Final Draft

Mapping Waste

Setting the Stage to Clean-Up Niagara

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Prepared for the Community Foundation for Greater Buffalo
and the Waste and Pollution Working Group of the Western New York
Environmental Alliance by the Urban Design Project, UB.

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This digital database is included on a separate DVD as an appendix to this report. The data in this database can be used for further mapping and analysis.

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Executive Summary

MAPPING WASTE, *Setting the Stage to Clean-Up Niagara,* has produced a hazardous waste profile of three counties of WNY: Erie, Niagara and Cattaraugus. Using existing data sources, the project has generated maps and charts that identify the legacy waste issues as well as on-going waste disposal and processes in the Niagara Region. This mapping project is proposed to be the first step in the development of a region-wide comprehensive argument for stopping the use of this region as a storage and dumping ground for waste from others.

Working with the Waste & Pollution Prevention Working Group of the WNY Environmental Alliance sponsored by the Community Foundation for Greater Buffalo, we have outlined the federal and state regulatory contexts that monitor, manage, oversee and permit waste in our region. Using the available databases, we have produced an Atlas -- maps and charts of the various classes of waste. This information has been organized first by type of waste, and then according to the agency responsible for its regulation. Besides the Atlas, we offer a series of case studies of waste identification and clean-up in our region, giving insight into the relationship among the agencies, the contamination, and community efforts.[i]

Figure E-1: Case Studies in Mapping Waste Report

- *Hickory Woods:* Residential construction on contaminated land adjacent to a Superfund site
- *Sycamore Village:* Residential construction on contaminated land, incorporating lessons from Hickory Woods
- *858 East Ferry:* Successful community involvement in a Superfund cleanup
- *Clean Air Coalition in Tonawanda:* Successful community involvement in air pollution
- *The former Lake Ontario Ordnance Works (LOOW)* site in Lewiston and Porter: A complex site with radiological and chemical waste storage and contamination and overlapping federal and state regulation
- *West Valley Nuclear Facility*

The intent is to make this information publicly accessible to the WNY Environmental Alliance members and also to the public-at-large through the Community Foundation for Greater Buffalo's "GrowWNY" website. The longer term goal is to develop a broadly based comprehensive strategy and campaign to clean-up and restore the Niagara region in Western New York.

The Mapping Waste project emerged as one of the agenda items identified by the Alliance during the first three Congresses held in 2008-9. In general, there was a concern that WNY has more than its share

[i] MAPPING WASTE is similar to the Community Foundation's funding of the Community LOOW (Lake Ontario Ordnance Works (LOOW) Project, which created public access geographic analysis of historic testing data from the site.

of toxic sites and a concern that much of our legacy waste was left before there was effective environmental legislation for managing the material. Specifically, the Waste Working Group identified our unique position as home to some of the most toxic material both at West Valley Nuclear Facility and the Niagara Falls Storage Site at the LOOW site, in addition to being the location for CWM, the only commercially operating hazardous waste site in New York, and the only one in the northeastern United States. These broad general conditions are known to many in the environmental community who have worked for years to stabilize and clean up these legacy and active hazardous waste facilities. But the scope and type of hazardous waste has been difficult to assess because of the complexity of the issues, the regulatory context, and the difficulty of interpreting the available data.

***The Atlas**:* The Atlas itself is divided into three parts: The regulatory framework; the maps and charts; and the analysis. Given the complexity of regulations, the levels of government involved, and the evolving nature of programs, we have attempted to describe how the system for protecting, regulating and permitting works at both the state and federal levels. The maps are organized according to type of waste regulated, and in each case, we give information on quantity and location of the selected waste. We have recorded the legacy waste, i.e., waste left from historic processes, and active waste, a term indicating that is still being generated and accumulated.

Figure E-2: Types of Waste in the Atlas

- *Hazardous Waste - Legacy or Inactive:* US EPA Superfund, NYS DEC Superfund and NYS DEC Brownfields Programs
- *Hazardous Waste - Active:* US EPA Resource Conservation and Recovery Act (RCRA); NYS DEC Treatment, Storage and Disposal Facilities (TSDF); NYS DEC Hazardous Materials Bulk Storage
- *Solid Waste:* NYS DEC Inactive Solid Waste Facilities and Solid Waste Program
- *Water Pollution:* IJC Great Lakes Areas of Concern, NYS DEC State Pollutant Discharge Elimination System (SPDES)
- *Air Pollution:* NYS DEC Air Facility System (AFS)
- *Resource Extraction:* NYS DEC Mined Land Reclamation Program and NYS DEC Oil, Gas and Other Regulated Wells
- *Radioactive Waste:* US EPA Radiation Information System, NYS DEC Radioactive Control Permits, and NYS DOH Radioactive Materials Licensing
- *Defense Related Sites:* US ACE Formerly Utilized Sites Remedial Action Program (FUSRAP) and US ACE Defense Environmental Restoration Program - Formerly Used Defense Sites (DERP-FUDS)

The summary table on the following page gives an overview of the total number of remedial sites and permits in WNY. More detailed information (totals by county, subcategories of the sites and permits, and data sources) on each remedial program or permitting program can be found in Chapter 3 of this report.

Summary of Remedial Sites and Permits in WNY (2010)	
Hazardous Waste	**Total (Erie, Niagara, Cattaraugus)**
Inactive	
US EPA Superfund Program[1]	13 (7 Current NPL, 6 Deleted NPL)
NYS DEC Superfund Program[2]	167 (43 Class 2)
NYS DEC Brownfield Programs[3]	98
Active	
US EPA Resource Conservation and Recovery Act (RCRA)[4]	460
Treatment, Storage and Disposal Facilities (TSDF)	53
Large Quantity Generators (LQG)	374
Corrective Action	33
US EPA Toxic Release Inventory System (TRIS)	299
US EPA Assessment, Cleanup and Redevelopment Exchange System (ACRES)	137
US EPA Risk Management Plan (RMP)	64
US EPA Section Seven Tracking System (SSTS)	29
NYS DEC Hazardous Waste Treatment, Storage and Disposal Facilities (TSDF)	27
NYS DEC Hazardous Materials Bulk Storage Program	1,744
Solid Waste	
Inactive: NYS DEC Inactive Landfills	82
Active: NYS DEC Solid Waste Program	17 (11 active landfills)
Water Pollution	
IJC Areas of Concern (AOC)	3
NYS DEC State Pollutant Discharge Elimination System (SPDES)[5]	1,081 (135 individual, 946 general)
Air Pollution	
NYS DEC Air Facility System (AFS)	200 (51Title V, 149 State Facility)
Resource Extraction	
NYS DEC Mined Land Reclamation Program	270 (134 active mines)
NYS DEC Oil, Gas and Other Regulated Wells Program	12,405 (6,609 active wells)
Radioactive Waste	
US EPA Radiation Information System	2
NYS DEC Radioactive Control Permit	4
NYS DOH Radioactive Materials Licensing	159
Defense Related Sites	
US ACE Formerly Utilized Sites Remedial Action Program (FUSRAP)	9 (5 active, 4 complete)
US ACE Defense Environmental Restoration Program - Formerly Used Defense Sites (DERP - FUDS)	15

[1] EPA NPL sites correct as of 03/2012

[2] All Current NPL sites are also NYS DEC Class 2 sites and all Deleted NPL sites are also NYS DEC Class 4 or 5 sites.

[3] Includes Environmental Restoration sites, Brownfield Cleanup sites, and Volunteer Cleanup sites.

[4] **Some TSDFs are also LQGs and Corrective Action sites. This data correct as of 12/2011.**

[5] Ballast Discharge and MS4 permits are not included in these totals.

***What We Learned About WNY**:* Much of WNY's contamination is concentrated in our population centers first, because that was the location of early industry and hence, the legacy waste, and second, these areas continue as the center of 'active' waste. This pattern increases the threats to the health of more people, especially our children. Further, many of these sites are located in low income areas, raising questions of environmental justice.

- There are 38 superfund sites (combined Superfund programs of the US EPA and NYS DEC) within a half mile of a public school
- There are 34 superfund sites (combined Superfund programs of the US EPA and NYS DEC) within Potential Environmental Justice Areas as defined by the NYS DEC for having high proportions of low-income and minority residents.

Western New York has a substantial burden of both legacy and ongoing contamination in comparison to the rest of NYS. At least one of the three study counties was near the top of the list in total number of sites with each contamination issues studies, leading us to suggest that WNY and its residents are unfairly burdened compared to the rest of NY.

- Cattaraugus County is tied for the fourth most with four current US EPA Superfund National Priority List (NPL) sites, and Niagara County is tied for the sixth most with three current NPL sites.
- Only Nassau County has more total NYS DEC Superfund sites than Erie County (Nassau County has 111 sites, compared to Erie County's 87). Following Suffolk County in third with 81 sites, Niagara County has the fourth most number of NYS DEC Superfund sites with 64.
- Erie County's 31 Brownfield Cleanup Program sites are the most in any county in New York State.
- Niagara County's six Treatment, Storage and Disposal Facilities (TSDF) are second only to Monroe County's seven. Erie County's 50 Large Quantity Generators (LQG) are third only to Bronx County's 178 and Kings County's 159. Both Erie County and Niagara County are tied with Albany for the most Corrective Action sites in New York State with ten sites each.
- Although none of the three study area counties are amongst the top ten New York State counties in total active landfills (Saratoga County has the most with 19), Niagara County landfills dispose of the third most amount of solid waste and its Chemical Waste Management (CWM) landfill is the only one in the state that stores hazardous waste.
- The presence of the US Department of Energy Niagara Falls Storage site in the Niagara County Lake Ontario Ordinance Works (LOOW) site, and the US Department of Energy West Valley Demonstration Project in Cattaraugus County, show that Western New York bares a disproportionately high burden for storing high-level radioactive waste.

Although burdened unfairly by contamination, Western New York residents have proven that community action can make a difference. The Love Canal tragedy catalyzed an environmental justice movement, championed by Lois Gibbs and other community members that saw the creation of the federal and state Superfund programs for remediating similar sites. More recently, community action led to the remediation of the 858 East Ferry site in Buffalo and successful legal action against Tonawanda Coke for polluting the air.

***Next Steps**:* This section provides an overview of the process of review and also, proposals for next steps to be considered by the WNYEA.

The first draft of *Mapping Waste* was completed in the Fall of 2010 and reviewed by the Waste and Pollution Working Group and the Community Foundation. At this time, the Community Foundation, at the request of the Task Group and UDP, submitted the draft to both EPA and DEC and asked for an agency review of the material. We had made a good faith effort to identify, explain and map the waste of WNY, often with the assistance of the agencies, but it was agreed that a final review would be important before public distribution. Both agencies were very helpful and gave us detailed comments that clarified some aspects of the report and at times, raised questions about the comments. UDP and the Chair of the Waste Working Group have reviewed and revised the feedback and made appropriate changes, particularly in the issue surrounding active hazardous waste. This process of inquiry, response and revision has taken us until April 2012 and the document is ready to be released to the public.

As a result of this study, we proposed a series of next steps.

1. **Agency / Expert Continued Involvement:** Given Agency participation in the *Mapping Waste* project, it is suggested that we invite them to a WNYEA sponsored meeting with interested stakeholders to discuss how this kind of information could become more available to the larger public. In addition, WNYEA might hold a symposium on the agenda and issues raised with federal and state commissioners and directors such as Abby Snyder, NYS DEC Region 9 director, Ralph van Houton, NYS DOH (Rochester/Buffalo) and Judith Enck, US EPA Region 2 – Regional Administrator. It would be very helpful to all if the matter of 'environmental justice' were brought to this level of discussion.
2. **Communication Plan**: The Task Group and WNYEA members need to develop a communication plan to determine what and how to present to others in service of the longer term goal of "Clean up Niagara". The first step is to put the material on the GrowWNY website with pointers on how the material is organized, presented and can be used. It may be useful to consult with experts in the communication of complex material to a public audience.
3. **Active and Permitted Waste**: The legacy waste data that we analyzed took us in a direction that allowed us to make comparisons among all counties in New York State. Due to certain constraints, we were not able to do the same in-depth analysis of **active** waste production, storage and remediation that is permitted and regulated by the DEC and EPA. It would be good to continue the research on our regional environment to find out if WNY has a disproportional amount of active waste in the same way we were able to identify our status among states for legacy waste. This would require additional funding.
4. **Elected Officials Campaign:** Now that we have generated the maps that identify how much and what kind of hazardous waste is located in each of the elected official districts, how should we engage this information? The Task Group has developed a proposal to the WNYEA Board about how to proceed on elected official visits.
5. **"Stories Project" for NF Manhattan Project**: One of the issues that emerged and for which it was difficult to get clear information was the historic nuclear history in Niagara Falls that support the development of the atomic bomb. We are suggesting that we access a grant to initiate a project by gathering a few stories of those involved to serve as a pilot for a larger project to document this history.

From the initiation of this project, it has been clear that this is a beginning only. Having the information is the first step in organizing a campaign directed at both state and federal officials to speed up the remediation of the region, and also to argue for 'no more waste' in Western New York. It is our hope that the Waste and Pollution Working Group will continue to meet and work toward a a cleaner Niagara.

Chapter 1: Introduction to Mapping Waste

1.1 Introduction

MAPPING WASTE, *Setting the Stage to Clean-Up Niagara,* has produced a snapshot of the hazardous waste profile of three counties of WNY: Erie, Niagara and Cattaraugus. Using existing data sources, the project has generated maps that identify the legacy waste issues, as well as on-going waste disposal and processes in the Niagara Region. In addition to using the source data from agencies and websites, the project convened a task group of stakeholders to identify issues and in many cases, to act as informants for data and processes.

The intent of "Mapping Waste" is to make information about hazardous waste publicly accessible to the groups working in the waste area and to the public-at-large through the Community Foundation for Greater Buffalo's "Grow Green" website. The longer term goal is to develop a broadly based comprehensive strategy and campaign to clean-up and restore the Niagara region in Western New York.

Buffalo, Niagara Falls and all of Western New York were the Silicon Valley of the late 19th and the first part of the 20th Century. It was here that industrialists and financiers, captured by the industrial revolution built a 'technological utopian vision,' expecting a better quality of life based on the new capacity for making and manufacturing. This was a scene of invention and innovation – including such things as mechanized production, electricity and its delivery, and steel manufacturing. It was here that the evolving chemical industries experimented, produced, and delivered the goods of the 20th century.

But the legacy of that wealth and energy is a highly contaminated landscape and polluted waters. Much of the experimentation and production, including the two world war efforts that greatly expanded both the chemical and nuclear industries, occurred before there was any effective legislation to manage, control, or treat this waste. One of the most infamous examples, Love Canal, brought national attention to the problem of toxic waste in the 1970s, and engendered an environmental movement that pushed, and continues to push, for the clean-up for our land and water.

However, all of the issues of waste in WNY are not historic, but ongoing today. WNY continues to accumulate waste, hazardous and otherwise, in quantities beyond most communities. The ongoing struggle to stop the expansion of Chemical Waste Management's Model City hazardous waste landfill (CWM), for example, highlights issues of ongoing pollution, and the designation of three rivers as Areas of Concern by the International Joint Commission as Great Lakes toxic hot spots. These are but two conditions that suggest that WNY is one of the 'toxic' hot spots in New York State, and perhaps in the United States.

1.2 Project Background

The "Mapping Waste" project is a continuation of the agenda developed during the Western New York Environmental Alliance process sponsored by the Community Foundation for Greater Buffalo (CFGB). From May 2008 through June 2009, CFGB with assistance from the Urban Design Project and the Institute for Conservation Leadership, convened over 150 organizations to strategically engage community-wide organizations and resources to improve the region's environment and thus its economy and quality of life.

The process gave birth to a new coalition, the Western New York Environmental Alliance, composed of groups from Erie and Niagara Counties. This loose federation of WNY groups developed a Declaration for Action, and a shared Agenda for Action, an evolving document that directs the shared work of the region.

The goal developed for the Alliance is simple but incredibly complex**: to Preserve and Restore our Regional Environments**. The objectives identified and confirmed at the Congresses are to (1) demonstrate, the preservation and restoration through collaborative projects; (2) mobilize the public and policy makers to improve the environment and (3) strengthen environmental organizations so that they may be more effective.

Figure 1-1: Declaration of Action

Western New York Environmental Alliance

This preamble was developed at the suggestion of various Task Group members who believed we needed to remind ourselves, not once, but often, about the importance of the work we do together. It was reviewed by the Steering Committee and the public at Congress Three. What follows is our agreed upon Declaration of Action.

We, the people of Western New York, are resolved to work collaboratively to improve our environment and our regional, international, community. We are a Great Lakes region and stewards of the world's largest supply of fresh water, vast forests, rich agricultural land, abundant wildlife, an incredible built heritage, historic park systems, the magnificent Niagara Falls and hundreds of wonderful communities. Unfortunately, much of our natural heritage has been lost and what remains is threatened. And, like the rest of the world, we face the prospects of climate change. We therefore establish this agenda to protect and restore our globally significant environment.

We know that our environmental resources are immeasurable assets; they have direct impacts on our quality of life and our economy. Healthy ecosystems provide habitat for wildlife; they provide clean air, clean water and other ecological services such as stormwater control and carbon sequestration; and they provide recreational and business opportunities. The environment is a source of wealth for all of us.

Like our natural heritage, our environmental community is strong. We are the birthplace of the environmental justice movement, a product of both our legacy of contamination and our determination to seek action through justice. We are home to thousands of individuals and hundreds of organizations aiming to improve our region.

Although our assets are plentiful and our voices numerous, our region and its people have suffered through the despoiling of our environment and the fragmentation of our collective efforts. Our dwindling population, declining health, vacant and contaminated land, and faltering economy are proof of this. Although some progress has been made, much more is needed. At this time, we make a commitment to collaboratively increase our region's environmental literacy, preserve its biodiversity, and ensure that our energy is sustainable, our air is clean, our water drinkable, our fish edible, and our forests, farms, and gardens plentiful.

With "Our Shared Agenda for Action," we have a vision for our future. Together, we are committed to strengthening the work of our environmental community through collaboration and implementation. This includes long term, overarching goals as well as specific measurable actions that can be accomplished soon. We are determined to leave those who follow us a sustainable, thriving community where they can live healthfully, work productively, learn, teach, grow old, and choose their own path. This is the aim of the Western New York Environmental Alliance – the purpose of Our Shared Agenda for Action.

The WNYEA Agenda was developed through discussions with the Steering Committee, Task Groups, and the three Congresses. Six major issues were identified as places to start and although they don't cover all regional environmental concerns, they do give the 150 organizations a place to start. The six categories are:

- Energy and Climate Change
- Habitat and Natural Resources
- Parks and Recreation
- Waste, Pollution Prevention, and Water
- Urban Regeneration and Land Use
- Strengthening Environmental Organizations

Since the final Congress in the spring of 2009, each of these areas has continued with on-going projects, all of which will be presented at the WNYEA 2010 Congress. This project, "Mapping Waste" directly addresses the Waste, Pollution Preventions and Water areas of shared concern.

As background, it is useful to review the Alliance's agenda in relation to this issue, specifically the first of the issues identified by the participating groups and individuals, ***cleaning up toxic and hazardous waste.***

Dedicated members of the environmental community guided the creation of Our Shared Agenda for Action.
Source: WNYEA Final Report, 2009.

Figure 1-2: Summary of the Waste and Pollution Working Group

Western New York is home to environmental assets unlike any others on Earth and a population of over a million people. Unfortunately, our industrial heritage and antiquated sewer systems continue to contaminate our water, land and air. The region continues to be the dumping ground for toxic waste. The Task Group developed actions that address three main issues:

- Clean up toxic / hazardous waste
- Improve recycling
- Protect water quality and quantity

The Task Group hopes their efforts will help restore the quality of our environment. We have to become better stewards of our water and land resources and change the region's perception as the nation's dumping ground.

Issues	Actions	Quantifiable Measures
Clean up toxic / hazardous waste	1. Establish a network of concerned organizations and citizens. 2. Connect them with each other and the public through the Green Table, events, and advertising. 3. Educate, inform & mobilize them on policy changes; create a 'Minute Man' group. 4. Communicate the impact of waste on economy to policy makers. 5. Increase the awareness of the importance of the work of smaller groups.	*Number of organization and citizens in the network and 'Minute Man' group. *Number of groups advocating against hazardous waste. *Number of groups from outside of the network reached and collaborating.
Improve recycling	1. Mount an awareness campaign on recycling and gather recycling pledges. 2. Provide the public with tools and incentives to change behavior. 3. Track behavior and develop report cards for area efforts.	*Number of recycling pledges gathered. *Number of people reached by awareness campaign.
Protect water quality and quantity	1. Mount an awareness campaign on water usage and track progress through a community opinion survey. 2. Provide the public with tools and incentives to change behavior. 3. Track behavior and develop report cards for area efforts. 4. Convene a round table discussion on water.	*Number of people reached by awareness campaign and progress as measured by the survey. *Number of individual water quality / conservation projects (green roofs, rain barrels, etc) and gallons of water conserved. *Decrease in number of CSO overflows. *Number of people attending the round table discussion.

1.3 Outline of the Mapping Waste Project

Between January and August 2010, the Urban Design Project from the University at Buffalo[i] with a grant from the Community Foundation for Greater Buffalo worked to map the hazardous waste environment and context of WNY. This was seen as the first step in developing a long term comprehensive strategy and campaign to clean up and restore Western New York. The goal of this initial project was to make this information public accessible to groups to increase the collective effectiveness of our work, and to make it available to the public-at-large in a form that was comprehensible and useful.

Building on the WNYEA Waste Group, we constituted an Advisory Task Group to oversee the work. This task group was comprised of self-identified organizations and individuals working on specific issues or sites; experts in waste issues; and regulators such as the Department of Health, DEC, EAP, and so on. The tasks of this group have been to: (1) frame the issues/types of waste to be included in this phase; (2) assist in gathering information; and (3) present the final draft report at the 2010 WNYEA Congress.

The research agenda, sources, and data organization builds on GIS mapping that gives us an overview of waste in the three counties, and also enlarged for the urban areas of Buffalo and Niagara Falls – the site of the most intense legacy waste. The data are organized, in most cases, according to the regulator, that is the agency responsible for each particular kind of waste or for that particular site. This includes international, federal, state and local responsibilities.

In order to make the data as useful as possible, one of the mapping projects is to present the information according to elected official responsibilities: federal, state, county and local. For each elected official, there is a map that outlines the hazardous waste in their 'district' that has been addressed according to 'best practices' (removed, contained….), and also a map that shows what problems still exist and are either under remediation or on a list to be remediated. This strategy gives all groups and all citizens a 'pressure' point for cleanup in their own neighborhood.

Limitations of Study: This study, focused on hazardous waste and historic and current contamination, may not be inclusive of all 'waste' in our region. We have attempted to acquire the most up-to-date information available as of 9/2010 and worked with agencies and experts with the interpretation of that information.

This project provides a snapshot of waste in WNY along with information on how to access the information on the agency websites. This is not an interactive data set as that structuring is beyond the scope of this project. However, all of the information has been obtained from public sources and is therefore available to any with the resources or capacity to access the GIS systems.

It is hoped, however, that gathering, editing, interpreting, and re-presenting the profile of this region will be helpful as we move forward in developing an agenda to 'clean up Niagara.

[i] The project was managed by the Urban Design Project under the direction of Lynda Schneekloth (Architecture and Planning), Joseph Gardella (Chemistry) and Jajean Rose-Burney (Urban Design Project) with the assistance of a graduate students, Ziyan Wu from Planning, Jinwon Bae from Geography and undergraduate, Planning and Environmental studies student Emily Bauer, for data collection, interpretation, mapping and management activities.

Chapter 2: Research Methodology

2.2 Overview

2.2 Community Participation

2.3 Waste and Pollution Data

2.4 Case Study Research

2.1 Overview

The impetus for the Mapping Waste project was the identification of waste and pollution as one of the main agenda items during the Western New York Environmental Alliance planning process. Research for the Mapping Waste project included three main components; 1) stakeholder participation, 2) existing waste and pollution data that could be quantified and mapped and 3) case study research on specific sites in Western New York. Three counties in Western New York, Niagara, Erie, and Cattaraugus, were considered the project area because of the amount of legacy and ongoing waste and contamination issues. The entire process was guided by a Steering Committee that was coordinated by the Community Foundation for Greater Buffalo and the project team.

2.2 Stakeholder Participation

The WNYEA identified the need for more publically accessible information regarding waste and pollution in Western New York to support advocacy campaigns to help "clean up Niagara" campaign. But first, the information had to be gathered and presented, and to do so required the participation of citizens and experts.

2.2.1 Steering Committee for Mapping Waste

The Waste and Pollution Working Group of the Western New York Environmental Alliance and its members formed the core of the Mapping Waste Steering Committee. The Steering Committee expanded by inviting those who were interested in the waste and pollution issues to join and attend regular meetings. The email list serve for the project has over 50 people who were sent regular project updates and work products as they were produced. The members of the Steering Committee represent local and statewide elected officials and public agencies, universities and research centers, schools, foundations, businesses, non-profits, advocacy organizations, and private citizens.

The Steering Committee met three times during the course of the project that lasted from February to August, 2010. Brief summaries of those meetings are below.

February 3, 2010 at the Community Foundation for Greater Buffalo

The dual purposes of the first steering committee meeting were to remind participants where the project idea originated and to discuss the desired outcome of the project. The project team first discussed the WNYEA and the work of the Waste and Pollution Working Group as the basis for the Mapping Waste project. The project team then introduced the Mapping Waste project's proposed goals and objectives, work products, and a timeline for completion. The project team facilitated a discussion with the participants to help define "the problem" and discuss ways that this project could address those problems.

Several important issues emerged from the discussion at the meeting:

- What are the historic and current contamination conditions?
- Who are the regulators?
- How can citizens influence decisions?
- How can citizens access data and how can the issues be communicated to the public?

April 14, 2010 at the Community Foundation for Greater Buffalo

The purpose of the second steering committee was to discuss proposed project outcomes and update the participants on the progress made on data collection and mapping. The project team presented maps and data on waste and pollution. The proposed project outcomes included:

- PDF maps and a GIS database of contamination issues
- Case studies on contamination issues
- Regulatory framework by issue
- Maps of contamination issues by legislative district
- Potential lecture series

September 9, 2010 at the Community Foundation for Greater Buffalo

2.2.2 Interviews

The project team conducted several interviews to help inform the process. Over ten staff members from various agencies including the New York State Department of Environmental Conservation, New York State Department of Health, Erie County Department of Environment and Planning participated in several interviews. These agency interviews helped the project team better understand the regulatory framework of waste and pollution issues, and helped the project team find data for mapping purposes. Staff at the agencies were extremely helpful and provided information openly and quickly.

The project team also conducted interviews with community advocates to determine their priority issues and better understand the role that citizens can have in the waste and pollution prevention process.

2.3 Waste and Pollution Data

2.3.1 Regulatory Framework for Mapping

The Atlas of Maps was produced from existing available data on waste and contamination in Western New York. The Steering Committee recommended that the project team collect and organize mapping data through regulatory programs related to waste and pollution. The Steering Committee felt that the complex and little-understood regulatory process, with multiple and overlapping layers of local, state, federal and international regulatory programs, is a key barrier to public participation. Although not comprehensive, this research attempted to determine the various types of regulatory programs and the agency's responsible for their oversight. From this regulatory framework, the project team collected available data on the following waste and pollution issues in Western New York (a more detailed description of the issues and the regulatory programs associated with each can be found in Chapter 3 of this report):

- Hazardous Waste Sites (active and inactive)
- Solid Waste
- Water Pollution
- Air Pollution

- Resource Extraction
- Radioactive Waste
- Defense Related Sites

The project team also created maps and data sets that correspond with state and federal legislative districts. These maps highlight sites that pose the greatest hazards to human health. The full Atlas of Maps can be found in Chapter 3 of this report. The full digital GIS database of mapping data is included as an appendix.

Figure 2-1: Mapping Waste as 'Snapshot'

It is important to note that the data and maps in this report are a "SNAPSHOT" and not an interactive data base. That is, this report gives a picture of what the conditions are like in September 2010 (Data 2011 for RCRA programs). The GIS data included in the paper report is interactive and can be used for additional mapping and analysis. The most up-to-date information is available on the publicly accessible websites that are DVD managed by the sponsoring agencies.

2.3.2 Data Analysis

In addition to the accumulation, organization and presentation of information, the project team conducted analysis on some of the data. This analysis included quantifications of the various types of sites by county, comparisons of the quantity and severity of contamination in Western New York to the rest of the state, and an Environmental Justice analysis of proximity of sites to population centers and schools.

2.3.3 Data Sources

Mapping data was retrieved from online databases hosted by the US Environmental Protection Agency and the NYS Department of Environmental Conservation, and from staff of the NYS Department of Environmental Conservation, the NYS Department of Health, and the Erie County Department of Environment and Planning. Other data was acquired by request through the Freedom of Information Law (FOIL). Data on brownfields was provided in part by NYS Senator Antoine Thompson's office, and data on Combined Sewer Overflows (CSO) was provided by the Buffalo Niagara Riverkeeper. A full list of resources by data set can be found in the Appendices.

There are several other online resources that can be referenced to find information regarding waste and pollution, such as those listed below:

- New York State Department of Health, "Environmental Facilities and Cancer Mapping": http://www.health.state.ny.us/statistics/cancer/environmental_facilities/mapping/
- American Lung Association, "State of the Air": http://www.stateoftheair.org/
- The US Environmental Protection Agency and USA Today, "The Smokestack Effect": http://content.usatoday.com/news/nation/environment/smokestack/index

2.4 Case Studies

The project team conducted case study research on specific contaminated or remediated sites in Western New York. These stories demonstrate the variety and complexity of contamination issues facing our region, how regulatory programs are put into practice, and how community-based activism can lead to successes.

The case studies included contaminated residential sites like Hickory Woods, East Ferry, and Sycamore Village, air pollution at Tonawanda Coke, radioactive waste at West Valley, and the Lake Ontario Ordinance Works site that integrates hazardous waste, solid waste, radioactive waste, and other sources of air and water pollution.

Data for these case studies was collected from published research, books, news articles, and interviews. The case studies can be found in Chapter 4 of this report.

Chapter 3: Atlas of Maps

PART ONE: Remedial Programs, Permitting Programs, and Databases of Information

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3.12.2 Public Schools

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Endnotes

PART ONE: Remedial Programs, Permitting Programs, and Databases of Information

3.1 Overview of the Section

This "Atlas of Maps" is a compilation of easy-to-read maps of legacy and ongoing contamination in three counties of Western New York (see Study Area map). The maps are corresponding with a digital GIS database of map files that are provided as an appendix to this report. Although the maps in this Atlas are not interactive, the digital GIS database can be updated and new maps and analysis can be created from it. This Atlas of Maps does the following:

- It describes the contamination issues facing Western New York as well as the regulatory programs designed to remediate, control through permits, or simply keep track of the associated contamination. The information is presented in a question and answer format to help guide the reader.
- It provides actual maps of each contamination issue and regulatory program in the WNY study area with the different remedial, permitting or tracking program sites identified.
- It quantifies the total number of remedial, permitting or tracking program sites in each of the three WNY study area counties and the study are as a whole.

3.2 Regulatory Framework for Mapping

3.2.1 Introduction

This section begins with an overview of regulatory programs in place to deal with each studied contamination issue. The maps are grouped by issue and by regulatory program. Each set of maps is coupled with a detailed description of the issue, regulatory program, and simple quantifications from Western New York.

3.2.2 Contamination Issues

The contamination issues included in the Atlas of Maps include:

- Hazardous Waste Sites (active and inactive)
- Solid Waste
- Water Pollution
- Air Pollution
- Resource Extraction
- Radioactive Waste
- Defense Related Sites

Figure 3-1: Definitions

Hazardous Waste - Hazardous Waste is waste that poses substantial or potential threats to public health or the environment. For the purposes of this study, inactive hazardous waste site are considered sites that contain legacy waste; they are no longer taking in new waste for storage or producing hazardous materials. Active hazardous waste sites are the opposite; they are taking in new waste for storage or processing, or producing materials considered to be hazardous.

Solid Waste - Solid Waste is any discarded material or garbage; solid waste is usually disposed of in landfills, incinerators, or is recycled. All hazardous waste is considered solid waste by definition, but not all solid waste is hazardous. However, even “non-hazardous” solid waste usually contains some levels of household hazardous waste from sources like batteries or electronics. Inactive solid waste facilities are considered landfills that are no longer storing new waste, while active solid waste facilities are those that are storing or processing new solid waste.

Water Pollution – Water Pollution is the addition of contaminated materials to water and to layers of sediment beneath water. It can originate from historic sources or from ongoing sources of contamination, it can travel with water over long distances, and can even be deposited from air. This study examines both the locations of existing polluted waters and point-sources of ongoing contamination.

Air Pollution – Air Pollution is the introduction of contaminated materials into the atmosphere that cause harm or discomfort to humans or other living organisms, or damages the natural environment. This study examines point-sources of ongoing air pollution rather than air quality in a given area.

Resource Extraction – Resource Extraction describes the acquisition of natural resources from the environment. The process of extraction can have impacts on air, soil and water. This study focuses on mining, oil, and natural gas wells.

Radioactive Waste – Radioactive Waste is waste that contains radioactive material, or material that emits harmful radiation. Radioactive waste is produced from multiple sources that range from atomic weapons and energy to medical and industrial sources. The majority of radioactive waste is "low-level waste", meaning it has low levels of radioactivity per mass or volume. Since radioactive waste decays over a long period of time – thousands of years for high-level radioactive waste – it needs to be stored. This study maps storage facilities, facilities that use radioactive materials, and facilities that emit radiation.

Environmental Justice – The NYS DEC defines Environmental Justice as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. This study includes a map of potential environmental justice areas as defined by the NYS DEC.

Defense Related Sites – This study identifies Defense Related sites that have hazardous waste, radioactive waste, or both. These sites were once utilized by the different branches of the military and the remediation is the responsibility of the US Army Corps of Engineers (US ACE).

3.2.3 Regulatory Programs

There are multiple levels of government agencies and regulatory programs responsible for most of the issues included in this study. For example, both the United States Environmental Protection Agency (US EPA) and the New York State Department of Environmental Conservation (NYS DEC) have a Superfund program with some overlap. Not all regulatory programs are included in this study, only the larger, commonly used programs with sites or facilities in Western New York. Regulatory programs under the jurisdiction of counties or municipalities are not included.

The following table shows the regulatory programs included in this study by issue.[i] The table also shows which programs are remedial programs, permitting programs or databases of information.

Remedial programs regulate the cleanup of contaminated sites.

Permitting programs regulate activities that have the potential to release contaminants into the environment

Databases list certain types of activities in order to make them public

Each remedial program or permitting program also has a database of information.

3.2.4 Enabling Legislation

Figure 3-2: Public Trust Doctrine

The Public Trust Doctrine is the basis for our environmental laws in that it acknowledges that the public owns common and shared environments such as the water, air, fisheries, parks and common spaces. The government is to be the trustee of the value of these ecosystems for all. Many of these common rights are under duress, as exemplified by the current global push to privatize water.

(See Barlow (2009), *Blue Covenant,* The New Press and Cronin and Kennedy (1997) *The Riverkeepers.* NY: Touchstone)

Important Federal Legislation

What is the EPA or the US Environmental Protection Agency?[1] The U.S. Environmental Protection Agency (EPA) was created on December 2, 1970, by executive order of President Richard Nixon. As described in Title 40 of the Code of Federal Regulations (CFR), the U.S. Environmental Protection Agency enables coordinated and effective governmental action to assure the protection of the environment by abating and controlling pollution on a systematic basis.

What is the Clean Air Act?[2] The Clean Air Act (CAA) is the comprehensive federal law that regulates air emissions from stationary and mobile sources. Among other things, this law authorizes the US EPA to establish National Ambient Air Quality Standards (NAAQS) to protect public health and public welfare and to regulate emissions of hazardous air pollutants.

[i] The descriptions of each regulatory program used in this study were taken directly from the program's website to ensure accuracy. The source of the information is included in the Endnotes section of the chapter.

What is the Clean Water Act?[3] The Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. The basis of the CWA was enacted in 1948 and was called the Federal Water Pollution Control Act, but the Act was significantly reorganized and expanded in 1972. The "Clean Water Act" became the Act's common name with amendments in 1977. Under the CWA, the US EPA has implemented pollution control programs such as setting wastewater standards for industry and water quality standards for all contaminants in surface waters. The CWA made it unlawful to discharge any pollutant from a point source into navigable waters, unless a permit was obtained.

What is the Superfund, or the Comprehensive Environmental Response, Compensation, and Liability Act?[4] Known as CERCLA or Superfund, this act provides a Federal "Superfund" to clean up uncontrolled or abandoned hazardous-waste sites as well as accidents, spills, and other emergency releases of pollutants and contaminants into the environment. Through CERCLA, the US EPA was given power to seek out those parties responsible for any release and assure their cooperation in the cleanup. The Superfund Amendments and Reauthorization Act (SARA) of 1986 reauthorized CERCLA to continue cleanup activities around the country.

What is the Resource Conservation and Recovery Act?[5] The Resource Conservation and Recovery Act (RCRA) gives the US EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled the US EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. 'The Federal Hazardous and Solid Waste Amendments' are the 1984 amendments to RCRA that focused on waste minimization and phasing out land disposal of hazardous waste as well as corrective action for releases.

Important State Legislation

What Established the NYS Department of Environmental Conservation?[6] The body of law that established the NYS DEC and authorizes its programs is called Environmental Conservation Law. The law states that it is the policy of New York State to "conserve, improve and protect its natural resources and environment and to prevent, abate and control water, land and air pollution, in order to enhance the health, safety and welfare of the people of the state and their overall economic and social well being." The NYS DEC was established in 1970, replacing the previous Conservation Department.

Table 3-1: Regulatory Framework			
	Remedial Program	**Permitting Program**	**Database**
Hazardous Waste			
Inactive			
US EPA Superfund Program	✓		
NYS DEC Superfund Program	✓		
NYS DEC Brownfield Program	✓		
Active			
US EPA Resource Conservation and Recovery Act (RCRA)	✓	✓	✓
Treatment, Storage and Disposal Facilities (TSDF)		✓	
Large Quantity Generators (LQG)		✓	
Corrective Action	✓		
US EPA Toxic Release Inventory System (TRIS)			✓
US EPA Assessment, Cleanup and Redevelopment Exchange System (ACRES)			✓
US EPA Risk Management Plan (RMP)			✓
US EPA Section Seven Tracking System (SSTS)			✓
NYS DEC Hazardous Waste Treatment, Storage and Disposal Facilities (TSDF)		✓	
NYS DEC Hazardous Materials Bulk Storage Program		✓	
Solid Waste			
Inactive: NYS DEC Inactive Landfills			✓
Active: NYS DEC Solid Waste Program		✓	
Water Pollution			
IJC Areas of Concern (AOC)	✓		
NYS DEC State Pollutant Discharge Elimination System (SPDES)		✓	
Air Pollution			
NYS DEC Air Facility System (AFS)		✓	
Resource Extraction			
NYS DEC Mined Land Reclamation Program			
NYS DEC Oil, Gas and Other Regulated Wells Program			
Radioactive Waste			
US EPA Radiation Information System			✓
NYS DEC Radioactive Control Permit		✓	
NYS DOH Radioactive Materials Licensing		✓	
Defense Related Sites			
US ACE Formerly Utilized Sites Remedial Action Program (FUSRAP)	✓		
US ACE Defense Environmental Restoration Program - Formerly Used Defense Sites (DERP - FUDS)	✓		

3.3 "Hazardous Waste – Inactive" or Legacy Waste

3.3.1 US Environmental Protection Agency (US EPA) Superfund Program[7]

What is a Superfund Program?

The EPA's Superfund Program is the federal government's program to clean up the nation's uncontrolled hazardous waste sites. Sites placed in the program include an uncontrolled or abandoned place where hazardous waste is located, possibly affecting humans and/or local ecosystems.

What is the Enabling Legislation for the Program?

The Superfund Program was established by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980. This law was enacted in the wake of the discovery of toxic waste dumps such as Love Canal (Niagara Falls, NY) and Times Beach (Eureka, MO) in the 1970s. It allows the EPA to clean up such sites and to compel responsible parties to perform cleanups or reimburse the government for EPA-lead cleanups.

Who Manages the Federal Superfund Program?

EPA's Office of Solid Waste and Emergency Response (OSWER) in Washington, D.C. oversees the Superfund Program. The Office of Emergency Management within OSWER is responsible for short term responses conducted under the authority of Superfund. The Office of Superfund Remediation and Technology Innovation, and the Federal Facilities Response and Reuse Office, also within OSWER, have the lead for managing the long-term Superfund response program, the latter for responses involving Federal Facilities.

What is the Cleanup Process?

The Superfund cleanup process involves the steps taken to assess sites, place them on the National Priorities List, and establish and implement appropriate cleanup plans. The specific steps are described below.

1. The Preliminary Assessment (PA) and Site Inspection (SI) are used by EPA to evaluate the potential for a release of hazardous substances from a site. The assessment and inspection are used to calculate a site's score in the Hazard Ranking System.
2. Sites placed on the National Priorities List (NPL) are the most serious EPA Superfund sites identified for possible long-term cleanup. Their assignment to NPL is based on their score in the Hazard Ranking System. If not placed on the NPL (or alternatively listed as a Class 2 NYS DEC Superfund), no remedial action is taken unless it qualifies for another remedial program like the NYS DEC Brownfield Program.
3. If a site is listed on the NPL, a remedial investigation/feasibility study (RI/FS) is performed at the site. The remedial investigation is a means to collect site data and the feasibility study is the mechanism for the development, screening, and detailed evaluation of alternative remedial actions.
4. A Record of Decision (ROD) is a public document that explains which cleanup alternatives will be used to clean up a Superfund site.
5. Remedial Design (RD) is the phase in Superfund site cleanup where the technical specifications for cleanup remedies and technologies are designed. Remedial Action (RA) follows the remedial

design phase and involves the actual construction or implementation phase of Superfund site cleanup. The RD/RA is based on the specifications described in the record of decision (ROD).

6. Construction Completion identifies completion of physical cleanup construction, although this does not necessarily indicate whether final cleanup levels have been achieved.
7. Post Construction Completion ensures that Superfund response actions provide for the long-term protection of human health and the environment.
8. Sites are deleted from the NPL once all response actions are complete and all cleanup goals have been achieved.

Figure 3-3: How Clean is Clean?

When a site is considered remediated, it is not necessarily cleaned up. Remediation can range from containment on-site (with some plan to monitor the containment for leaks over some period of years) to the full removal of hazardous materials. There are different levels of cleanup depending on the proposed final use of the site.

How does the US EPA categorize Superfund sites for remediation?

What is the National Priorities List (NPL)? The National Priorities List (NPL) is a list of the most serious EPA Superfund sites identified for possible long-term cleanup. All US EPA Superfund sites are on the National Priorities List as either Current or Deleted.

Any person or organization can petition EPA to conduct a preliminary assessment using the Preliminary Assessment Petition. Information collected during the preliminary assessment and site inspection is used to calculate a Hazard Ranking System score. Sites with a Hazard Ranking System score of 28.50 or greater are eligible for listing on the NPL and require the preparation of a Hazard Ranking System scoring package. The Hazard Ranking System is a numerically based screening system that uses information from initial, limited investigations, the preliminary assessment, and the site inspection to assess the relative potential of sites to pose a threat to human health or the environment. The factors considered during the ranking include:

- Likelihood that a site has released or has the potential to release hazardous substances into the environment.
- Characteristics of the waste (e.g. toxicity and waste quantity).
- People or sensitive environments (targets) affected by the release.

The second mechanism for placing sites on the NPL allows States or Territories to designate one top-priority site regardless of score. In New York State, the Governor can request that a site be placed on the NPL.

The third mechanism allows listing a site if it meets all three of these requirements:

- The Agency for Toxic Substances and Disease Registry (ATSDR) of the U.S. Public Health Service has issued a health advisory that recommends removing people from the site;
- EPA determines the site poses a significant threat to public health; and
- EPA anticipates it will be more cost-effective to use its remedial authority (available only at NPL sites) than to use its emergency removal authority to respond to the site.

Are sites ever deleted from the National Priorities List (NPL)? The US EPA removes a site from the NPL once all response actions are complete and all cleanup goals have been achieved. (Current NPL sites are listed as NYS DEC Class 2 sites, while Deleted NPL sites are listed as NYS DEC Class 4 or 5 sites. Deleted NPL sites may require continued monitoring.) A site may be deleted where no further response is appropriate if EPA determines that one of the following criteria has been met:

- EPA, in conjunction with the State, has determined that responsible or other parties have implemented all appropriate response action required.
- EPA, in consultation with the State, has determined that all appropriate Superfund-financed responses under CERCLA have been implemented and that no further response by responsible parties is appropriate.
- A Remedial Investigation/Feasibility Study has shown that the release poses no significant threat to public health or the environment and, therefore, remedial measures are not appropriate.

Western New York Study Area

The Western New York study area (Erie, Niagara, and Cattaraugus Counties) has 12 US EPA Superfund sites (NPL -- Deleted + Current). Most of these sites are in Niagara and Cattaraugus Counties. Of the seven current NPL sites, four are in Cattaraugus County, three are in Niagara County, and none are in Erie County. Five sites have been deleted from the NPL; three in Niagara County and two in Erie County. As an example, Love Canal is included as a deleted NPL site although all of the toxic material is contained on site and it is continually monitored. This is a common occurance with stabilization and remediation on-site, that is, a site is deleted but still monitored.

Table 3-2: US EPA Superfund

	Niagara	Erie	Cattaraugus	Total
Total US EPA Superfund - NPL (Deleted + Current)	*6*	*3*	*4*	*13*
Deleted NPL	3	2	1	6
Current NPL	4	0	3	7

Source: US EPA Superfund Site Information (March 2012)

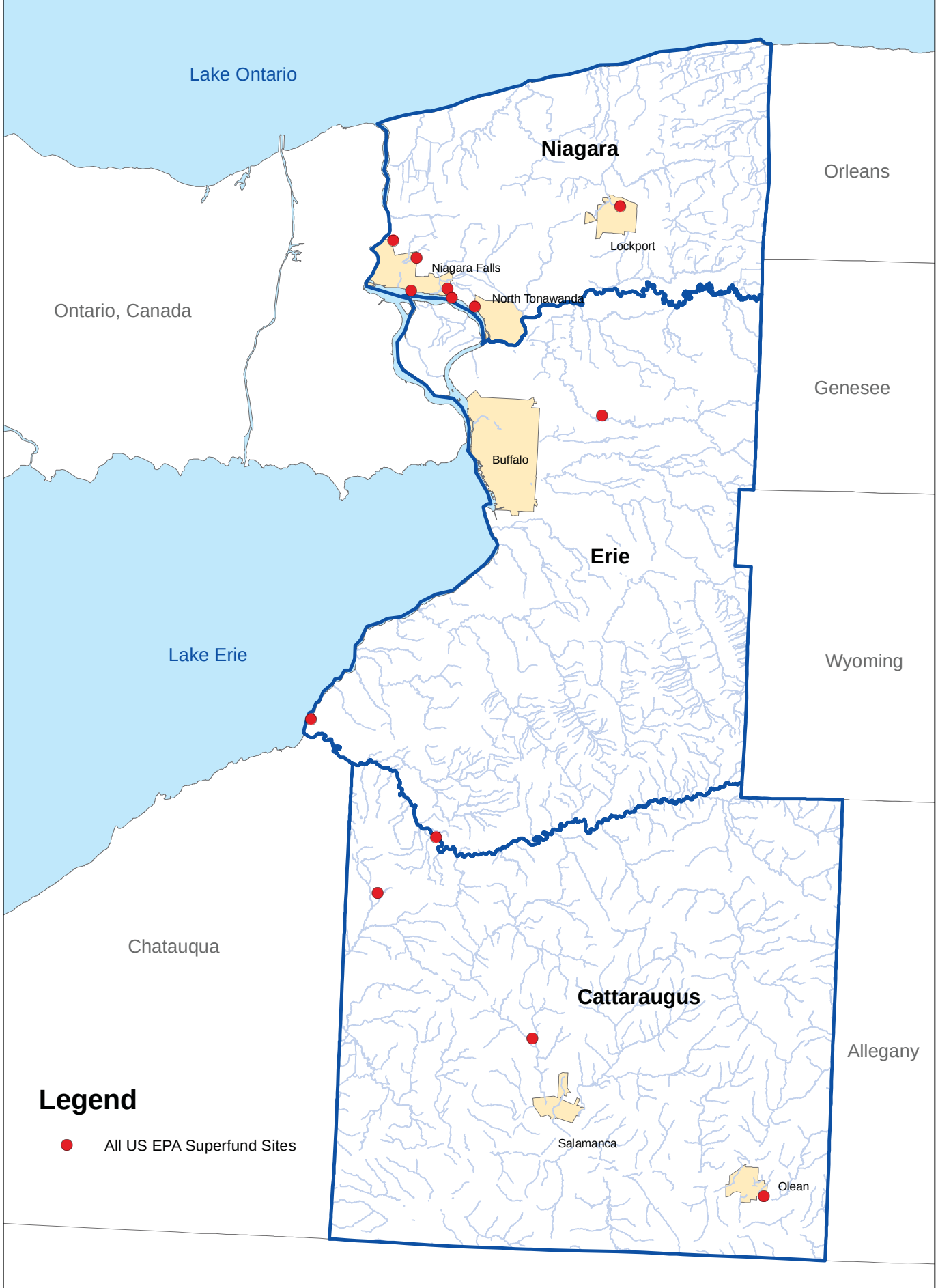
Maps

1. All study area US EPA Superfund Sites
2. All study area US EPA Superfund Sites with Current and Deleted NPL sites identified
3. Study area US EPA Superfund Sites as parcels

Table 3-3: US EPA Superfund Site Locations

County	Category	Site Name	Address	City
Niagara	Deleted NPL	Love Canal	E of 97th Street/W of 99th Street	Niagara Falls
Niagara	Deleted NPL	Niagara County Refuse	Witmer Road	Wheatfield
Niagara	Deleted NPL	Hooker (102nd Street)	102 Street	Niagara Falls
Niagara	Current NPL	Forest Glen Mobile Home Subdivision	Lisa Lane, Carrie Drive & T. Mark Drv.	Niagara Falls
Niagara	Current NPL	Hooker (Hyde Park)	Hyde Park Blvd	Niagara Falls
Niagara	Current NPL	Hooker (S Area)	Buffalo Ave	Niagara Falls
Niagara	Current NPL	Eighteenmile Creek	198-300 Mill Street	Lockport
Erie	Deleted NPL	Wide Beach Development	Wide Beach Road	Brant
Erie	Deleted NPL	Pfohl Brothers Landfill	Aero Drv.	Cheektowaga
Cattaraugus	Deleted NPL	Peter Cooper Corporation (Markhams)	Bently Road	Dayton
Cattaraugus	Current NPL	Peter Cooper	Palmer Street	Gowanda
Cattaraugus	Current NPL	Little Valley	Intersect of Rtes 242, 353, and Baker Rd	Little Valley
Cattaraugus	Current NPL	Olean Well Field	Lauren Street	Olean

Data Source : US EPA Superfund Site Information (March 2012)



N
W E
S

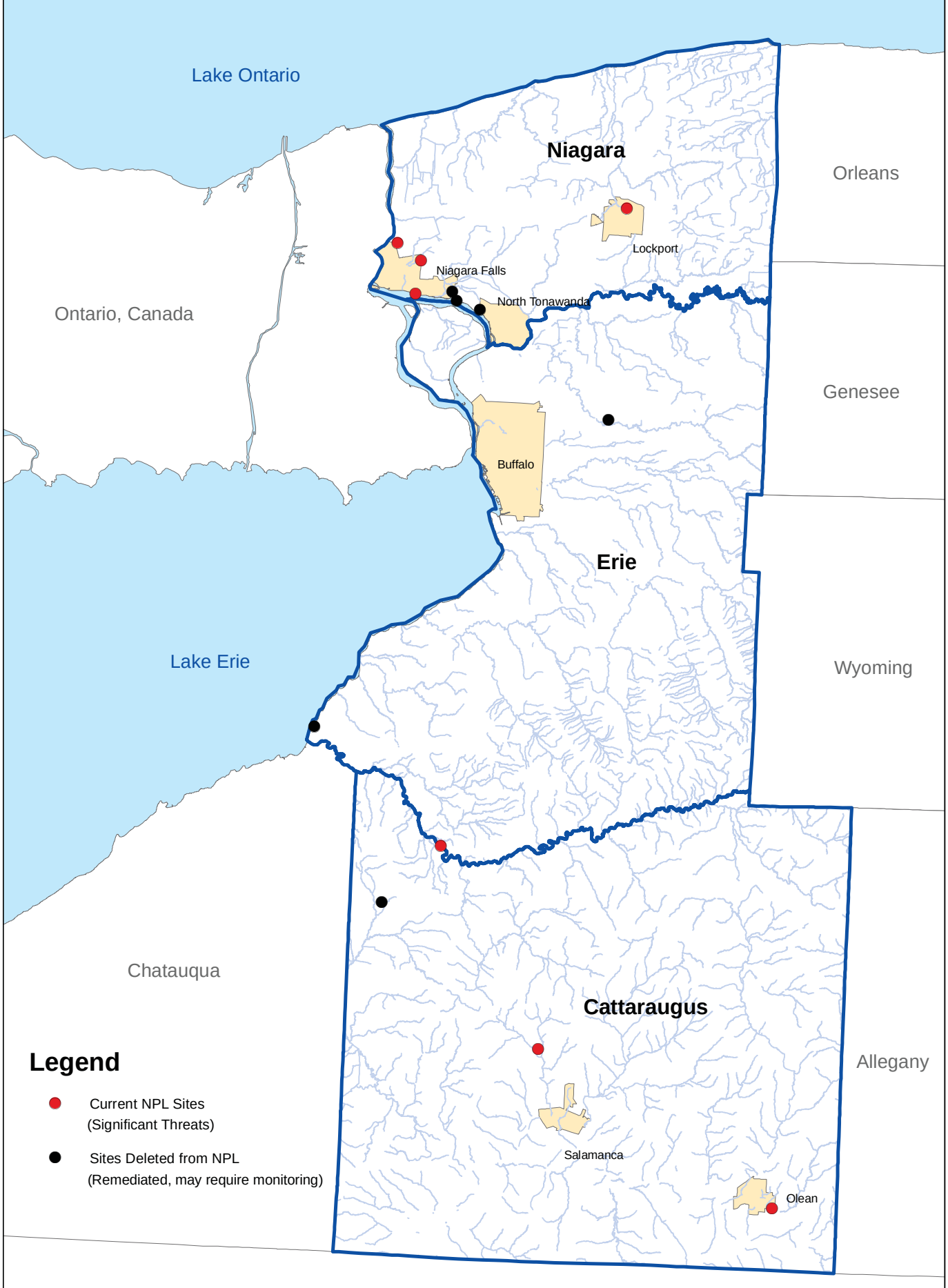
US EPA Superfund Program

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
March, 2012

Data Source: US EPA Superfund Site Information(2011)
www.epa.gov/superfunds/sites



N
W E
S

US EPA Superfund Program
National Priorities List (NPL)

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
March, 2012

Data Source: US EPA Superfund Site Information(2011)
www.epa.gov/superfunds/sites

US EPA Superfund Program in Focused Area

Mapping Waste

N
W E
S

0 1 2 4 6 8 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
June, 2010

Data Source: US EPA Superfund Site Information (2010)
www.epa.gov/superfund/sites/

3.3.2 NYS Department of Environmental Conservation (NYS DEC) Superfund Program[8]

What is the New York State Superfund Program?

The New York State Superfund Program, known as the Inactive Hazardous Waste Disposal Site (IHWDS) Program, is the state's program for identifying, investigating and cleaning up sites where consequential amounts of hazardous waste may exist. The program is an enforcement program whose mission is to identify and characterize suspected inactive hazardous waste disposal sites and to investigate and remediate those sites found to pose a significant threat to public health and environment.

What is the Enabling Legislation for the Program?

The body of law that established NYS DEC and authorizes its programs is called the Environmental Conservation Law. Under this law, the NYS DEC has several responsibilities, including regulating the disposal, transport and treatment of hazardous and toxic wastes in an environmentally sound manner. The original state Superfund program began in 1980. Article 27, Title 13 of the Environmental Conservation Law established the Superfund Program for New York State. On October 25, 2006, the State Environmental Board approved 6 NYCRR (NY Codes, Rules, and Regulations) Subparts 375-1 through 375-4 and Subpart 375-6, amending environmental remediation programs.

Who Manages the Program?

The New York State Department of Environmental Conservation (NYS DEC) Division of Environmental Remediation (DER) is responsible for administering the state's Superfund Program. The US EPA has an overlapping Superfund program in New York State that allows federal resources to be used in remediation of National Priority List sites. The NPL sites are also considered NYS Superfunds and listed as Class 2 sites.

What is the Cleanup Process?

NYS DEC Superfund sites go through a process of investigation, evaluation, cleanup and monitoring that has several distinct stages. Division of Environmental Remediation (DER) is made aware of potential hazardous waste sites in a variety of ways, including notification by the responsible party and citizen complaints. Often, this occurs when a property is being sold and routine site documentation discovers potential contamination issues.

The remedial steps are listed and briefly described here:

1. *Preliminary Site Assessment* - A Preliminary Site Assessment is DEC's first investigation of a site where hazardous waste has or may have been disposed of illegally or improperly. The goal of the Preliminary Site Assessment is to determine whether a site meets the state's definition of a hazardous waste site by confirming or denying the presence of hazardous waste and determining whether or not the site poses a significant threat to public health or the environment. A records search, sampling / surveys, and groundwater monitoring are part of the assessment. If the presence of hazardous waste and the degree of health or environmental threat can be documented, a site is classified based on its threat.

2. *Remedial Investigation* - The responsible party (site owner) or DEC performs a Remedial Investigation after preliminary investigations have shown that contaminants pose a significant threat to public health or the environment. Through extensive sampling and laboratory analyses, the Remedial Investigation identifies the length, depth and width of contamination, defines the pathways of migration and measures the degree of contamination in surface water, groundwater, soils, air, plants, and animals.
3. *Feasibility Study* - The Feasibility Study uses Remedial Investigation information to develop alternative remedies that will eliminate the site's threat to public health or the environment. Wherever feasible, the state selects a remedy that permanently reduces or eliminates the contamination.
4. *Proposed Remedial Action Plan* - The Proposed Remedial Action Plan (PRAP) summarizes the decision that led to the recommended remedial action by discussing each alternative and the reasons for choosing or rejecting it. DEC drafts a Record of Decision (ROD) which includes the selected remedial action, a public response summary and a bibliography of documents that were used to reach the remedial decision. The NYS Department of Health and Department of Labor have an opportunity to comment on the draft ROD before final DEC approval.
5. *Remedial Design / Construction* - The remedial design details the size, scope and character of a site's remediation - the planned action that will, at a minimum, protect public health and the environment. It translates information from the Remedial Investigation/Feasibility Study, the Record of Decision and additional data gathered during design preparation into clear, precise facts and numbers.

How does the NYS DEC categorize Superfund sites for remediation?

Classifications

DEC Superfund sites are classified based on their potential threat and their stage of remediation. The sites are classified during the remedial process. During the preliminary site assessment, if the presence of hazardous waste and the degree of health or environmental threat can be documented, a site is classified to:

- Class 1 (imminent danger – immediate action required)[i]
- Class 2 (significant threat – action required)
- Class 3 (no significant threat – action may be deferred)
- If hazardous waste cannot be documented, a site is delisted.

Following remediation, a site usually is reclassified from Class 2 to a category appropriate to protect public health or the environment:

- Class 4 (requiring continued operation, maintenance and monitoring)
- Class 5 (requiring no operation, maintenance and monitoring)

[i] The DEC has never classified a site as a Class 1 site.

Figure 3-4: New York State Classification System

The **NYS DEC historically used classifications** that assign and Active (A) or Complete (C) code to each site. Several sites still have these classifications although no sites currently being remediated or recently cleaned-up are given these designations.

- Classification Code A (Active):
    - The classification is assigned to a non-Superfund site in any remedial program where work is underway and not yet complete (i.e., Brownfield Cleanup Program, Environmental Restoration Program, and Voluntary Cleanup Program sites). This may be used only for Superfund sites that are Manufactured Gas Plant sites or those being remediated under an EPA Cooperative Agreement.
- Classification Code C (Complete):
    - The classification used for sites where the DEC has determined that remediation has been satisfactorily completed under a remedial program (i.e., State Superfund, Brownfield Cleanup Program, Environmental Restoration Program, Voluntary Cleanup Program). DEC Superfund sites must have completed all active operation, maintenance, or monitoring requirements before they can be delisted and made class C.

Western New York Study Area

The Western New York study area (Erie, Niagara, and Cattaraugus Counties) has 167 NYS DEC Superfund sites. Most NYS DEC Superfund sites are in Erie and Niagara Counties, concentrated in urban areas. There are no Class 1 sites in the study area, the most severe of all classes of NYS DEC Superfund sites. There are 43 Class 2 sites (or approximately 26% of all sites), a classification similar in threat to US EPA NPL Superfund sites. It is the Class 2 sites that are of particular concern to communities as Class 3 sites pose no significant threat and Class 4 and 5 sites have been remediated.

The seven current US EPA Superfund NPL sites are included in the list of NYS DEC Superfund Class 2 sites. Sites deleted from EPA's National Priority List are also included as NYS DEC Superfund Class 4 and 5 sites. (Note: Tonawanda Coke is listed as a NYS DEC Superfund Class 2 site.

Table 3-4: NYS DEC Superfund

	Niagara	Erie	Cattaraugus	Total
Total NYS DEC Superfund	*64*	*87*	*16*	*167*
Class 1: Most severe, never been assigned	0	0	0	0
Class 2: Current threat to human health; being remediated	15	22	6	43
Class 3: No threat based on evaluation, action may be deferred or site delisted	12	9	1	22
Class 4: Remediated site, required monitoring	27	28	6	61
Class 5; Remediated site; no further action	1	4	1	6
Class A: Manufactured Gas Plant	2	0	0	2
Class C: Remediation completed	7	24	2	33

Source: NYS DEC Environmental Site Remediation Database
< www.dec.ny.gov/geodata/ptk > (2010)

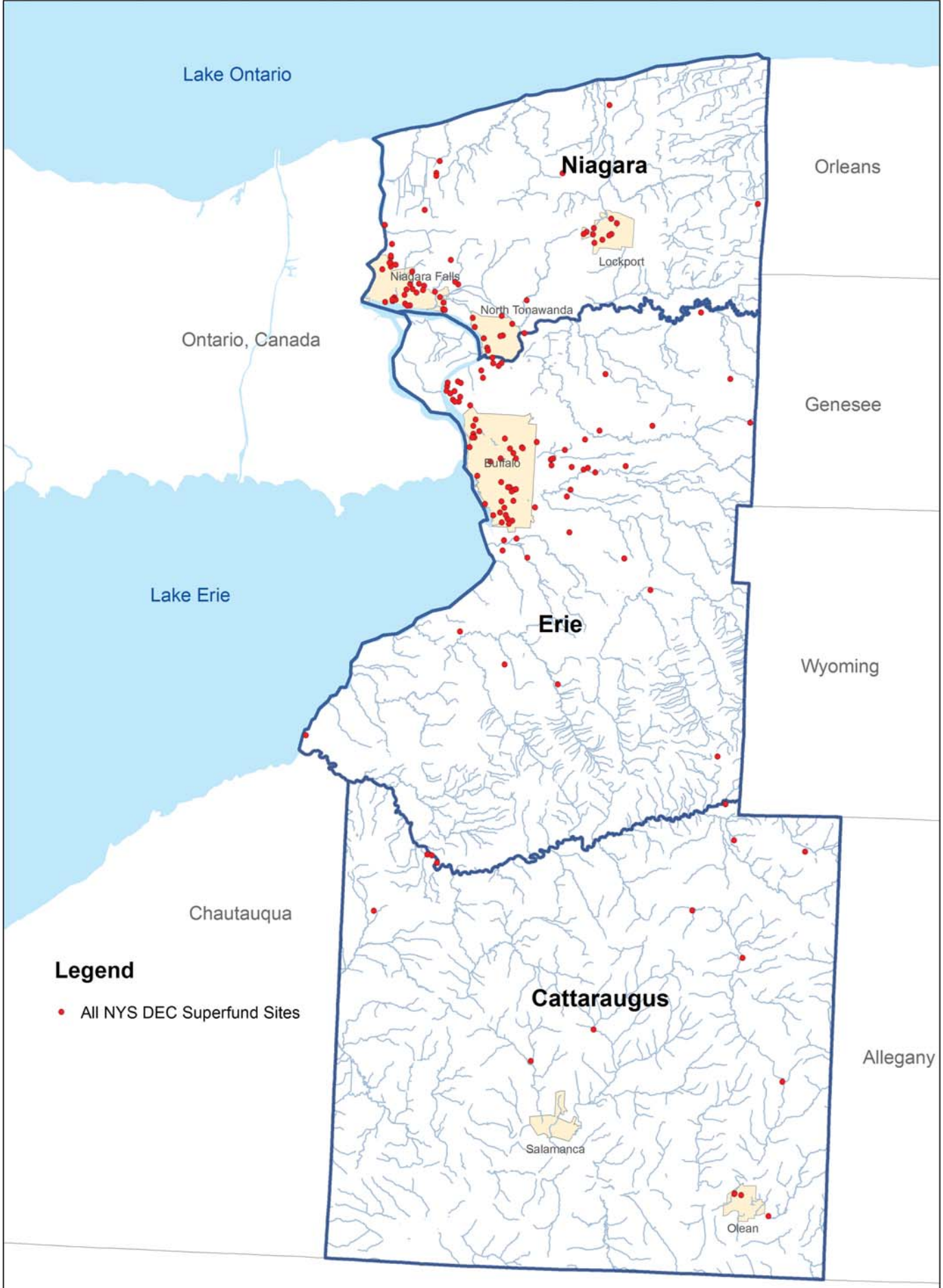
Maps

1. All study area NYS DEC Superfund Sites
2. All study area NYS DEC Superfund Sites with Classes identified
3. Only study area Class 2 sites
4. Study area NYS DEC Superfund Sites as parcels

> Data on all NYS DEC Superfund Sites within the Study Area can be found in the Mapping Database Digital Appendix (Data as of 9/1/10).

Table 3-5: NYS DEC Superfund Site Locations: Class 2

County	Category	Site Name	Address	City
Niagara	Class 2	Vanadium Corporation of America	Witmer Road at Maryland Avenue	Niagara
Niagara	Class 2	Old Upper Mountain Road Site	Old Upper Mountain Road	Lockport
Niagara	Class 2	Carborundum Company, Globar	3425 Hyde Park Blvd.	Niagara
Niagara	Class 2	FMC Corporation	100 Niagara Street	Middleport
Niagara	Class 2	Frontier Chemical - Royal Avenue	4626 Royal Avenue	Niagara Falls
Niagara	Class 2	Guterl Specialty Steel Corp.	695 Ohio Street	Lockport
Niagara	Class 2	U.S. Airforce Plant 68	Balmer Road	Porter
Niagara	Class 2	U.S. Airforce Plant 68	Balmer Road	Porter
Niagara	Class 2	Necco Park	Niagara Falls Boulevard	Niagara Falls
Niagara	Class 2	Forest Glen Subdivision	Service Road	Niagara Falls
Niagara	Class 2	Eighteenmile Creek Corridor	62, 70, 198 & 300 Mill Street	Lockport
Niagara	Class 2	Hooker-Hyde Park Landfill	Hyde Park Boulevard	Niagara
Niagara	Class 2	Hooker Main Plant	Buffalo Avenue	Niagara Falls
Niagara	Class 2	Hooker Plant - "S" Area	Buffalo Avenue	Niagara Falls
Niagara	Class 2	Tract II Highland Ave	3001 Highland Avenue	Niagara Falls
Erie	Class 2	Newstead - Fletcher Road Site	8471 Fletcher Road	Newstead
Erie	Class 2	858 East Ferry Street	858 East Ferry Street	Buffalo
Erie	Class 2	Buffalo Outer Harbor - Radio Tower Area	901 Fuhrmann Boulevard	Buffalo
Erie	Class 2	Former Gastown M.G.P. Site	126 East Niagara Street	Tonawanda
Erie	Class 2	American Axle Plant	1001 East Delavan Avenue	Buffalo
Erie	Class 2	Spaulding Fibre	310 WHEELER STREET	TONAWANDA
Erie	Class 2	Lackawanna Incinerator Site	2960 South Park Ave.	Lackawanna
Erie	Class 2	Chemical Leaman Tank Lines	470 Filmore Avenue	Tonawanda
Erie	Class 2	Bethlehem Steel	3555 Lake Shore Drive	Lackawanna
Erie	Class 2	Polymer Applications	3445 River Road	Tonawanda
Erie	Class 2	Alltift Landfill	579 Tifft Street	Buffalo
Erie	Class 2	Tonawanda Coke	3875 RIVER ROAD	TONAWANDA
Erie	Class 2	Buffalo Color Area "D"	340 Elk Street	Buffalo
Erie	Class 2	Leica, Inc.	Eggert and Sugar Roads	Cheektowaga



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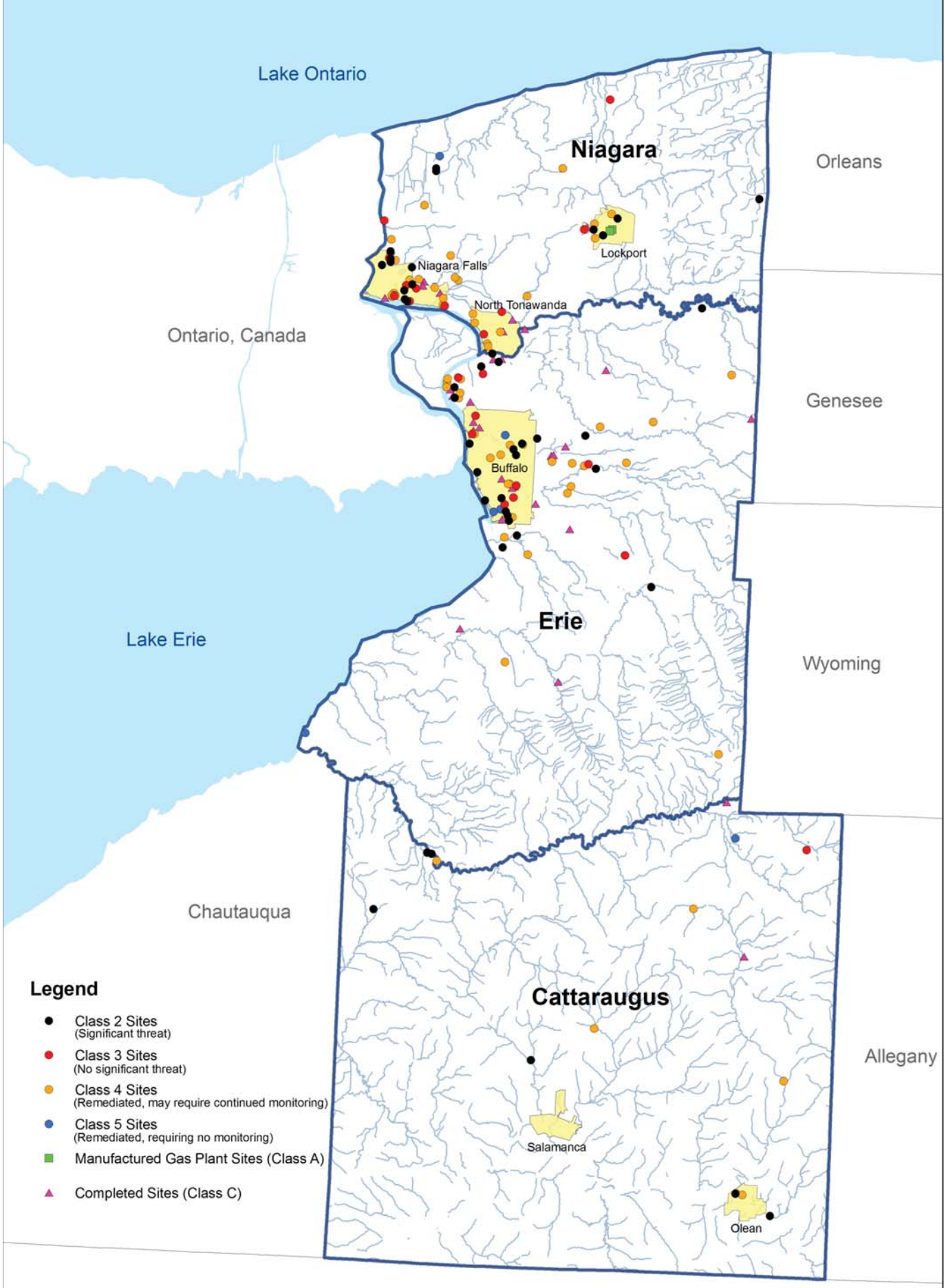
NYS DEC Superfund Program

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
June, 2010

Data Source: NYS DEC Environmental Site Remediation Database (1978 - 2010)



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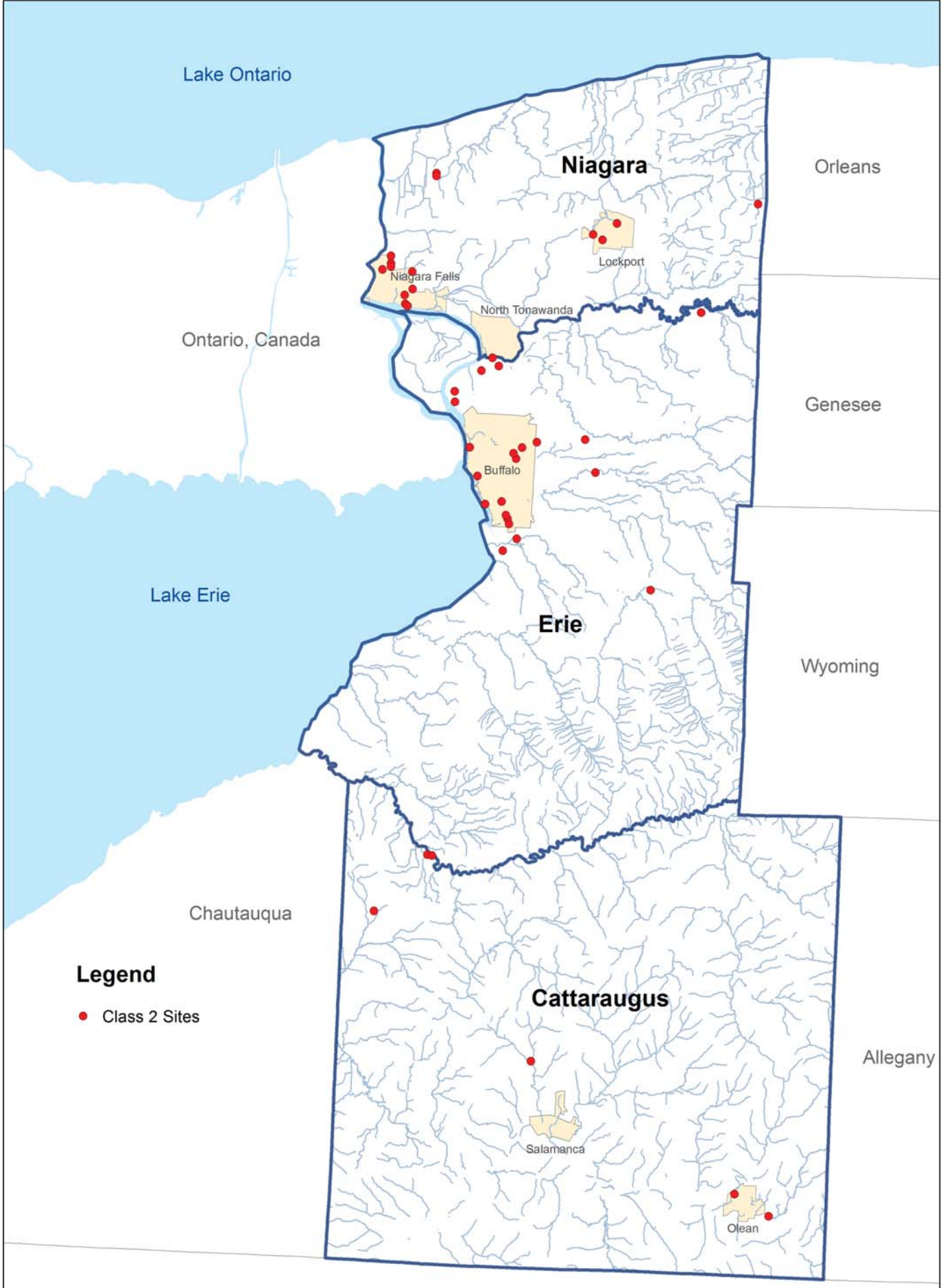
NYS DEC Superfund Program by Classification

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning

June, 2010



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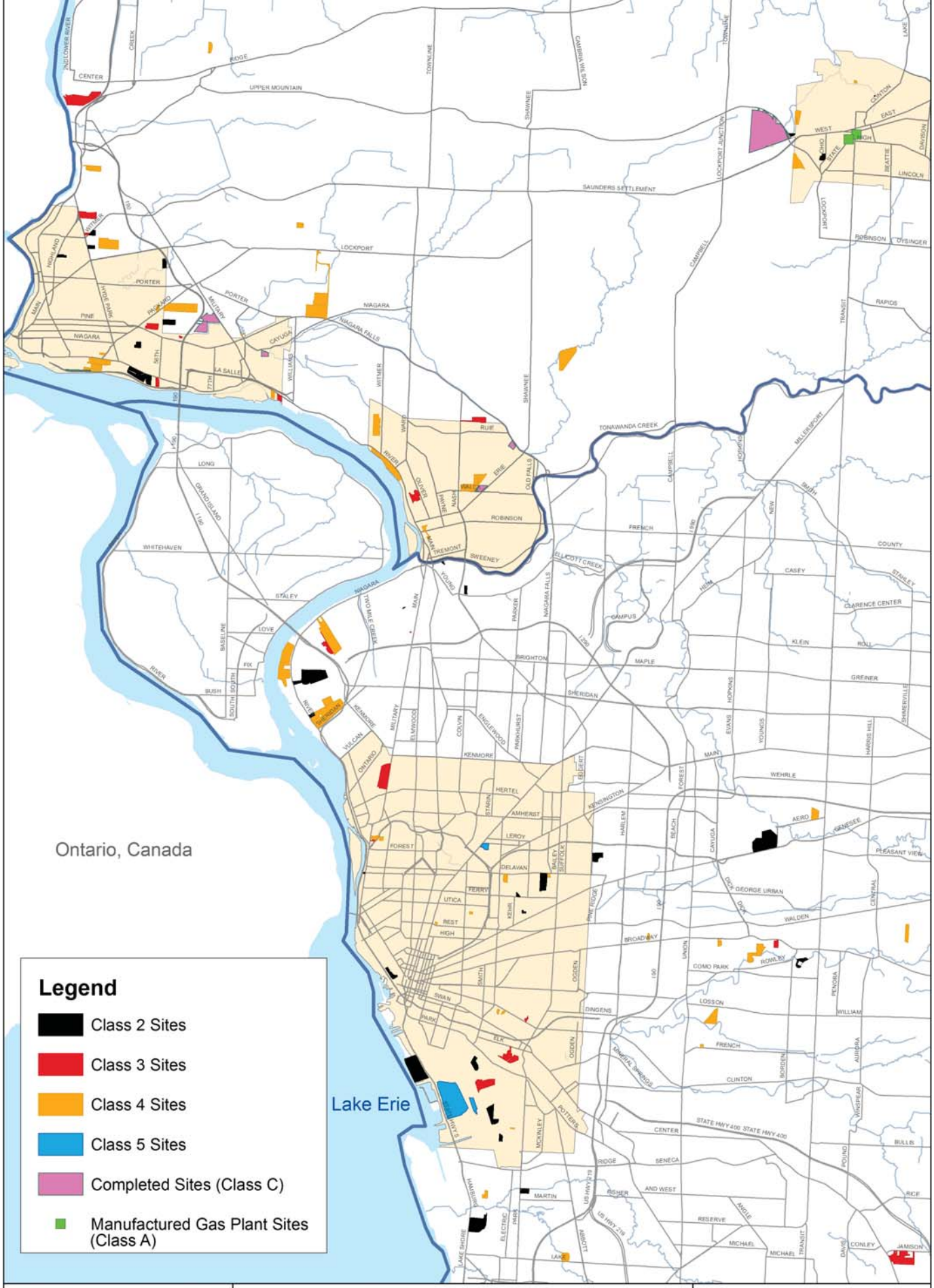
NYS DEC Superfund Program (Class 2 Sites)

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
June, 2010

Data Source: NYS DEC Environmental Site Remediation Database (1978 - 2010)



NYS DEC Superfund Program in Focused Area

Mapping Waste Project

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
June, 2010

Data Source: NYS DEC Environmental Site Remediation Database (1978 - 2010)

3.3.3 NYS Department of Environmental Conservation (NYS DEC) Brownfield Program

What is the Brownfield Program?

The New York State Department of Environmental Conservation Superfund Program is not the only program for managing inactive hazardous waste in New York. There is also the NYS DEC Brownfield Program that consists of three separate programs, including

- Environmental Restoration Program
- Brownfield Cleanup Program
- Voluntary Cleanup Program.

Figure 3-5: Definition of Brownfield by NYS DEC

"A brownfield site is real property, the redevelopment or reuse of which may be complicated by the presence or potential presence of a contaminant. Contaminants include hazardous waste and/or petroleum." *NYS DEC*

What is the Enabling Legislation for the Program?

Environmental Restoration Program - New Yorkers approved a $200 million Environmental Restoration Fund as part of the $1.75 billion Clean Water/Clean Air Bond Act of 1996. This enabled the NYS DEC to administer the Environmental Restoration Program.

Brownfield Cleanup Program – On October 7, 2003, legislation was signed to create a new Brownfield Cleanup Program (BCP), modeled after the Department's existing administrative Voluntary Cleanup Program. The Article 27, Title 14 of the Environmental Conservation Law establishes the Brownfield Cleanup Program. The program was amended in 2006 with changes to 6 NYCRR (NY Codes, Rules, and Regulations), and again on July 23, 2008, when Governor David A. Paterson signed legislation to reform certain aspects of the state's brownfield programs.

Volunteer Cleanup Program – The NYS DEC administers the Volunteer Cleanup Program with authority found in several parts of New York's Environmental Conservation Law and Navigation Law. The Volunteer Cleanup Program was replaced by the Brownfield Cleanup Program in 2003.

Who Manages the Program?

The program is administered by the NYS DEC Division of Environmental Remediation.

What Programs Are Part of the Umbrella Brownfield Program?

The Environmental Restoration Program[9] - Under the Environmental Restoration Program, the state provides *grants to municipalities* (or community organizations and other government authorities) to reimburse up to 90% of on-site eligible costs and 100% of off-site eligible costs for site investigation and remediation activities. Once remediated, the property may then be reused for commercial, industrial, residential or public use.

The municipality must own the property and cannot be responsible for the contamination. The property cannot be listed as a Class 1 or 2 site on the New York State Registry of Inactive Hazardous Waste Disposal Sites (DEC Superfund Program).

The Brownfield Cleanup Program[10] - The goal of the Brownfield Cleanup Program (BCP) is to enhance *private-sector cleanups* of brownfields and to reduce development pressure on "greenfields". An eligible site is any real property, the redevelopment or reuse of which may be complicated by the presence or potential presence of a hazardous waste, petroleum, pollutant, or contaminant. A taxpayer who has entered into a Brownfield Cleanup Agreement (BCA) with DEC may be eligible for tax credits relating to the cleanup and redevelopment of a brownfield site.

Figure 3-6: Sites Excluded from the Brownfield Cleanup Program

- Sites listed as Class 1 or 2 in the Registry of Inactive Hazardous Waste Disposal Sites (DEC Superfund Program).
- Sites on the US EPA Superfund National Priorities List (NPL).
- Hazardous waste treatment, storage, or disposal facilities (TSDF's) permitted under ECL 27-0901 ("interim status" facilities are eligible).
- Sites subject to a cleanup order or Stipulation under Article 12 of the Navigation Law (oil spill prevention, control, and compensation) or under Title 10 of ECL Article 17 (control of the bulk storage of petroleum).
- Sites subject to any on-going state or federal enforcement actions regarding solid/hazardous waste or petroleum.

The Voluntary Cleanup Program[11] - New York State's Voluntary Cleanup Program (VCP) was developed to enhance private sector cleanup of brownfields by enabling parties to remediate sites using private rather than public funds and to reduce the development pressures on "greenfield" sites. The *Voluntary Cleanup Program was replaced* by the Brownfield Cleanup Program (BCP) in 2003.

Under the Voluntary Cleanup Program, a volunteer performs remedial activities pursuant to one or more DEC approved work plans. The volunteer agrees to remediate the site to a level which is protective of public health and the environment for the present or intended use of the property. Investigation and remediation is carried out under the oversight of the DEC and the New York State Department of Health and the volunteer pays the state's oversight costs. When the volunteer completes work, a release from liability from the DEC is provided with standard reservations.

How are sites identified and made eligible for this program?

Sites included in remedial activities under one of the brownfields programs are identified by the site's owner / developer when the owner / developer wishes to develop those sites and avoid the liability of potential contamination issues. The *NYS DEC does **not** proactively identify contaminated sites* and force a cleanup under these programs. Sites are eligible for the Environmental Restoration Program if they are owned by a municipality or other community organization or government authority. Sites are eligible for the Brownfield Cleanup Program, and formerly the Voluntary Cleanup Program, if they are owned by a private entity and qualify as a brownfield (presence or potential presence of contamination).

Figure 3-7: The NYS DEC Spill Response Program

Although the data is not included in this report, the NYS DEC responds to hazardous materials spills through the Spill Response Program when they are reported. Action, including immediate containment and long term clean up, vary depending on the type of material spilled and the damage caused. The NYS DEC requires the spiller to notify government agencies and to contain, clean up, and dispose of any spilled/contaminated material in order to correct any environmental damage.

How does the NYS DEC categorize sites within the Brownfields Program?

Classifications

DEC Brownfield Program sites are classified based on their stage of remediation.

- Classification Code A (Active):
    - The classification is assigned to a non-Superfund site in any remedial program where work is underway and not yet complete (i.e., Brownfield Cleanup Program, Environmental Restoration Program, and Voluntary Cleanup Program sites).
- Classification Code C (Complete):
    - The classification used for sites where the DEC has determined that remediation has been satisfactorily completed under a remedial program (i.e., State Superfund, Brownfield Cleanup Program, Environmental Restoration Program, Voluntary Cleanup Program). Non-Superfund sites may be made a class C after successful completion of all required construction or after a no further action remedy has been selected by the Department. These sites will be issued a Certificate of Completion (COC), but may still require ongoing maintenance and periodic certification of institutional/engineering controls.

Western New York Study Area

The Western New York study area has 98 NYS DEC Brownfield Program (Environmental Restoration, Brownfield Cleanup, and Voluntary Cleanup) sites. Of these 73 or 74% are classified as Active (A), while 25 or 26% are classified as Complete (C). The Brownfield Cleanup program, the largest of the three programs, has 46 total sites; 36 Active (A) and 10 Complete (C). The Environmental Restoration program has 27 total sites; 21 Active (A) and 6 Complete (C). The Voluntary Cleanup program has 25 total sites; 16 Active (A) and 9 Complete (C).

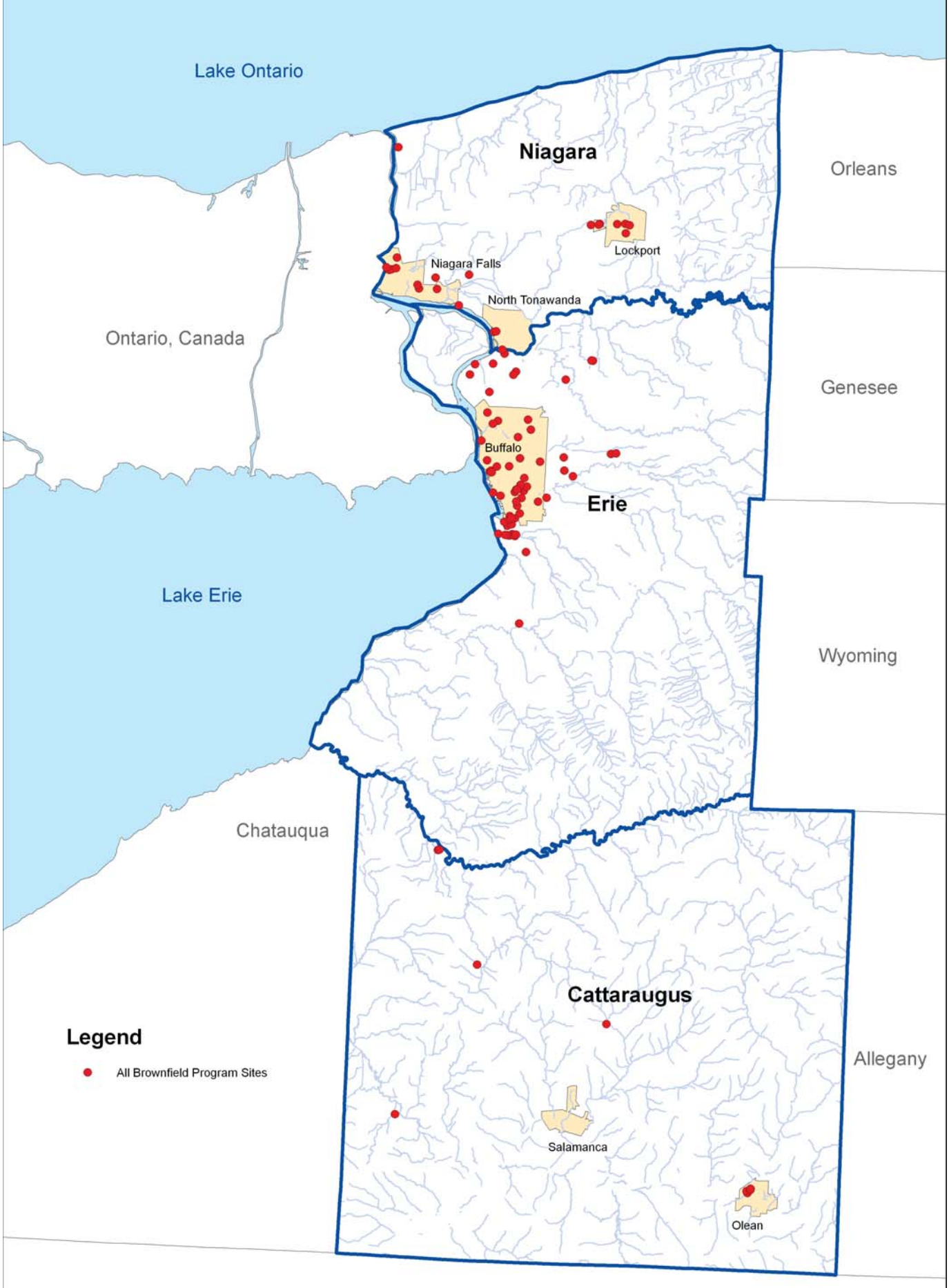
Table 3-6: NYS DEC Brownfield Program				
	Niagara	**Erie**	**Cattaraugus**	**Total**
Total Brownfield Program	*24*	*65*	*9*	*98*
Total NYS DEC Env. Restoration	10	14	3	27
Class A	9	9	3	21
Class C	1	5	0	6
Total NYS DEC Brownfield Cleanup	11	31	4	46
Class A	9	23	4	36
Class C	2	8	0	10
Total NYS DEC Voluntary Cleanup	3	20	2	25
Class A	2	13	1	16
Class C	1	7	1	9

Source: NYS DEC Environmental Site Remediation Database
< www.dec.ny.gov/geodata/ptk > (2010)

Maps

1. All study area NYS DEC Brownfield Program sites
2. All study area NYS DEC Brownfield Program sites with cleanup programs identified
3. Only study area NYS DEC Environmental Restoration sites
4. Only study area NYS DEC Brownfield Cleanup sites
5. Only study area NYS DEC Voluntary Cleanup sites
6. All study area NYS DEC Brownfield Program sites as parcels with cleanup programs identified

Data on all NYS DEC Brownfield Program Sites within the Study Area can be found in the Mapping Database Digital Appendix



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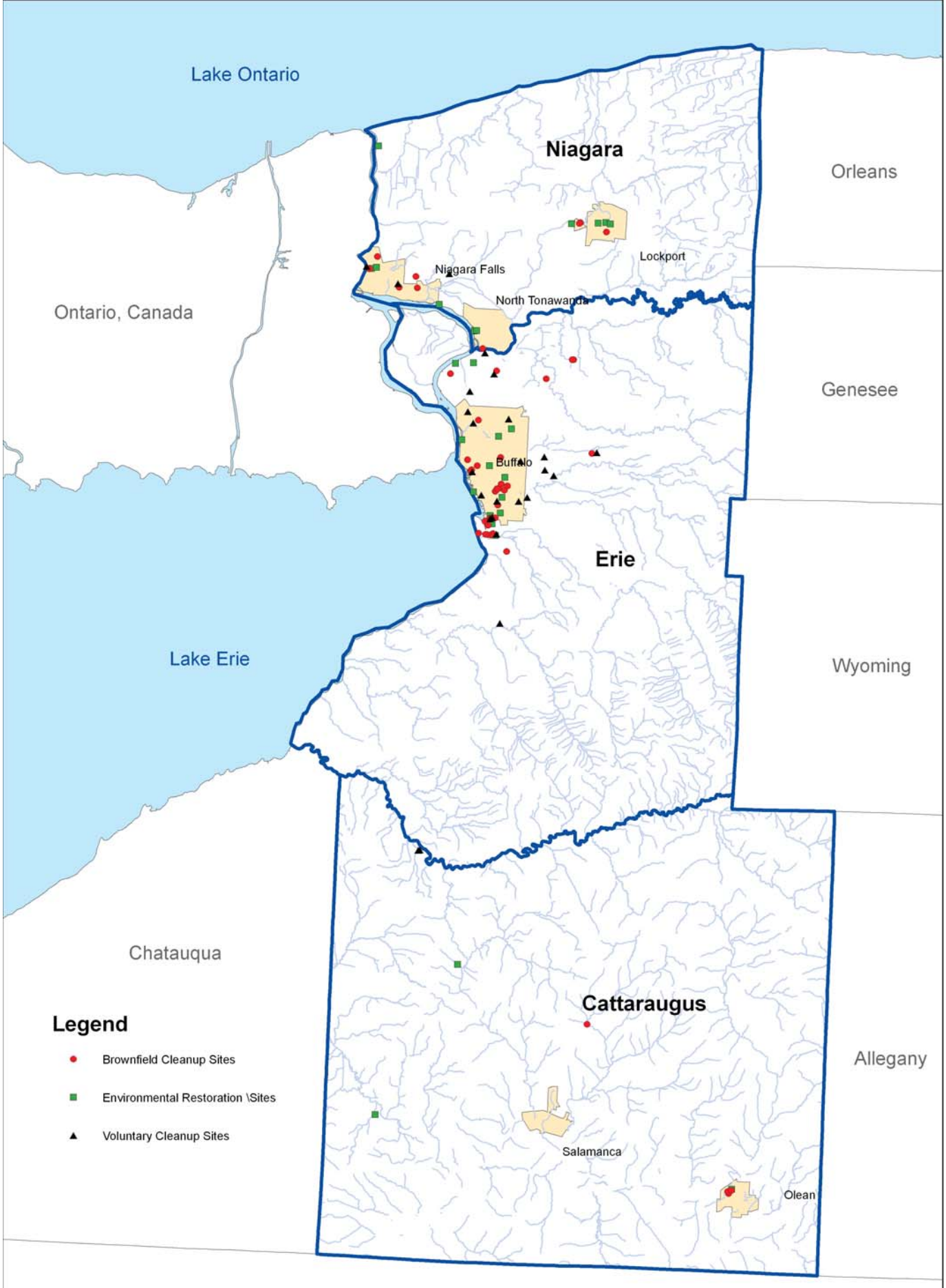
NYS DEC Brownfield Program

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
SUNY at Buffalo
School of Architecture and Planning
June, 2010

Data Source: NYS DEC Environmental Site Remediation Database (1978 - 2010)



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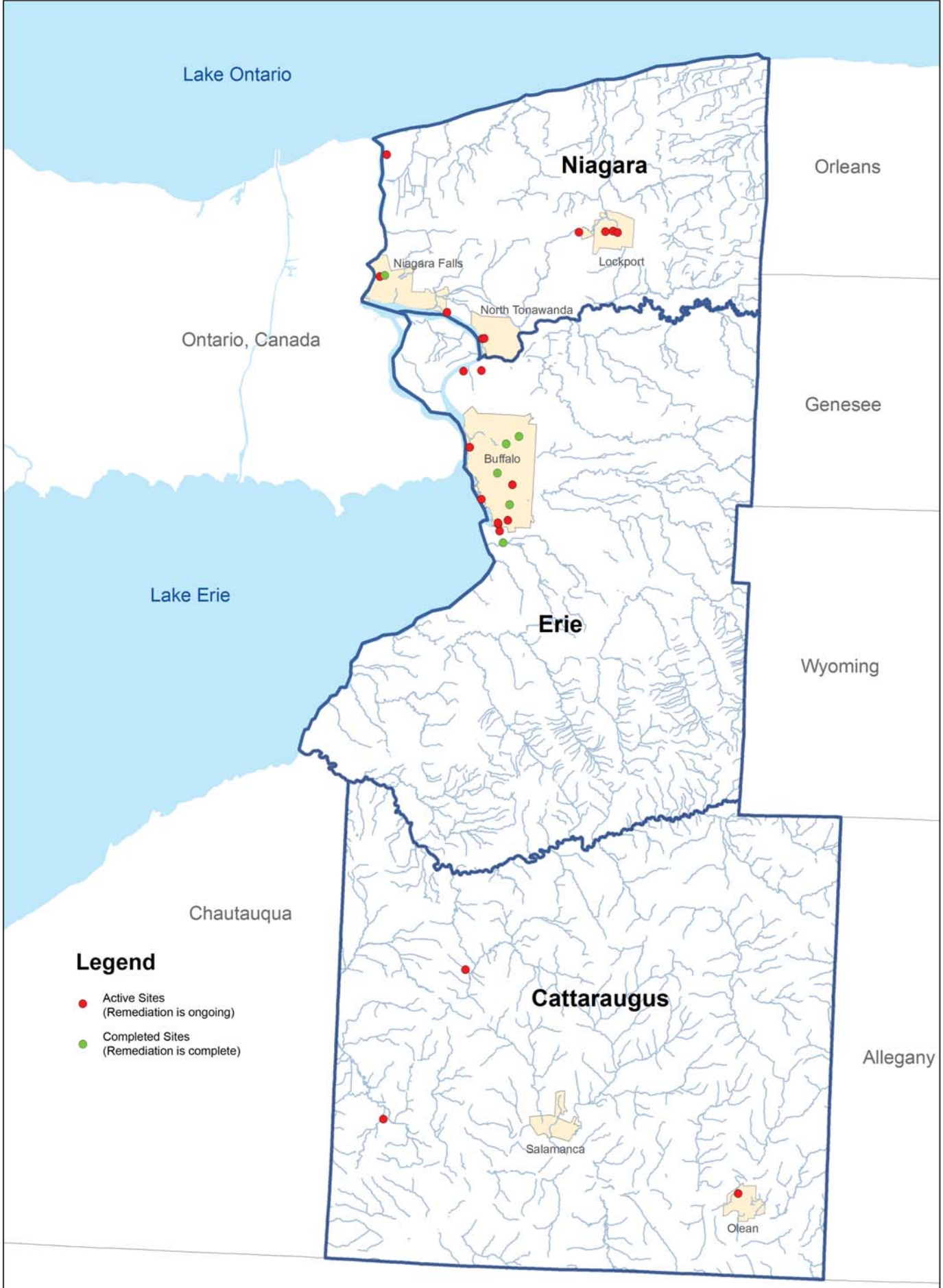
NYS DEC Brownfield Program with Cleanup Programs Identified

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
June, 2010

Data Source: US DEC Environmental Site Remediation Database (1978-2010)



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NYS DEC Brownfield Program

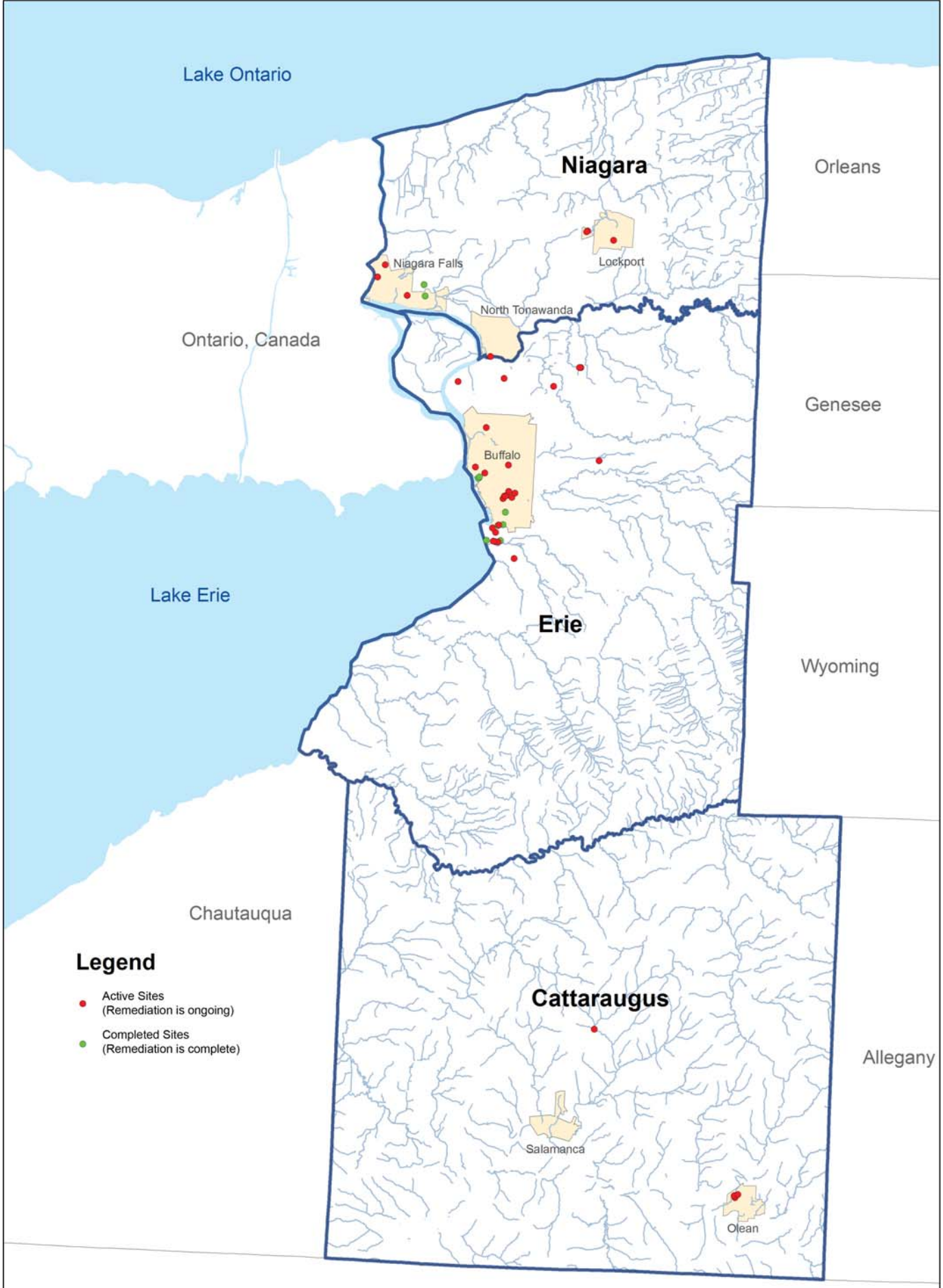
Environmental Restoration Sites

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
June, 2010

Data Source: NYS DEC Environmental Site Remediation Database (1978 - 2010)



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NYS DEC Brownfield Program

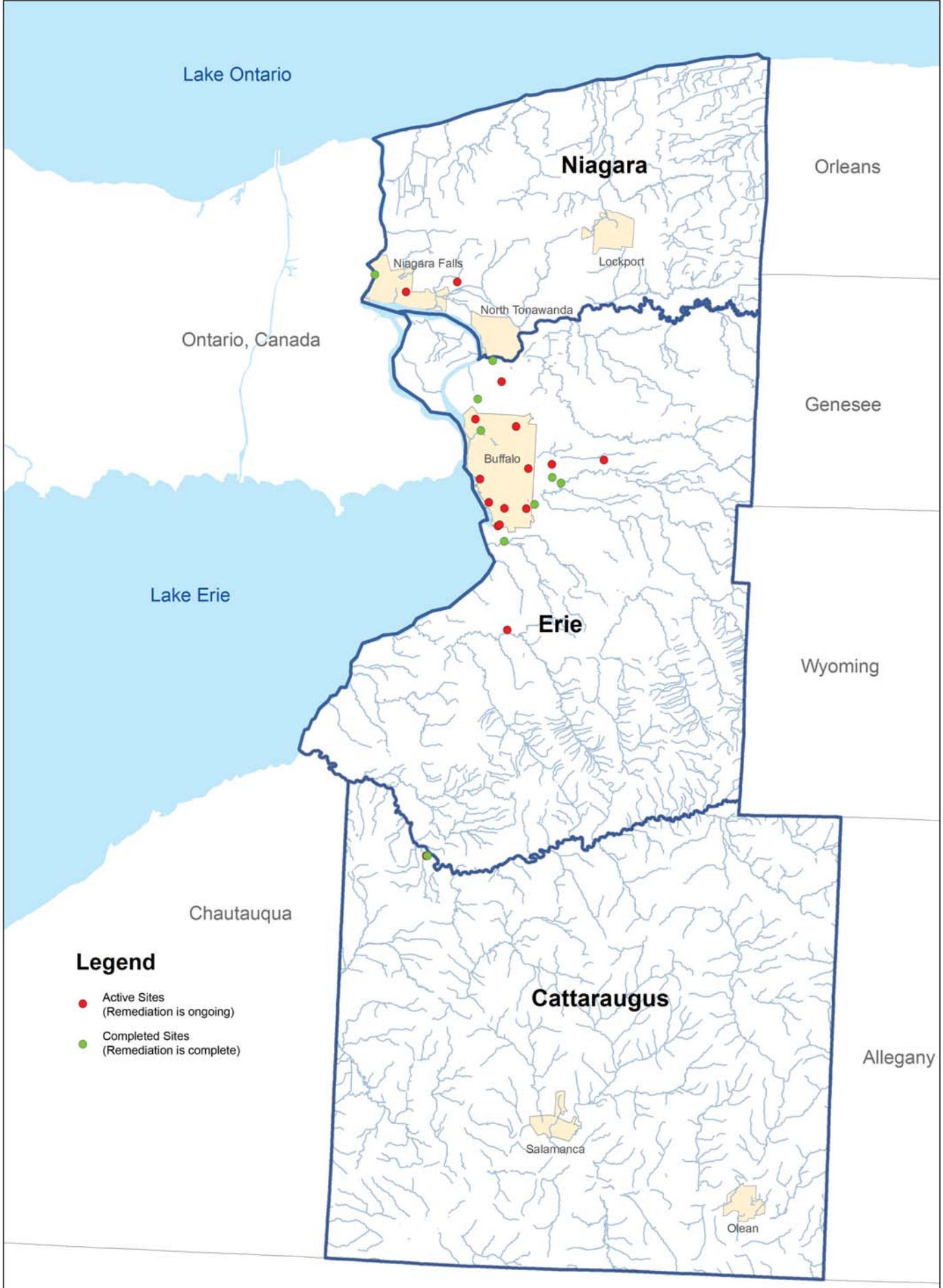
Brownfield Cleanup Sites

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
June, 2010

Data Source: NYS DEC Environmental Site Remediation Database (1978 - 2010); Senator Antoine Thompson's Office



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NYS DEC Brownfield Program

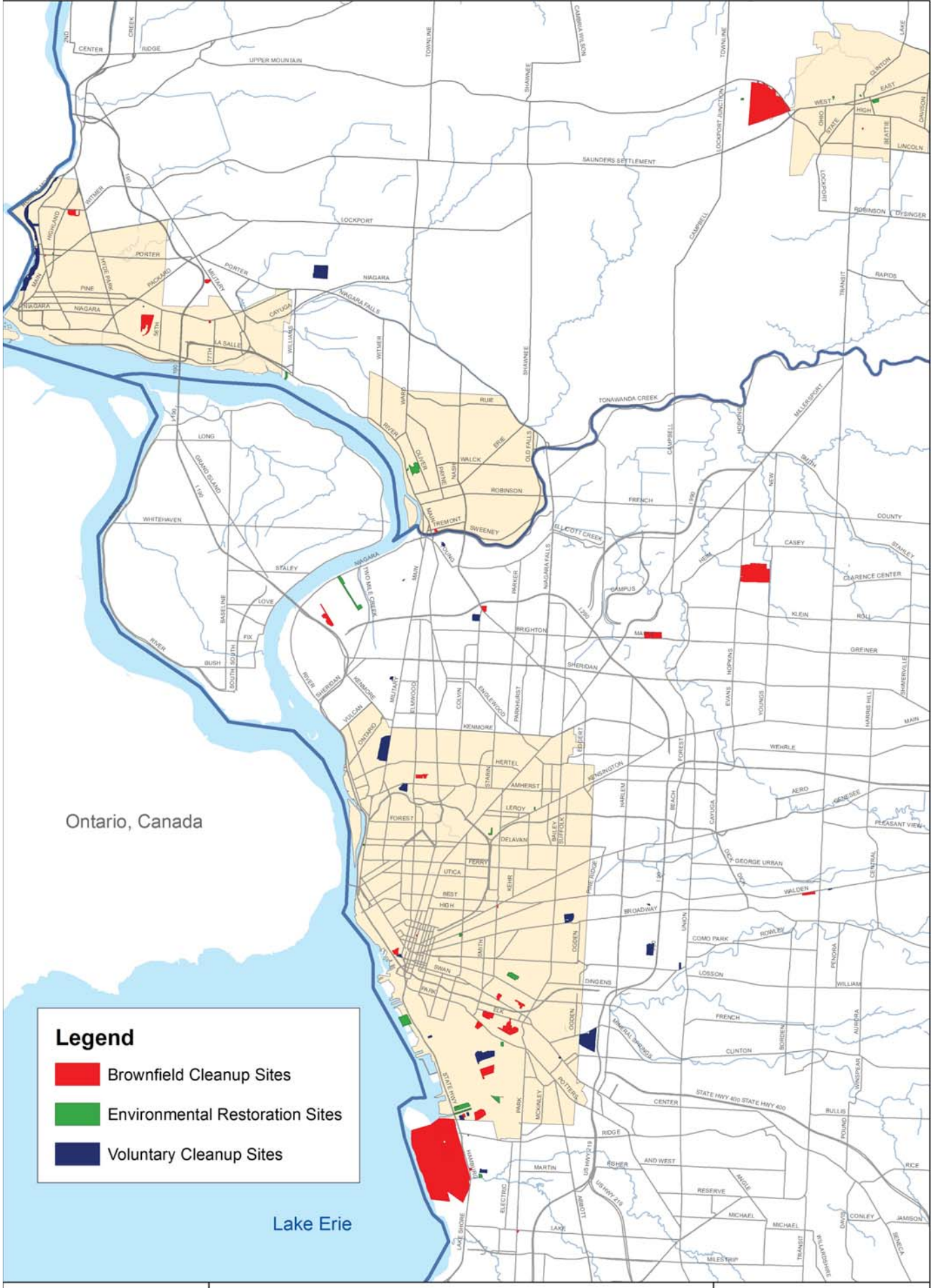
Voluntary Cleanup Sites

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
June, 2010

Data Source: NYS DEC Environmental Site Remediation Database (1978 - 2010)


Ontario, Canada
Lake Erie
Legend
Brownfield Cleanup Sites
Environmental Restoration Sites
Voluntary Cleanup Sites
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NYS DEC Brownfield Program in Focused Area
Mapping Waste
0 1.25 2.5 5 7.5 10 Miles
Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
June, 2010
Data Source: NYS DEC Environmental Site Remediation Database (1978 - 2010)

3.4 "Hazardous Waste - Active" or Regulating the Waste Being Produced or Stored Today

3.4.1 US Environmental Protection Agency (US EPA) Resource Conservation and Recovery Act (RCRA)[12]

Are we still producing hazardous waste and what happens to that?

The 'legacy' waste described earlier in this report is the result of past pollution left in the environment from historic practices. But **we are still producing toxic material** that must be controlled and regulated. The Resource Conservation and Recovery Act (RCRA) from 1976 gives the US EPA the authority to control current hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances[i].

The Resource Conservation and Recovery Act (RCRA), because it regulates 'active' waste, that is, material that is still being produced, stored, treated and disposed of, is an **active data base**. The data change frequently because the landscape being regulated changes as facilities open and close, facilities at times store materials and sometimes don't, and treatment and disposal places and methods change. For this reason, the data presented here are less secure than the legacy hazardous waste and should be checked against the EPA website if being researched or used.

Like all programs that oversee environmental hazards in the United States, the program has evolved over time. The RCRA Programs, at their inception, were focused primarily on controlling the management of units currently in operation at 'Treatment Storage and Disposal Facilities' (TSDF). The RCRA Permitting Program, (including the closure) was the mechanism utilized for such control and required TSDFs to apply for and obtain a RCRA permit for the continued operation of such units or to close them. With the recognition, however, that TSDFs had other inactive and/or improperly closed units on site (legacy waste) that could cause significant health and environmental risks, the RCRA Statutes were amended to require the current owners/operators of the TSDFs to investigate and clean up, if necessary, those inactive and/or improperly closed units (or areas of concern) at the TSDFs regardless of when they were utilized. The RCRA Corrective Action Program is the mechanism utilized to implement such RCRA corrective action/cleanups. In summary, TSDFs may be subject to the RCRA corrective action if they have legacy waste conditions. The RCRA corrective action does not apply to sites that are not TSDFs.

Figure 3-8: RCRA Programs Administered by the US EPA

- Treatment Storage and Disposal Facilities (TSDF)
- Large Quantity Generator Program (LQG)
- Corrective Action

[i] There were amendments in 1976, 1980, 1981, 1984, 1988, 1990 listed on EPA website. Also, this paragraph is just a part of the history of RCRA amendments.

What Are US EPA Hazardous Waste Treatment, Storage & Disposal Facilities (TSDF)?[13]

The EPA developed strict regulations for the treatment, storage, and disposal of hazardous waste. Treatment and disposal is considered any process that changes the physical, chemical, or biological characteristics of a waste to minimize its threat to the environment. Storage is considered temporary holding of waste before the waste is treated, disposed of, or stored somewhere else. The US EPA has delegated the TSDF program to the NYS DEC. This section of the report includes data from the US EPA's Envirofacts database in the RCRA quantifications and maps, but includes NYS data in the following section.[i]

Owners and operators of waste treatment, storage, and disposal facilities (TSDFs) are required to keep and regularly submit records of hazardous waste activities to the US EPA. Regulations specific to hazardous waste treatment, storage and disposal facilities (TSDFs) pertain to:

- Air Emissions – RCRA regulations require TSDFs to control the emissions of volatile organic compounds (VOCs) from process vents from certain hazardous waste treatment processes; hazardous waste management equipment (e.g., valves, pumps, compressors); and containers, tanks, and surface impoundments.
- Closure – EPA established closure requirements for hazardous waste management units to ensure that once TSDFs end operations and stop managing hazardous waste that they will not pose a future threat to human health and the environment.
- Financial Assurance – RCRA requires all TSDFs to demonstrate that they will have the financial resources to properly close the facility or unit when its operational life is over or provide the appropriate emergency response in the case of an accidental release.
- Ground Water Monitoring - RCRA requires TSDFs to monitor the ground water beneath their facilities to ensure the facility is not contaminating this valuable resource. The regulations require the installation groundwater monitoring wells and the establishment of a groundwater sampling regiment.
- Land Disposal Restrictions – EPA established the land disposal restrictions (LDR) program to further protect groundwater from hazardous waste contamination. The LDR standards require all hazardous waste to be treated prior to being placed on the land for final disposal.
- Permits and Permitting - To closely regulate and ensure proper hazardous waste management practices, RCRA requires TSDFs to obtain permits to demonstrate compliance with all applicable hazardous waste regulations.
- Corrective Action/Hazardous Waste Cleanup – RCRA requires TSDF owners and operators to investigate and clean up hazardous waste releases at hazardous waste facilities. The RCRA Corrective Action Program allows the owners/operators of these facilities to address the investigation and cleanup of these hazardous releases themselves. Cleanup at closed or abandoned RCRA sites can also take place under the Superfund program. (See section below for more information on Corrective Action).

[i] The US EPA maintains a database of many of the active hazardous waste permitting programs that have been delegated to state agencies. < www.epa.gov/enviro/index.html >, as of September 2010. Data from the NYS DEC for many of the programs delegated to them by the US EPA does not always match data found on the Envirofacts website.

What are US EPA Large Quantity Generators (LQG)?[14]

Large Quantity Generators (LQG) generate 1,000 kilograms per month or more of hazardous waste, or more than 1 kilogram per month of acutely hazardous waste. Requirements for LQGs include:

- Identify and count waste
- Obtain an EPA ID number
- Comply with accumulation and storage requirements
    - LQGs may only accumulate waste on site for 90 days although they do not have a limit on the amount of hazardous waste accumulated on site.
    - There must always be at least one employee available to respond to an emergency. This employee is the emergency coordinator responsible for coordinating all emergency response measures. LQGs must have detailed, written contingency plans for handling emergencies.
- Prepare the waste for transportation
- Track the shipment and receipt of such waste
- Meet recordkeeping and reporting requirements.
- Submit LQG's biennial hazardous waste report.

What is the US EPA Corrective Action Program?[15]

The Corrective Action Program of RCRA was instituted to address legacy waste that might be located on an active site that is currently treating, storing and/or disposing of waste. Under the RCRA Corrective Action Program, the current owners/operators of TSDFs are required, if determined necessary, to investigate all units or areas of concern at the facility that have ever been utilized for the management of wastes and have shown evidence of release, have been suspected to have releases, or have been contaminated. In addition, they are required, if determined necessary, to implement adequate remedial measures.

The procedures and the requirements for the RCRA Corrective Action Program are similar to those of the Superfund Programs. The primary difference is that the RCRA corrective action is applicable primarily to facilities whose manufacturing operations are currently ongoing and where the cleanup responsibilities lie primarily with the current owners/operators of TSDFs. This is different from Superfund where sites have been abandoned and responsible parties are not clearly defined, and therefore, the cleanups are typically administered by the regulatory agencies and any associated costs are recovered against potential responsible parties. The RCRA corrective action requirements cannot be imposed on a site/facility if it is not a RCRA TSD site/facility. Therefore, the RCRA corrective action is a subset of the universe of RCRA TSD sites/facilities.

There are two different Baseline data sets within the Corrective Action Program of RCRA. The 2008 Baseline was developed in 2004 as an implementation plan for the EPA RCRA Corrective Action Program. It included RCRA Treatment, Storage and Disposal Facilities (TSDFs) to be targeted for RCRA Corrective Action until the year 2008. The 2020 Baseline was developed in 2007. It includes TSDFs that will be targeted until the year 2020. The 2020 Baseline is intended to include all RCRA TSDFs in the 2008 Baseline, TSDFs on the permitting track, and other facilities based on regional discretion. [Note: A few TSDFS in the 2008 Baseline were dropped from the 2020 Baseline because the corrective action at those facilities was to be managed under other environmental programs such as the EPA Superfund].

The progress of the RCRA corrective action programs (national RCRA goals and objectives) are currently measured in two ways. The Environmental Indicators (EIs) have to be met in order to stabilize a site and

are immediately required. The last category, Remedy Construction Completion, comes into effect after the two EIs have been met and the site is deemed stabilized.

- The 'Human Exposures under Control' Environmental Indicator ensures that an entire RCRA site/facility poses no unacceptable risks to people
- The 'Migration of Contaminated Groundwater under Control' Environmental Indicator ensures that contaminated groundwater underneath an entire RCRA site/facility has been stabilized and under control.
- The 'Remedy Construction Completion' determination ensures that the construction of remedies/corrective action measures selected for an entire RCRA site/facility has been completed.

It can take a long time, years in some cases, to complete the RCRA corrective action following the typical procedures and meanwhile, contamination could continue to migrate further, deteriorating and exacerbating the existing conditions. Therefore, the RCRA Corrective Action Program has been developed, structured and prioritized in a way that all TSDFs implementing RCRA corrective action, rather than waiting for years for the completion, should be stabilized as early as possible so that they cause no further deterioration or exacerbation of the current situations. Once stabilized, TSDFs would continue to follow the procedures to the completion while maintaining the stabilization. The EIs listed above (Human Exposure under Control and Migration of Contaminated Groundwater Under Control) are the criteria required to achieve 'stabilization.'

Stabilization does not necessarily mean that the TSDFs have achieved the cleanup goals/standards relevant to them. The TSDFs still need to follow through the corrective action procedures to the completion, which would entail determining, among other things, as to whether they are required to implement final remedies to achieve the cleanup-goals/standards relevant to the respective TSDFs and if required, whether the construction of all necessary facilities for the implementation of final remedies has been completed. Any accomplishments with respect to the implementation of final remedies are currently assessed and measure primarily in terms of "Remedy Construction Completion" as noted above.

Western New York Study Area

The Western New York study area has 460 US EPA RCRA sites (the RCRA program includes TSDFs, LQGs, and Corrective Action sites - some TSDFs are also LQGs and Corrective Action sites but are counted only once as RCRA sites). There are 374 LQGs is the study area, more than half of which are in Erie County. There are 53 TSDFs; 21 in Niagara County, 27 in Erie County, and 5 in Cattaraugus County. There are a total of 33 Corrective Action sites; ten in both Erie and Niagara Counties, and three in Cattaraugus County. For example, the West Valley Demonstration Project and the West Valley Nuclear Service Center are both Corrective Action sites.

Please note that EPA and NYSDEC share the database for tracking permitting and corrective action activities at the RCRA TSDFs. Although the Envirofacts should be a reflection of the database because the data are scheduled to be downloaded onto the Envirofacts on a monthly basis, some discrepancies are expected between them due to the time intervals for downloading.

Table 3-7: US EPA Resource Conservation and Recovery Act (RCRA)				
	Niagara	**Erie**	**Cattaraugus**	**Total**
Total RCRA[1]	118	283	59	460
Treatment, Storage and Disposal Facilities (TSDF)	21	27	5	53
Large Quantity Generators (LQG)	82	241	51	374
Corrective Action	15	15	3	33

The numbers of Large Quantity Generators (LQGs) are expected to continuously change. The database as of January 13, 2012 shows 398 LQGs in the three counties. Also, the actual numbers of RCRA can be different from this table because the total numbers of RCRA is the results of adding up TSDFs, LQGs and Corrective Action.

Per EPA Correspondence December 2011

Table 3-8: Resource Conservation and Recovery Act (RCRA) - Treatment, Storage, and Disposal Facilities (TSDFs) (302 TSDs for New York State)				
	Niagara	**Erie**	**Cattaraugus**	**Total**
TSDFs	*21*	27	5	53
TSDFs with Control in Place for all units subject to RCRA permitting (either permitted or clean closed)	13	19	2	34
TSDFs with confirmation needed as to whether control is in place for all units subject to RCRA permitting (such as still under closure, referred to Superfund, or RCRA corrective action)	8[1]	8[2]	3	19

1: 4 facilities referred to Superfund; 3 referred to corrective action
2: 4 facilities referred to Superfund, 2 referred to corrective action
Per EPA Correspondence December 2011

Table 3-9: Resource Conservation and Recovery Act (RCRA) - Corrective Action				
2008 Baseline (72 TSDs for New York State)				
	Niagara	**Erie**	**Cattaraugus**	**Total**
Baseline TSDs	*12*	*3*	*2*	*17*
Human Exposure Under Control	11	2	2	15
Migration of Contaminated Groundwater Under Control	11	2	2	15
Remedy Construction Completion	9	1	0	10
2020 Baseline (174 TSDs for New York State)				
Baseline TSDs	15	15	3	33
Human Exposure Under Control	13	9	3	25
Migration of Contaminated Groundwater Under Control	13	9	3	25
Remedy Construction Completion	11	7	1	19

Source: US EPA Envirofacts <www.epa.gov/enviro/index.html> (2011)

Maps

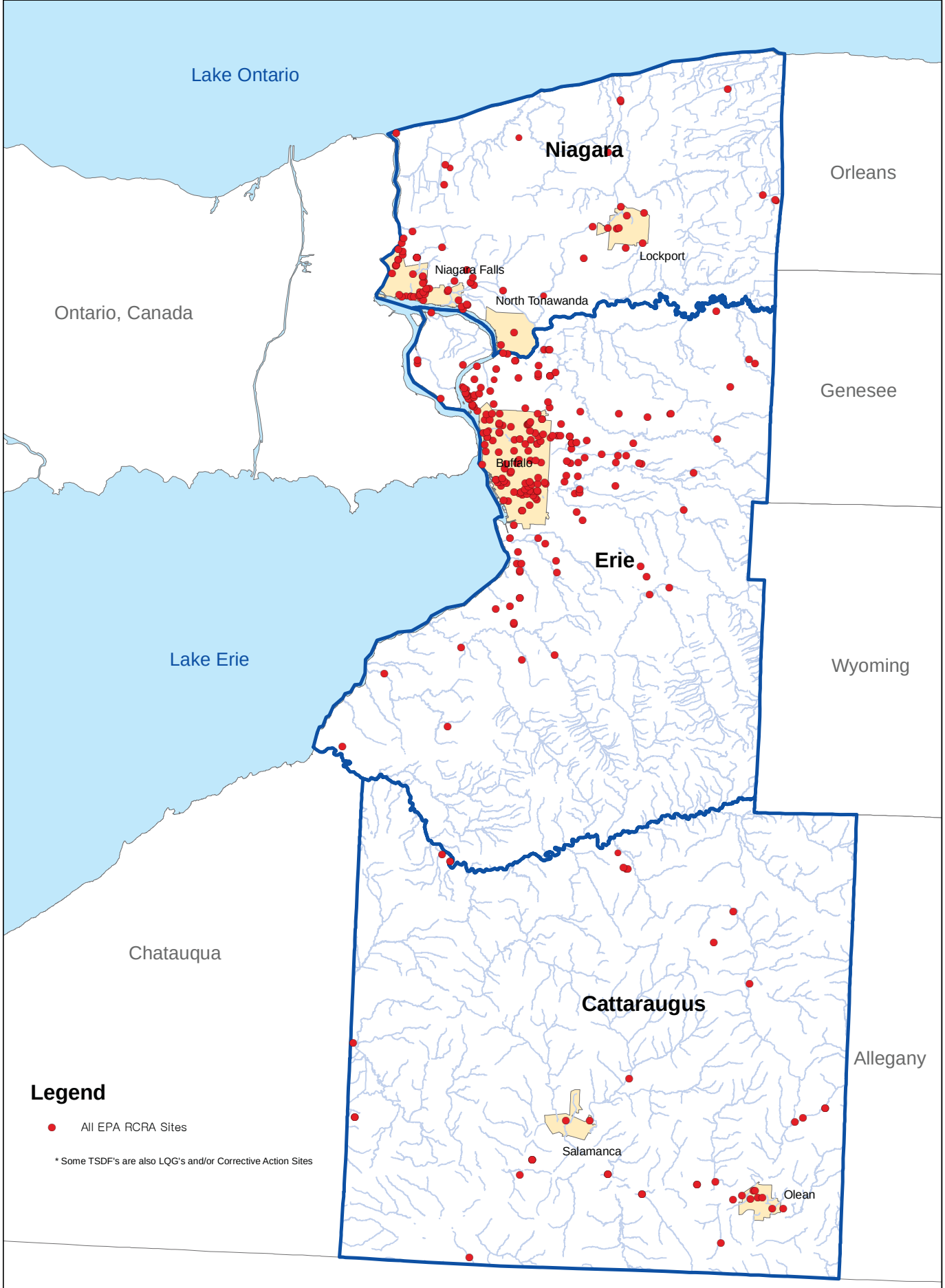
1. All study area US EPA RCRA sites
2. All study area US EPA RCRA sites with programs identified
3. Only study area US EPA TSDF sites
4. Only study area US EPA LQG sites
5. Only study area US EPA Corrective Action sites

> Data on all US EPA RCRA Sites within the Study Area can be found in the Mapping Database Digital Appendix

Table 3-10: US EPA RCRA Site Locations: Corrective Action (2020 Baseline)

County	Category	Site Name	ID	City
Niagara	Corrective Action	Occidental Chemical Corp	NYD000824482	Niagara Falls
Niagara	Corrective Action	Sherwood Forest Properties	NYD000824466	Niagara Falls
Niagara	Corrective Action	Olin Corp	NYD002123461	Niagara Falls
Niagara	Corrective Action	Frontier Chemical (Niagara Falls)	NYD043815703	Niagara Falls
Niagara	Corrective Action	Cecos International Inc	NYD080336241	Niagara Falls
Niagara	Corrective Action	Frontier Chemical (Pendleton)	NYD991292053	Pendleton
Niagara	Corrective Action	Durez Corporation	NYD002103216	Niagara Falls
Niagara	Corrective Action	Bell Test Center	NY4572024624	Porter
Niagara	Corrective Action	Bell Aerospace Textron	NYD002106276	Wheatfield
Niagara	Corrective Action	914Th Airlift Wing (Afrc)	NY0570024273	Niagara Falls
Niagara	Corrective Action	Van De Mark Chem Co Inc Ind Landfill	NYD991290529	Lockport
Niagara	Corrective Action	Fmc Corporation	NYD002126845	Middleport
Niagara	Corrective Action	Cwm Chemical Services, Llc	NYD049836679	Model City
Niagara	Corrective Action	Dal Specialties Inc	NYD002128544	Ransomville
Niagara	Corrective Action	Akzo Nobel Polymer Chemicals Llc	NYD043815158	Burt
Erie	Corrective Action	Bethlehem Steel Corporation	NYD002134880	Lackawanna
Erie	Corrective Action	Safety-Kleen Systems Inc	NYD981556541	Lackawanna
Erie	Corrective Action	Exxonmobil Oil Corp 3140	NYD002107019	Buffalo
Erie	Corrective Action	Buffalo Color Corporation	NYD080335052	Buffalo
Erie	Corrective Action	Honeywell Buffalo Research Laboratory	NYD000632315	Buffalo
Erie	Corrective Action	Enrx Inc	NYD991291782	Buffalo
Erie	Corrective Action	Niagara Transformer Corp	NYD002106177	Buffalo
Erie	Corrective Action	189 Tonawanda St Corp	NYD980526818	Buffalo
Erie	Corrective Action	Dewey Ave Scr-Niagara Mohawk	NYD000730390	Buffalo
Erie	Corrective Action	Clean Harbors Bdt Llc	NYD000632372	Clarence
Erie	Corrective Action	Fmc Corporation Active Oxidants Division	NYD074033101	Tonawanda
Erie	Corrective Action	Allied Corporation	NYD051816262	Tonawanda
Erie	Corrective Action	Honeywell International Inc	NYD038641601	Tonawanda
Erie	Corrective Action	General Electric Buffalo	NYD067539940	Tonawanda
Erie	Corrective Action	Spaulding Fibre Co Inc	NYD002104404	Tonawanda
Cattaraugus	Corrective Action	Moench Tanning Co	NYD002126910	Gowanda
Cattaraugus	Corrective Action	Us Department Of Energy	NYD980779540	West Valley
Cattaraugus	Corrective Action	Western Ny Nuclear Service Center	NYD986905545	Ashford

Source: US EPA Envirofacts <www.epa.gov/enviro/index.html> (2011)
* Managed by NYS DEC



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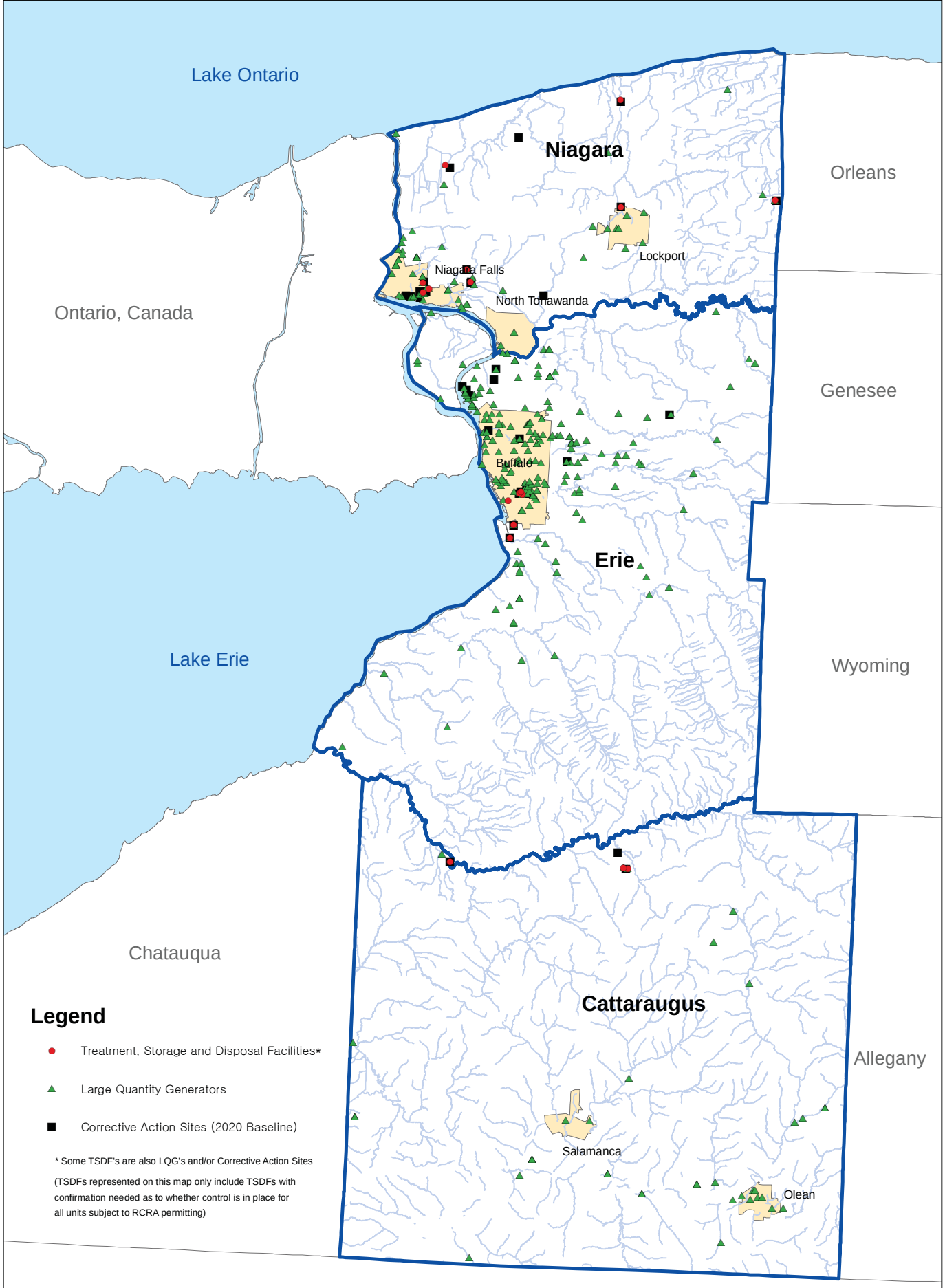
US EPA Resource Conservation and Recovery Act Program (RCRA)

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
December, 2011

Data Source: US EPA Envirofacts www.epa.gov/enviro/info/html (2011)



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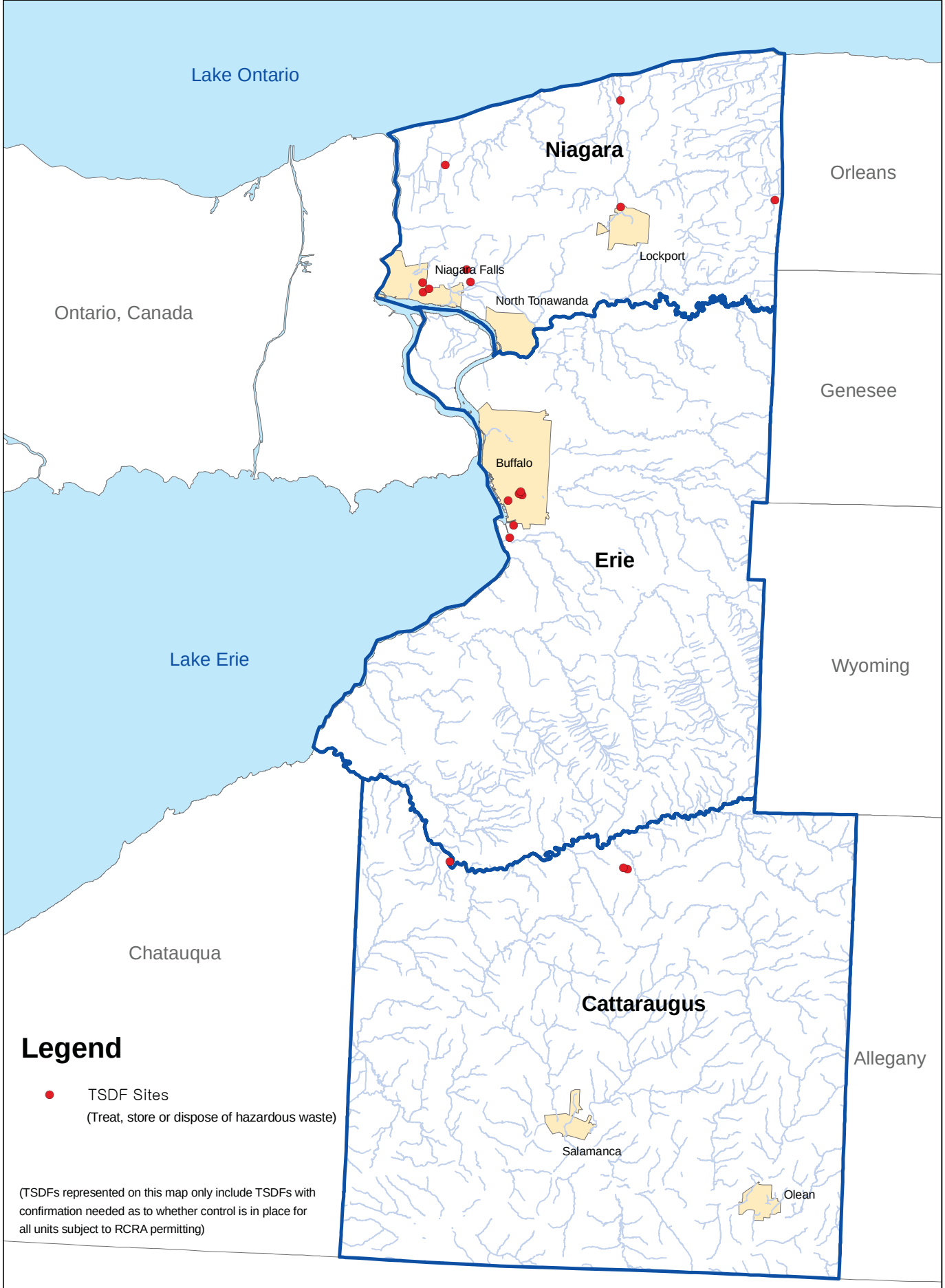
US EPA RCRA Program
TSDFs, LQGs and Corrective Action Sites

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
December, 2011

Data Source: US EPA Envirofacts www.epa.gov/enviro/info/html (2011)



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US EPA RCRA Program

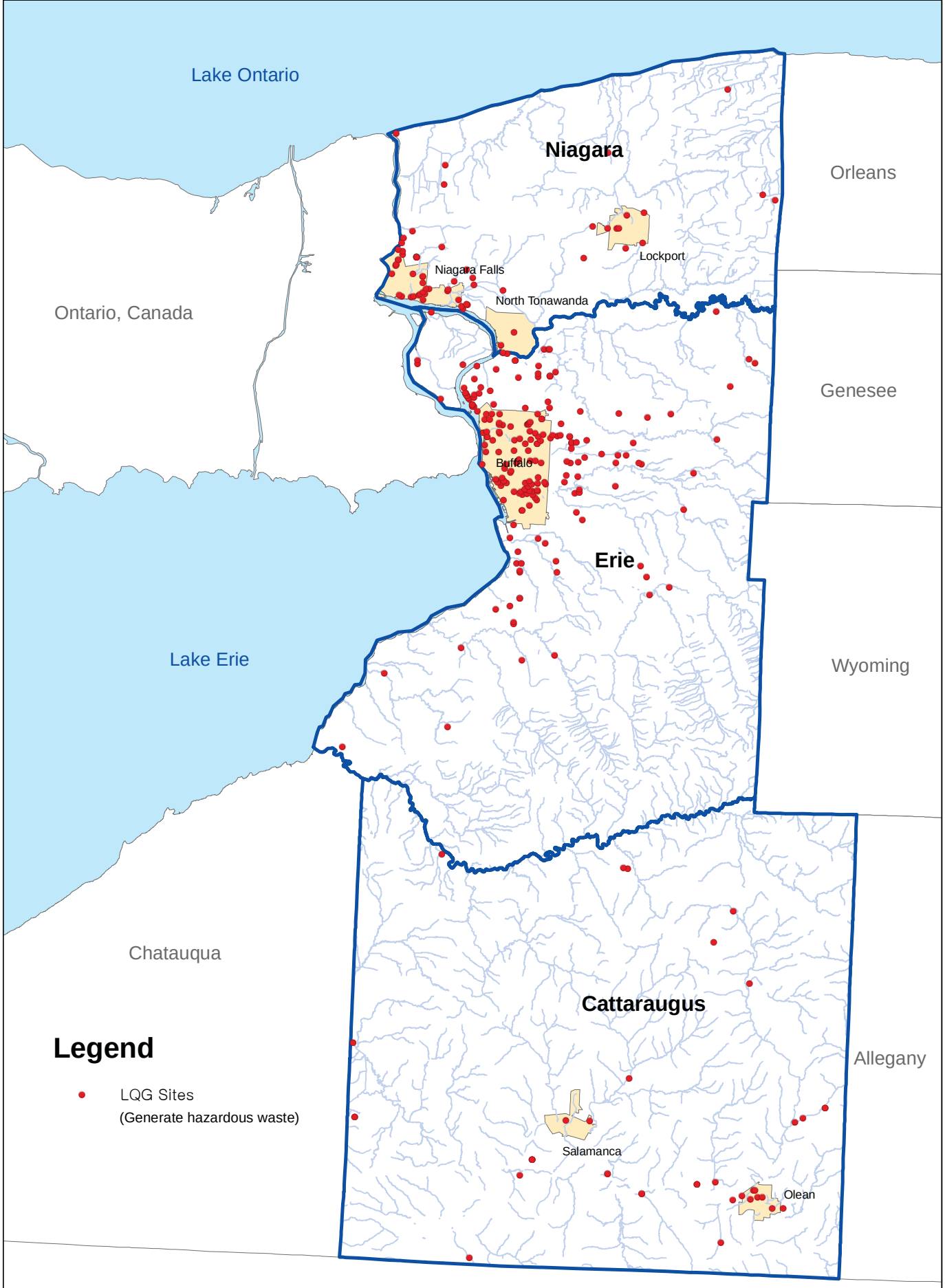
Treatment, Storage and Disposal Facilities (TSDF)

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
December, 2011

Data Source: US EPA Envirofacts www.epa.gov/enviro/info/html (2011)



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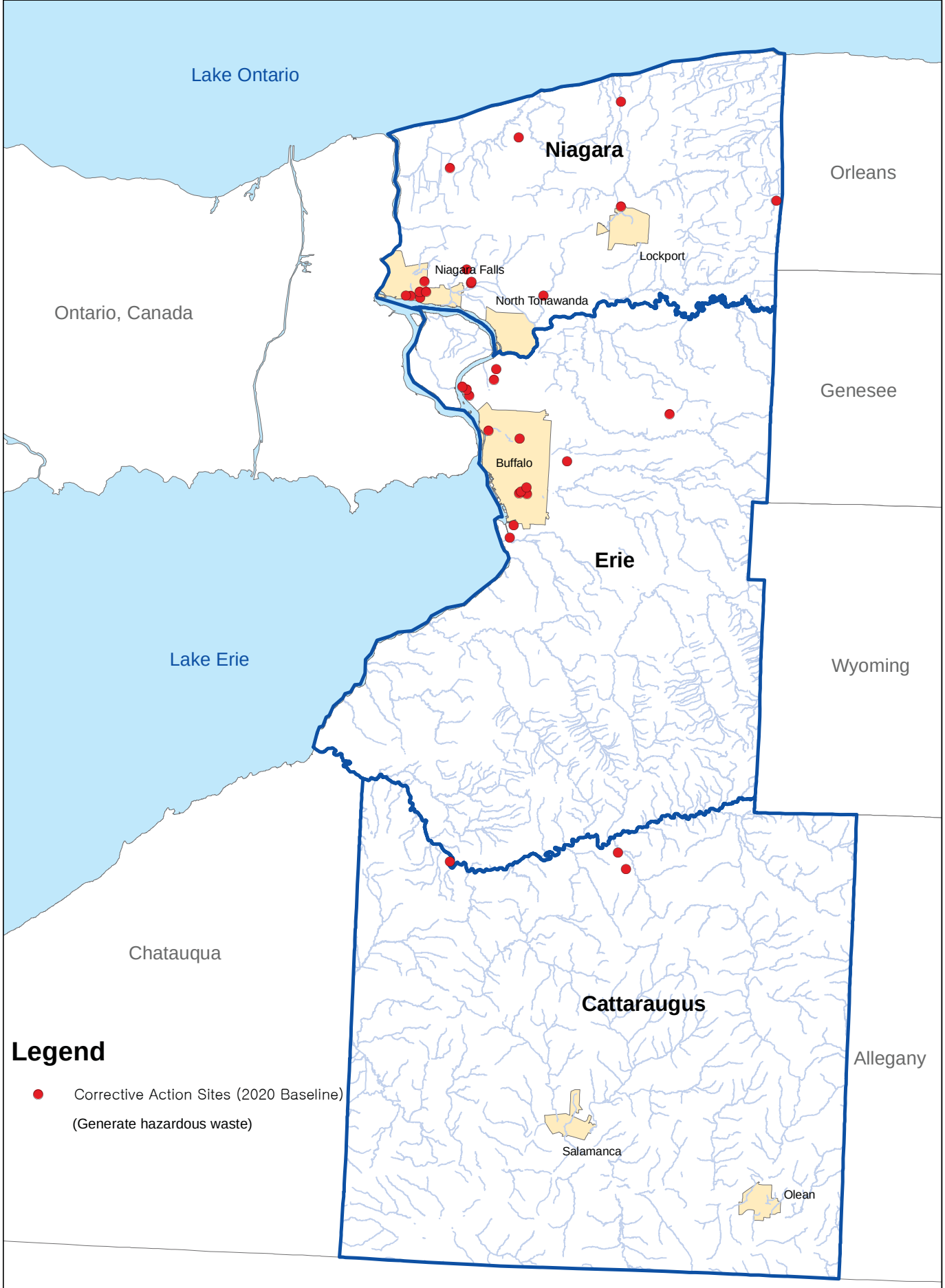
US EPA RCRA Program
Large Quantity Generators (LQG)

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
December, 2011

Data Source: US EPA Envirofacts www.epa.gov/enviro/info/html (2011)



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US EPA RCRA Program
Corrective Action
Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
December, 2011

Data Source: US EPA Envirofacts www.epa.gov/enviro/info/html (2011)

3.4.2 Other US Environmental Protection Agency (US EPA) Databases

US EPA Toxic Release Inventory System (TRIS)[16]

The Toxic Release Inventory System TRIS is a publicly available US EPA database reported annually by certain covered industry groups as well as federal facilities. It contains information about more than 650 toxic chemicals that are being used, manufactured, treated, transported, or released into the environment, and includes information about waste management and pollution prevention activities. Manufacturers of these chemicals are required to report the locations and quantities of chemicals stored on-site to state and local governments. The reports are submitted to the EPA and state governments. EPA compiles this data in an on-line, publicly accessible national computerized database. The database is accessible here: http://www.epa.gov/tri/

US EPA Assessment, Cleanup and Redevelopment Exchange System (ACRES)[17]

ACRES stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions.

US EPA Risk Management Plan (RMP)[18]

The RMP database stores the risk management plans reported by companies that handle, manufacture, use, or store certain flammable or toxic substances, as required under section 112(r) of the Clean Air Act (CAA). According to the EPA Chemical Accident Prevention plan website, the plans are publicly available. (http://www.epa.gov/osweroe1/content/lawsregs/rmpover.htm)

US EPA Section Seven Tracking System (SSTS)[19]

SSTS tracks the registration of all *pesticide-producing* establishments and tracks annually the types and amounts of pesticides, active ingredients, and related devices that are produced, sold, or distributed.

Western New York Study Area

The Western New York study area has 299 sites listed on the TRIS, 137 sites listed on ACRES, 64 sites with RMPs, and 29 sites on the SSTS.

Table 3-11: US EPA Active Hazardous Waste Databases

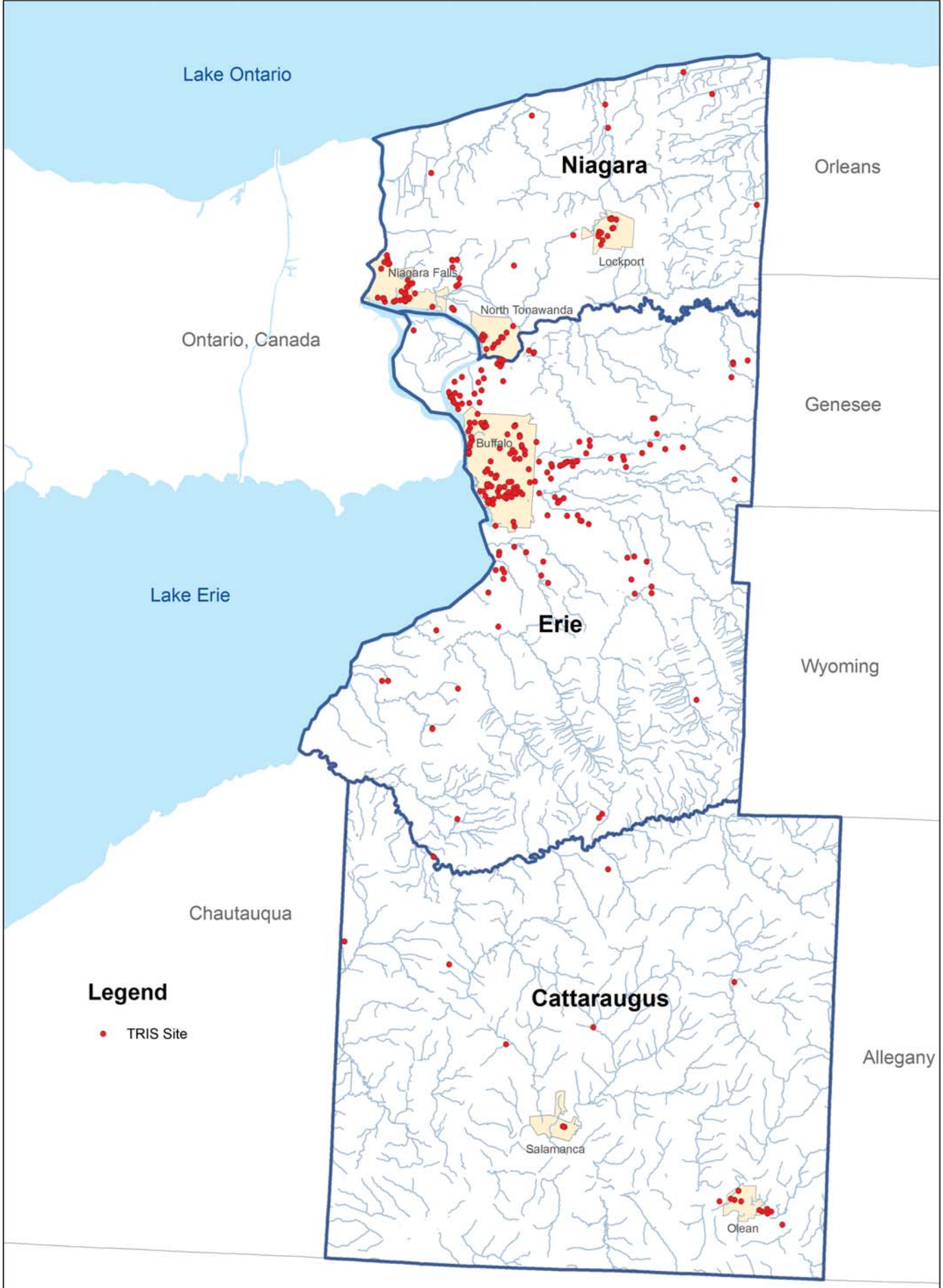
	Niagara	Erie	Cattaraugus	Total
Toxic Release Inventory System (TRIS)	76	202	21	299
Assessment, Cleanup and Redevelopment Exchange System (ACRES)	53	83	1	137
Risk Management Plan (RMP)	20	40	4	64
Section Seven Tracking System (SSTS)	7	22	0	29

Source: US EPA Envirofacts <www.epa.gov/enviro/index.html> (2010)

Maps

1. Only study area US EPA TRIS sites
2. Only study area US EPA ACRES sites
3. Only study area US EPA RMP sites
4. Only study area US EPA SSTS sites

Data on all US EPA Active Hazardous Waste Database Sites within the Study Area can be found in the Mapping Database Digital Appendix (Data for mapping as of 9/1/2010)



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US EPA Toxic Release Inventory System (TRIS)

Mapping Waste

0 4 8 16 24 32 Miles

Created by
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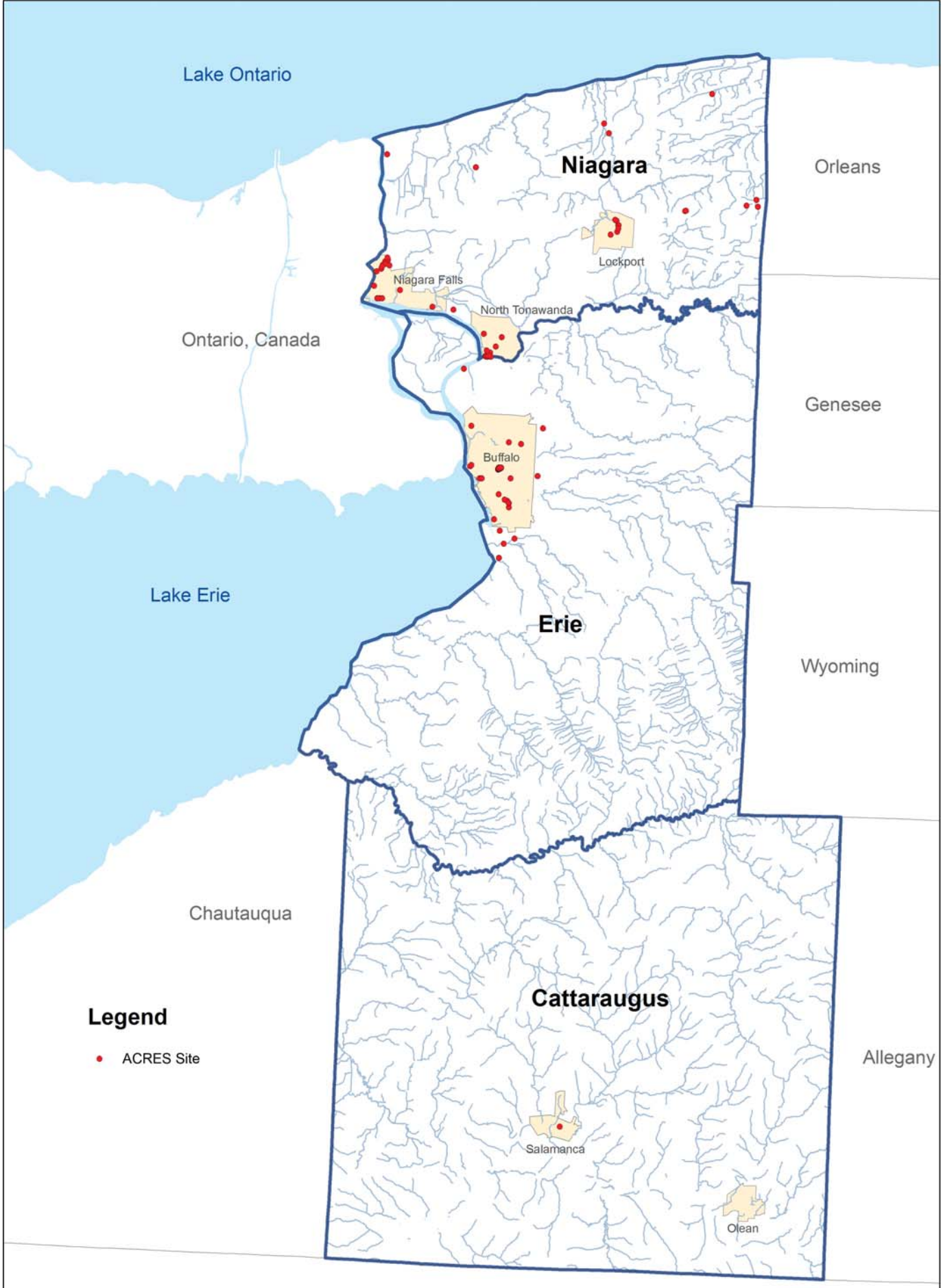
University at Buffalo, SUNY
School of Architecture and Planning
June, 2010

Data Source: US EPA Envirofacts www.epa.gov/enviro/index.html (2010)



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US EPA Assessment, Cleanup and Redevelopment Exchange System (ACRES)

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
June, 2010

Data Source: US EPA Envirofacts www.epa.gov/enviro/index.html (2010)

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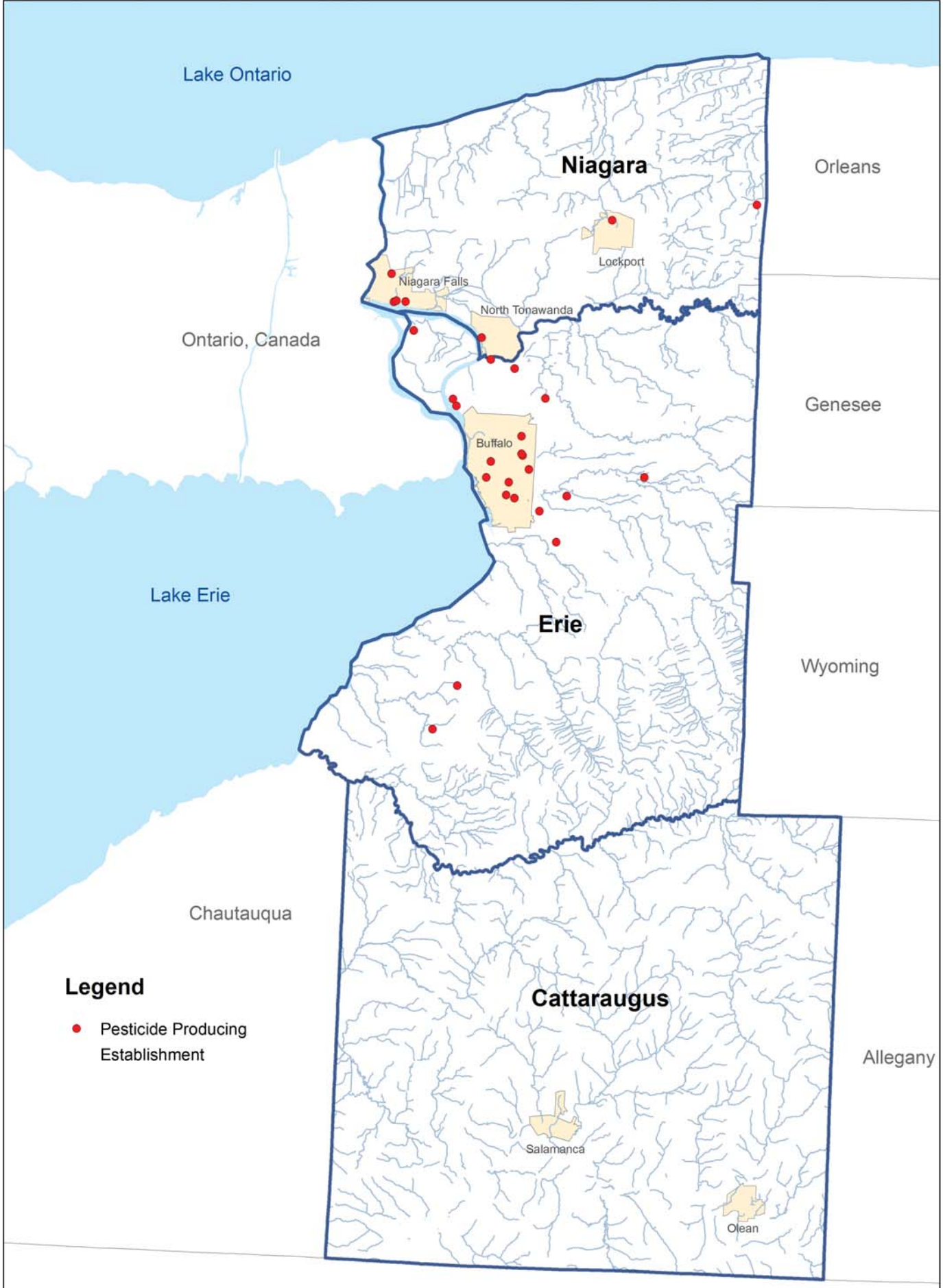
US EPA Risk Management Plan (RMP)

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
June, 2010

Data Source: US EPA Envirofacts www.epa.gov/enviro/index.html (2010)



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US EPA Section Seven Tracking System (SSTS)

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
June, 2010

Data Source: US EPA Envirofacts www.epa.gov/enviro/index.html (2010)

3.4.3 NYS Department of Environmental Conservation (NYS DEC) Waste Treatment, Storage, and Disposal Facilities (TSDFs)[20] regulated by DEC

What is a Hazardous Waste Treatment, Storage, and Disposal Facility (TSDF) Permit?

Hazardous waste management facilities receive hazardous wastes for treatment, storage, or disposal and thus are usually referred to as TSDFs. Like the US EPA program with the same name, treatment and disposal is considered any process that changes the physical, chemical, or biological characteristics of a waste to minimize its threat to the environment and storage is considered temporary holding of waste before the waste is treated, disposed of, or stored somewhere else. These facilities must obtain a permit for these activities.

What is the Enabling Legislation for this Program?

The State's comprehensive hazardous waste regulatory program is based on Subtitle C of the Federal Resource Conservation and Recovery Act of 1976, known as the RCRA-C program. Regulations that implemented RCRA-C became effective on November 19, 1980, to address adverse impacts to human health and the environment that were being discovered with increasing regularity as a result of unsafe waste handling and disposal practices.

Who Manages the Program?

The US EPA has delegated the hazardous waste management program to the NYS DEC. The DEC issues the permits, conducts inspections, signs consent orders, and gathers and processes data. As stated in Section 3.4, the active waste management program through RCRA that includes the TSDFs is a dynamic program and changes occur more frequently than in the legacy waste programs.

Through Part 373 permits, the Division of Environmental Remediation(DER) ensures that environmentally protective design and operational standards are maintained at treatment, storage and disposal facilities (TSDFs). As a part of this permit program, it is the responsibility of the Division to review permit applications and prepare permits for all facilities. When major regulatory changes occur, DEC must submit an updated application to US EPA to update or add program areas for authorization.

How does the NYS DEC categorize TSDFs?

The DEC defines two types of TSDFs; commercial and non-commercial.

Commercial TSDF

Commercial TSDFs manage large quantities of hazardous wastes from a myriad of generators. Whether a land disposal, combustion, storage or treatment facility, considerable resources and expertise are required to ensure that the wide variety of hazardous wastes are safely managed and that incompatible wastes are not blended (note: Some of commercial TSDFs handle only small quantities).

Non-Commercial TSDF

Non-commercial TSDFs manage only hazardous waste generated by their own company with the vast majority of those wastes generated onsite.

- “On-site” non-commercial facilities manage their hazardous waste at the generating facility, and

- "Captive" non-commercial facilities receive manifested hazardous waste for management that is generated by another facility owned by the same company.

Western New York Study Area

The Western New York study area has 27 NYS DEC hazardous waste TSDFs; 24 or 89% are non-commercial, while 3 or 11% are commercial. The majority (22 of 24) of non-commercial TSDFs are on-site facilities. Most NYS DEC hazardous waste TSDFs are in Erie and Niagara Counties.

Table 3-12: NYS DEC Hazardous Waste Treatment, Storage and Disposal Facilities (TSDF)

	Niagara	Erie	Cattaraugus	Total
Total NYS DEC TSDF	*9*	*15*	*3*	*27*
Commercial	2	1	0	3
Non-commercial	7	14	3	24
On-site	5	14	3	22
Captive	2	0	0	2

Source: NYS DEC Hazardous Materials Database
< www.dec.ny.gov/geodata/ptk > (2007)

Maps

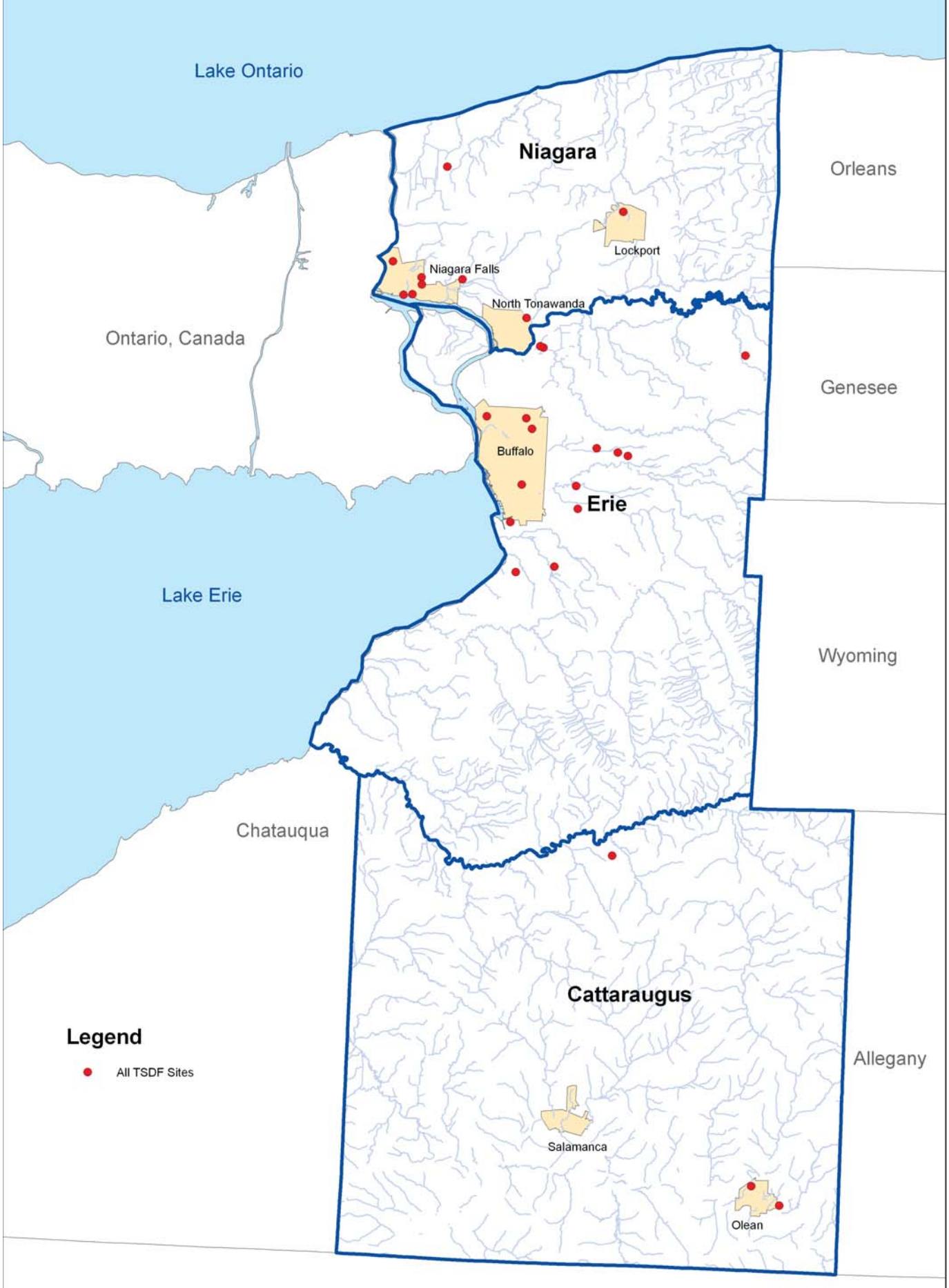
1. All study area NYS DEC TSDF sites
2. All study area NYS DEC TSDF sites with categories identified

Table 3-13: NYS DEC TSDF Site Locations

County	Category	Site Name	Address	City
Niagara	Non-Commercial Captive Facility	OCCIDENTAL CHEMICAL - LOVE CANAL	4700 Buffalo Avenue	Niagara Falls
Niagara	Non-Commercial Captive Facility	OCCIDENTAL CHEMICAL CORP	3780 Commerce Court	North Tonawanda
Niagara	Commercial Facility	TULIP CORP	3125 Highland Avenue	Niagara Falls
Niagara	Commercial Facility	CWM CHEMICAL SERVICES INC	1550 Balmer Road	Model City
Niagara	Non-Commercial On-site Facility	DUREZ CORP	5000 Packard Road	Niagara Falls
Niagara	Non-Commercial On-site Facility	E I DUPONT DE NEMOURS CO	2551 Buffalo Avenue	Niagara Falls
Niagara	Non-Commercial On-site Facility	CECOS INTERNATIONAL INC	5300 Niagara Falls Boulevard	Niagara Falls
Niagara	Non-Commercial On-site Facility	VANDEMARK CHEMICAL INC	1 North Transit Road	Lockport
Niagara	Non-Commercial On-site Facility	STAUFFER MANAGEMENT-C/O TREA TEK-CRA	2055 Niagara Falls Boulevard	Niagara Falls
Erie	Commercial Facility	SAFETY-KLEEN CORP	41 North Gates Avenue	Lackawanna
Erie	Non-Commercial On-site Facility	PRECISION PHOTO FAB	4020 Jeffrey Boulevard	Buffalo
Erie	Non-Commercial On-site Facility	LUVATA BUFFALO INC	70 Sayre Street	Buffalo
Erie	Non-Commercial On-site Facility	LEICA INCORPORATED	3362 Walden Avenue	Depew
Erie	Non-Commercial On-site Facility	FLEXO TRANSPARENT, INC.	28 Wasson Street	Buffalo
Erie	Non-Commercial On-site Facility	WHITING DOOR MANUFACTURING CORP	113 Cedar Street	Akron
Erie	Non-Commercial On-site Facility	QUEBECOR PRINTING BUFFALO, INC.	2475 George Urban Boulevard	Depew
Erie	Non-Commercial On-site Facility	FENNER PRECISION	852 Kensington Avenue	Buffalo
Erie	Non-Commercial On-site Facility	FMC CORP	35 Sawyer Avenue	Tonawanda
Erie	Non-Commercial On-site Facility	PAXAR/I I MAK	310 Commerce Drive	Amherst
Erie	Non-Commercial On-site Facility	SEVERN TRENT LABORATORIES	10 Hazelwood Drive	Amherst
Erie	Non-Commercial On-site Facility	CELLO PACK CORP	55 Innsbruck Drive	Cheektowaga
Erie	Non-Commercial On-site Facility	L D MCCAULEY	3875 California Road	Orchard Park
Erie	Non-Commercial On-site Facility	WILLIAMS ADVANCED MATERIALS INC	2978 Main Street	Buffalo
Erie	Non-Commercial On-site Facility	EXCEL PRECISION INC	1200 North America Drive	Buffalo
Cattaraugus	Non-Commercial On-site Facility	HENKELTECHNOLOGIES	211 West Franklin Street	Olean
Cattaraugus	Non-Commercial On-site Facility	OLEAN ADVANCED PRODUCTS-DIV OF AVX CORP	1695 Seneca Avenue	Olean
Cattaraugus	Non-Commercial On-site Facility	WEST VALLEY NUCLEAR SERVICES CO*	10282 Rock Springs Road	West Valley

Note : Non Commercial on-site facilities do not require a Part 373 disposal permit.

* Regulation of West Valley Nuclear Services involve both the Federal Department of Energy and NYS DEC, which lists it is a TSDF.



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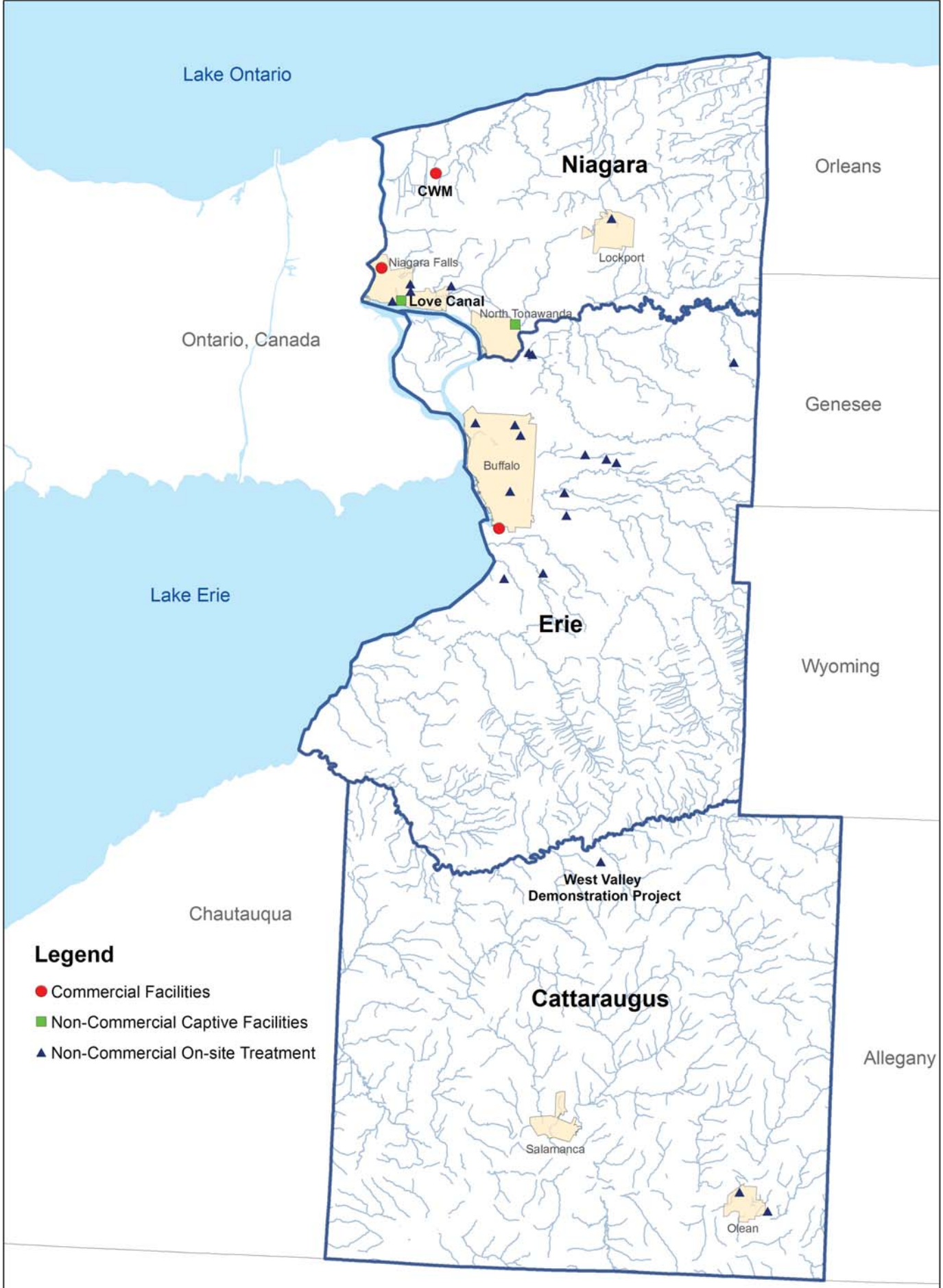
NYS DEC Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF)

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
SUNY at Buffalo
School of Architecture and Planning
June, 2010

Data Source: NYS DEC Hazardous Materials Database (2007)



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NYS DEC Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF) by Categories

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
June, 2010

Data Source: NYS DEC Hazardous Materials Database (2007)

3.4.4 NYS Department of Environmental Conservation (NYS DEC) Hazardous Materials Bulk Storage Program[21]

What is the Hazardous Materials Bulk Storage Program?

The storage of hazardous materials, like chemicals or petroleum at gas stations, is common but can have significant impacts on groundwater and drinking water if stored improperly. This permitting program maintains records of storage sites and regulates those facilities.

What is the Enabling Legislation for the Program?

The Bulk Storage Program is based on four laws enacted over the past 20 years. Three are State laws requiring the DEC to develop and enforce standards for storage and handling of petroleum and chemical products and to regulate aboveground and underground tanks storing these products. The fourth law is the federal amendment to RCRA (Subtitle I) requiring the Environmental Protection Agency (EPA) to regulate underground storage tanks (USTs), a program that is, nevertheless, managed by the state.

Who Manages the Program?

The Hazardous Materials Bulk Storage Program is operated by the NYS DEC.

How does the NYS DEC categorize Hazardous Materials Bulk Storage facilities?

Chemical Bulk Storage

Article 37 of the Environmental Conservation Law requires the Department of Environmental Conservation (DEC) to regulate all substances covered by the Federal Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), and Federal Toxic Substances Control Act (FTSCA). DEC may also regulate other chemicals known to be hazardous. A second law, which is entitled Article 40, Hazardous Substances Bulk Storage Act, regulates the sale, storage and handling of hazardous substances. The DEC has enacted Chemical Bulk Storage Regulations (6NYCRR Parts 595-599) that include the following:

- Over 1,000 substances are listed.
- Requirements for release reporting, response and corrective action are outlined.
- Chemical manufacturers/distributors must supply their buyers with guidance on proper storage and handling of chemicals and to file the guidance with DEC.
- New storage equipment (tanks, pipes, transfer stations and associated equipment) must meet State standards.
- Tanks and pipes must be tested and inspected for soundness.

Petroleum Bulk Storage

In 1983, the State Legislature enacted Article 17, Title 10 of the Environmental Conservation Law, entitled "Control of the Bulk Storage of Petroleum." The Law applies both to Underground Storage Tanks (USTs) and Aboveground Storage Tanks (ASTs), or groupings of such tanks with a combined storage capacity of more than 1,100 gallons. All facilities regulated under Article 17, Title 10 must meet certain handling and storage requirements established by DEC.

- Existing USTs and ASTs must observe rules for color coding of fill ports, shutoff valves, gauges and check valves. Aboveground tanks must be provided with secondary containment (i.e., berms or other devices to contain spills).
- Operators of USTs must keep daily inventory records, reconcile them on a 10 day basis (and maintain them for five years) and notify DEC and the tank owner within 48 hours of unexplained inventory losses. They must also test tanks and pipes every five years or monitor the interstitial space of double-walled equipment.
- Operators of ASTs must conduct monthly visual inspections. Every 10 years they must clean out the tanks that are resting on grade, remove the sludge from the bottom, inspect for structural integrity and test for tightness.

Major Oil Storage Facilities

In 1977, the New York State Legislature passed the "Oil Spill Prevention, Control and Compensation Act" (Article 12 of the Navigation Law). This law regulates all oil terminals and transport vessels operating in the waters of the State which have a storage capacity of 400,000 gallons or more. The express purpose of the law is to "ensure a clean environment and healthy economy for the State by preventing the unregulated discharge of petroleum which may result in damage to lands, waters or natural resources of the State... and to effect prompt cleanup and removal of such discharges." Regulations developed by the DEC to administer the law can be found in 6NYCRR Parts 610 and 611. Under the law and regulations, owners or operators of major oil storage facilities must do the following:

- Obtain an operating license from DEC.
- Pay a license fee of up to 12 1/4 cents per barrel of throughput at the facility.
- Submit data to DEC on operating activities, such as average daily throughput and storage capacity.
- Implement a spill prevention (SPCC) plan.
- Comply with license conditions and State petroleum bulk storage regulations, 6NYCRR Parts 613 and 614.
- Report discharges to DEC.

Western New York Study Area

The Western New York study area has 1,744 total NYS DEC Bulk Storage sites that are Chemical Bulk Storage, Petroleum Bulk Storage, or Major Oil Storage Facilities. Most of these are Petroleum Bulk Storage sites (1,607 or 92% of the total). There are 127 Chemical Bulk Storage sites and 10 Major Oil Storage Facilities.

Table 3-14: NYS DEC Hazardous Materials Bulk Storage Program

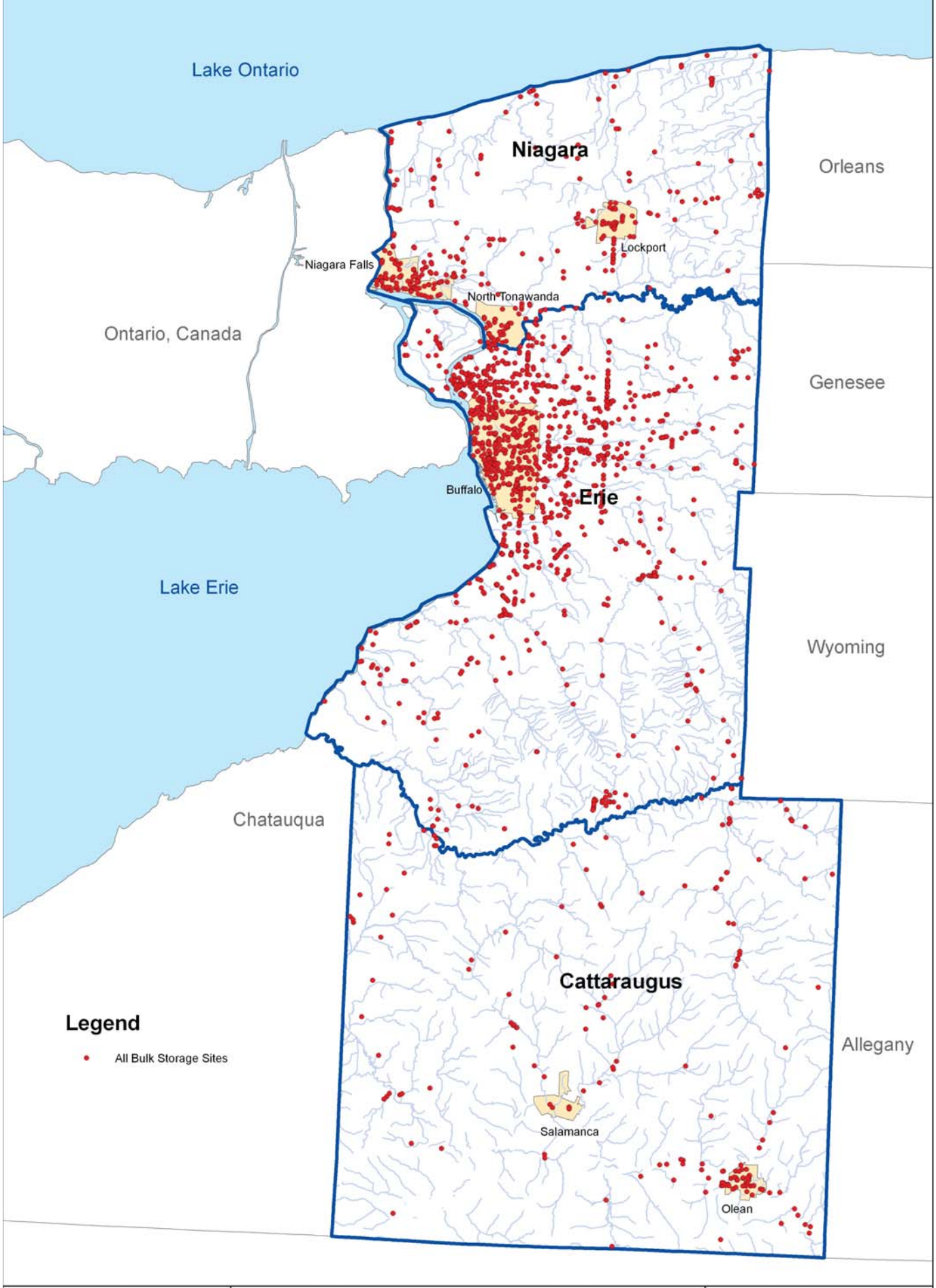
	Niagara	Erie	Cattaraugus	Total
Total NYS DEC Bulk Storage	*343*	*1219*	*182*	*1744*
Chemical Bulk Storage (CBS)	46	75	6	127
Petroleum Bulk Storage (PBS)	296	1135	176	1607
Major Oil Storage Facilities (MOSF)	1	9	0	10

Source: NYS DEC Hazardous Materials Database
< www.dec.ny.gov/geodata/ptk > (2010)

Maps

1. All study area NYS DEC Bulk Storage
2. All study area NYS DEC Bulk Storage sites with categories identified

Data on all NYS DEC Hazardous Materials Bulk Storage Program Sites within the Study Area can be found in the Mapping Database Digital Appendix



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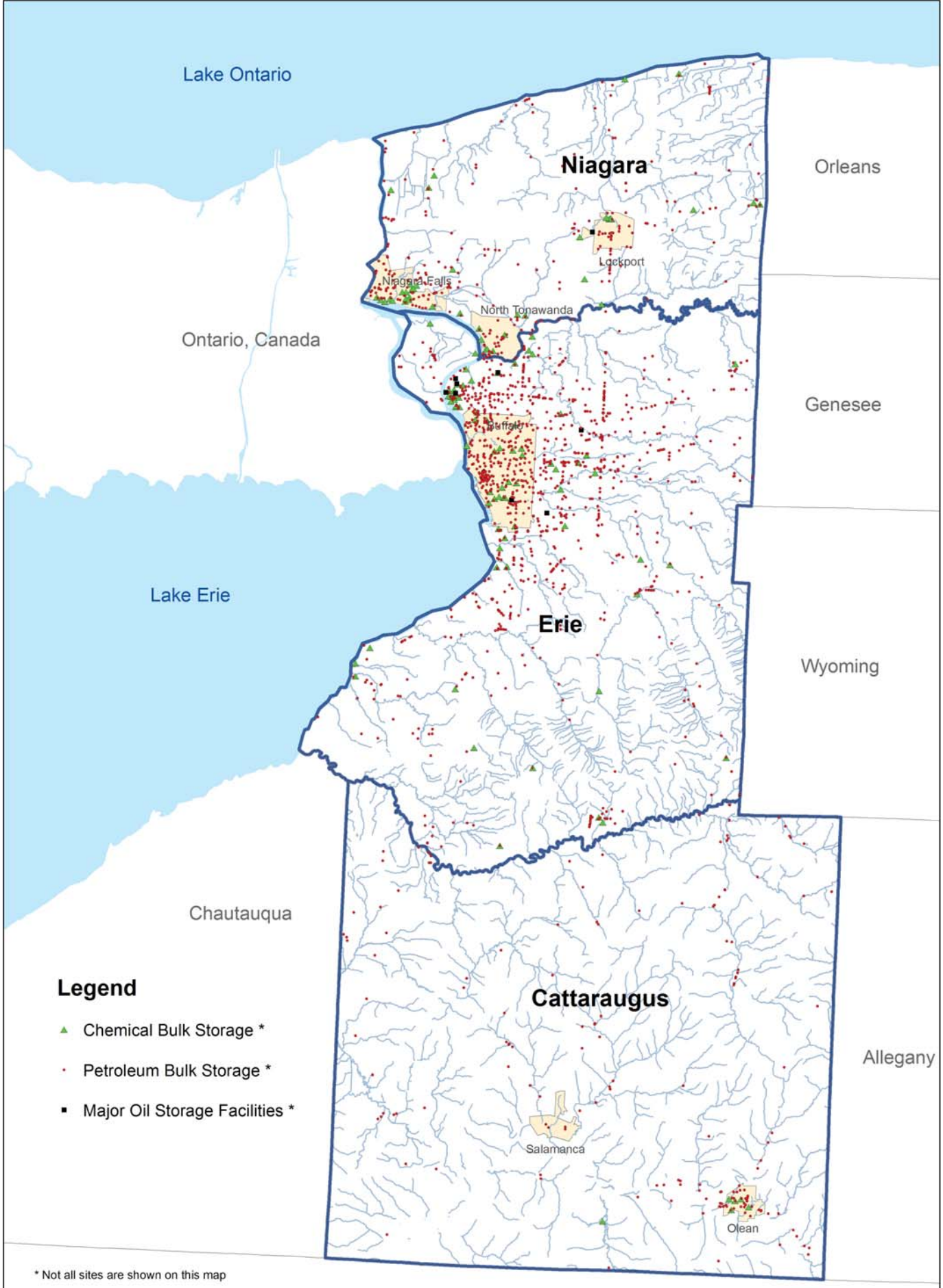
NYS DEC Bulk Storage Program

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
SUNY at Buffalo
School of Architecture and Planning
June, 2010

Data Source: NYS DEC Hazardous Materials Database (2007)



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NYS DEC Bulk Storage Program by Categories

Mapping Waste

0 4 8 16 24 32 Miles

Created by
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University at Buffalo, SUNY
School of Architecture and Planning
June, 2010

Data Source: NYS DEC Hazardous Materials Database (2010)

3.5 Solid Waste

3.5.1 NYS Department of Environmental Conservation (NYS DEC) *Inactive* Solid Waste Facilities

What is an inactive solid waste facility?

Inactive solid waste facilities are considered landfills that are no longer storing new waste. Often, abandoned landfills are not well maintained or even well recorded. The NYS DEC does not have a specific program for regulating inactive, non-hazardous solid waste facilities. However, the DEC does maintain a database of known inactive solid waste sites as part of the Solid Waste Program.

How does the NYS DEC categorize Inactive Solid Waste Facilities?

There are four types of landfills within the inactive solid waste facilities database. They are:

- Landfill (inactive) – Construction and Demolition
- Landfill (inactive) – Industrial / Commercial
- Landfill (inactive) – Land Clearing Debris
- Landfill (inactive) – Mixed Solid Waste

Western New York Study Area

The Western New York study area has 82 total inactive solid waste landfills. Most are in Erie County (45), while there are 20 in Niagara County and 17 in Cattaraugus County. The majority (79%) of these inactive solid waste landfills are mixed solid waste, or former municipal landfills.

Table 3-15: NYS DEC Inactive Solid Waste Facilities

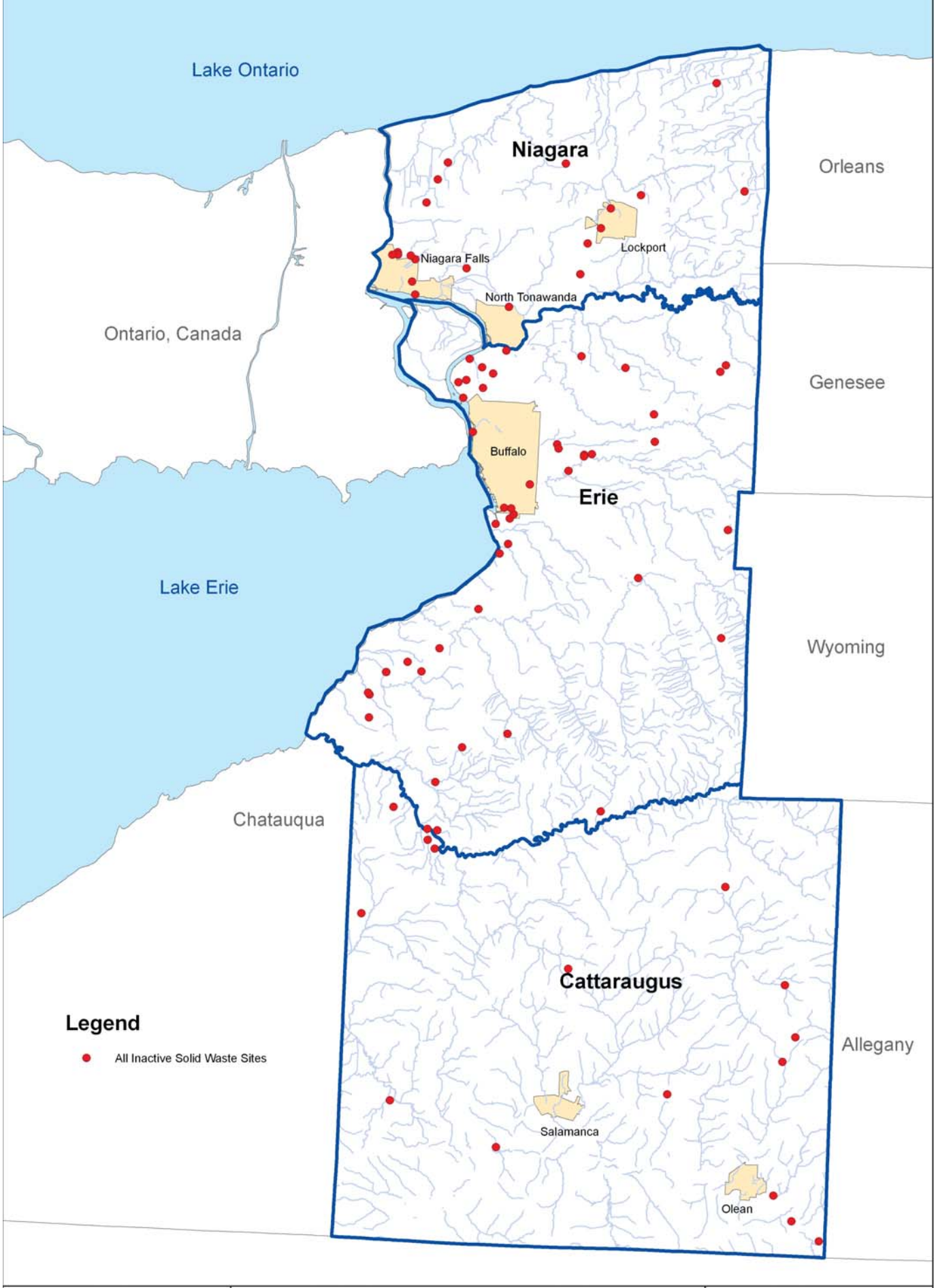
	Niagara	Erie	Cattaraugus	Total
All NYS DEC Inactive Solid Waste Landfills	*20*	*45*	*17*	*82*
Landfill - construction and demolition	3	4	0	7
Landfill - industrial/commercial	4	2	2	8
Landfill - land clearing debris	1	1	0	2
Landfill - mixed solid waste	12	38	15	65

Source: NYS DEC Division of Solid and Hazardous Waste (2009)

Maps

1. All study area NYS DEC Inactive solid waste facilities
2. All study area NYS DEC Inactive solid waste facilities with facility type identified

> Data on all NYS DEC Inactive Solid Waste Facility Sites within the Study Area can be found in the Mapping Database Digital Appendix



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NYS DEC Solid Waste Program

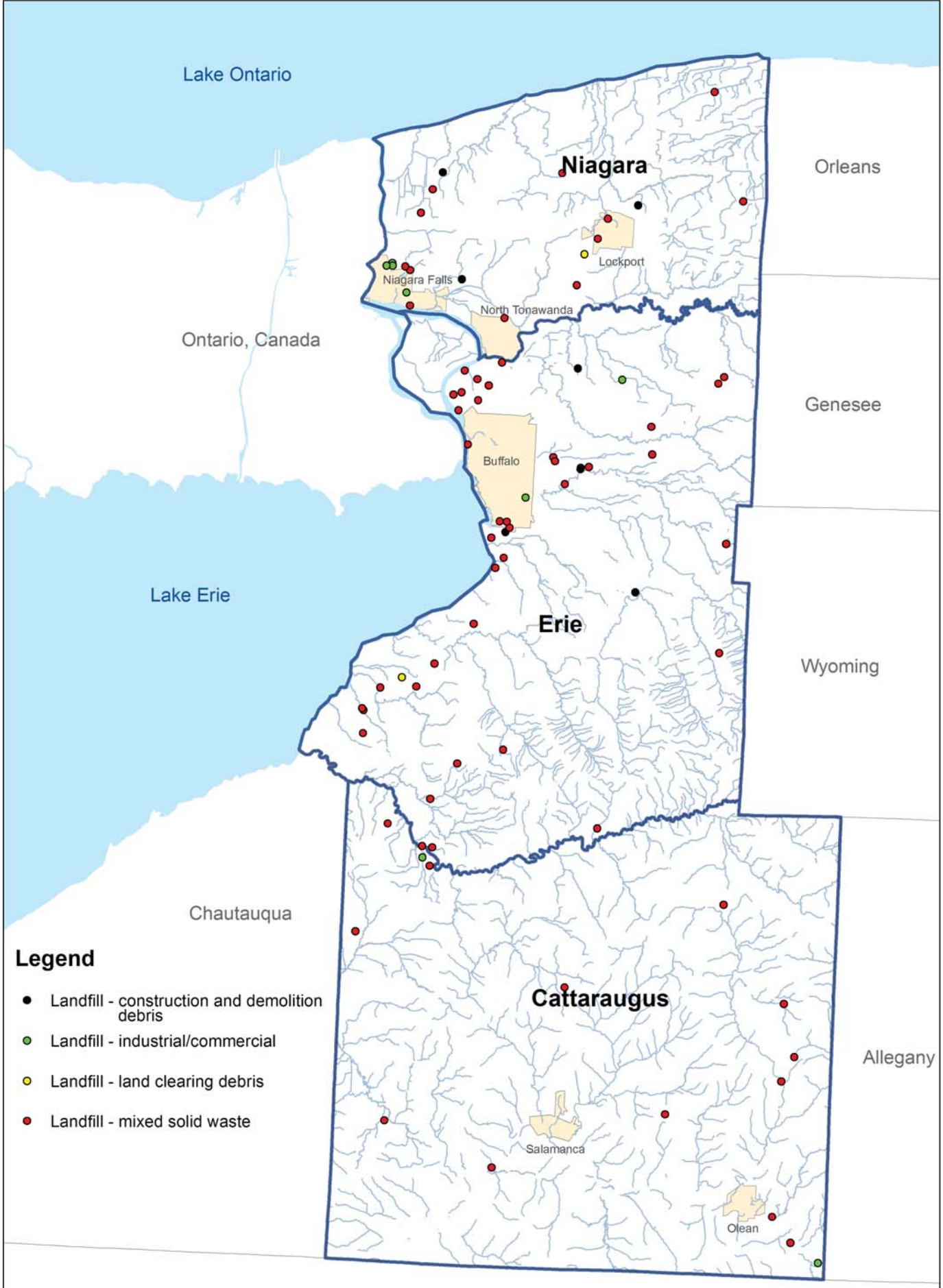
Inactive Facilities

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
SUNY at Buffalo
School of Architecture and Planning
June, 2010

Data Source: NYS DEC Division of Solid and Hazardous Waste (2009)



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NYS DEC Solid Waste Program

Inactive Facilities by Categories

Mapping Waste

0 4 8 16 24 32 Miles

Created by
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University at Buffalo, SUNY
School of Architecture and Planning
June, 2010

Data Source: NYS DEC Division of Solid and Hazardous Waste (2009)

3.5.2 NYS Department of Environmental Conservation (NYS DEC) Solid Waste Program[22]

What is the Solid Waste Management Program?

The Solid Waste Management Program provides permits for operational solid waste management facilities. The inspection process is the primary means by which the Department assesses the operational compliance of solid waste management facilities. Another important aspect of the Department's facility oversight is the review of facility quarterly and annual reports which must be submitted to the Department. Another aspect of the Solid Waste Program is providing technical and regulatory assistance to the regulated community.

What is the Enabling Legislation for the Program?

In the Solid Waste Management Act of 1988, the NYS Legislature established a State Solid Waste Management Policy. The following are the solid waste management priorities in New York State:

- First, **to reduce** the amount of solid waste generated;
- Second, **to reuse** material for the purpose for which it was originally intended or to recycle material that cannot be reused;
- Third, **to recover**, in an environmentally acceptable manner, energy from solid waste that cannot be economically and technically reused or recycled; and
- Fourth, **to dispose** of solid waste that is not being reused, recycled or from which energy is not being recovered, by land burial or other methods approved by the department. (from New York State Environmental Conservation Law 27-0106.1)

The general operational requirements for all solid waste management facilities (SWMF) are contained in the Part 360 regulations, Subpart 360-1. In addition to the operational requirements found in Subpart 360-1, specific operational requirements for each type of SWMF are contained in each separate Subpart of the Part 360 regulations.

Who Administers the Program?

The NYS DEC Solid Waste Management Program is administered by the nine individual regions of the NYS DEC. Regional staff are responsible for permitting, facility inspection and assessment of facility compliance.

How does the NYS DEC categorize active solid waste facilities?

There are four types of landfills within the NYS DEC Solid Waste Program. They are:

- Landfill – Construction and Demolition
- Landfill – Industrial / Commercial
- Landfill – Land Clearing Debris
- Landfill – Mixed Solid Waste

The other types of solid waste facilities include:

- Composting
- Waste combustion

Western New York Study Area

The Western New York study area has 17 total active solid waste landfills. Erie and Niagara County have eight each, while there is only one in Cattaraugus County. Eleven of the 17 active solid waste facilities are landfills (65%). There are five composting facilities and one combustion facility in the study area. Unfortunately, the data does not include the size of the landfills, or the amount of waste each facility takes in.

Table 3-16: NYS DEC Active Solid Waste Facilities

	Niagara	Erie	Cattaraugus	Total
All NYS DEC Active Solid Waste Facilities	*8*	*8*	*1*	*17*
Landfill - construction and demolition	1	0	0	1
Landfill - industrial/commercial	1	1	0	2
Landfill - land clearing debris	1	3	1	5
Landfill - mixed solid waste	2	1	0	3
Composting	2	3	0	5
Waste Combustion	1	0	0	1

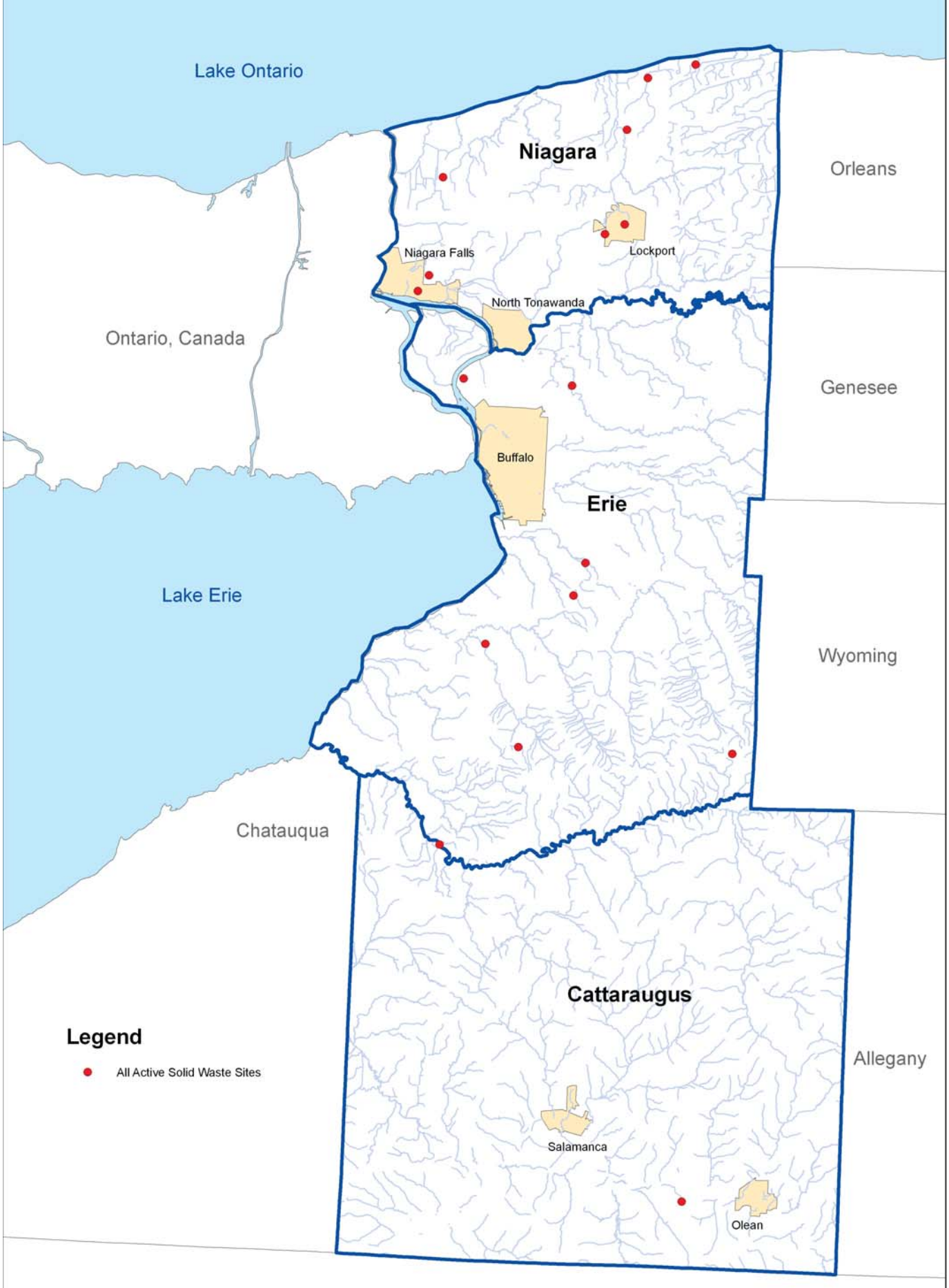
Source: NYS DEC Division of Solid and Hazardous Waste (2009)

Maps

1. All study area NYS DEC active solid waste facilities
2. All study area NYS DEC active solid waste facilities with facility type identified

Table 3-17: NYS DEC Solid Waste Program Site Locations: Active

County	Category	Site Name	Address	City
Niagara	Landfill - industrial/commercial	AES SOMERSET LANDFILL	7725 Lake Road	Somerset
Niagara	Landfill - mixed solid waste	ALLIED WASTE NF LANDFILL	56th Street & Niagara Falls Blvd	Niagara Falls
Niagara	Landfill - mixed solid waste	MODERN LANDFILL	Pletcher & Harold Roads	Lewiston
Niagara	Landfill - land clearing debris	NEWFANE COMPOSTING	1659 Phillips Road	Newfane
Niagara	Landfill - construction and demolition debris	NIAGARA CO REFUSE LANDFILL	Route 93 Bypass	Lockport
Niagara	Waste combustion - MSW WTE	COVANTA NIAGARA, LP	100 Energy Boulevard @ 56th St	Niagara Falls
Niagara	Composting	LOCKPORT (C)	1 Locks Plaza/Municipal Bldg	Lockport
Niagara	Composting	NEWFANE (T)	2896 Transit Rd	Newfane
Erie	Landfill - mixed solid waste	CHAFFEE LANDFILL	10860 Olean Road	Sardinia
Erie	Landfill - land clearing debris	JAMES SERVICES	3006 Hickox Road	Eden
Erie	Landfill - industrial/commercial	NRG HUNTLEY	Huntley Power LLC	Tonawanda
Erie	Landfill - land clearing debris	OP YARD WASTE COMPOST	Milestrip Road	Orchard Park
Erie	Landfill - land clearing debris	ZYLINSKI CLAY MINE	11005 Snyder Road	Concord
Erie	Composting	GOWANDA (V)	27 E Main St	Gowanda
Erie	Composting	AMHERST (T)	1100 North Forest Rd	Williamsville
Erie	Composting	ORCHARD PARK (T)	4925 South Buffalo Rd	Orchard Park
Cattaraugus	Landfill - land clearing debris	KINLEY SAND & GRAVEL	4468 Lower Birch Run Road	Allegany



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NYS DEC Solid Waste Program

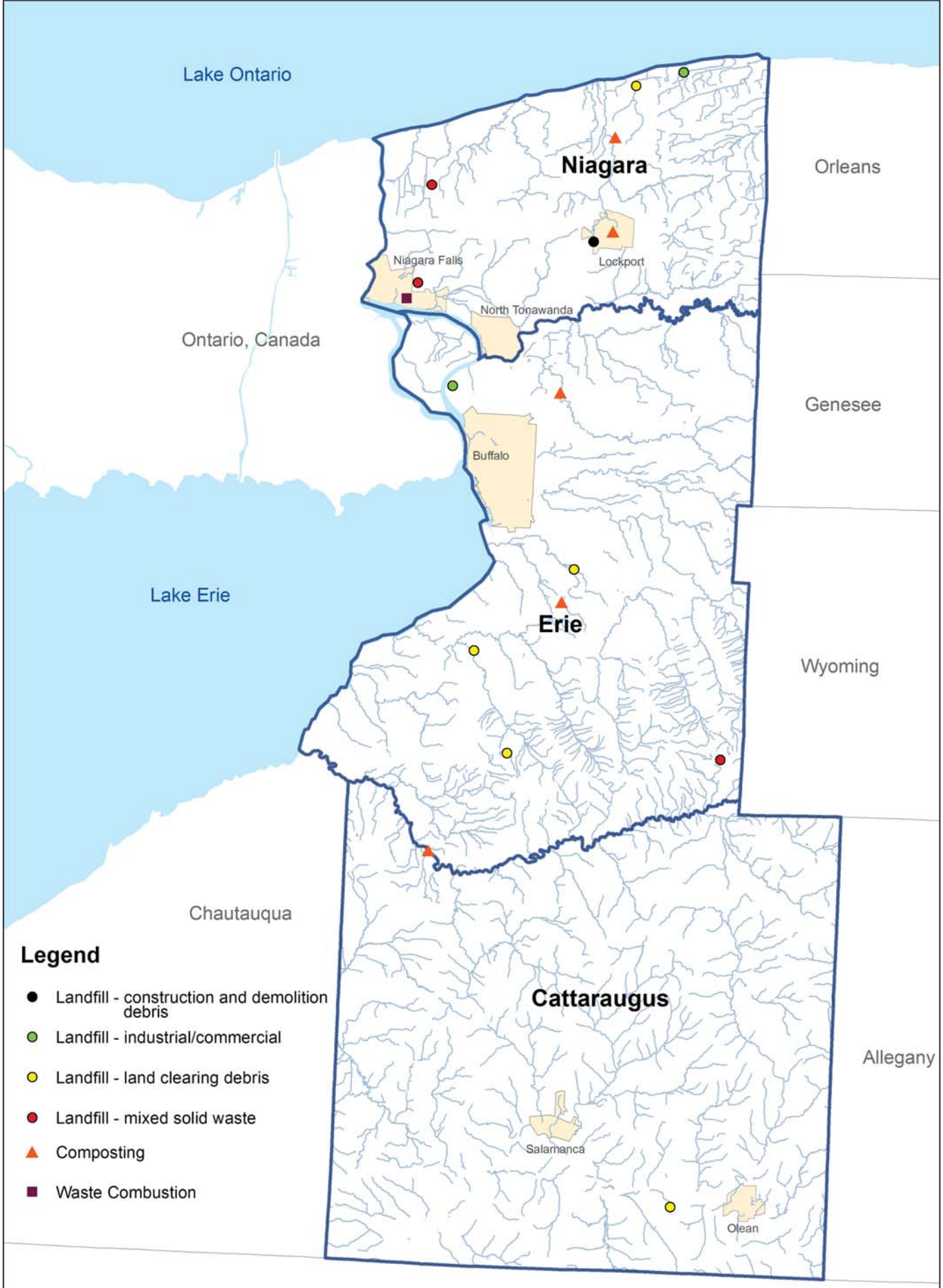
Active Facilities

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
SUNY at Buffalo
School of Architecture and Planning
June, 2010

Data Source: NYS DEC Division of Solid and Hazardous Waste (2009)



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NYS DEC Solid Waste Program

Active Facilities by Categories

Mapping Waste

0 4 8 16 24 32 Miles

Created by
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University at Buffalo, SUNY
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June, 2010

Data Source: NYS DEC Division of Solid and Hazardous Waste (2009)

3.6 Water Pollution

The three counties included in this report contain two major watersheds: The Great Lakes and the Mississippi Basins. All of these waters are under the jurisdiction of the federal Environmental Protection Agencies and the NYS Department of Environmental Conservation.

The Great Lakes watershed portion in Western New York has an additional layer of regulation and oversight because they are shared by Canada and are therefore international waters. The agreements on management of these waters was first established in the Boundary Waters Treaty of 1909 between the United States and Canada. This treaty has updated several times through the Great Lakes Water Quality Agreement initially signed in 1972, updated through amendments and protocols and currently under review as announced by Secretary of State Hiliary Clinton in 2009. The original treaty and agreements provide mechanisms for resolving disputes over any waters bordering the two countries, and established the International Joint Commission as an oversight body. The Commission has six members: three are appointed by the President of the United States, with the advice and approval of the Senate, and three are appointed by the Governor in Council of Canada, on the advice of the Prime Minister.

One of the primary responsibilities of the International Joint Commission is water quality and the control of pollution into the Great Lakes. All of the Niagara River Watersheds, Lake Erie and Lake Ontario watersheds in the three counties are under the international jurisdiction in addition to federal and state. Other areas of WNY, including parts of Erie and Cattaraugus Counties, are in the Mississippi River Basin and are regulated only by federal and NYS regulations.

3.6.1 International Joint Commission (IJC) Great Lakes Areas of Concern (AOC)[23]

What are Great Lakes Areas of Concern?

Great Lakes Areas of Concern (AOCs) are severely degraded geographic areas within the Great Lakes Basin. They are defined by the U.S.- Canada Great Lakes Water Quality Agreement (Annex 2 of the 1987 Protocol) as "geographic areas that fail to meet the general or specific objectives of the agreement where such failure has caused or is likely to cause impairment of beneficial use of the area's ability to support aquatic life." The U.S. and Canadian governments have identified 43 such areas; 26 in U.S. waters, 17 in Canadian water (five are shared between U.S. and Canada on connecting river systems).There are three AOCs in our study area: the Niagara River, the Buffalo River, and 18 Mile Creek in Niagara County.

What is the Enabling Legislation for the Program?

The Great Lakes Water Quality Agreement, as amended via the 1987 protocol, directs the two federal governments to cooperate with state and provincial governments to develop and implement Remedial Action Plans (RAPs) for each Area of Concern. Remedial Action Plans address impairments to any of the beneficial uses associated with these areas. Once these impairments are addressed, the AOC can be delisted. An impaired beneficial use means a change in the chemical, physical or biological integrity of the Great Lakes system sufficient to cause any of the following:

- restrictions on fish and wildlife consumption
- tainting of fish and wildlife flavor

- degradation of fish wildlife populations
- fish tumors or other deformities
- bird or animal deformities or reproduction problems
- degradation of benthos
- restrictions on dredging activities
- eutrophication or undesirable algae
- restrictions on drinking water consumption, or taste and odor problems
- beach closings
- degradation of aesthetics
- added costs to agriculture or industry
- degradation of phytoplankton and zooplankton populations
- loss of fish and wildlife habitat

Who Manages the Program?

The International Joint Commission administers the Great Lakes Areas of Concern program. The IJC assists governments in finding solutions to problems in waters shared between the US and Canada. The IJC works with federal and state agencies, as well as local organizations, to prepare RAPs for AOCs.

Western New York Study Area

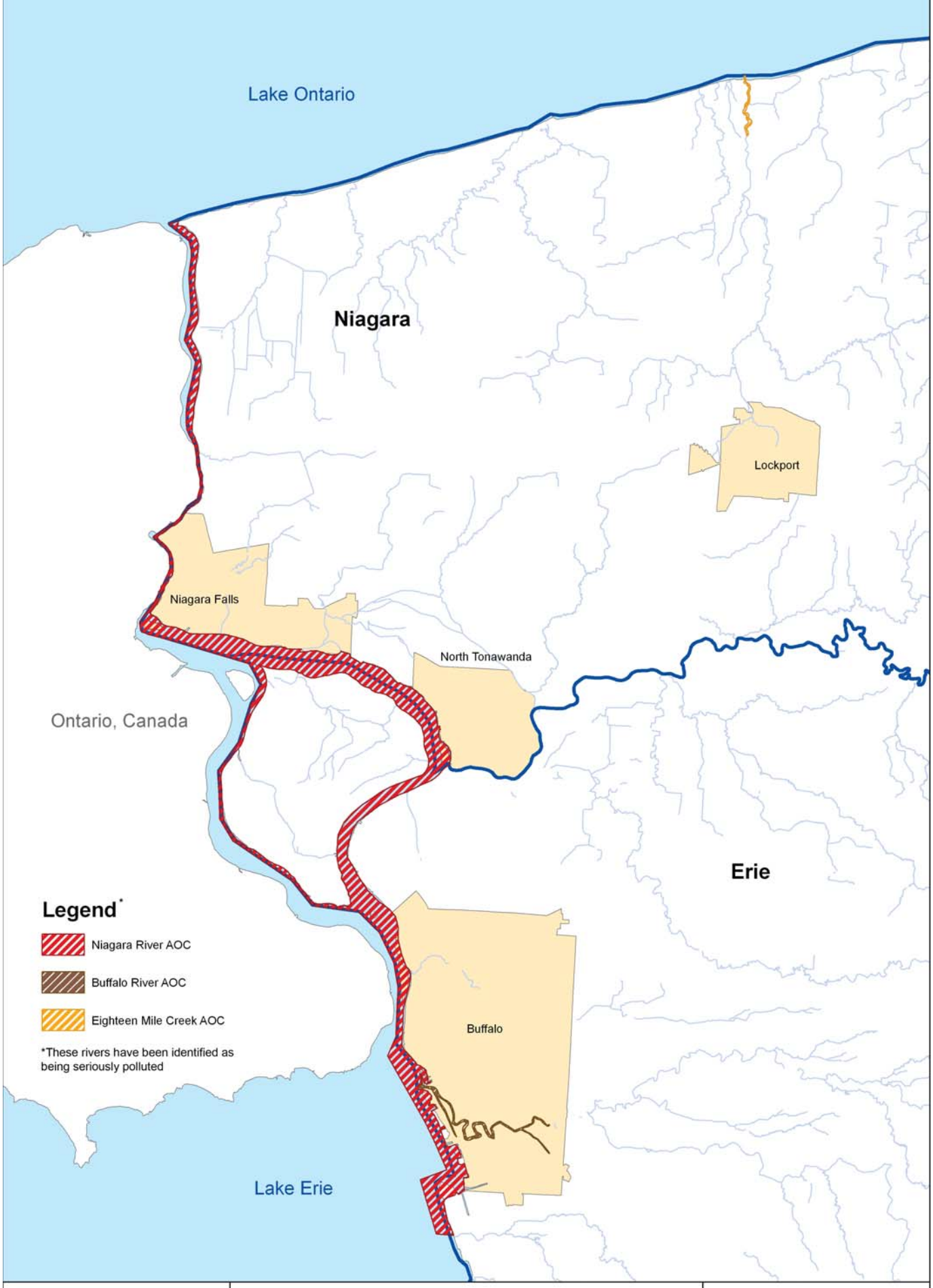
Of the 43 total Great Lakes Areas of Concern, the Western New York study area has three Areas of Concern; the Buffalo River AOC in Erie County, the Eighteen Mile Creek AOC in Niagara County, and the Niagara Rover AOC that extends Lake Erie to Lake Ontario through Erie and Niagara Counties.

Remedial Action Plans have been developed for each of the three Areas of Concern in our region, along with the Canadian Niagara River RAP. More information on the RAPs can be found at the following websites:

- Buffalo Niagara Riverkeeper - www.BNRiverkeeper.org
- NYS DEC - www.dec.ny.gov/lands/25562.html
- US EPA - www.epa.gov/glnpo/aoc/
- Niagara Peninsula Conservation Authority - www.npca.ca/water-management/nrap/default.htm

Maps

1. All study area Great Lakes Areas of Concern boundaries
2. Three Counties Watershed Boundaries



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International Joint Commission Areas of Concern

Mapping Waste

0 1.5 3 6 9 12 Miles

Created by
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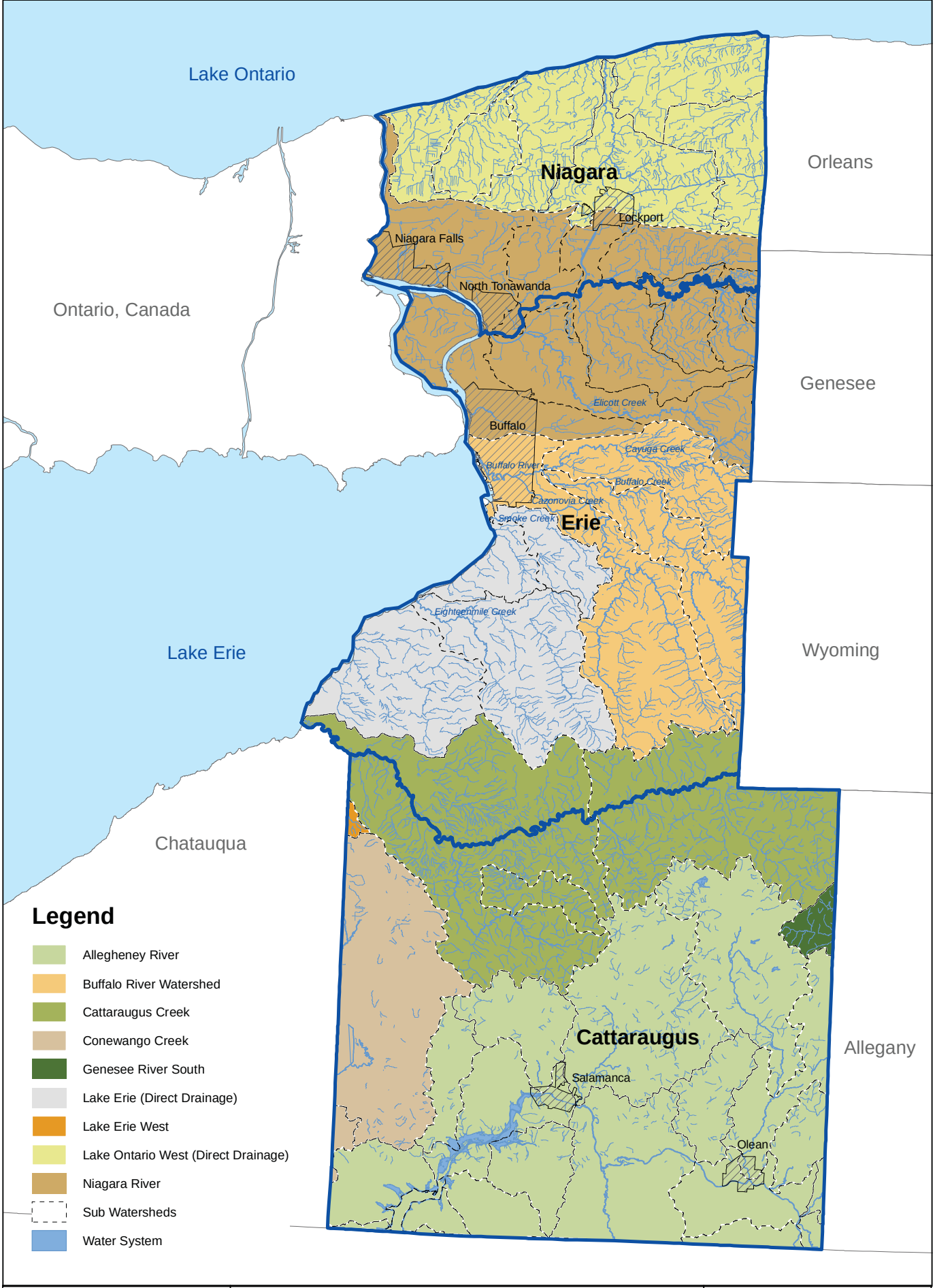
SUNY at Buffalo
School of Architecture and Planning
June, 2010

Data Source: US EPA Great lakes Areas of Concern (2005)



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Three counties Watersheds Boundaries

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
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June, 2010

Data Source: US DEC Environmental Site Remediation Database (1978-2010) & USGS (2010)

3.6.2 NYS Department of Environmental Conservation (NYS DEC) State Pollutant Discharge Elimination System (SPDES)[24]

What is a SPDES Permit? [State Pollutant Discharge Elimination System]

All facilities that discharge pollutants from any point source into waters of the United States are required to obtain a permit. The permit contains limits on what can be discharged, imposes monitoring and reporting requirements, and includes other provisions to ensure that the discharge does not adversely affect water quality. The NYS DEC charges permittee fees for each permit that range from $50 to $50,000, depending on the type of permit and the amount of wastewater discharged. Permits are rejected if they cannot meet the standards of the permit.

What is the Enabling Legislation for this Program?

The US EPA tracks surface water permits issued under the Clean Water Act through a program called the National Pollutant Discharge Elimination System (NPDES). The *EPA delegates the permitting authority for this program to state agencies* (unless permits are on Indian Reservations). Article 17 of the NYS Environmental Conservation Law (ECL) entitled "Water Pollution Control" authorized the creation of the SPDES program to maintain New York's waters with reasonable standards of purity. The SPDES program is broader in scope than that required by the Clean Water Act in that it controls point source discharges to groundwaters as well as surface waters.

Who Manages this Program?

The NYS DEC SPDES program has been approved by the US EPA for the control of wastewater and stormwater discharges in accordance with the Clean Water Act.

Figure 3-9: SPDES permits by NYS DEC

The NYS DEC issues permits for multiple environmental regulatory programs. Permits allow the NYS DEC to track sources of pollution, and limit the quality and amount of pollution discharged. Typically the permits are purchased from the NYS DEC by the permittee at predefined rates. An example of the rate structure for an SPDES permits is below:

Permit	Capacity	Fee (in U.S. $)
Individual Industrial SPDES Permit	Less than 10,000 gpd	600
	10,000 - 99,999 gpd	2,000
	100,000 - 499,999 gpd	6,000
	500,000 - 999,999 gpd	20,000
	1,000,000 - 9,999,999 gpd	30,000
	10,000,000 gpd or more	50,000

How does the NYS DEC categorize SPDES permits?

SPDES permits are categorized as either **general permits** that have predefined regulations that can be applied to any facility of a specified type (not required to treat waste water), or **individual permits** that are designed for specific facilities (required to treat waste water).

Individual Permits

- Industrial - Permits are issued for industrial uses that discharge wastewater.
- Municipal - Individual Municipal SPDES Permits are generally for wastewater treatment plants. These permits include regulations for Combined Sewer Overflows (CSOs). CSOs are sewers that are designed to collect rainwater runoff, domestic sewage, and industrial wastewater in the same pipe. During heavy rain events, CSOs overflow into water bodies before any treatment. The NY DEC used to include SSO regulations in Individual Municipal SPDES permits as well, but now considers them illegal and uses consent orders with municipalities remove them.
- Private / Commercial / Institutional – Permit are issued for other private uses, businesses, or institutions.
- Power Plant – Permits are issued for power plants that discharge wastewater.
- Ballast Discharges – Permits are issued to ships that release ballast into water bodies.

General Permits

- Multi Sector General Permit (MSGP) - Rather than addressing environmental concerns for a single facility as an individual permit does, the Multi-Sector General Permit includes conditions and requirements that are applicable to 31 categories of industrial activities.
- Construction – Construction sites are required to obtain an authorization permit and an annual fee.
- Private, Commercial or Institutional facilities (PCI to groundwater) – Private, commercial or institutional facilities that discharge wastewater directly into the groundwater are required to obtain a permit.
- Municipal Separate Storm Sewer Systems (MS4s) – These permits regulated stormwater systems in larger, more developed communities. A single permit is given to an entire municipality. Small rural municipalities, even those with some stormwater systems, are not issued SPDES permits for their stormwater. (Some MS4 permits are given to government agencies or other non-municipal entities without geographic boundaries, so are not shown on the maps or in the data).

- CAFOs (Concentrated Animal Feeding Operations) are Animal Feeding Operations that meet certain EPA criteria. These are agricultural operations "where animals are kept and raised in confined situations. AFOs congregate animals, feed, manure and urine, dead animals, and production operations on a small land area. Feed is brought to the animals rather than the animals grazing or otherwise seeking feed in pastures, fields, or on rangeland." (http://www.epa.gov/Region7/water/cafo/index.htm). CAFO's are regulated by scale of operation to ensure oversight for public health and safety issues. There are, however, many facilities with fewer animals that are not regulated at this time and these may or may not be discharging more water into the water systems than large operations.

An example of SPDES permit regulations is in the table describing the permitted sizes of CAFOs below.

Table 3-18: NYS DEC CAFO Definitions		
Type	**Large**	**Medium**
cattle or cow	1,000 or more	300 - 999
mature dairy cattle	700 or more	200 - 699
veal calves	1,000 or more	300 - 999
swine (weighing over 55 pounds)	2,500 or more	750 - 2,499
swine (weighing less than 55 pounds)	10,000 or more	3,000 - 9,999
horses	500 or more	150 - 499
laying hens or broilers (liquid manure handling systems)	30,000 or more	9,000 - 29,999
chickens other than laying hens (other than a liquid manure handling systems)	125,000 or more	37,500 - 124,999
laying hens (other than a liquid manure handling systems)	82,000 or more	25,000 - 81,999

Western New York Study Area

Of the 137 total study area Individual SPDES permits, 71 are Industrial, 57 are Municipal, 1 is Private/Commercial/Institutional, and 6 are for Power Plants. Of the 946 General SPDES permits, 133 are Multi Sector General Permits, 39 are CAFO, 554 are Construction, and 220 are PCI to groundwater.

Table 3-19: NYS DEC State Pollutant Discharge Elimination System (SPDES)				
	Niagara	**Erie**	**Cattaraugus**	**Total**
Total Individual NYS DEC SPDES Permits[1]	*41*	*67*	*28*	*135*
Industrial	27	32	12	71
Municipal	11	33	13	57
Private/Commercial/Institutional (PCI)	0	0	1	1
Power Plant	3	2	1	6
Total General NYS DEC SPDES Permits[2]	*139*	*628*	*179*	*946*
Multi-Sector General Permit (Effective 03-present) (MSGP)	17	99	17	133
CAFO	11	15	13	39
Construction	101	408	45	554
PCI (to groundwater)	10	106	104	220

Source: NYS DEC Division of Water (2010)

[1]The NYS DEC does not have any information on Ballast Discharge permits.

[2]MS4 permits are not included in these totals.

The table below shows the total number of CSO and SSO outfalls in the study area. Individual Municipal SPDES permits regulate CSO but not SSO since they are considered illegal. The data below represents outfalls, not permits, from 2005. Of the 145 total CSO outfalls in the study area, 89 are in Erie County, 54 are in Niagara County, and two are in Cattaraugus County. As of 2005, all 36 illegal SSOs were in Erie County.

Table 3-20: NYS DEC CSO and SSO Outfalls

	Niagara	Erie	Cattaraugus	Total
CSO	54	89	2	145
SSO	0	36	0	36

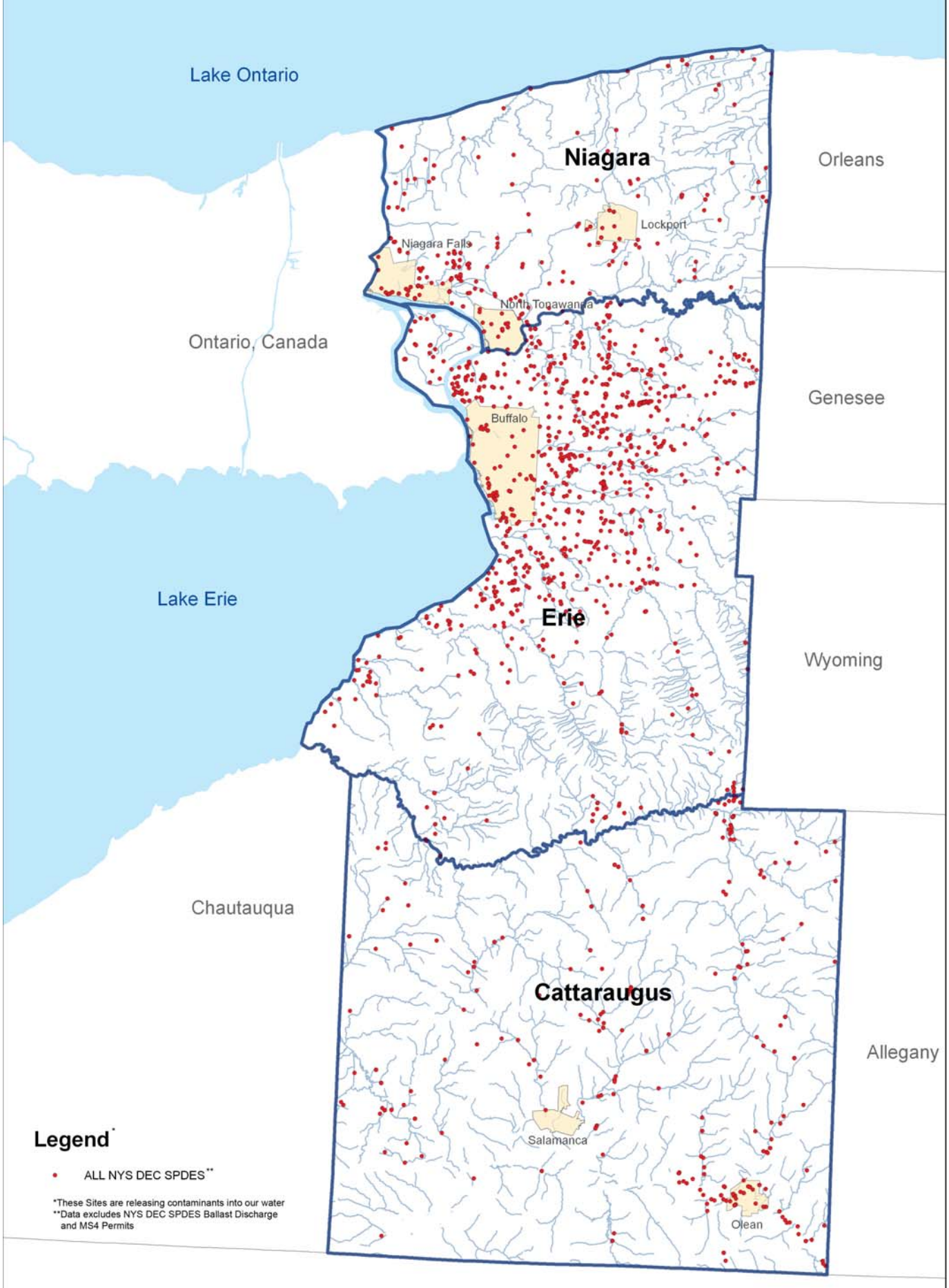
Source: NYS DEC Division of Water (2005)

.

Maps

1. All study area NYS DEC SPDES permit locations (excludes ballast discharge and MS4 permits)
2. All study area NYS DEC individual SPDES permit locations with permit type identified
3. All study area NYS DEC individual Industrial SPDES permit locations
4. All study area NYS DEC individual Municipal SPDES permit locations
5. All study area CSO / SSO outfall locations
6. All study area NYS DEC individual PCI SPDES permit locations
7. All study area NYS DEC general PCI (to groundwater) SPDES permit locations
8. All study area NYS DEC individual Power Plant SPDES permit locations
9. All study area NYS DEC general SPDES permit locations with permit type identified
10. All study area NYS DEC general MSGP SPDES permit locations
11. All study area NYS DEC general CAFO SPDES permit locations with permit type identified (two maps)
12. All study area NYS DEC general Construction SPDES permit locations

Data on all NYS DEC SPDES Sites within the Study Area can be found in the Mapping Database Digital Appendix



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NYS DEC State Pollutant Discharge Elimination System (SPDES)

Mapping Waste

0 4 8 16 24 32 Miles

Created by
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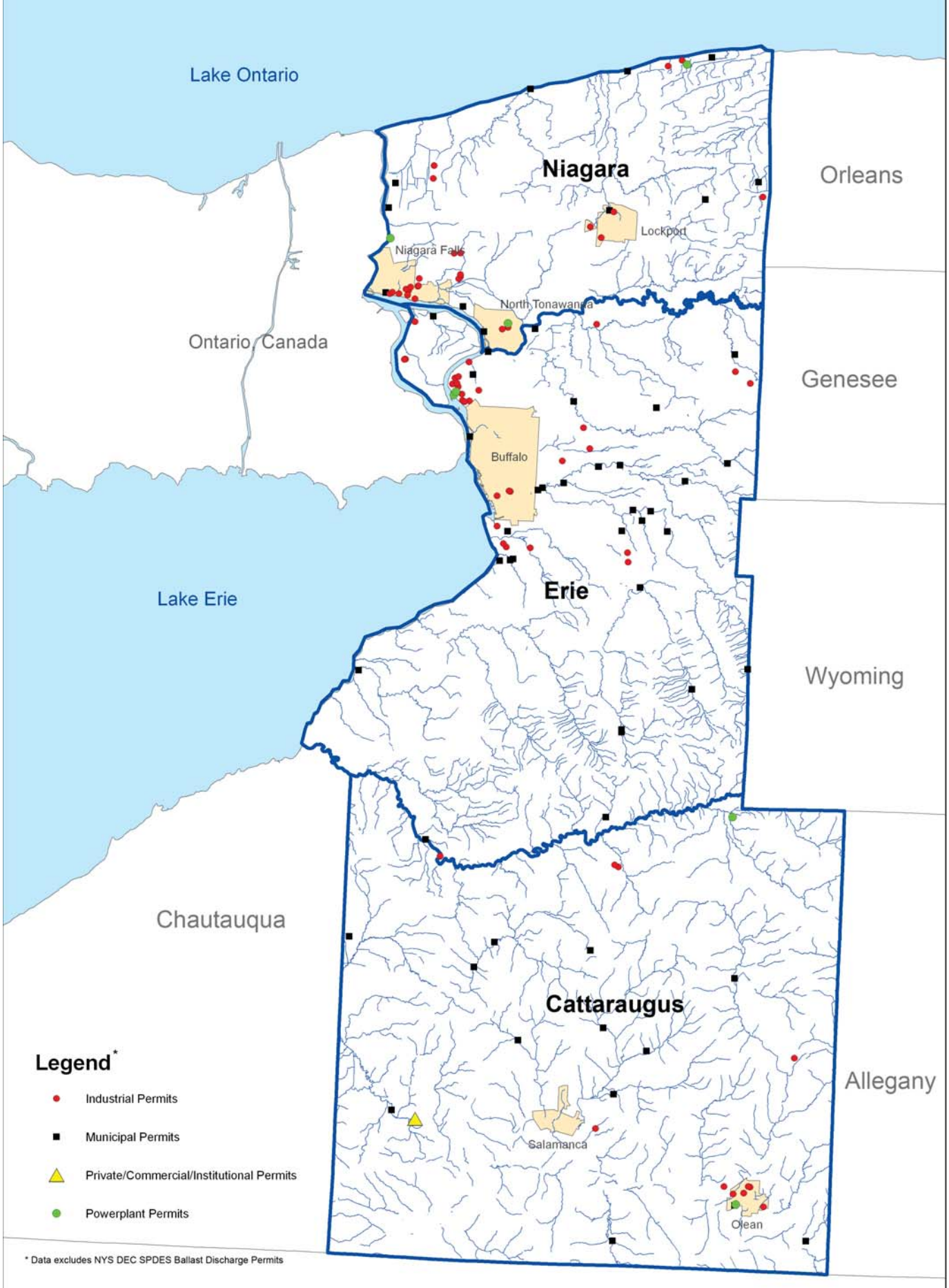
SUNY at Buffalo
School of Architecture and Planning
June, 2010

Data Source: NYS DEC Division of Water (2010)



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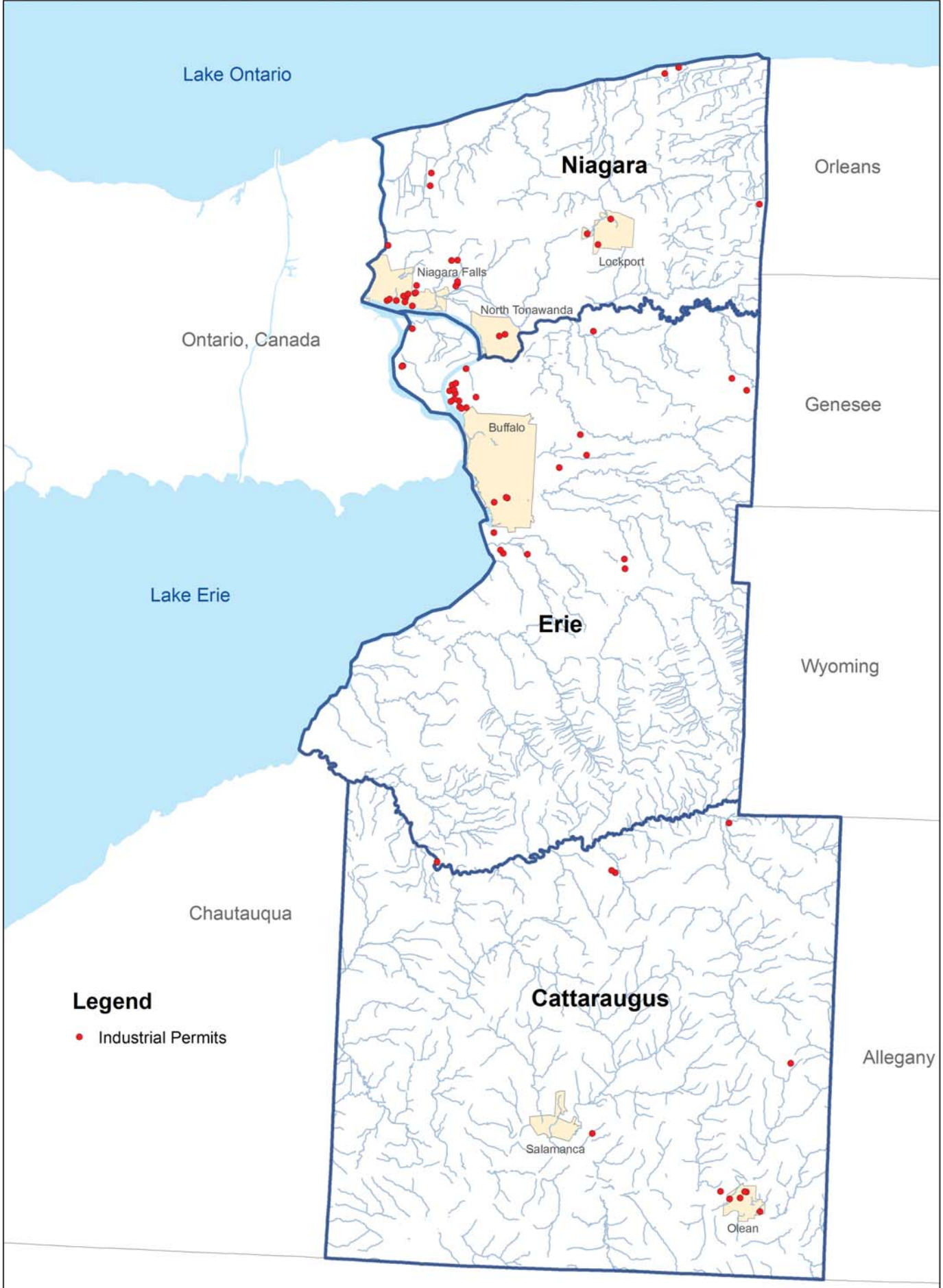
NYS DEC SPDES
Individual Permits
Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
SUNY at Buffalo
School of Architecture and Planning
June, 2010

Data Source: NYS DEC Division of Water (2010)



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NYS DEC SPDES Individual Permits

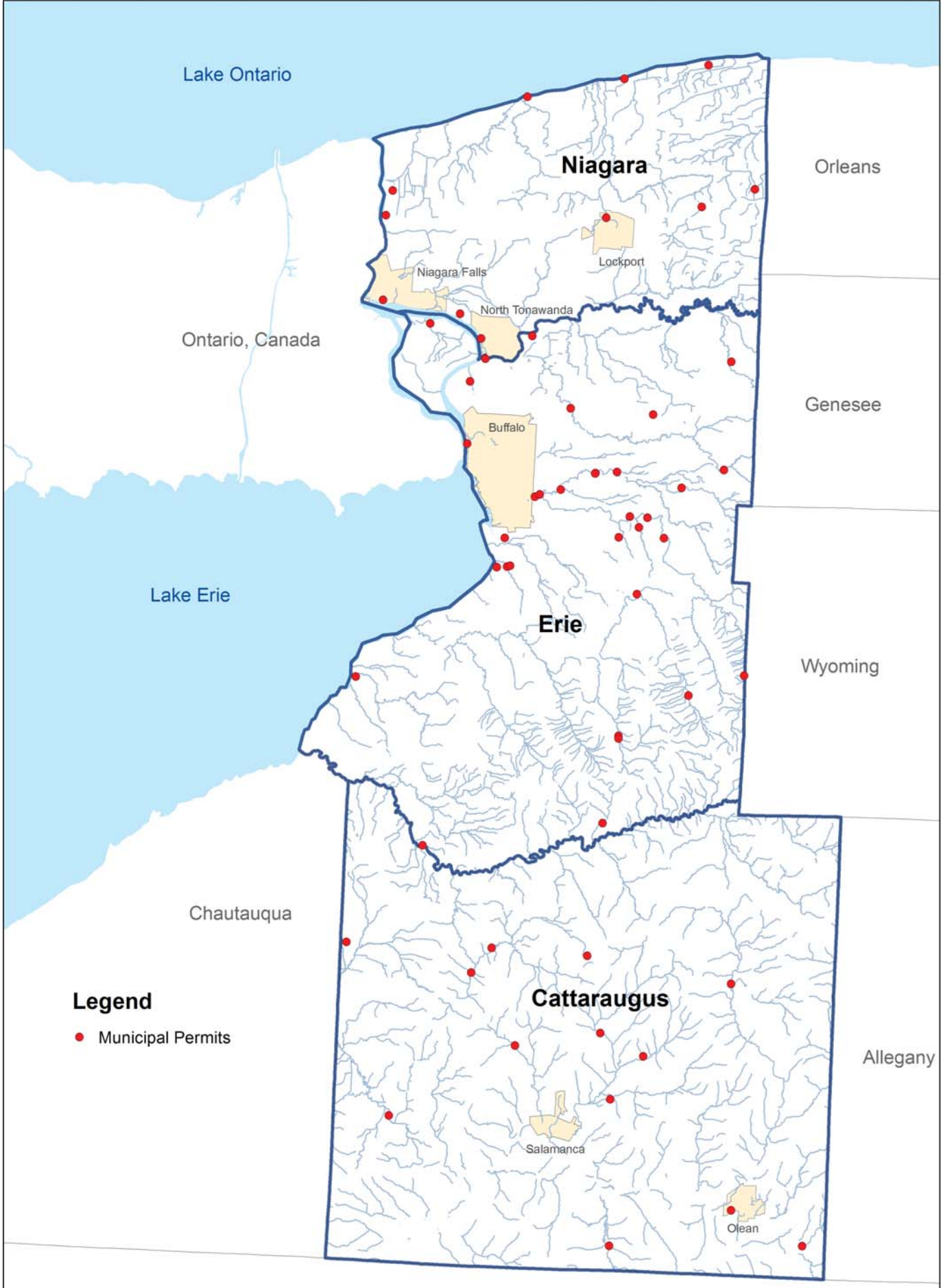
Industrial Permits

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
June, 2010

Data Source: NYS DEC Division of Water (2010)



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NYS DEC SPDES Individual Permits

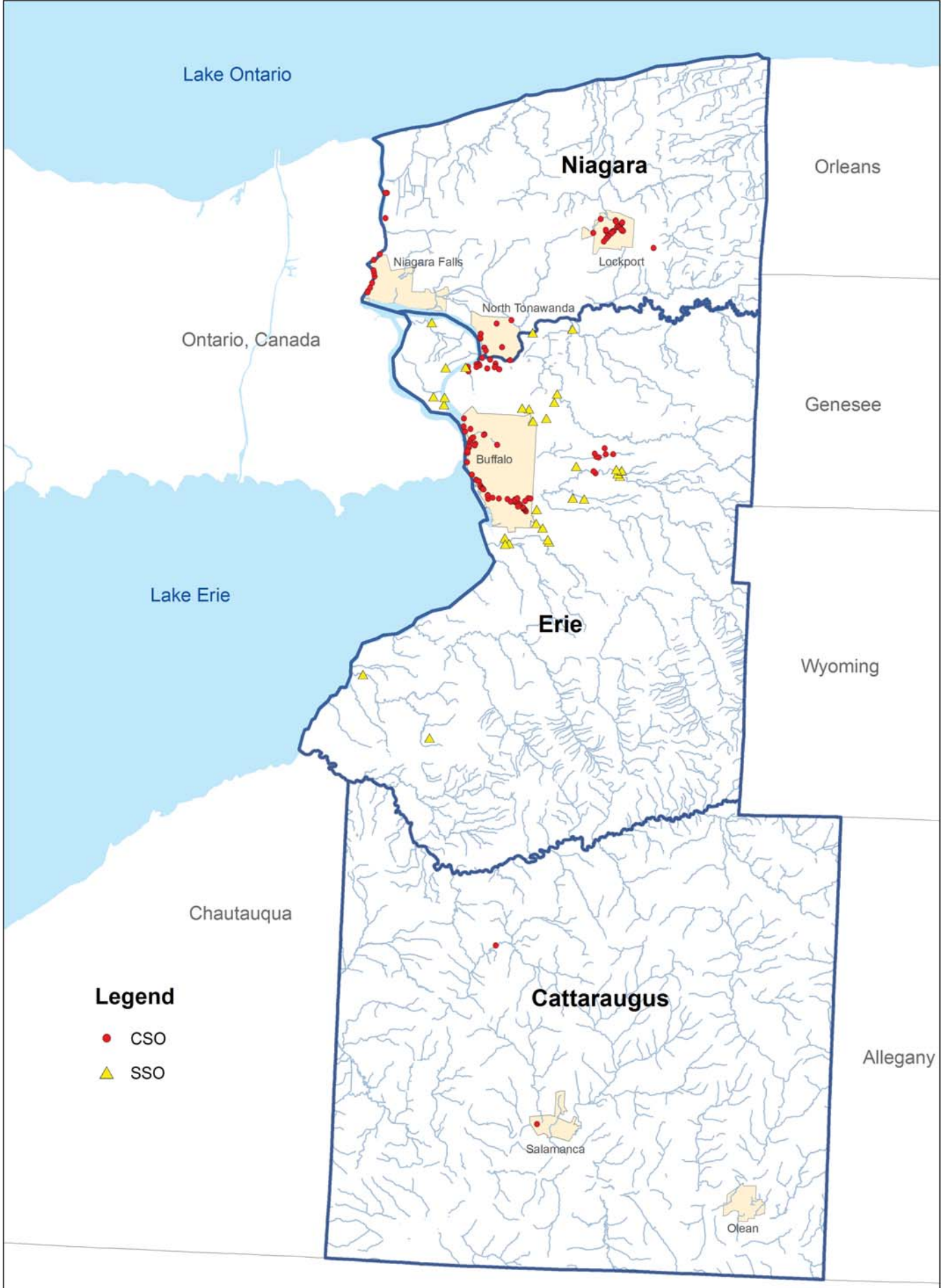
Municipal Permits

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
June, 2010

Data Source: NYS DEC Division of Water (2010)



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Combined Sewer Overflows (CSO) and Sanitary Sewer Overflows (SSO)

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
June, 2010

Data Source: NYS DEC Division of Water (2005)

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NYS DEC SPDES Individual Permits

Private / Commercial / Institutional Permits

Mapping Waste

0 4 8 16 24 32 Miles

Created by
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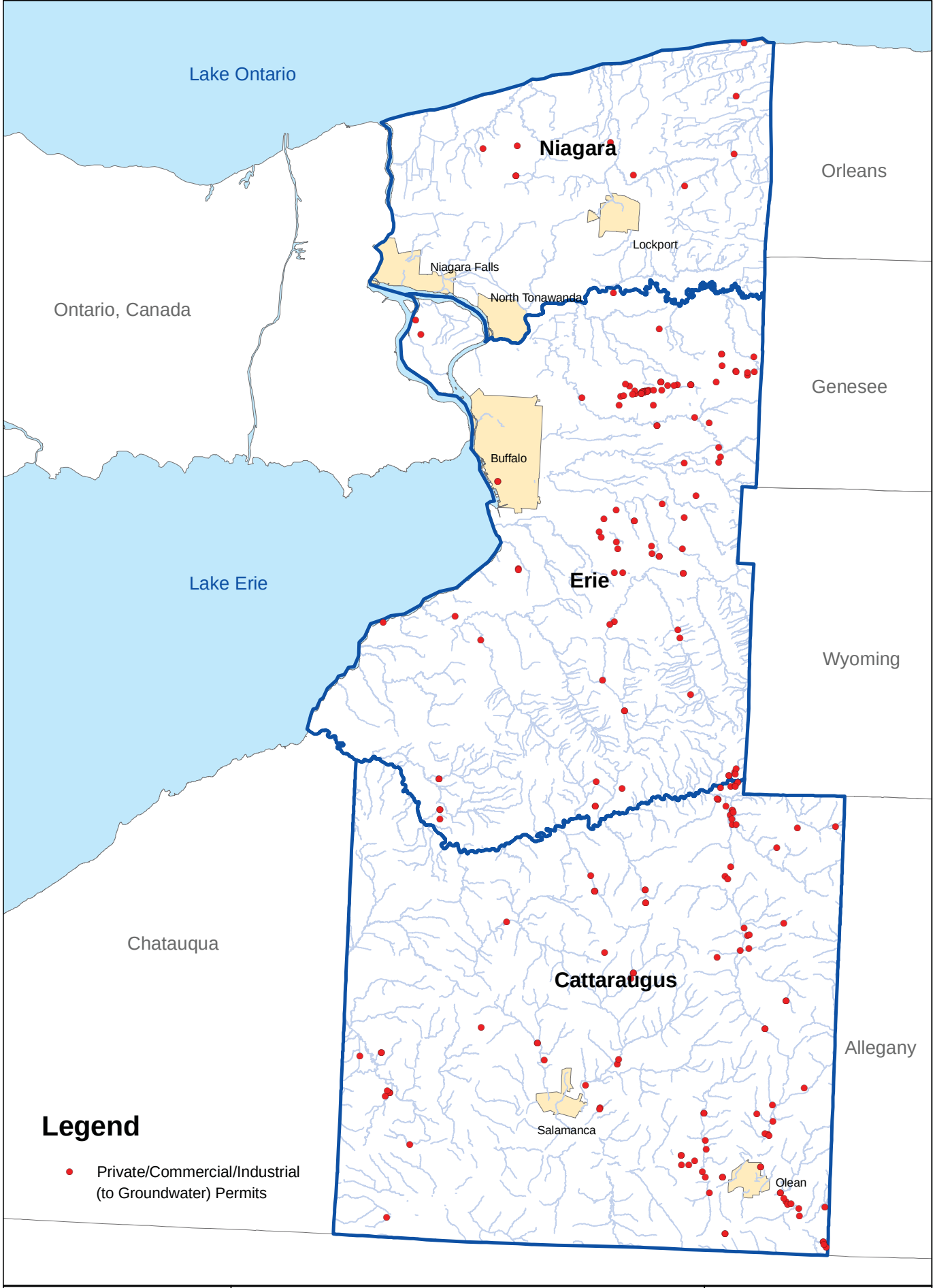
University at Buffalo, SUNY
School of Architecture and Planning
June, 2010

Data Source: NYS DEC Division of Water (2010)



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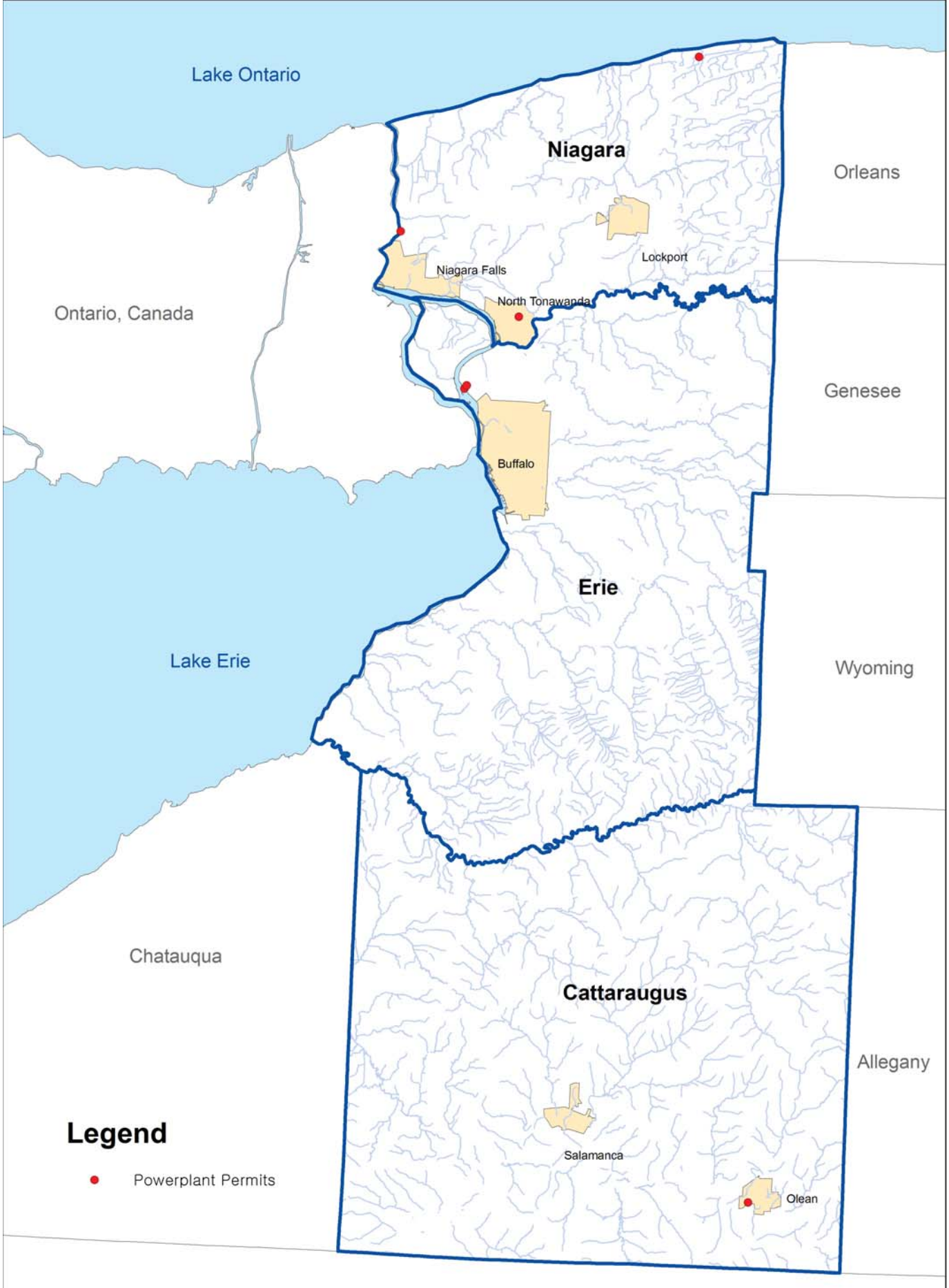
NYS DEC SPDES General Permits
PCI (to Groundwater) Permits

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
June, 2010

Data Source: NYS DEC Division of Water (2010)



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NYS DEC SPDES Individual Permits

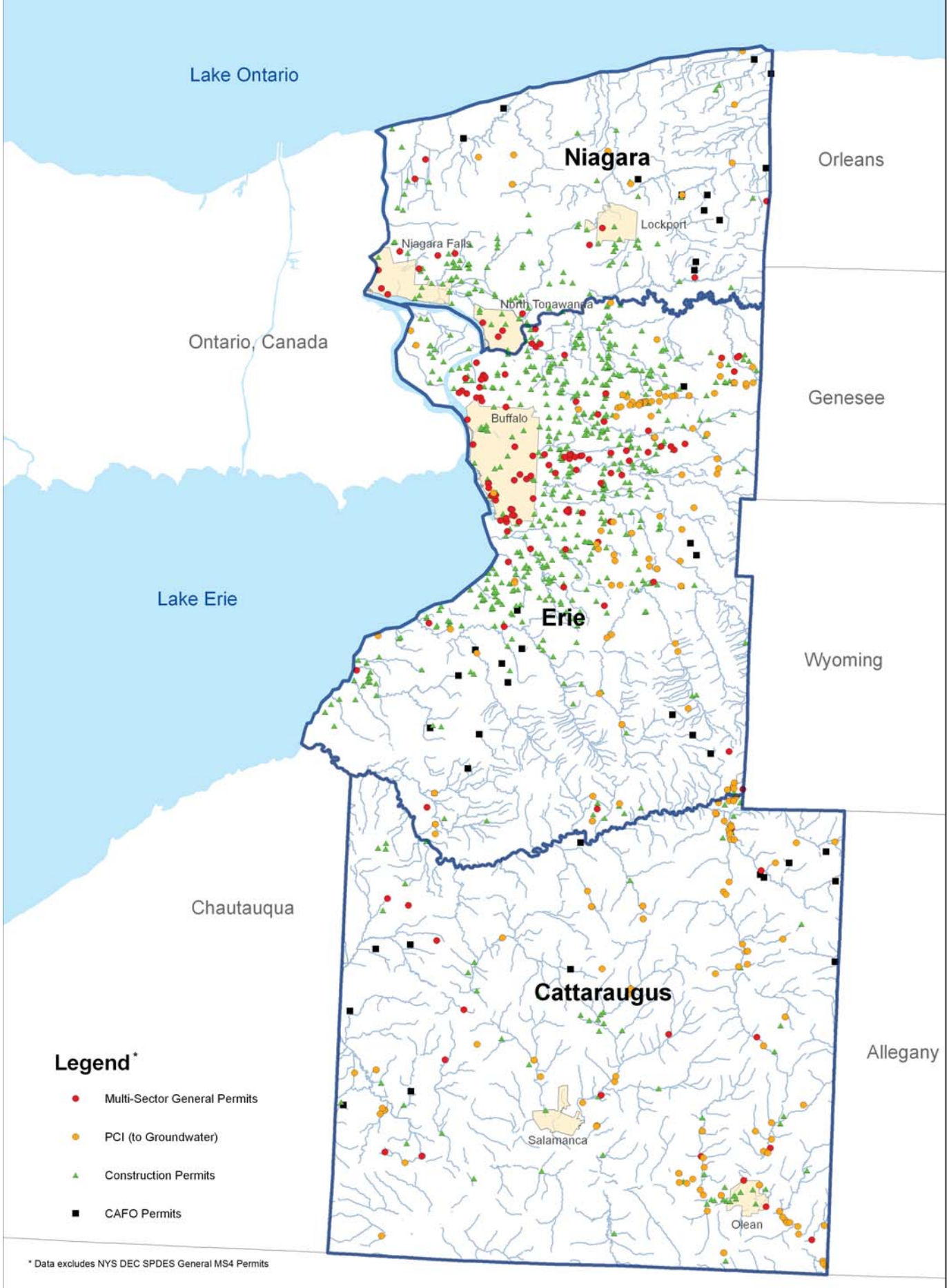
Powerplant Permits

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
June, 2010

Data Source: NYS DEC Division of Water (2010)



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NYS DEC SPDES
General Permits
Mapping Waste

0 4 8 16 24 32 Miles

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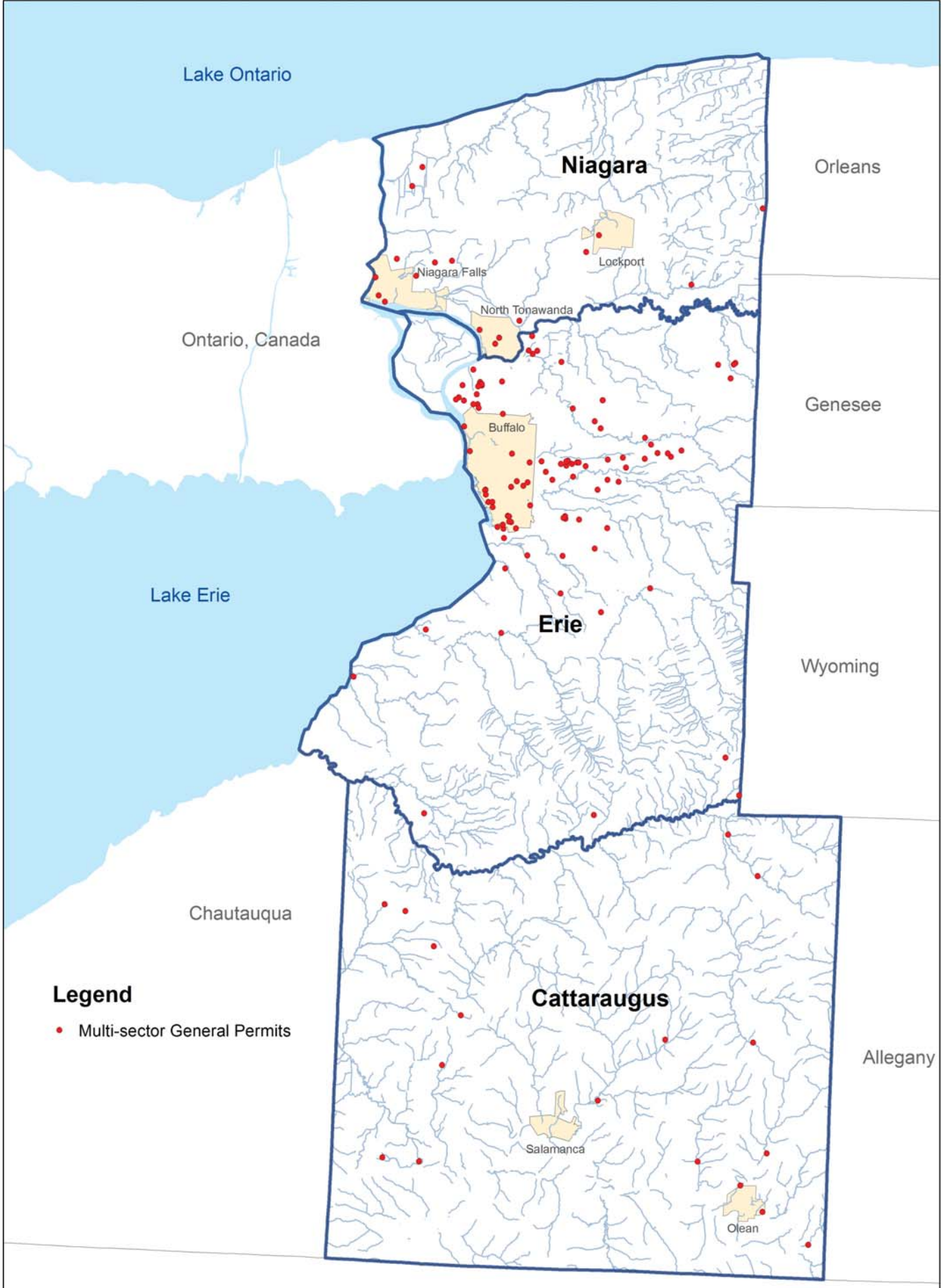
School of Architecture and Planning
June, 2010

Data Source: NYS DEC Division of Water (2010)



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NYS DEC SPDES General Permits

Multi-sector General Permits

Mapping Waste

0 4 8 16 24 32 Miles

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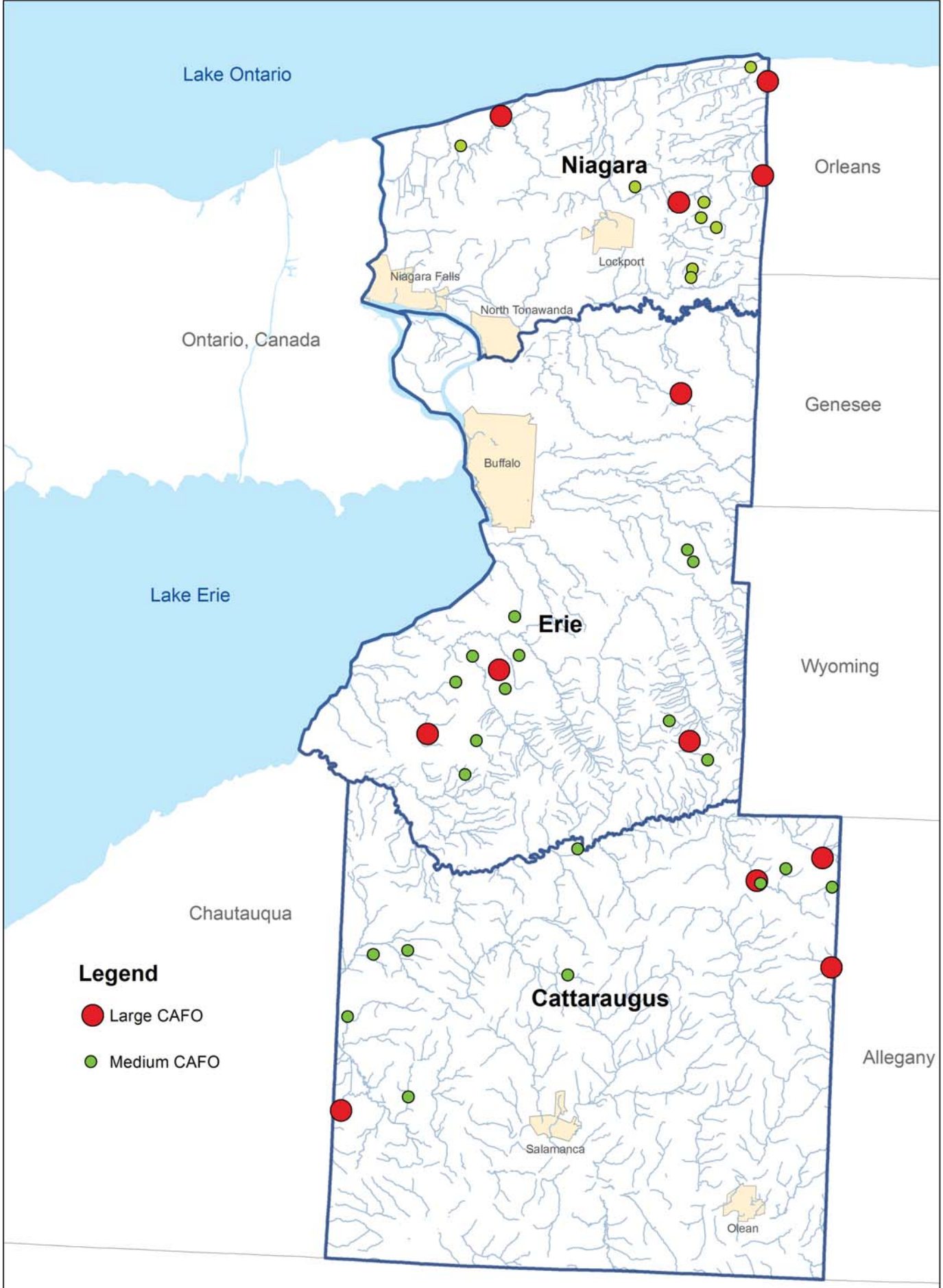
University at Buffalo, SUNY
School of Architecture and Planning
June, 2010

Data Source: NYS DEC Division of Water (2010)



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NYS DEC SPDES General Permits

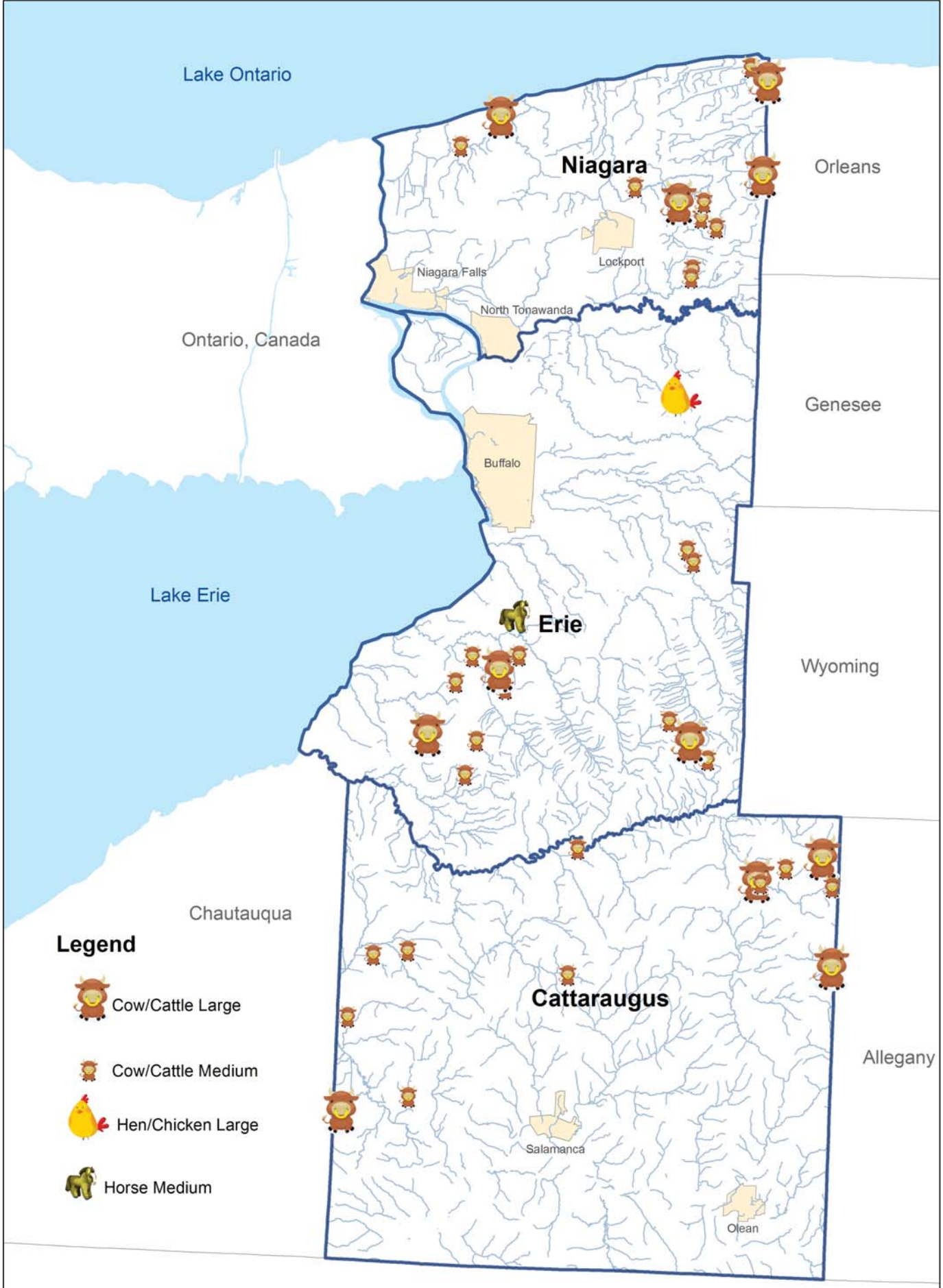
Concentrated Animal Feeding Operation (CAF) by Size

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
June, 2010

Data Source: NYS DEC Division of Water (2010)



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NYS DEC SPDES General Permits

Concentrated Animal Feeding Operation (CAF) by Anymal Type

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
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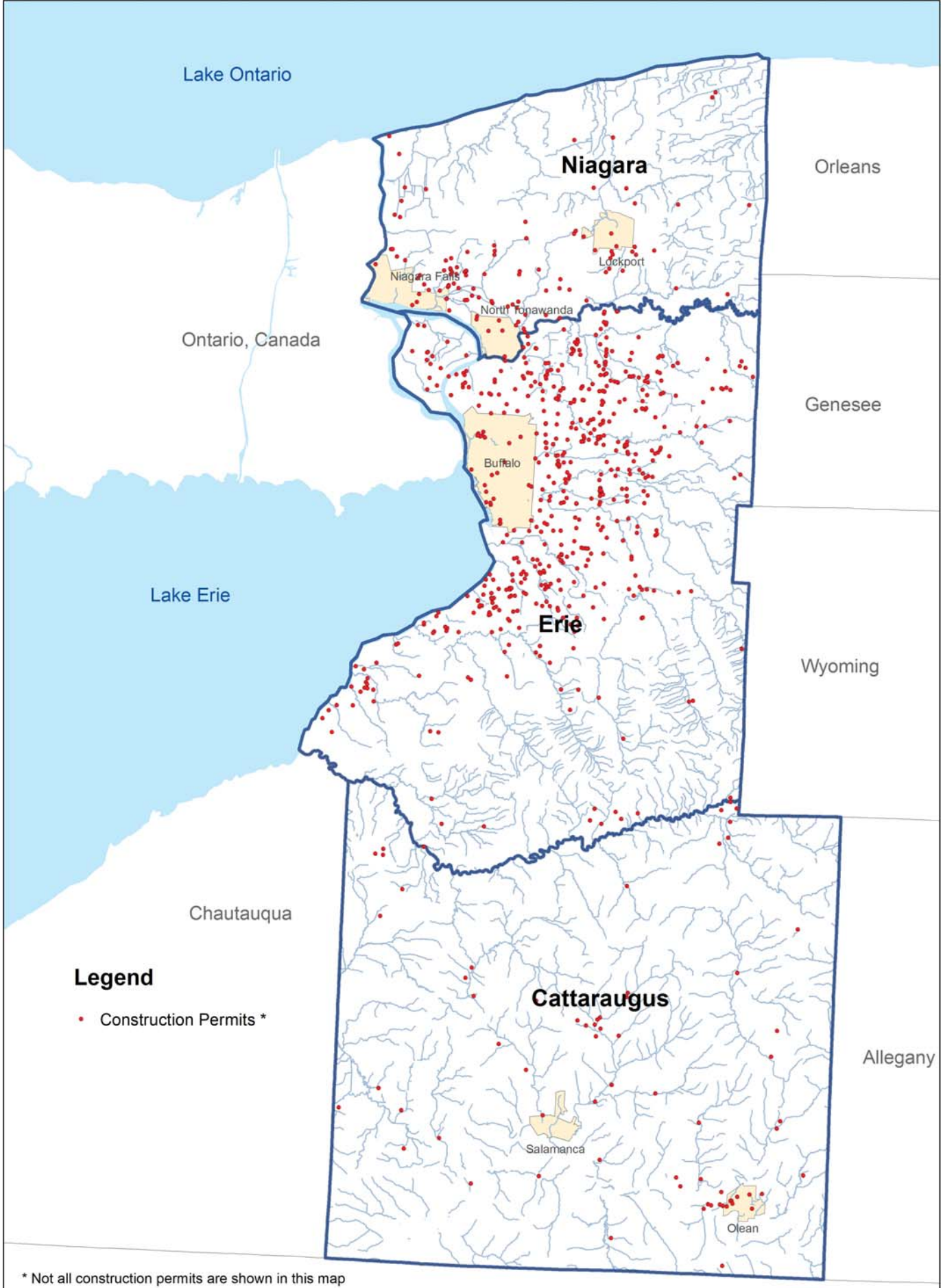
June, 2010

Data Source: NYS DEC Division of Water (2010)



* Not all construction permits are shown in this map

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NYS DEC SPDES General Permits

Construction Permits

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
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June, 2010

Data Source: NYS DEC Division of Water (2003-2010)

3.7 Air Pollution

3.7. 1 NYS Department of Environmental Conservation (NYS DEC) Air Emission Inventory System (AIRS) [25]

What is the Air Facility System?

The National Emission Inventory System (AIRS) has replaced the NYS DEC Air Facility System (AFS) [Division of Air Resources] as the system to track air emissions data, to process air applications and permits, and to facilitate compliance and enforcement activities associated with air quality requirements. New York's air permitting program identifies and controls sources of air pollution. Air sources range in size from large industrial facilities and power plants to small commercial operations, such as dry cleaners.

What is the Enabling Legislation for this Program?

The air permitting program is required by the Clean Air Act and under New York State law and regulation, most notably 6 NYCRR Part 201.

Who Manages the Program?

The US EPA delegates responsibility for this program to the NYS DEC who issues permits in New York State. The program is administered by NYS DEC's Division of Air Resources (DAR). The US EPA has a database of Air Facility System (AFS) data, now the Air Emission Inventory (AIRS), that contains compliance and permit data for stationary sources regulated by EPA, state and local air pollution agencies. <http://www.epa.gov/oecaerth/data/systems/air/afssystem.html>

How does the NYS DEC categorize AIRS permits?

The two most common types of permit for air contamination sources are State Facility Permits and Title V (major) permits. [Both Tonawanda Coke and Modern Landfill have a Tile V Permit.]

State Facility Permits

State facility permits are issued to facilities that are not considered to be *major* (as defined in the department's regulations), but that meet the criteria of Subpart 201-5. These are generally large facilities with the following characteristics:

- Their actual emissions exceed 50 percent of the level that would make them major, but their potential to emit as defined in 6NYCRR Part 200 does not place them in the major category
- They require the use of permit conditions to limit emissions below thresholds that would make them subject to certain state or federal requirements
- They have been granted variances under specific sectors/allowances in the department's air regulations.
- They are new facilities that are subject to New Source Performance Standards (NSPS) or that emit hazardous air pollutants.

Title V Permits – "Major"

Title V facility permits, the second type of permit, are issued to facilities subject to Subpart 201-6. These include facilities that are judged to be *major* under the department's regulations, or that are subject to New Source Performance Standards (NSPSs), a standard or other requirements regulating hazardous air pollutants or to federal acid rain program requirements. Title V permits reduce violations of air pollution laws and improve enforcement of those laws by:

- Recording in one document all of the air pollution control requirements that apply to the source. This gives members of the public, regulators, and the source a clear picture of what the facility is required to do to keep its air pollution under the legal limits.
- Requiring the source to make regular reports on how it is tracking its emissions of pollution and the controls it is using to limit its emissions. These reports are public information, and you can get them from the permitting authority.
- Adding monitoring, testing, or record keeping requirements, where needed to assure that the source complies with its emission limits or other pollution control requirements.
- Requiring the source to certify each year whether or not it has met the air pollution requirements in its title V permit. These certifications are public information.
- Making the terms of the title V permit federally enforceable. This means that EPA **and the public** can enforce the terms of the permit, along with the State.

Western New York Study Area

The Western New York study area has 200 NYS DEC AIRS permits. Most of these permits are in Erie (110) and Niagara (72) Counties, while 18 are in Cattaraugus County. Three quarters of the AIRS permits are considered non-major and are given State Facility Permits (149 permits), while one quarter are considered major and are given Title V Permits (51 permits).

Table 3-21: NYS DEC Air Emission Inventory System

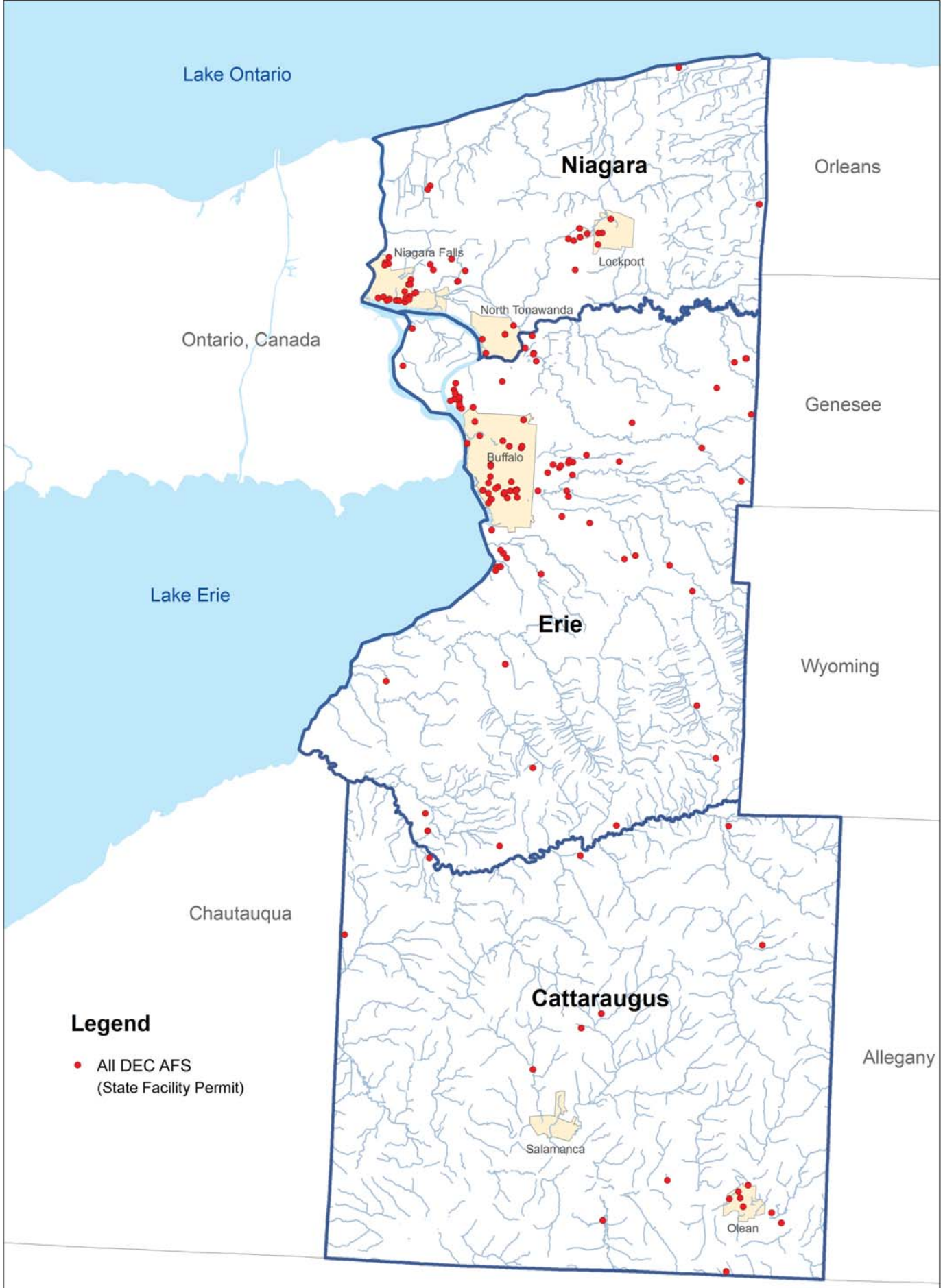
	Niagara	Erie	Cattaraugus	Total
Total NYS DEC AIRS	*72*	*110*	*18*	*200*
State Facility Permit	53	80	16	149
Title V Facility Permit	19	30	2	51

Source: NYS DEC Division of Air Resources (2010)

Maps

1. All study area NYS DEC AIRS locations
2. All study area NYS DEC AIRS locations with permit type identified

Data on all NYS DEC Air Emission Inventory System Sites within the Study Area can be found in the Mapping Database Digital Appendix



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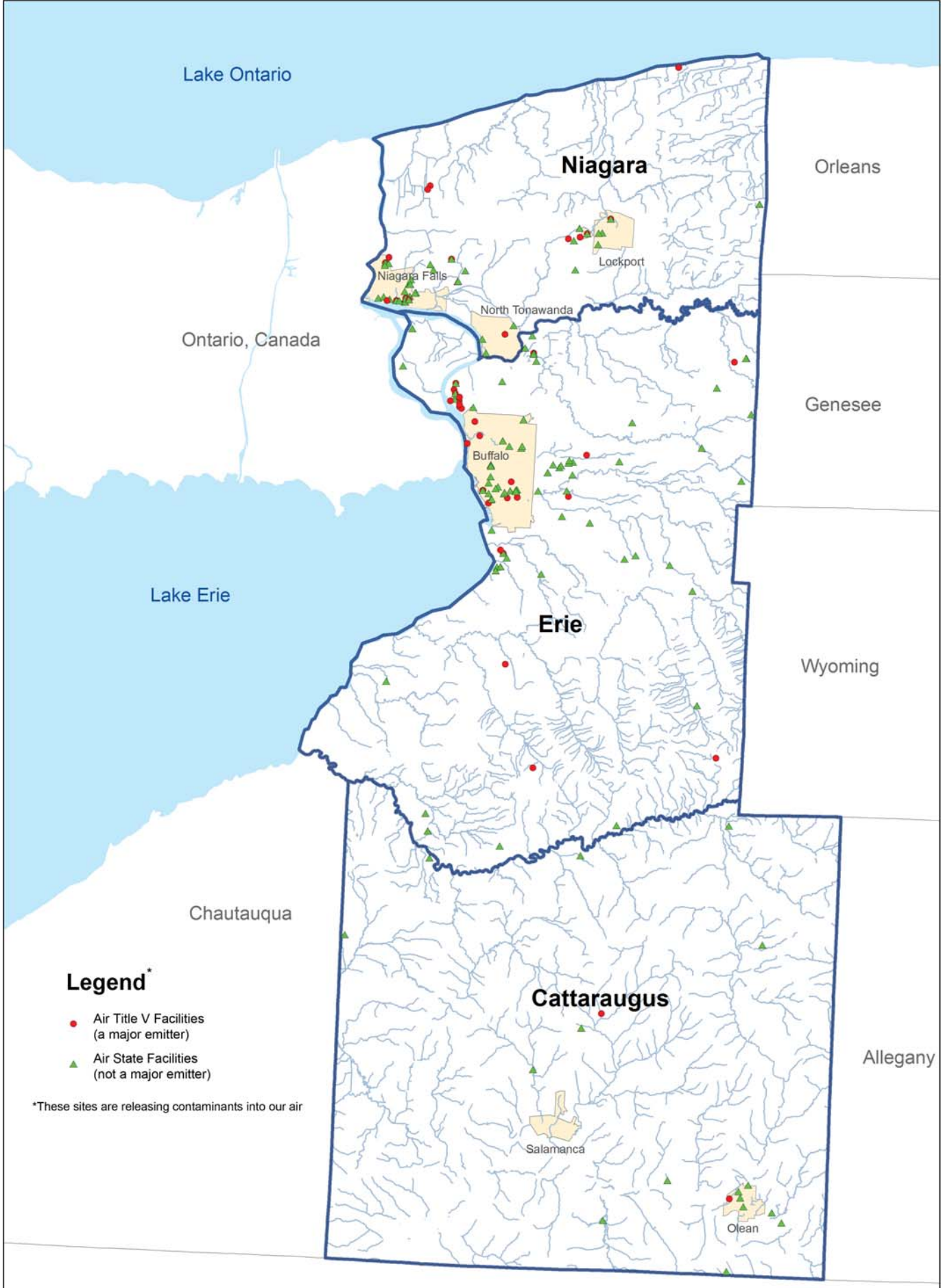
NYS DEC Air Emission Inventory System (AIRS)

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
June, 2010

Data Source: NYS DEC Division of Air Resources (2010)



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NYS DEC Air Emission Inventory System (AIRS) by Emitters

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
June, 2010

Data Source: NYS DEC Division of Air Resources (2010)

3.8 Resource Extraction

3.8.1 NYS Department of Environmental Conservation (NYS DEC) Mined Land Reclamation Program[26]

What is the Mined Land Reclamation Program?

A Mined Land Reclamation permit is an approval to conduct regulated activities at a specific mining site. A Mined-Land Reclamation permit is required for all excavations and related activities defined as mining and applies to all excavations from which greater than 1,000 tons or greater than 750 cubic yards, whichever is less, of mineral(s) are removed, or are proposed to be removed, during 12 successive months. Certain extraction of minerals in aid of construction projects or agricultural activities may be exempt from the permitting requirements of the Mined Land Reclamation Law.

What is the Enabling Legislation for this Program?

The NYS Legislature enacted Article 23, Title 27 of the Environmental Conservation Law (ECL) of New York State to achieve the policies of the State which are to ensure the environmentally sound, economic development of New York's mineral resources and the return of affected land to productive use for current and future generations.

Who Manages this Program?

Regulations (6NYCRR Parts 420-425) and a permitting program designed to achieve these goals have been established by the NYS DEC.

How does the NYS DEC categorize Mined Land Reclamation site permits?

The permit types include:

- Active – a permit is issued for currently mined land.
- Reclaimed – the mine is closed and reclaimed, or determined environmentally stable for another use.
- Expired; not reclaimed – an active permit has expired and the mine has not been reclaimed; most will be renewing the permit rather than closing the mine but have submitted paperwork late.
- Pending; permit not issued – permit application is under review.
- Temporary code for other mines.

Western New York Study Area

The Western New York study area has 270 permits in the NYS DEC Mined Land Reclamation Program. Most of these permits are in Cattaraugus (130) and Erie (100) Counties, while 40 are in Niagara County. Approximately the same number of permits are active (134) as reclaimed (129). The majority (206 of 270, or 76%) of the permits are for sand / gravel mines.

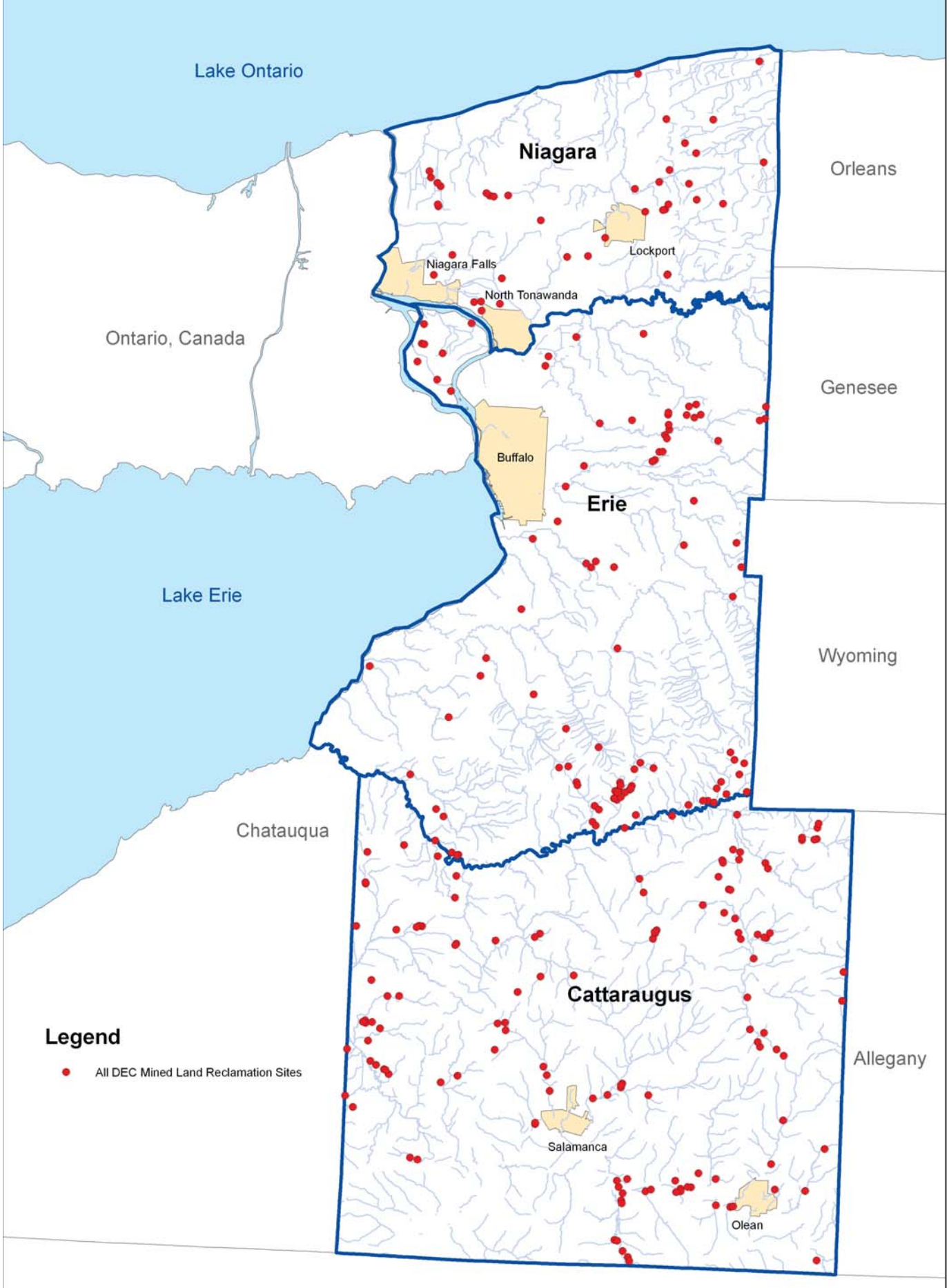
Table 3-22: NYS DEC Mined Land Reclamation Program				
	Niagara	**Erie**	**Cattaraugus**	**Total**
Total NYS DEC Mined Land Reclamation Program	*40*	*100*	*130*	*270*
Active	13	52	69	134
Reclaimed	23	47	59	129
Expired; not reclaimed	2	1	0	3
Pending; permit not issued	1	0	2	3
temporary code for other mines	1	0	0	1

Source: NYS DEC Division of Mineral Resources (2010)

Maps

1. All study area NYS DEC Mined Land Reclamation sites
2. All study area NYS DEC Mined Land Reclamation sites with categories identified

Data on all NYS DEC Mined Land Reclamation Program Sites within the Study Area can be found in the Mapping Database Digital Appendix



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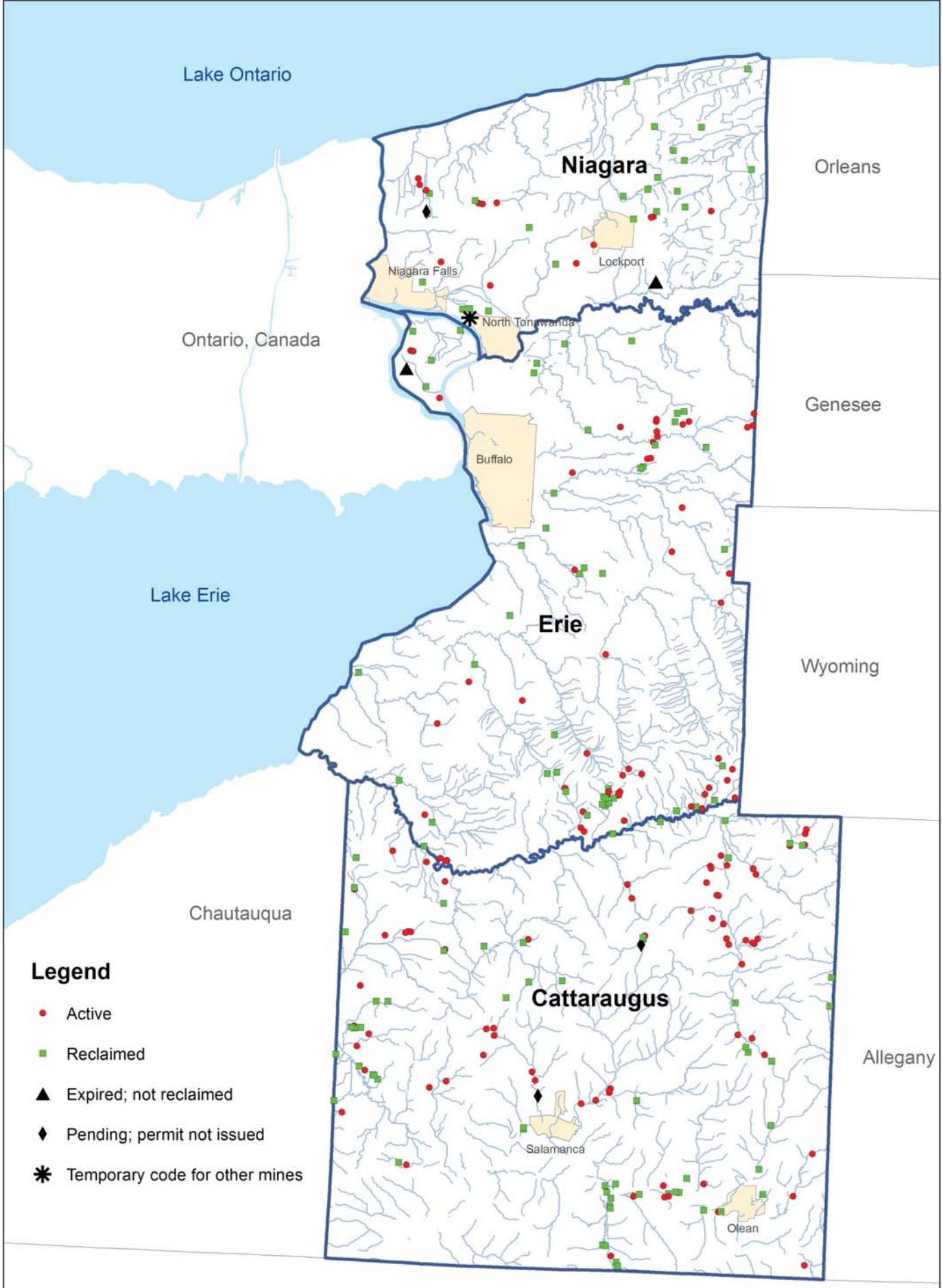
NYS DEC Mined Land Reclamation Program

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
SUNY at Buffalo
School of Architecture and Planning
June, 2010

Data Source: NYS DEC Division of Mineral Resources (2010)



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NYS DEC Mined Land Reclamation Program by Categories

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
June, 2010

Data Source: NYS DEC Division of Mineral Resources (2010)

3.8.2 NYS Department of Environmental Conservation (NYS DEC) Oil, Gas and Other Regulated Wells Program[27]

What is the Oil, Gas, and Other Regulated Wells Program?

The program mitigates, to the greatest extent possible, any potential environmental impact of drilling and well operations. The program is also known as the Oil, Gas, and Solution Mining Program.

What is the Enabling Legislation for this Program?

The oil, gas and solution mining law, Article 23 of the Environmental Conservation Law, gives the NYS DEC the authority to administer this program.

Who manages the program?

The NYS DEC's Division of Mineral Resources administers regulations for this permitting program.

How does the NYS DEC categorize wells within the program?

The law and the corresponding rules and regulations apply to the following well types:

- all oil wells, regardless of depth
- all gas wells, regardless of depth
- all storage wells, regardless of depth, associated with underground storage in caverns or reservoirs of gas, liquefied petroleum gas, oil, petroleum products and petroleum byproducts.

Other wells:

- all solution salt mining wells, regardless of depth
- stratigraphic wells deeper than 500 feet
- geothermal wells
- brine disposal wells deeper than 500 feet

The database of wells in this study includes both active wells and wells that have been abandoned and plugged. A dry hole is a well that produced no gas or oil.

Western New York Study Area

The Western New York study area has 12,405 permits in the NYS DEC Oil, Gas and Other Regulated Wells program. Most of these permits are in Cattaraugus (9,003) and Erie (3,388) Counties, while only 14 are in Niagara County. Approximately 53% (6,609) of all permits are for active wells, while 45% (5,615) are for plugged wells or dry holes. The vast majority of oil wells (active and plugged) are in Cattaraugus County (99.9%), while 68% of gas wells (active and plugged) are in Erie County.

Table 3-23: NYS DEC Oil, Gas and Other Regulated Wells Program				
	Niagara	**Erie**	**Cattaraugus**	**Total**
Total NYS DEC Oil, Gas and Other Regulated Wells	*14*	*3388*	*9003*	*12405*
Gas Well	2	1634	773	2409
Gas Well Plugged	4	390	162	556
Oil Well	0	4	2901	2905
Oil Well Plugged	0	2	2288	2290
Storage Well	0	350	99	449
Storage Well Plugged	0	0	1	1
Other Well	0	290	556	846
Other Well Plugged	0	232	1819	2051
Dry Hole	8	433	276	717
Confidential	0	53	128	181

Source: NYS DEC Division of Mineral Resources (2010)

Figure 3-10: "Hydrofracking" for Natural Gas Under Review

Hydraulic Fracturing, known commonly as "hydrofracking" is a process used to capture natural gas stored underneath the Marcellus Shale formation that covers much of New York State. Hydraulic Fracturing (HF) is a process by which a fracturing fluid made up of water, a variety of chemical additives (over 600 chemicals, many of them toxic to life) and a solid proppant such as sand are pumped under extreme pressure through the well bore and out into the formation to open new fractures and/or enlarge existing fractures in the formation in order to release natural gas trapped in the formation. The solid proppant in the HF fluid moves into these fractures to keep them open after the pumping pressure is released and a significant proportion of the water and chemicals are forced back up the well bore with the natural gas.

As of fall 2011,horizontal hydrofracking is banned although vertical wells in the state are currently using fracking fluid containing chemicals and sand. NYS DEC released its Supplemental Generic Environmental Impact Statement for high-volume hydraulic fracturing combined with horizontal drilling in September 2011, asserting that this process can be done safely. Governor Cuomo has stated that this process can begin in NYS as soon as all the legal reviews are completed, except in New York City and Syracuse watersheds. As of January 2012, DEC had received 60,000 comments from New York Citizens and organizations with a ratio of 10-1 opposed.

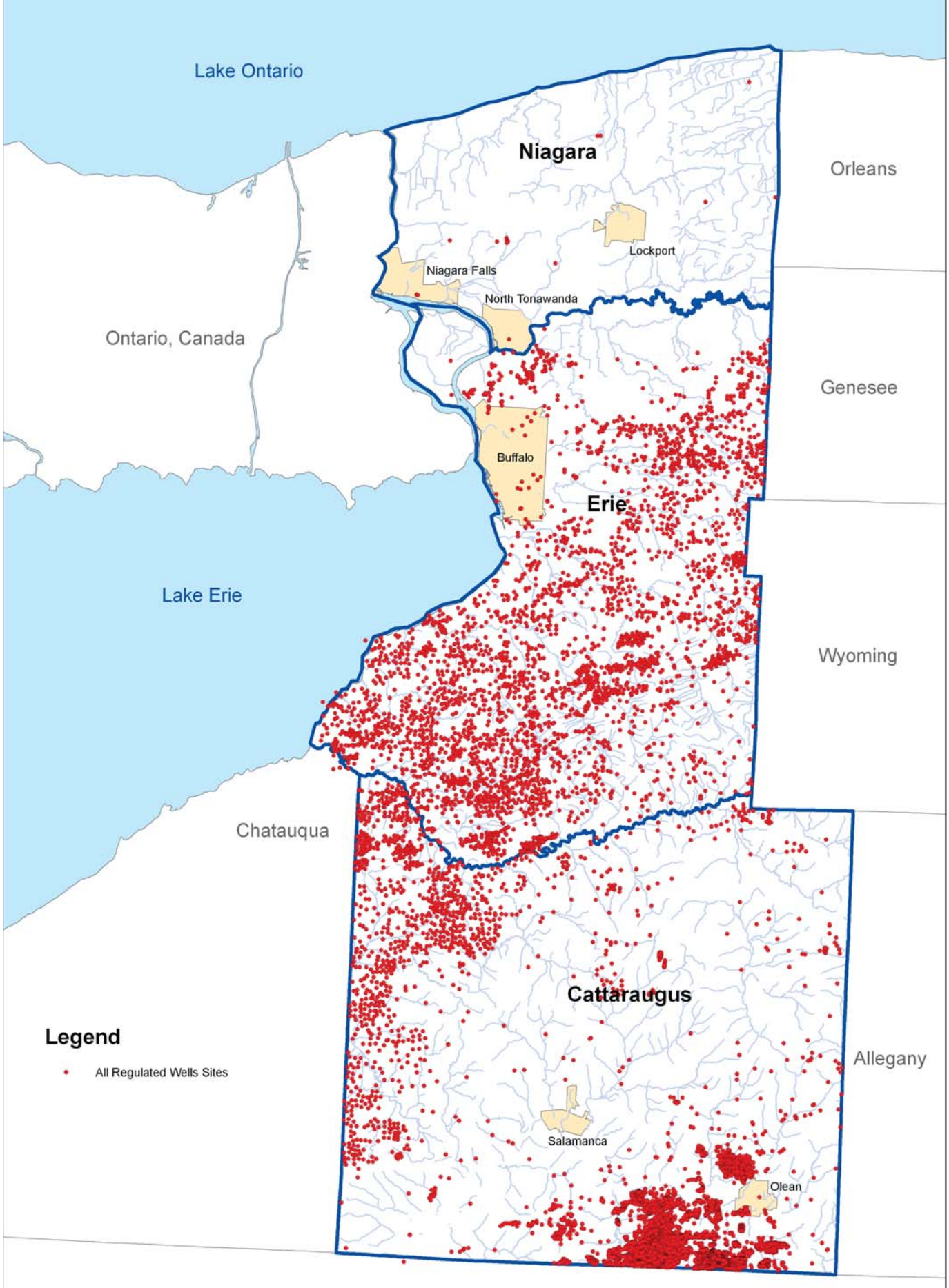
According to oil and gas companies, the amount of gas located in these shale deposits is very significant and necessary for energy security. The USGS has recently published a report significantly reducing the estimated amount of gas in the Marcellus Shale. According to those opposed to drilling, the environmental costs to fresh water quantity use and potential contamination, air pollution, the inability to manage hazardous waste water , the industrialization of the rural landscape and long terms stability of drilling sites make this process unacceptable.

From the NYS DEC < www.dec.ny.gov/energy/46288.html > and <stopfracking.com>

Maps

1. All study area NYS DEC Oil, Gas, and Other Regulated Wells sites
2. All study area NYS DEC Oil, Gas, and Other Regulated Wells sites with categories identified

> Data on all NYS DEC Oil, Gas and Other Regulated Wells Program Sites within the Study Area can be found in the Mapping Database Digital Appendix



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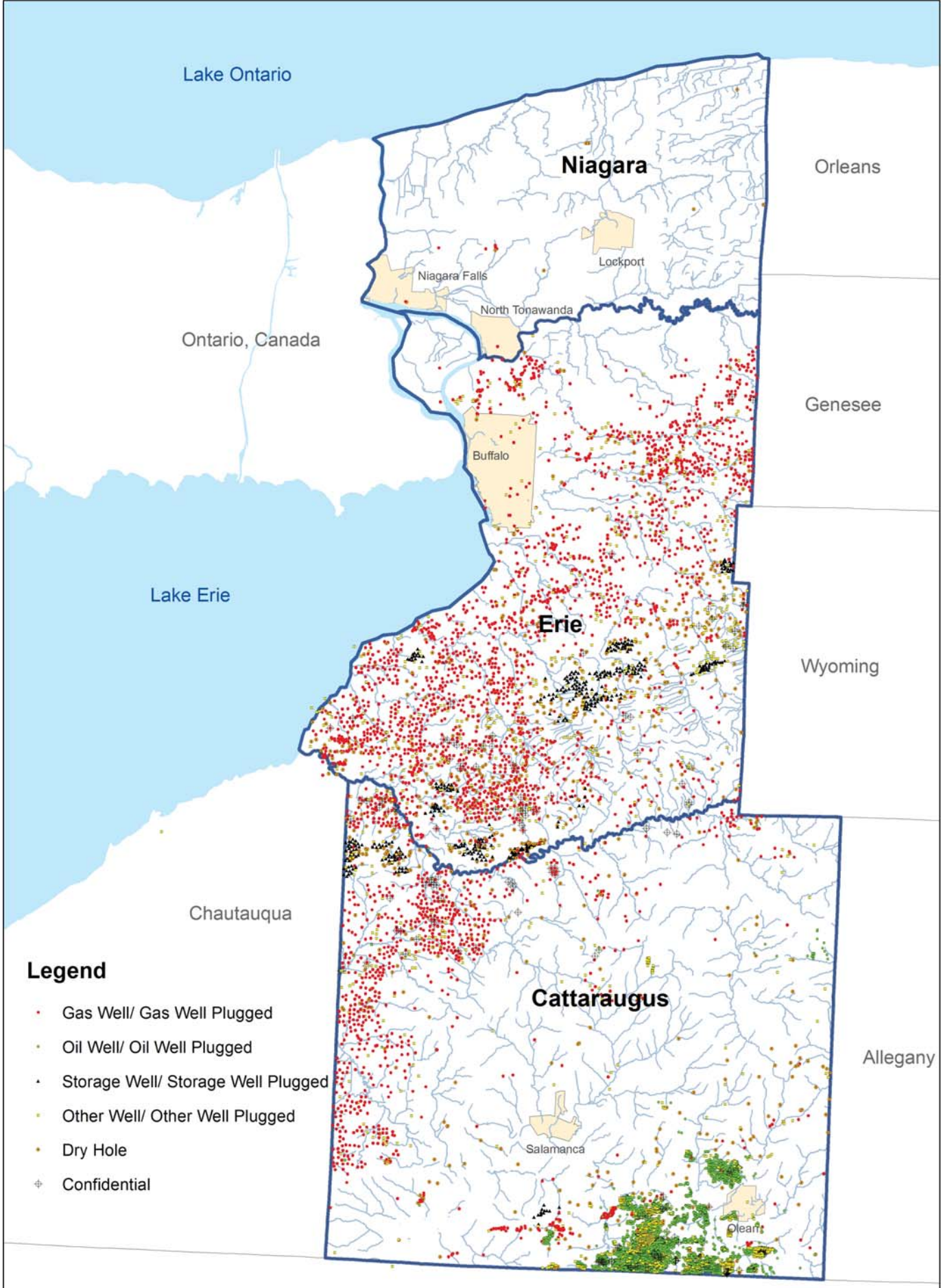
NYS DEC Oil, Gas and Other Regulated Wells Program

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
SUNY at Buffalo
School of Architecture and Planning
June, 2010

Data Source: NYS DEC Division of Mineral Resources (2010)



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NYS DEC Oil, Gas and Other Regulated Wella Program by Categories

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
June, 2010

Data Source: NYS DEC Division of Mineral Resources (2010)

3.9 Radioactive Waste

3.9.1 US Environmental Protection Agency (US EPA) Radiation Information System[28]

What is the Radiation Information System?

The Radiation Information System database (RADINFO) contains information about facilities that are regulated by the US EPA regulations for radiation and radioactivity. RADINFO is a website (www.epa.gov/enviro/html/rad/rad_query_java.html) that includes facility information for facilities regulated by the following Code of Federal Regulation (CFR) parts: 40 CFR Parts 191 and 194; 40 CFR Part 61; and 40 CFR Part 300.

EPA's RADINFO database only includes facilities regulated by EPA under 40 CFR 61 or radiologically contaminated National Priorities List (NPL) sites. For example, not included (because the EPA does not regulate them) are nuclear power plants where spent nuclear fuel is stored or the Formerly Utilized Sites Remedial Action Program (FUSRAP) sites managed by the U.S. Army Corps of Engineers (this database has not been updated for about a decade).

These regulations govern the Department of Energy's Waste Isolation Pilot Plant (Part 194) and the management and disposal of spent nuclear fuel, high-level and transuranic radioactive wastes, as well as the amount of radiation that can be released into the air from these facilities. Facilities listed in the US EPA Radiation Information System only include those that contain high-level and transuranic radioactive wastes and a spent fuel (except as stored at nuclear power plants).

Western New York Study Area

The Western New York study area has only two sites on the US EPA Radiation Information System; the former US Department of Energy Niagara Falls Storage Site (NFSS) now under the jurisdiction of the Army Corps of Engineers in the Niagara County Lake Ontario Ordinance Works (LOOW) site, and the US Department of Energy West Valley Demonstration Project in Cattaraugus County.

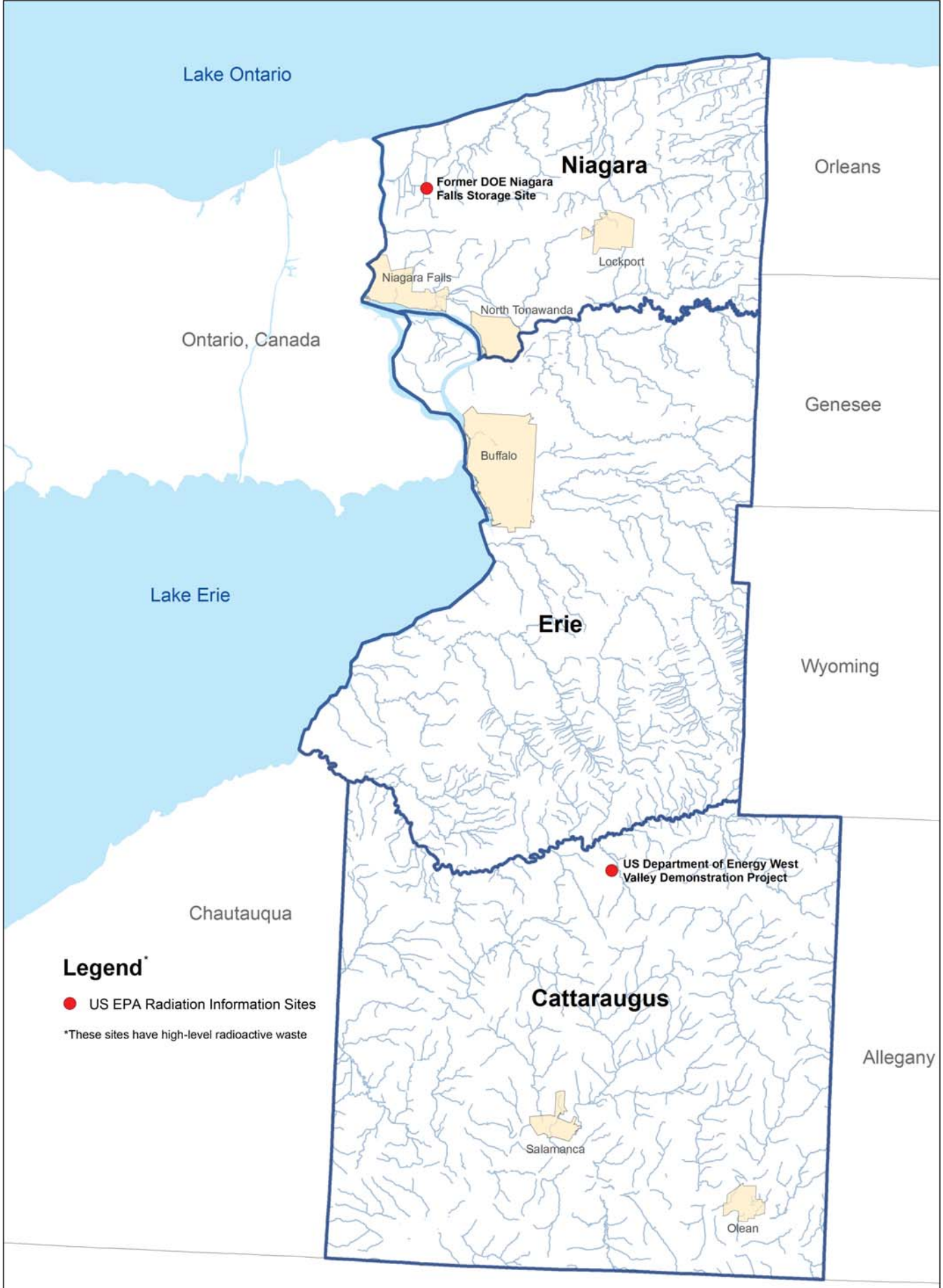
Maps

1. All study area US EPA Radiation Information System sites

Table 3-24: US EPA Radiation Information System Site Locations

County	Category	Site Name	Address	City
Niagara	US EPA Radiation Information System	FORMER DOE NIAGARA FALLS STORAGE SITE	1397 Pletcher Road	Lewiston
Cattaraugus	US EPA Radiation Information System	DOE WEST VALLEY DEMONSTRATION PROJECT	10282 Rock Spring Road	West Valley

Note : List does not include Radioactive Waste waste regulated by US ACE or spent fuel at nuclear power plants.



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US EPA Radiation Information System

Mapping Waste

0 4 8 16 24 32 Miles

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June, 2010

Data Source: US EPA Radiation Information Database (2008)

3.9.2 NYS Department of Environmental Conservation (NYS DEC) Radioactive Control Permit[29] (Part 380 Permits)

What is a Radioactive Control Permit?

Radioactive Control Permits regulate radioactive discharges to the environment and are called "Part 380" permits. These permits require parties who discharge radioactive material to keep records of the radioactive material discharged and to maintain those discharges as low as reasonably achievable. The Part 380 permit standards set radiation dose limits and emission levels above which a party must obtain a Radiation Control Permit from the NYS DEC. Permits are given to industrial, research, medical, radiopharmaceutical, and wastewater treatment facilities that emit radiation into the environment.

What is the Enabling Legislation for the Program?

The permits are authorized under the Rules and Regulations for Prevention and Control of Environmental Pollution by Radioactive Materials, 6 NYCRR Part 380.

Who Manages the Program?

The NYS DEC Division of Solid & Hazardous Materials manages the program. NYS DEC staff perform regular, unannounced inspections of all Part 380 permittees.

Western New York Study Area

The Western New York study area has four total NYS DEC Radioactive Control permits. Three of the four are in Erie County, one is in Cattaraugus County and none in Niagara County.

Table 3-25: NYS DEC Radioactive Control Permits

	Niagara	Erie	Cattaraugus	Total
Total NYS DEC Radioactive Control Permits	0	3	1	4

Maps

1. All study area NYS DEC Radioactive Control Permit sites

Table 3-26: NYS DEC Radioactive Control Permit Site Locations

County	Category	Site Name	Address	City
Erie	NYS DEC Radioactive Control Permits	CARDINAL HEALTH	303 Cayuga Road	Cheektowaga
Erie	NYS DEC Radioactive Control Permits	NRD LLC	2937 Alt Boulevard	Grand Island
Erie	NYS DEC Radioactive Control Permits	SUNY AT BUFFALO CAMPUS	3435 Main Street	Buffalo
Cattaraugus	NYS DEC Radioactive Control Permits	WNY NUCLEAR SERVICE CENTER	10282 Rock Springs Road	West Valley

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NYS DEC
Radioactive Control Permits
Mapping Waste

0 4 8 16 24 32 Miles

Created by
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SUNY at Buffalo
School of Architecture and Planning
June, 2010

Data Source: NYS DEC (2010)

3.9.3 NYS Department of Health (NYS DOH) Radioactive Materials Licensing[30]

What is a Radioactive Materials License?

Commercial, medical, academic and government facilities that use radioactive materials have to apply for a license to use those materials. The vast majority of these facilities do not emit radiation locally, and all waste that is created is stored outside of New York State.

What is the Enabling Legislation for the Program?

New York State is one of 33 states that have agreements with the federal government under the Atomic Energy Act (AEA) to regulate all sources of radiation in the state, except reactors, federal facilities and large quantities of special nuclear material which are regulated by the U.S. Nuclear Regulatory Commission.

Who Manages the Program?

Recently the New York State Department of Labor's radioactive materials program was merged with the Department of Health's program. The Radioactive Materials Licensing program is administered by the NYS DOH Bureau of Environmental Radiation Protection who is responsible for licensing and inspecting facilities. The NYS DOH does not license federal facilities like Veterans Affairs hospitals.

Western New York Study Area

The Western New York study area has 159 total NYS DOH Radioactive Materials Licensing permits. The majority (124 or 78%) are in Erie County, 28 are in Niagara County, and seven are in Cattaraugus County.

Table 3-27: NYS DOH Radioactive Materials Licensing

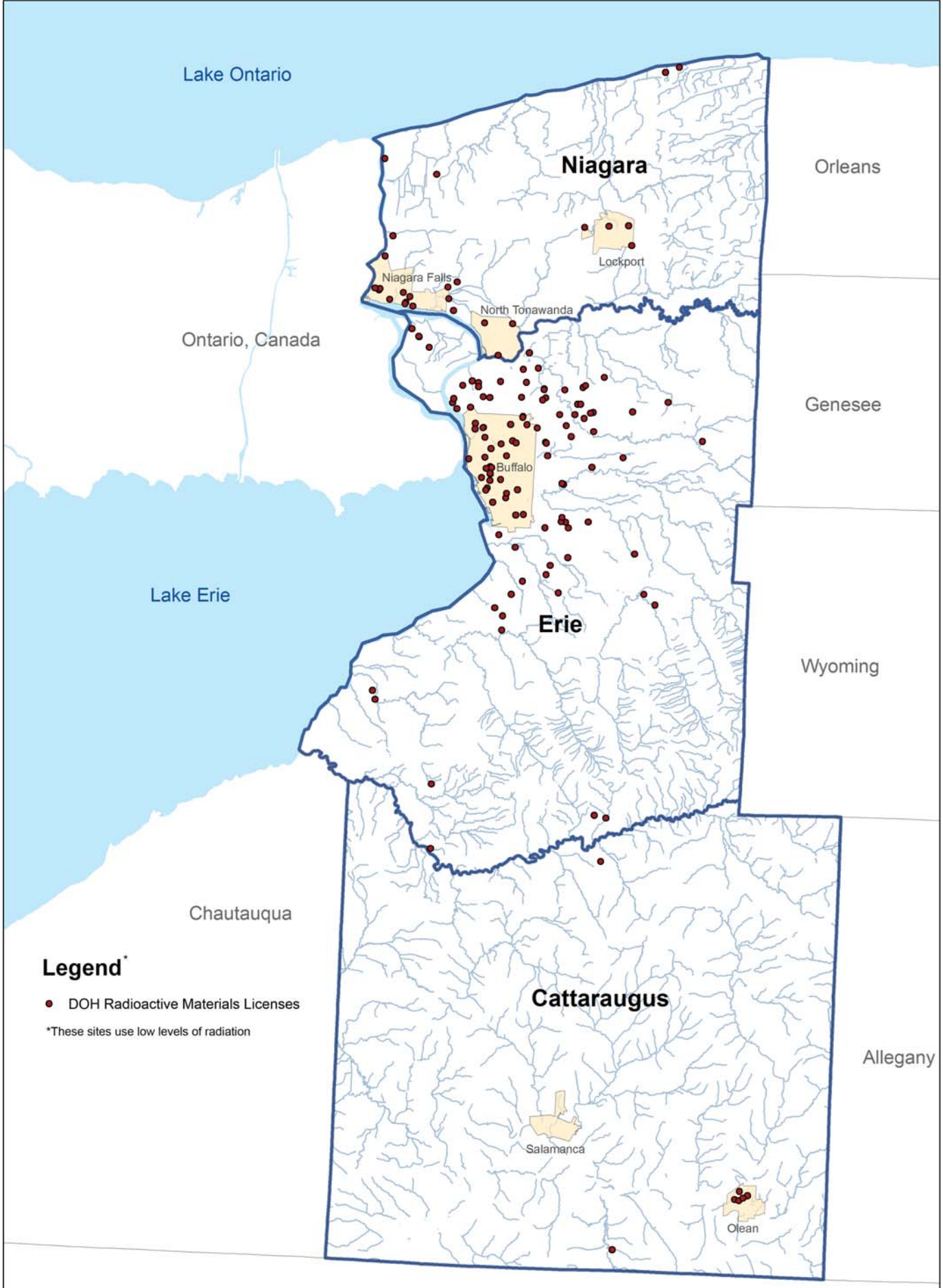
	Niagara	Erie	Cattaraugus	Total
Total NYS DOH Radioactive Materials Licensing	28	124	7	159

Source: NYS DOH (2010)

Maps

1. All study area NYS DOH Radioactive Materials Licensing locations

> Data on all NYS DOH Radioactive materials Licensing Sites within the Study Area can be found in the Mapping Database Digital Appendix



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NYS DOH Radioactive Materials Licenses

Mapping Waste

0 4 8 16 24 32 Miles

Created by
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University at Buffalo, SUNY
School of Architecture and Planning
June, 2010

Data Source: NYS Department of Health (2010)

3.10 Defense Related Sites

3.10.1 US Army Corps of Engineers (US ACE) Formerly Utilized Sites Remedial Action Program (FUSRAP)[31]

What is a FUSRAP?

The **Formerly Utilized Sites Remedial Action Program** (FUSRAP) is a program to identify, investigate and clean up or control sites that were part of the nation's early atomic energy and weapons program. Activities at the sites that are eligible for FUSRAP were conducted by the Manhattan Engineer District (MED) or the Atomic Energy Commission (AEC), both predecessors of the Department of Energy (DOE). FUSRAP sites contain primarily radioactive materials, but also other non-radioactive hazardous waste.

What is the Enabling Legislation for the Program?

The Formerly Utilized Sites Remedial Action Program (FUSRAP) was initiated by the US Department of Energy (DOE) in 1974.

Who Manages the FUSRAP Program?

In 1997, the U.S. Congress directed FUSRAP management to be transferred from DOE to the US Army Corps of Engineers (US ACE). The DOE Office of Legacy Management retains responsibility for determining eligibility for site cleanup under FUSRAP and for long-term surveillance and maintenance.

What happens before nearing completion time of remedial action?

When remedial action is nearing completion at a FUSRAP site, US ACE and DOE begin coordinating transfer of the site to the DOE for long-term surveillance and maintenance. Before a site is transferred, the regulator must concur that the selected remedy is operating successfully, which indicates the site is protective of human health and the environment. If residual radioactive contamination will remain on a site, such as in ground water or inaccessible soil areas, long-term surveillance and maintenance requirements may include environmental monitoring, inspections, or management of institutional controls to ensure protectiveness. In these instances, US ACE conducts a 2-year-long Operations and Maintenance period to demonstrate the site hazards are controlled. During this time, DOE develops a long-term surveillance and maintenance plan for the site.

Categories within the Program

The US ACE defines FUSRAP sites as either active (remediation ongoing), or Completed (remediation activities complete). NFSS is a temporary storage site. A remediation plan is presently being developed under FUSRAP.

Western New York Study Area

The Western New York study area has 7 total US ACE FUSRAP sites. The majority (5 or 71%) are in Erie County, two are in Niagara County, and none are in Cattaraugus County. Only two of the FUSRAP site remedial processes are considered complete, both of which are in Erie County.

Table 3-28: US ACE FUSRAP				
	Niagara	**Erie**	**Cattaraugus**	**Total**
Total US ACE FUSRAP	*3*	*6*	*0*	*9*
Active FUSRAP	2	3	0	5
Completed FUSRAP	1	3	0	4

Source: US DOE (2010)

Maps

1. All study area US ACE FUSRAP locations
2. All study area US ACE FUSRAP locations identified as active or complete

	Table 3-29: US ACE FUSRAP Site Locations				
County	**Category**	**Site Name**	**City**	**Longitude**	**Latitude**
Erie	US ACE FUSRAP	Ashland 1	Tonawanda	-78.917	42.993
Eire	US ACE FUSRAP	Ashland 2	Tonawanda	-78.916	43.000
Erie	US ACE FUSRAP	Seaway Industrial Park	Tonawanda	-78.915	42.997
Erie	US ACE FUSRAP	Linde (Praxair, Inc)	Tonawanda	-78.895	42.979
Erie	US ACE FUSRAP	Tonawanda Landfill	Tonawanda	-78.901	42.985
Erie	US ACE FUSRAP	Buffalo Site	Buffalo	-78.833	42.841
Niagara	US ACE FUSRAP	Niagara Falls Storage Site	Lewiston	-78.986	43.217
Niagara	US ACE FUSRAP	Former Guterl Specialty Steel Corp	Lockport	-78.712	43.159
Niagara	US ACE FUSRAP	Niagara Falls Vicinity Properties	Lewiston	-78.970	43.221

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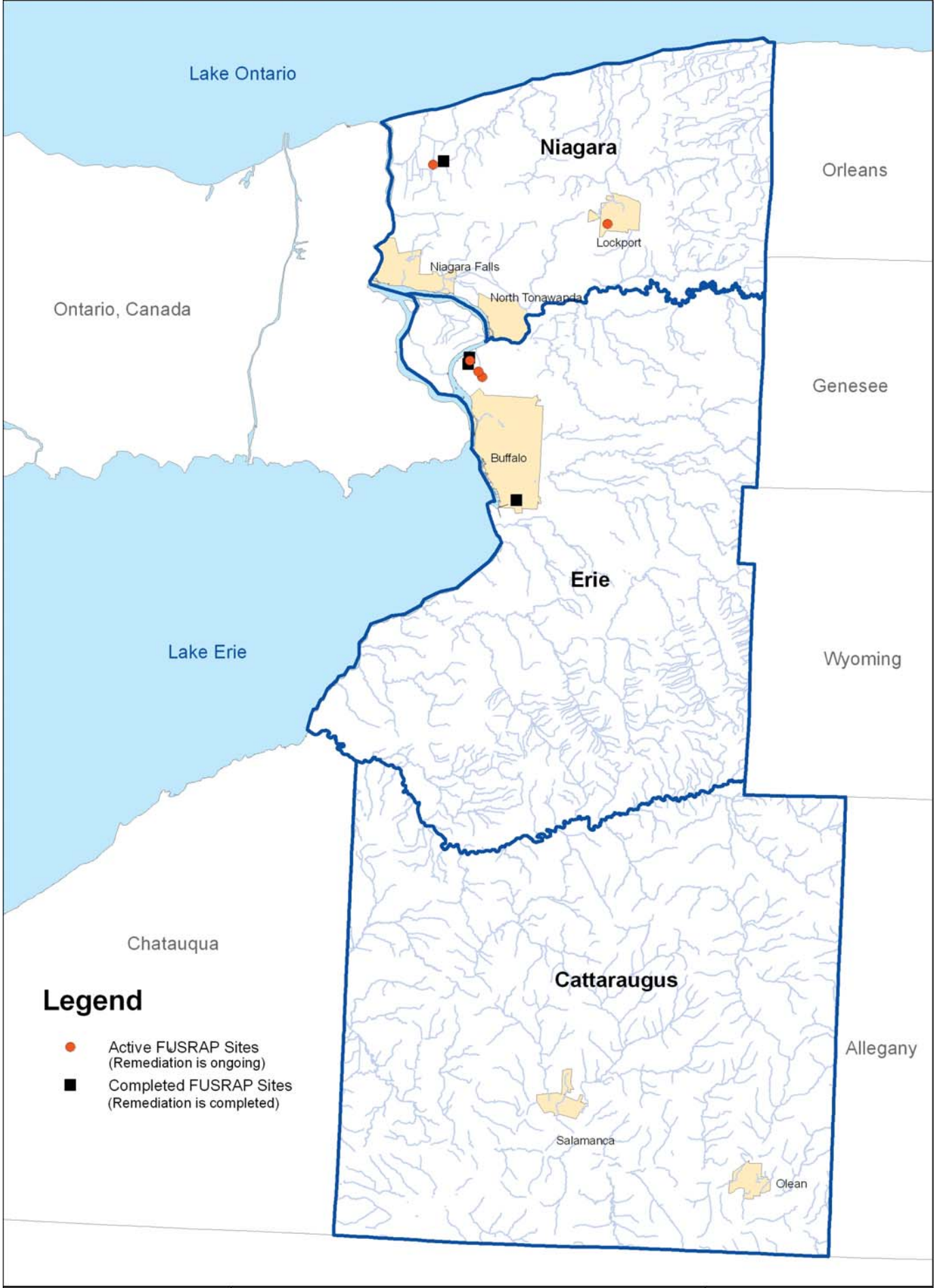
US ACE
FUSRAP Sites

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
December, 2011

Data Source: US ACE (2010)



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US ACE FUSRAP Sites by Categories

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
December, 2011

Data Source: US ACE (2010)

3.10.2 US Army Corps of Engineers (US ACE) Defense Environmental Restoration Program - Formerly Used Defense Sites (DERP - FUDS)[32]

What is a DERP-FUDS?

The **Defense Environmental Restoration Program-Formerly Used Defense Site Program** (DERP-FUDS) include real property that was under the jurisdiction of the Secretary of Defense and owned by, leased by, or otherwise possessed by the United States (including governmental entities that are the legal predecessors of DOD or its Components) and those real properties where accountability rested with DOD but where the activities at the property were conducted by contractors (i.e. government-owned, contractor-operated [GOCO] properties) that were transferred from DOD control prior to October 1986. DERP-FUDS sites **do not contain radioactive materials, only non-radioactive hazardous waste.**

What is the Enabling Legislation for the Program?

The Defense Environmental Restoration Program (DERP) was established by Congress to provide for the cleanup of Department of Defense (DOD) sites under the jurisdiction of the Secretary of Defense. The Defense Environmental Restoration Program-Formerly Used Defense Site Program (DERP-FUDS) was established in 1984 by the United States Army.

Who Manages the DERP-FUDS Program?

The Army is DOD's Executive Agent for this program. The US Army Corps of Engineers (US ACE) executes this program for the Army.

How Does the Cleanup Process Work?

Information about the origin and extent of contamination, land transfer issues, past and present property ownership, and program policies must be evaluated before DOD considers a property eligible for funding under the DERP-FUDS program. Environmental cleanup procedures at DERP-FUDS are similar to those at active DOD installations. The type of cleanup required varies from property to property. Within the FUDS Program, cleanup projects fall into one or more of the following categories:

- Identifying, investigating and cleaning up hazardous, toxic, and radioactive waste sites.
- Correcting other environmental contamination such as that caused by ordnance and explosives.
- Conducting building demolition and debris removal.

The FUDS Program uses a three-phased cleanup process consistent with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 as amended and the National Oil and Hazardous Substances Contingency Plan. The first phase is an inventory of the site to determine eligibility in the program (was it a former DOD site and did the DOD contaminate the site), the second phase is an investigation into the nature and extent of contamination, and the third phase is the cleanup.

Western New York Study Area

The Western New York study area has 15 total US ACE DERP-FUDS sites. The majority (8 or 53%) are in Erie County, slightly fewer (seven) are in Niagara County, and none are in Cattaraugus County.

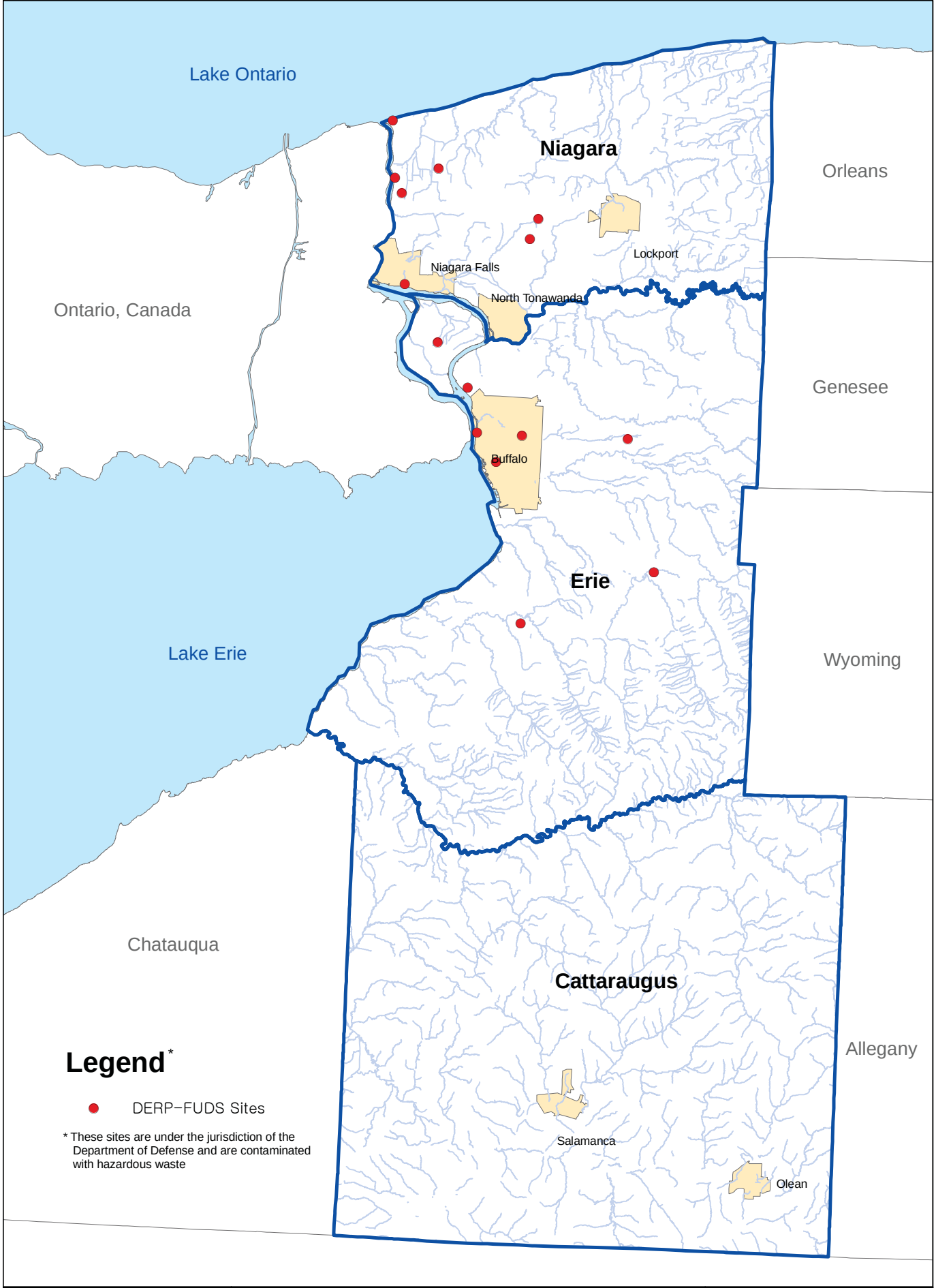
Table 3-30: US ACE DERP-FUDS				
	Niagara	Erie	Cattaraugus	Total
Total US ACE FUSRAP	7	8	0	15

Source: US ACE (2011)

Maps

1. All study area US ACE DERP-FUDS locations

Table 3-31: US ACE DERP-FUDS Site Locations				
County	Category	Site Name	Longitude	Latitude
NIAGARA	US ACE DERP-FUDS	NIKE BAT NF16	-78.81944	43.16167
NIAGARA	US ACE DERP-FUDS	LAKE ONTARIO ORDINANCE WORKS	-78.97806	43.21306
NIAGARA	US ACE DERP-FUDS	AFPLT NO 68	-79.04472	43.20028
NIAGARA	US ACE DERP-FUDS	NIKE NF 03	-79.03333	43.18333
NIAGARA	US ACE DERP-FUDS	LOCKPORT AFS	-78.83111	43.13806
NIAGARA	US ACE DERP-FUDS	FORT NIAGARA	-79.05250	43.26472
NIAGARA	US ACE DERP-FUDS	NIAG FALLS AR CHEM PLT	-79.02167	43.08056
ERIE	US ACE DERP-FUDS	Nike NF-41	-78.96667	43.01639
ERIE	US ACE DERP-FUDS	NIKE BU 51 52	-78.81861	42.70250
ERIE	US ACE DERP-FUDS	Nike BU 18	-78.66667	42.91667
ERIE	US ACE DERP-FUDS	AFPLT NO 18	-78.91667	42.96667
ERIE	US ACE DERP-FUDS	AFPLT NO 49	-78.82972	42.91528
ERIE	US ACE DERP-FUDS	STERLING ENGINE CO	-78.89944	42.91639
ERIE	US ACE DERP-FUDS	NIKE BU 34/35	-78.61750	42.76694
ERIE	US ACE DERP-FUDS	NIKE BU 09	-78.86806	42.88389



N
W E
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US ACE
DERP-FUDS Sites

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
December, 2011

Data Source: US ACE (2011)

PART TWO: Preliminary Analysis

3.11 Introduction

The preliminary analysis in this report begins with the question: Does Western New York have more than its share of hazardous waste? The analysis attempts to demonstrate the severity of historic and ongoing contamination and the impact on human populations in the three county Western New York study area. The analysis does not include every contamination issue and regulatory program included in this study; instead it focuses on some of the larger and more recognizable programs like the state and federal Superfund.

Environmental Justice:

The report addresses contamination issues in relation to environmental justice areas. Specifically, the analysis shows how many Superfund sites are within potential environmental justice areas as identified by the NYS DEC and what impact it might have on children as measured by how many serious sites are within a half mile radius of a public school.

WNY in comparison with other counties in NYS:

The report compares the Western New York study area with the rest of New York State. Data tables show how many hazardous waste, solid waste, and radioactive waste sites each of the 62 total counties in New York State should have if contamination was distributed equally and compares that to actual study area totals. This is only one kind of measure and would need a more indepth analysis for any final determination and comparison.

Responsibility by Elected Official:

The analysis provides maps of Superfund sites by state and federal legislative districts in the study area. It includes an associated data table that quantifies Superfund sites by each of the legislative districts.

3.12 Environmental Justice

The NYS DEC defines environmental justice as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Environmental justice efforts focus on improving the environment in communities, specifically minority and low-income communities, and addressing disproportionate adverse environmental impacts that may exist in those communities.

The Western New York study area that includes Erie, Niagara, and Cattaraugus County has several large population centers. The largest cities are Buffalo in Erie County and Niagara Falls in Niagara County, and each are surrounded by large suburban communities. Smaller urban centers include Lockport in Niagara County and Olean in Cattaraugus County. Because population and the industrial or commercial uses that create contamination tend to locate near each other, major contamination issues are concentrated near major population centers.

3.12.1 NYS Department of Environmental Conservation (NYS DEC) Potential Environmental Justice Areas[33]

The NYS DEC has identified Potential Environmental Justice Areas in each county in New York State. Potential Environmental Justice Areas are not selected for the potential or known presence of contamination; the areas are defined by census tract boundaries (because demographic data is available through the US Census Bureau < www.census.gov >), and are selected because they have high proportions of low-income or minority residents.

NYS DEC Commissioner Policy 29 (CP-29) provides guidance for incorporating environmental justice concerns into the New York State Department of Environmental Conservation (DEC) environmental permit review process and the DEC application of the State Environmental Quality Review Act (SEQR). The policy also incorporates environmental justice concerns into some aspects of the DEC's enforcement program, grant programs and public participation provisions. The policy is written to assist NYS DEC staff, the regulated community and the public in understanding the requirements and review process.

Figure 3-11: Goal of Environmental Justice Movement

The environmental justice movement seeks to abolish environmental harms for everyone, not just to redistribute them equally. Further many environmental justice activists consider environmental justice regulations to be inadequate and have proposed ways to strengthen the regulations.
Source: Environmental Justice Net < www.ejnet.org/ej/ >

Western New York Study Area

The table shows the overlap of Potential Environmental Justice Areas with US EPA Superfund sites and NYS DEC Superfund sites. In total, there are 35 superfund sites (combined Superfund programs of the US EPA and NYS DEC) within Potential Environmental Justice Areas. There are two NPL Superfund sites

(one current and one deleted) and nine Class 2 Superfund sites within Potential Environmental Justice Areas.

The average number of Superfund Sites within Potential Environmental Justice Areas is .17 sites per square mile, compared to .06 sites per square mile for the entire WNY Study Area.

Figure 3-12: Environmental Burdens

A study conducted by the Regional Institute at the University at Buffalo found that on an EPA Sites per Capita basis, the WNY region shares a similar environmental burden with many other formerly industrialized regions throughout the northeast, Great Lakes and Ohio River Valley. The study found that the WNY region has a much lower EPA-monitored site density than areas such as Chicago, Cleveland and Detroit. However, when considering sites per capita, the WNY region falls only behind Cleveland, with 3.8 sites per 10,000 residents in WNY and 4.8 sites in Cleveland.

The study also found that there was not a significant statistical correlation between increased environmental burdens and low-income block groups. Additionally, the study found that minority dominated low-income block groups did not have a higher environmental burden than white dominated low-income block groups.

Source: The Regional Institute <http://www.regional-institute.buffalo.edu/Includes/UserDownloads/PolicyBrief_LoveCanal_Aug08.pdf>

Table 3-32: Superfund Sites Within Potential Environmental Justice Areas

	Niagara	Erie	Cattaraugus	Study Area[1]
Total Superfund Sites in Environmental Justice Area	*12*	*22*	*0*	*34*
Total US EPA Superfund sites (Current + Deleted NPL)	1	1	0	2
Current National Priority List (NPL)	1	0	0	1
Deleted National Priority List (NPL)	0	1	0	1
Total NYS DEC Superfund sites	11	21	0	32
Class 2 sites	3	5	0	8

Source: Superfund Site Information from <www.epa.gov/superfund/sites/> (2010) and NYS DEC Environmental Site Remediation Database (1978-2010).
Environmental Justice data from NYS DEC Office of Environmental Justice (2008).
[1]Note: All Current NPL sites are also NYS DEC Class 2 sites and all Deleted NPL sites are also NYS DEC Class 4 or 5 sites.

3.12.2 Public Schools – Potential Impacts on Children

An analysis of the proximity of public schools to inactive hazardous waste sites helps demonstrate the point that contamination in urban areas poses potential significant threats to the most vulnerable people living there -- children. Although these sites are not necessarily contaminating surrounding communities, given their close proximity (within a half mile or quarter mile walking distance) to schools, the possibility that children and other residents walk by or near them on a daily basis is real. Ground water contamination and airborne particulate contamination can pose health risks.

Western New York Study Area

The table shows the proximity to schools of the US EPA Superfund sites and NYS DEC Superfund sites. Of the total 167 superfund sites in the three counties, there are 38 superfund sites (combined Superfund programs of the US EPA and NYS DEC) within a half mile of a public school; none are US EPA Superfund sites. There are ten NYS DEC Class 2 sites within a half mile of a public school.

Table 3-33: Superfund Sites Within A Half Mile of a Public School

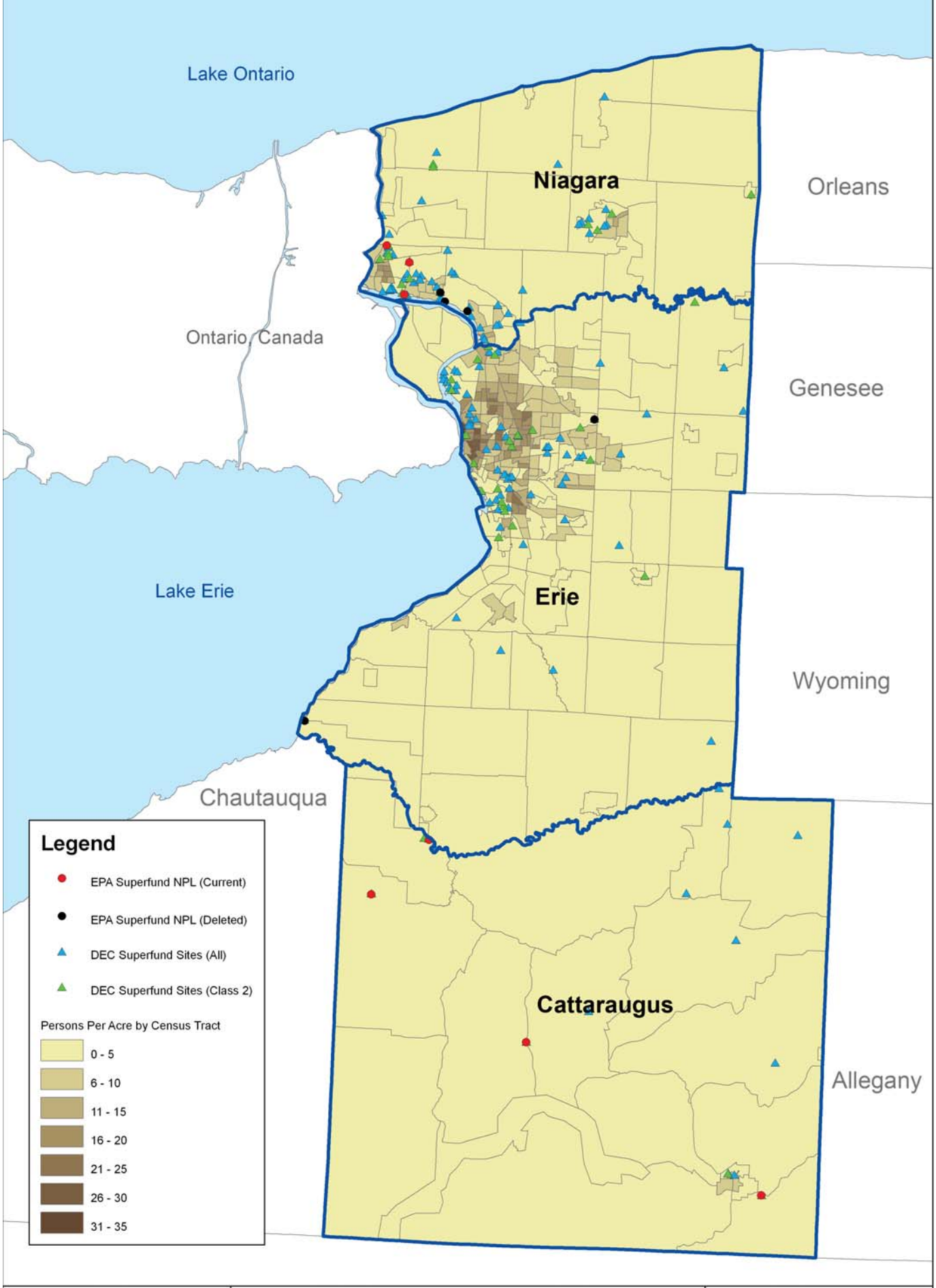
	Niagara	Erie	Cattaraugus	Total Study Area[1]
Total Superfund Sites Within a Half Mile of a Public School	*12*	*24*	*2*	*38*
Total US EPA Superfund sites (Current + Deleted NPL)	0	0	0	0
Current National Priority List (NPL)	0	0	0	0
Deleted National Priority List (NPL)	0	0	0	0
Total NYS DEC Superfund sites	12	24	2	38
Class 2 sites	2	8	0	10

Source: Superfund Site Information from <www.epa.gov/superfund/sites/> (2010) and NYS DEC Environmental Site Remediation Database (1978-2010).

[1]Note: All Current NPL sites are also NYS DEC Class 2 sites and all Deleted NPL sites are also NYS DEC Class 4 or 5 sites

Maps

1. Study area population density overlaid with US EPA and NYS DEC Superfund sites with NPL and Class 2 sites identified
2. All study area Potential Environmental Justice Areas overlaid with US EPA and NYS DEC Superfund sites with NPL and Class 2 sites identified
3. City of Buffalo public schools overlaid with US EPA and NYS DEC Superfund sites with NPL and Class 2 sites identified



N
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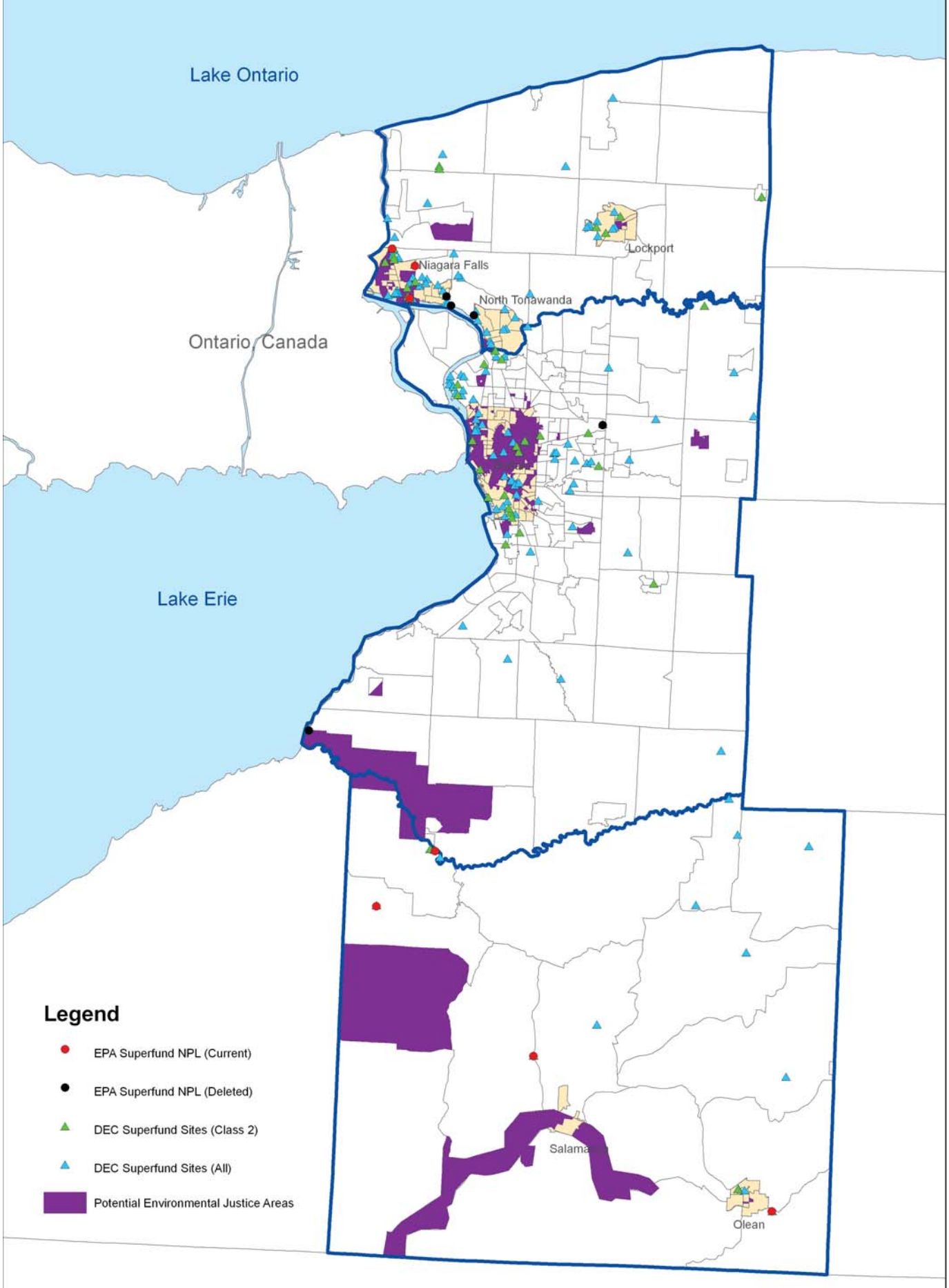
Population Density

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
SUNY at Buffalo
School of Architecture and Planning
June, 2010

Data Source: US EPA (2010) and NYS DEC Environmental Site Remediation Database (1978 - 2010)
US Census Bureau (2000)



N
W E
S

NYS DEC Potential Environmental Justice Areas

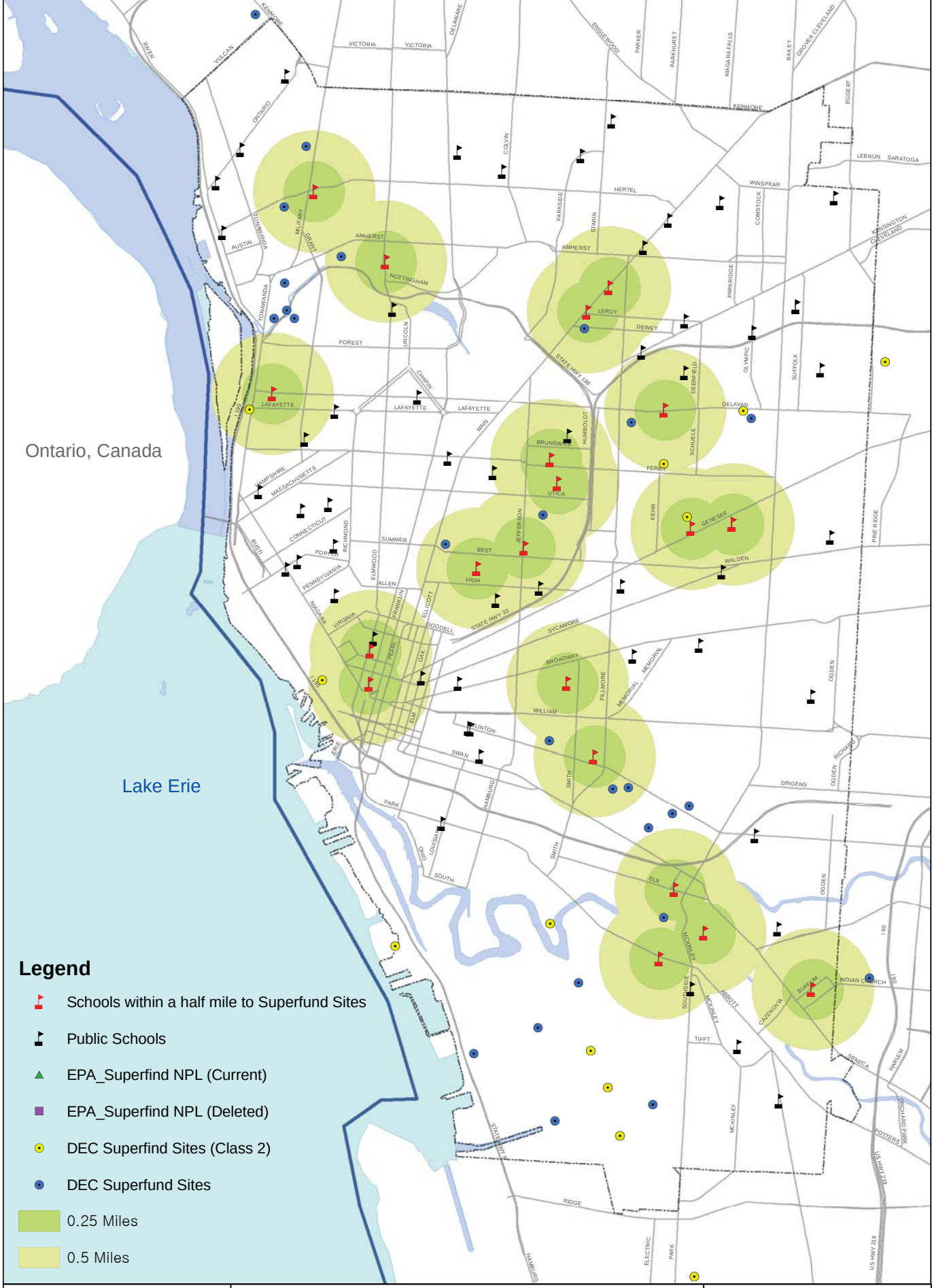
Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
SUNY at Buffalo
School of Architecture and Planning

June, 2010

Data Source: US EPA (2010) and NYS DEC Environmental Site Remediation Database (1978 - 2010)
NYS DEC Office of Environmental Justice (2008)



N
W E
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City of Buffalo Public Schools

Mapping Waste Project

0 0.4 0.8 1.6 2.4 3.2 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
June, 2010

Data Source: US EPA (2010) and NYS DEC Environmental Site Remediation Database (1978-2010)

3.13 WNY Comparison with New York State

Although each contamination issue represented in this study poses potential impacts to the environment and to human health, it is helpful to gauge the severity of the threat by comparing Western New York to other regions. The question is, do we have a "fare share of contamination," or are we overburdened? The analysis that follows looks at Erie, Niagara and Cattaraugus counties individually to get a more accurate picture of the relationship of it to the rest of New York.

Figure 3-13: What is a Fair Share of Hazardous Waste in New York State?

There are 62 counties in New York State, and if all

waste were equally divided, each county would hold 1.6% of that total.

This percentage is used to calculate the expected shared waste in the following analyses and when the number and percentage is higher than it would be if equally shared, it is highlighted.

[Note: Analysis could also look at burden/population, a figure not calculated for this study.]

The following contamination issues and regulatory programs are included in this comparative analysis as examples:

- Hazardous Waste
  - US EPA Superfund Program
  - NYS DEC Environmental Site Remediation Program
    - Superfund Program
    - Brownfield Cleanup Program
  - US EPA Resource Conservation and Recovery Act (RCRA)
    - Large Quantity Generators
    - Hazardous Waste Treatment, Storage and Disposal Facilities (TSDF)
    - Corrective Action
- Solid Waste
  - NYS DEC Inactive Landfills and Solid Waste Program (active landfills)
- Radioactive Waste
  - US EPA Radiation Information System

3.13.1 Hazardous Waste

US EPA Superfund Program

If each of the 62 counties in the state had an equal share, each would have 1.6% of the US EPA Superfund Current NPL sites, or 1.4 current NPL sites. Of all 86 total US EPA NPL Superfund sites in New York State, Erie County has 0 (0%), Niagara County has 3 (3.5%), and Cattaraugus County has 4 (4.7%).

Although Nassau and Suffolk Counties have significantly more current NPL Superfund sites (15 and 11, respectively), Cattaraugus County is tied for the fourth most with four current NPL sites, and Niagara

County is tied for the sixth most with three current NPL sites. Overall, the study area has more current NPL sites than what would be considered its fair share.

Table 3-34: Comparison of US EPA Superfund Sites

Location	Number of NPL Sites	Current NPL as % of Total Statewide Current NPL
If Equally Distributed	*1.4*	*1.6%*
Niagara	3	3.5%
Erie	0	0.0%
Cattaraugus	4	4.7%
NYS	86	100.0%

Source: US EPA Superfund Site Information <www.epa.gov/superfund/sites/> (2010)

NYS DEC Superfund Program

If each of the 62 counties in the state had an equal share, each would have 1.6% of the NYS DEC Superfund and Class 2 sites, or 19.4 total sites and 8.3 Class 2 sites. Of all 1,185 total NYS DEC Superfund sites in New York State, Erie County has 87 (7.3%), Niagara County has 64 (5.4%), and Cattaraugus County has 16 (1.4%). Of all 508 total NYS DEC Class 2 Superfund sites in New York State, Erie County has 22 (4.3%), Niagara County has 15 (3.0%), and Cattaraugus County has 6 (1.2%).

Of all counties in New York State, only Nassau County has more total NYS DEC Superfund sites than Erie County (Nassau County has 111 sites, compared to Erie County's 87). Following Suffolk County in third with 81 sites, Niagara County has the fourth most number of NYS DEC Superfund sites with 64.

Because Class 2 are the most contaminated sites, this type was looked at more closely. Nassau County has the most Class 2 NYS DEC Superfund sites with 72. Erie County has the fourth most Class 2 sites with 22 and Niagara County has tenth most with 15.

Overall, the Western New York study area is burdened by a disproportionally high number of NYS DEC Superfund sites and Class 2 Superfund sites**. Erie and Niagara County alone have 12.7% of NYS DEC Superfund sites, and 7.3% of the Class 2 sites**. A fair share for two counties would 3.2% of both total NYS DEC Superfund sites and Class 2 sites.

Table 3-35: Comparison of NYS DEC Superfund Sites

Location	NYS DEC Superfund Sites	Total as % of Total Statewide Superfund	Class 2 Sites	Class 2 as % of Total Statewide Class 2
If Equally Distributed	*19.4*	*1.6%*	*8.3*	*1.6%*
Niagara	64	5.4%	15	3.0%
Erie	87	7.3%	22	4.3%
Cattaraugus	16	1.4%	6	1.2%
NYS	1185	100.0%	508	100.0%

Source: NYS DEC Environmental Site Remediation Database (1978-2010)

NYS DEC Brownfield Cleanup Program

The Brownfield Cleanup Program is one of the programs within the NYS DEC Brownfield Program. The others include the Environmental Restoration Program and the Voluntary Cleanup Program. If each of the 62 counties in the state had an equal share of Brownfield Cleanup Program sites, each would have 1.6% of the NYS DEC Brownfield Cleanup Program sites, or 4.1 total sites. Of all 253 total NYS DEC Brownfield Cleanup Program sites in New York State, Erie County has 31 (12.3%), Niagara County has 11 (4.3%), and Cattaraugus County has 4 (1.6%).

Erie County's 31 Brownfield Cleanup Program sites are the most in any county in New York State, followed by Queens and Monroe Counties with 24. Niagara County has the ninth most sites with 11.

Overall, the Western New York study area has a disproportionally high number of Brownfield Cleanup Program sites. The study area has 18.2% of the state's Brownfield Cleanup Program sites, when its fair share would only be 4.8%.

Table 3-36: Comparison of NYS DEC Brownfield Cleanup Program Sites

Location	Number ofNYS DEC Brownfield Cleanup Sites	Total as % of Number of Statewide Brownfield Cleanup Sites
If Equally Distributed	*4.1*	*1.6%*
Niagara	11	4.3%
Erie	31	12.3%
Cattaraugus	4	1.6%
NYS	253	100.0%

Source: NYS DEC Environmental Site Remediation Database (1978-2010)

US EPA Resource Conservation and Recovery Act (RCRA)

The US EPA Resource Conservation and Recovery Act (RCRA) includes three programs; the US EPA Treatment, Storage, and Disposal facility (TSDF) program, the US EPA Large Quantity Generators (LQG) program, and the US EPA Corrective Action sites programs.

If each of the 62 counties in the state had an equal share of TSDF sites, each would have 1.6% of the sites, or 4.9 total sites. Of all 302 total TSDF sites in New York State, Niagara County has twenty one (7.0%), Erie County has twenty seven (8.9%), and Cattaraugus County has five (1.7%). Niagara County's twenty one TSDFs are second only to Monree County's seven.

If each of the 62 counties in the state had an equal share of LQG sites, each would have 1.6% of the sites, or 30.1 total sites. Of all 4,530 total LQG sites in New York State, Erie County has 241 (5.3%), Niagara County has 82 (1.8%), and Cattaraugus County has 51 (1.1%).

If each of the 62 counties in the state had an equal share of Corrective Action sites, each would have 1.6% of the sites, or 2.8 total sites. Of all 174 total Corrective Action sites in New York State, Erie County has 15 (8.6%), Niagara County has 15 (8.6%), and Cattaraugus County has three (1.7%). Both Erie County and Niagara County are tied with Albany for the most Corrective Action sites in New York State with ten sites each.

Table 3-37: Comparison of US EPA RCRA Sites[1]

Location	Number of US EPA TSDF Sites	Total as % of Statewide US EPA TSDF	Number of US EPA LQG Sites	Total as % of Total Statewide US EPA LQG	Number of US EPA Corrective Action Sites	Total as % of Total Statewide US EPA Corrective Action
If Equally Distributed	*4.9*	*1.6%*	*73*	*1.6%*	*2.8*	*1.6%*
Niagara	21	7.0%	82	1.8%	15	8.6%
Erie	27	8.9%	241	5.3%	15	8.6%
Cattaraugus	5	1.7%	51	1.1%	3	1.7%
NYS	*302*	*100.0%*	*4,530*	*100.0%*	*174*	*100.0%*

Source: US EPA Envirofacts <www.epa.gov/enviro/index.html> (2011)

[1]Some TSDFs and LQGs are also Corrective Action sites.

Note: Data per EPA correspondence November 2011

3.13.2 Solid Waste

NYS DEC Solid Waste Program

If each of the 62 counties in the state had an equal share, each would have 1.6% of active and inactive landfills in New York State, or 3.3 active landfills and 20 inactive landfills. Of all 200 active landfills in New York State, Erie County and Niagara County each have 5 (2.5%), and Cattaraugus County has 3 (1.5%). Of all 1,223 inactive landfills in New York State, Erie County has 66 (5.4%), Niagara County has 31 (2.5%), and Cattaraugus County has 26 (2.1%).

None of the three study area counties are amongst the top ten New York State counties in total active landfills (Saratoga County has the most with 19). However, Erie County is tied for the most inactive landfills with Suffolk County at 66, Niagara County is tenth with 31, and Cattaraugus County is twelfth

with 26 (this may be due to the fact that inactive landfills do not fall under a specific regulatory program and may be counted differently across NYS DEC regions).

Table 3-38: Comparison of Solid Waste Landfills				
Location	**Number of Active Landfills**	**Total as % of Total Statewide Active Landfills**	**Number of Inactive Landfills**	**Total as % of Total Statewide Inactive Landfills**
If Equally Distributed	*3.3*	*1.6%*	*20*	*1.6%*
Niagara	5	2.5%	31	2.5%
Erie	5	2.5%	66	5.4%
Cattaraugus	3	1.5%	26	2.1%
NYS	200	100.0%	1223	100.0%

Source: NYS DEC Division of Solid and Hazardous Waste (2009)

3.13.3 Radioactive Waste

US Environmental Protection Agency (US EPA) Radiation Information System

There are only eight sites in New York State on the US EPA Radiation Information System* and the Western New York study has two sites; the former US Department of Energy Niagara Falls Storage site in the Niagara County Lake Ontario Ordinance Works (LOOW) site, and the US Department of Energy West Valley Demonstration Project in Cattaraugus County.

Besides these two in WNY, there are six other sites across the state to include:

- The Brookhaven National Laboratory in Suffolk County
- The Colonie Interim Storage Site in Albany County
- The Environmental Measurement Laboratory in New York County
- LI Tungsten Corp. in Nassau County
- The Radium Chemical Company Inc. in Queens County
- The US DOE Knolls Atomic Power Laboratory in Saratoga County.

* Note : Data does not include spent nuclear fuel stored at operating nuclear power plants.

3.13.4 Conclusions

In each comparison of contamination issues between the Western New York study area and the rest of New York State as measured by distribution by county, the study area has a disproportionate share of contamination. At least one of the three study area counties was near the top of the list in total number of sites with each contamination issue studied. Each county in the study area had more than 1.6% (calculated to be the fair share) of almost every issue studied, the approximate proportion of sites that each county should have if the sites were distributed equally. The only exceptions were Erie County with 0% of the US EPA Superfund Current NPL, and Cattaraugus County with less than 1.6% of NYS DEC Superfunds, NYS DEC Superfund Class 2 sites, US EPA LQGs, and active landfills.

The results of this comparison suggest that, although remedial programs like Superfunds and Brownfield Cleanup sites are attempts to improve our community, Western New York has a legacy of contamination that surpasses most other areas of New York State. The elevated presence of inactive landfills, not directly tied to a remedial program, also show this legacy of waste.

Further, the elevated numbers of sites within the US EPA RCRA program (TSDFs, LQGs, and Corrective Action) show that Western New York is still home to more than its fair share of active hazardous waste sites including hazardous waste treatment, storage, disposal, and generation.

And finally, the presence of the US Department of Energy Niagara Falls Storage site in the Niagara County Lake Ontario Ordinance Works (LOOW) site, and the US Department of Energy West Valley Demonstration Project in Cattaraugus County, demonstrate in themselves that Western New York bares a disproportionately high burden for storing high-level radioactive waste.

3.14 Contamination by Legislative District

Each community in the Western New York study area has multiple layers of local, statewide, and federal elected representation. Each legislator has the ability to influence policy and decisions related to remediation and permitting programs. This section of the report is an example of how the data collected for the study can help citizens influence their elected representatives, and how elected representatives can use data to influence their own decisions.

The following table quantifies the total number of Superfund sites in each state and federal representative's district in Western New York. [Federal Senate Districts are not included since the two representatives, Charles Schumer and Kirsten Gillibrand, represent all of New York State.] Superfund programs are the response of both the US EPA and the NYS DEC to legacy hazardous waste contamination. Of all of the regulatory programs examined in this study, the Superfund programs are probably the most recognizable symbols of contamination

There are 1,185 DEC Superfund sites in New York State. If all 27 Federal House of Representatives districts in the state had an equal share of Superfund sites, each district would have 44 sites located within its boundaries. If all 150 NYS Assembly districts had an equal share, each district would have 8 superfund sites, and if all 63 NYS Senate districts had an equal share, each district would have 19 sites within its boundaries.

WNY Districts that have a higher number of total superfund sites than the state wide average are highlighted in grey on the following table.

Table 3-39: Superfund Sites by Federal and State Legislative Districts[1]						
Federal House Of Representatives Average Number of Superfund Sites by District (Statewide): 44 as of 3/2012						
	Total Superfund Sites[2]	US EPA Superfund	US EPA Superfund Deleted NPL	US EPA Superfund Current NPL	NYS DEC Superfund	NYS DEC Superfund Class 2
23: Thomas Reed	16	4	1	3	16	6
26: Brian Higgins	102	4	3	1	102	25
27: Chris Collins	49	5	2	3	49	12
NYS Assembly of Representatives Average Number of Superfund Sites by District (Statewide): 8						
	Total Superfund Sites	US EPA Superfund	US EPA Superfund Deleted NPL	US EPA Superfund Current NPL	NYS DEC Superfund	NYS DEC Superfund Class 2
140: Robin Schimminger	6	1	1	0	6	1
141: Crystal Peoples-Stokes	16	4	1	3	16	6
142: Mickey Kearn	13	0	0	0	13	5
143: Dennis H. Gabryszak	16	1	1	0	16	3
144: Jane Corwin	20	1	0	1	20	7
145: John Ceretto	41	6	3	3	41	9
146: Kevin Smardz	2	0	0	0	2	0
147: David DiPiertro	26	0	0	0	26	5
148: Joseph Giglio	11	0	0	0	11	3
149: Sean Ryan	16	0	0	0	16	4
NYS Senate Average Number of Superfund Sites by District (Statewide): 19						
	Total Superfund Sites	US EPA Superfund	US EPA Superfund Deleted NPL	US EPA Superfund Current NPL	NYS DEC Superfund	NYS DEC Superfund Class 2
57: Catharine M. Young	16	4	1	3	16	6
59: Patrick M. Gallivan	9	0	0	0	9	1
60: Mark Grisanti	31	1	1	0	31	7
61: Michael H. Ranzenhofer	5	0	0	0	5	1
62: George D. Maziarz	64	7	3	4	64	15
63: Tim Kennedy	42	1	1	0	42	13

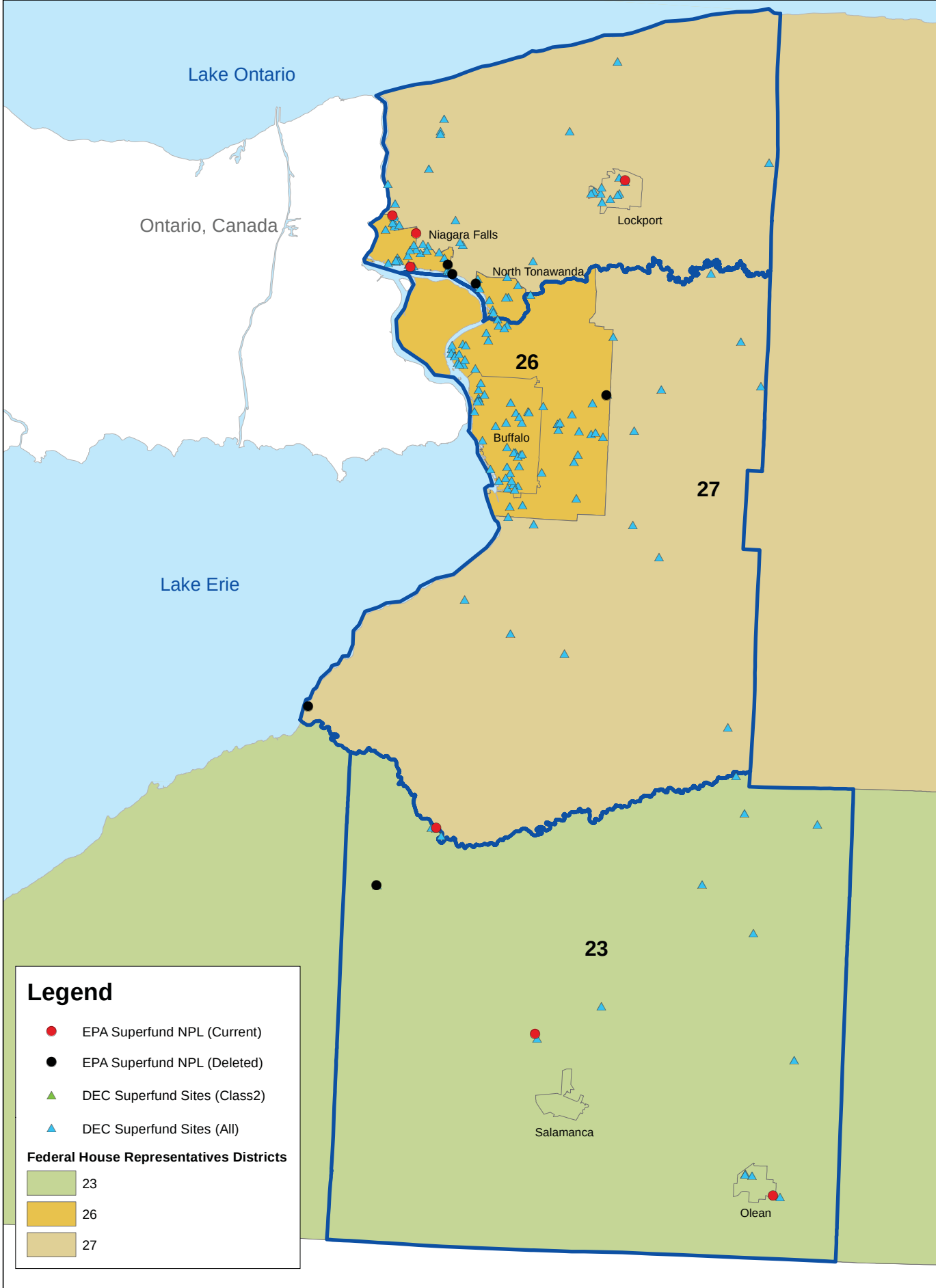
Source: US EPA Superfund Site Information <www.epa.gov/superfund/sites/> (2010-2012) and NYS DEC Environmental Site Remediation Database (1978-2010)

[1]Totals only include Superfund sites within the portion of the legislative district in the Western New York study area (Erie, Niagara, and Cattaraugus Counties)

[2]Note: All Current NPL sites are also NYS DEC Class 2 sites and all Deleted NPL sites are also NYS DEC Class 4 or 5 sites

Maps

1. Study area federal House of Representative Districts overlaid with US EPA and NYS DEC Superfund sites with NPL and Class 2 sites identified
2. Study area state Senate Districts overlaid with US EPA and NYS DEC Superfund sites with NPL and Class 2 sites identified
3. Study area state Senate Districts overlaid with US EPA and NYS DEC Superfund sites with NPL and Class 2 sites identified (urban areas)
4. Study area state Assembly Districts overlaid with US EPA and NYS DEC Superfund sites with NPL and Class 2 sites identified
5. Study area state Assembly Districts overlaid with US EPA and NYS DEC Superfund sites with NPL and Class 2 sites identified (urban areas)



N
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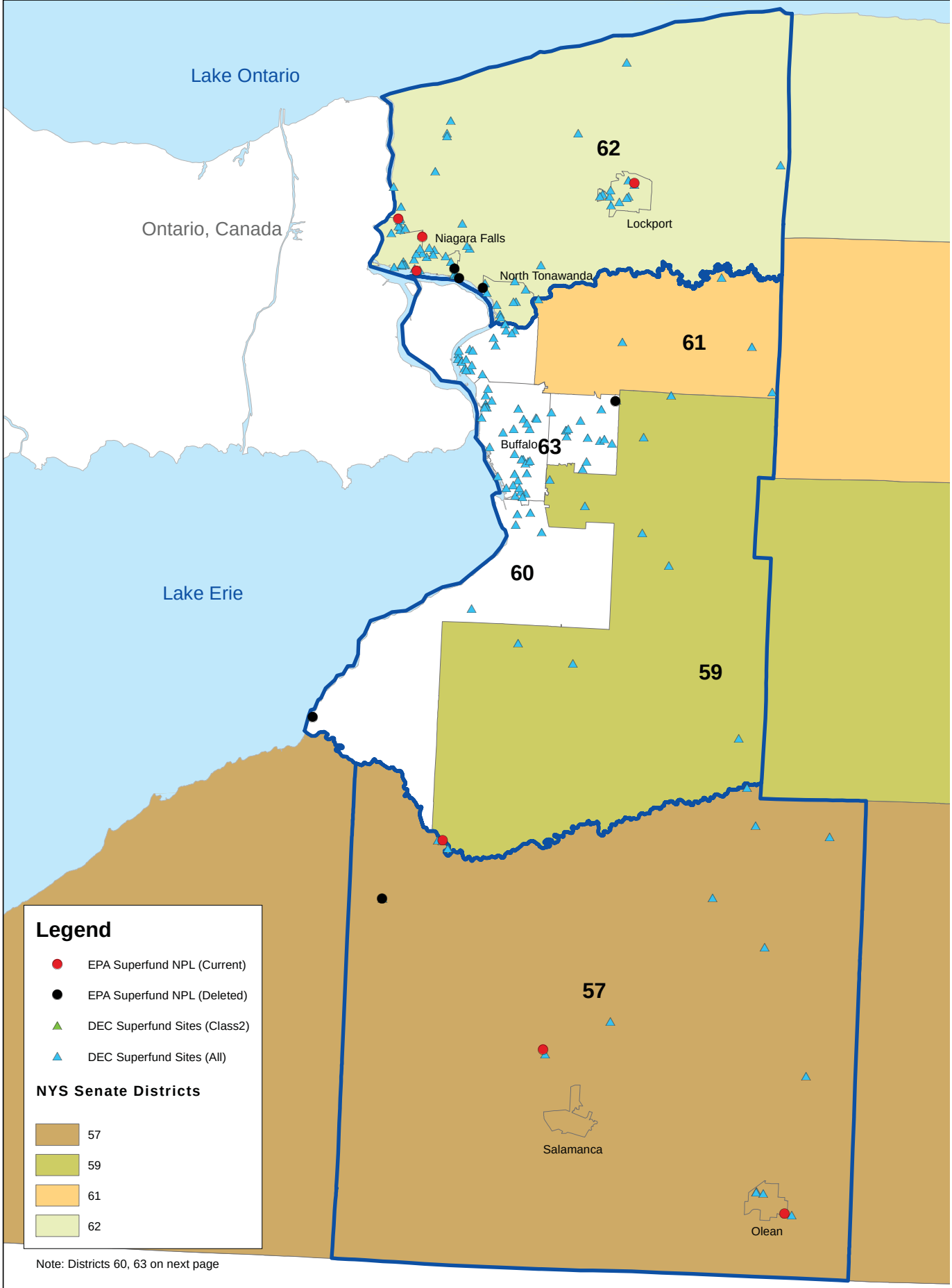
Federal House of Representative Districts

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
March, 2012

Data Source: US EPA (2010) and NYS DEC Environmental Site Remediation Database (1978-2010)



Note: Districts 60, 63 on next page

N
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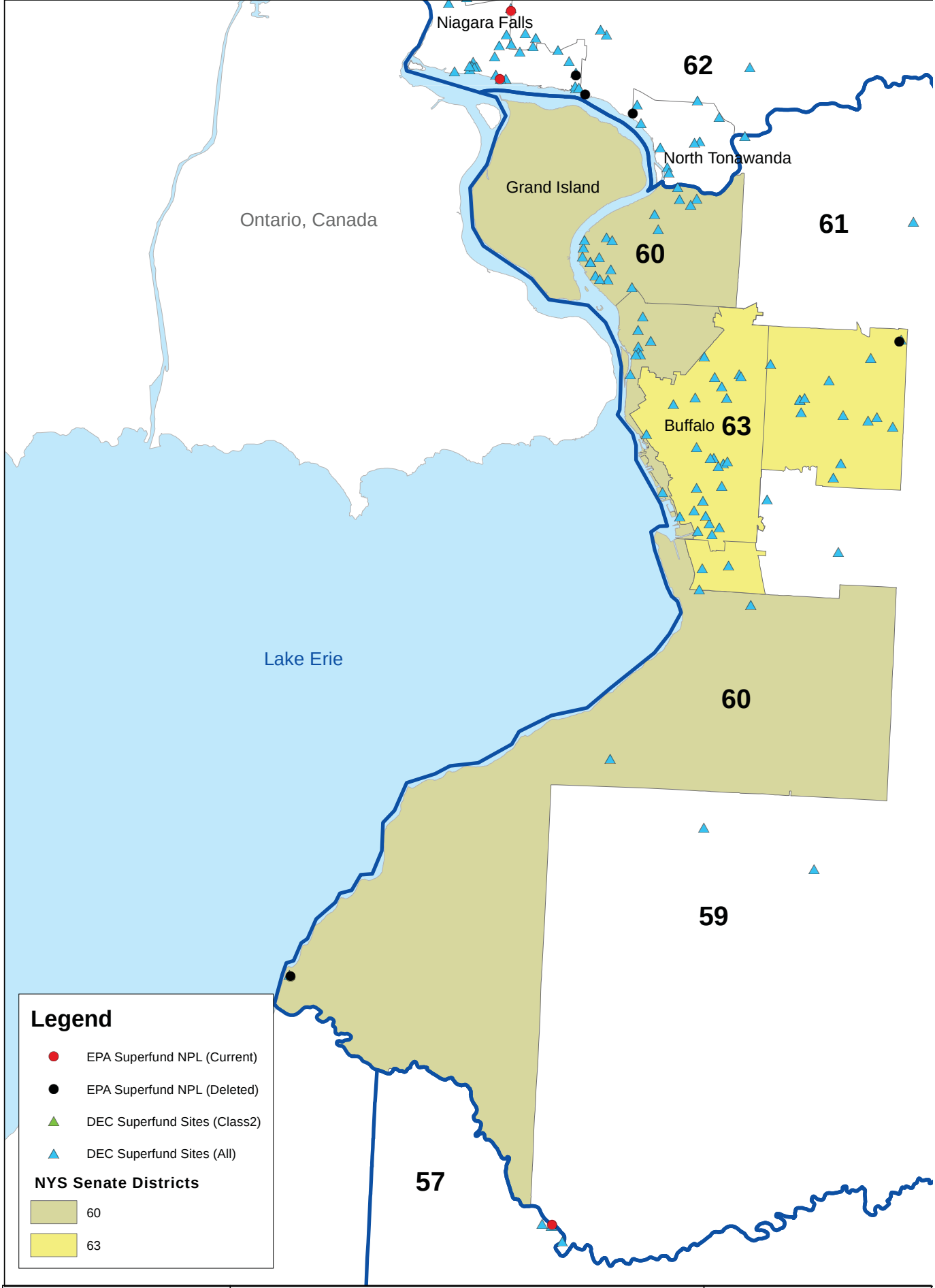
NYS Senate Districts

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
March, 2012

Data Source: US EPA (2010) and NYS DEC Environmental Site Remediation Database (1978-2010)



N
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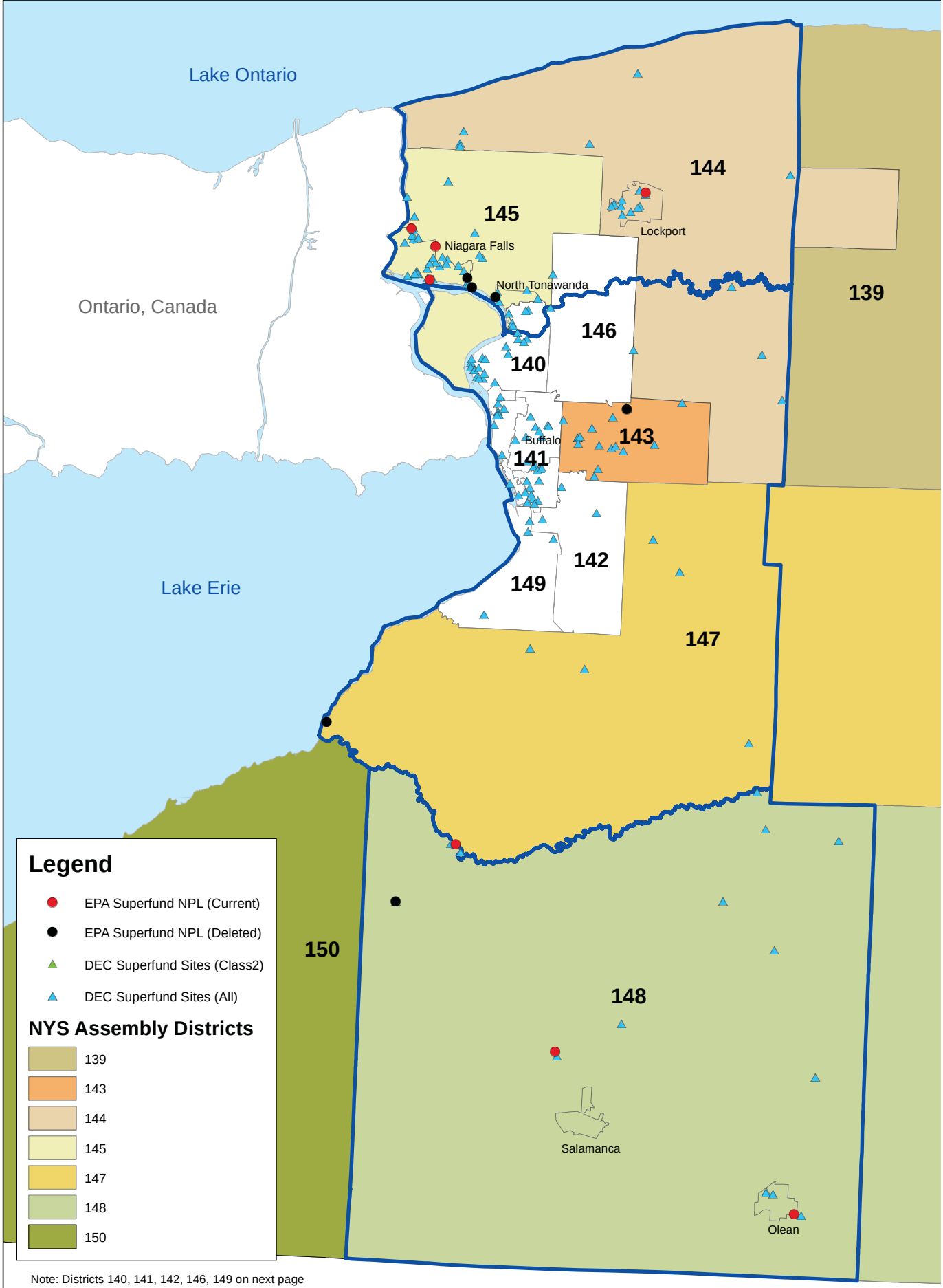
NYS Senate Districts in Focused Area

Mapping Waste

0 1.5 3 6 9 12 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
March, 2012

Data Source: US EPA (2010) and NYS DEC Environmental Site Remediation Database (1978-2010)



Note: Districts 140, 141, 142, 146, 149 on next page

N W E S

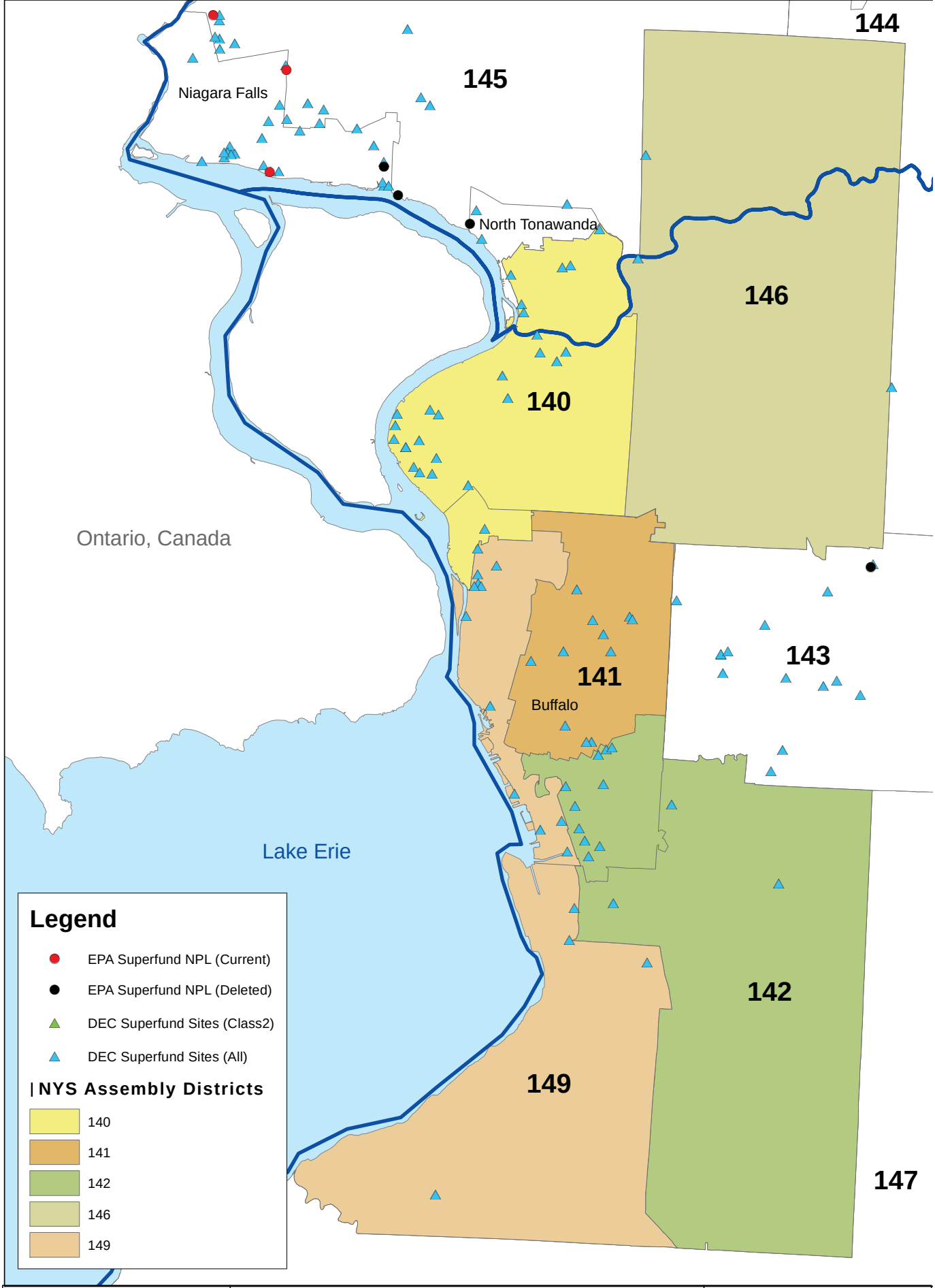
NYS Assembly Districts

Mapping Waste

0 4 8 16 24 32 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
March, 2012

Data Source: US EPA (2010) and NYS DEC Environmental Site Remediation Database (1978-2010)



N
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NYS Assembly Districts in Focused Area

Mapping Waste

0 1 2 4 6 8 Miles

Created by
Urban Design Project
University at Buffalo, SUNY
School of Architecture and Planning
March, 2012

Data Source: US EPA (2010) and NYS DEC Environmental Site Remediation Database (1978-2010)

Endnotes

[1] Source: US EPA < http://www.epa.gov/lawsregs/search/40cfr.html >

[2] Source: US EPA < http://www.epa.gov/lawsregs/laws/caa.html >

[3] Source: US EPA < http://www.epa.gov/lawsregs/laws/cwa.html >

[4] Source: US EPA < http://www.epa.gov/lawsregs/laws/cercla.html >

[5] Source: US EPA < http://www.epa.gov/lawsregs/laws/rcra.html >

[6] Source: NYS DEC < http://www.dec.ny.gov/regulations/40195.html >

[7] Source: US EPA < http://www.epa.gov/superfund/about.htm >

[8] Source: NYS DEC < http://www.dec.ny.gov/chemical/8439.html >

[9] Source: NYS DEC < http://www.dec.ny.gov/chemical/8444.html >

[10] Source: NYS DEC < http://www.dec.ny.gov/chemical/8450.html >

[11] Source: NYS DEC < http://www.dec.ny.gov/chemical/8442.html >

[12] Source: US EPA < http://www.epa.gov/waste/inforesources/data/index.htm >

[13] Source: US EPA < http://www.epa.gov/waste/hazard/tsd/index.htm >

[14] Source: US EPA < http://www.epa.gov/solidwaste/hazard/generation/lqg.htm >

[15] Source: US EPA < http://www.epa.gov/epawaste/hazard/correctiveaction/index.htm >

[16] Source: US EPA < http://www.epa.gov/tri/ >

[17] Source: US EPA < http://www.epa.gov/R5Brownfields/htm/acres.htm >

[18] Source: US EPA < http://www.epa.gov/oem/content/rmp/index.htm >

[19] Source: US EPA < http://www.epa.gov/oecaerth/data/systems/toxics/sstsys.html >

[20] Source: NYS DEC < http://www.dec.ny.gov/chemical/9059.html >

[21] Source: NYS DEC < http://www.dec.ny.gov/chemical/4767.html >

[22] Source: NYS DEC < http://www.dec.ny.gov/chemical/292.html >

[23] Source: US EPA < http://www.epa.gov/glnpo/aoc/ >

Buffalo Niagara Riverkeeper < http://bnriverkeeper.org/ >

[24] Source: US EPA < http://www.dec.ny.gov/permits/6054.html >

[25] Source: NYS DEC < http://www.dec.ny.gov/chemical/8930.html >

US EPA < http://www.epa.gov/compliance/data/systems/air/afssystem.html >

[26] Source: US EPA < http://www.dec.ny.gov/lands/5020.html >

[27] Source: NYS DEC < http://www.dec.ny.gov/energy/205.html >

[28] Source: US EPA < http://www.epa.gov/enviro/html/rad/ >

[29] Source: NYS DEC < http://www.dec.ny.gov/chemical/296.html >

[30] Source: NYS DOH < http://www.health.state.ny.us/environmental/radiological/radon/ >

[31] Source: US ACE < http://www.lrb.usace.army.mil/fusrap/ >

[32] Source: US ACE < https://environment.usace.army.mil/what_we_do/fuds/>

[33] Source: NYS DEC < http://www.dec.ny.gov/public/333.html >

[34]Source : US DOE < http://www.lm.doe.gov/Sites_Map.aspx>

Chapter 4: Case Studies

4.1 Introduction

It is difficult to convey the reality of living in a hazardous waste community without sharing some of the stories. This section describes the background, regulatory history, community response and public health concerns associated with select hazardous waste sites in the area of Erie, Niagara and Cattaraugus Counties. While time limitations prevent us from telling the stories of all the hazardous waste sites in the study area or even going into depth of those reported, those selected represent a good cross-section of the concerns presented by hazardous waste.

The industrialization and militarization of Erie, Niagara and to a lesser degree Cattaraugus County began with the completion of the Erie Canal in 1825 and continues today. The drop in manufacturing across the country after the 1960s deeply affected areas like Erie and Niagara Counties. During this time many large industries closed or moved, leaving behind them more than unemployed workers. Industries like Hooker Chemical dumped hazardous chemicals onto their property and then went bankrupt, leaving the federal government responsible for the designation of the first superfund site and cleanup of Love Canal in Niagara Falls in 1978. In addition, the federal government left contamination in WNY as a result of the war effort that continues to be of concern to the community-at-large.

Since the passing of significant environmental legislation in the 1970s, the remediation of hazardous waste in the area has involved many citizens. Some residential communities in Erie, Niagara and Cattaraugus Counties have found themselves facing the existence of hazardous waste near their homes. In the case of Hickory Woods, houses were built on a former industrial site and residents lived there for over a decade before the hazardous material was discovered and partially removed.

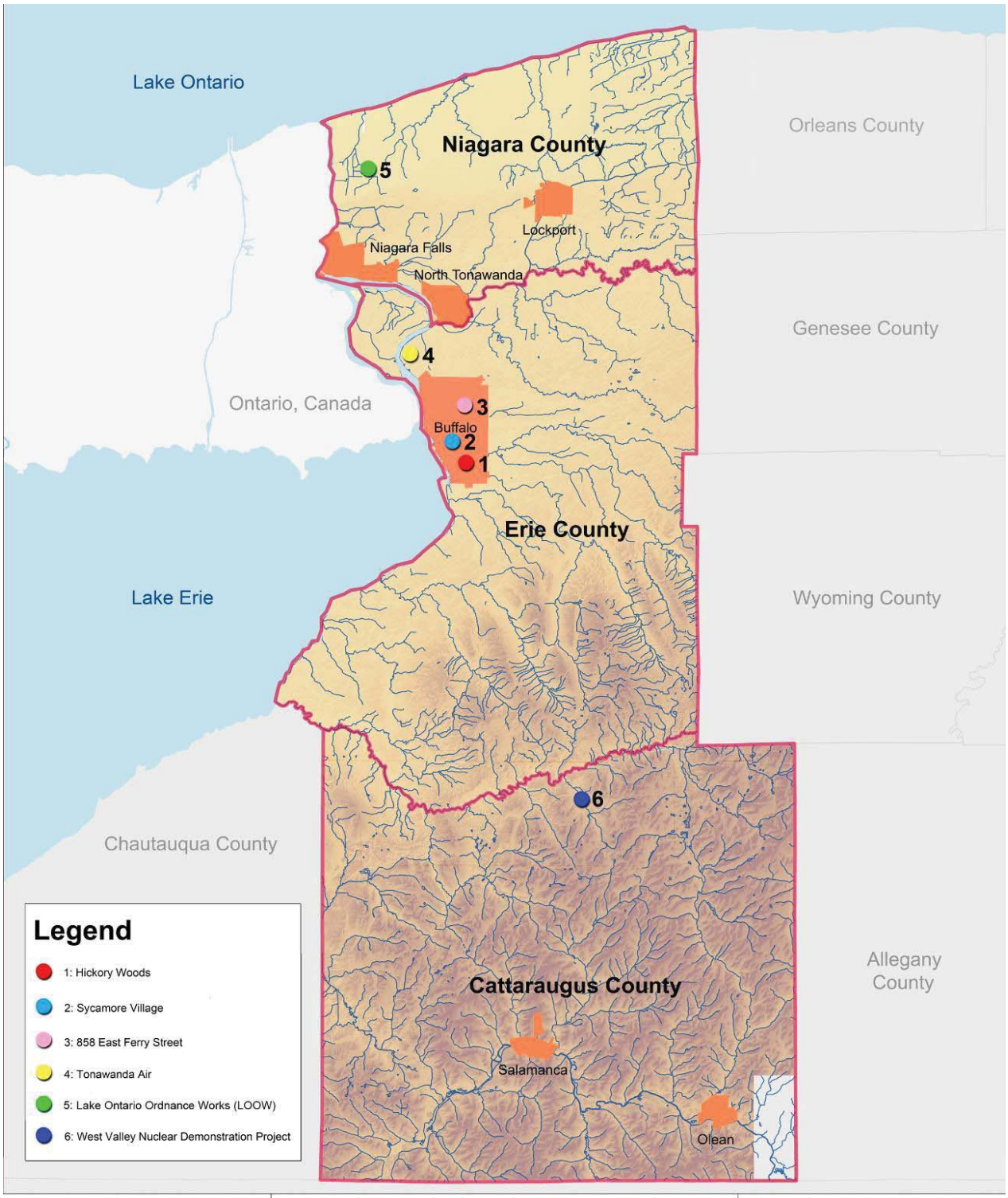
As has been found across the nation, community involvement is almost always necessary for the thorough detection, address, and remediation of residential hazardous waste areas. Community involvement in hazardous waste cases varies from a few individuals to coalitions, from academic studies to media-grabbing rallies. In the case of East Ferry St, it was only after residents spoke out about the large number of autoimmune disorders in their community that regulatory action was taken and the remediation of the New York Superfund site was expanded to include a much larger area Was due to the organized action of the community and elected leaders.

In Erie, Niagara and Cattaraugus Counties, there are several sites that fall under the classification of radioactive waste sites. These include the Niagara Falls Storage Site (NFSS), and adjacent “vicinity properties”, all parts of the former Lake Ontario Ordnance Works, and the West Valley Nuclear site. Various industrial sites in Western New York were used by engineers in the Manhattan Project to process, store, and dump radioactive material. When these defense operations ceased regulators, including the Atomic Energy Commission, the Nuclear Regulatory Commission, the Department of Energy, the US Army Corps of Engineers and the US Environmental Protection Agency, oversaw the remediation of the known and acknowledged sites. Sites like these are not zoned for residential purposes due to their threatening histories.

The Lake Ontario Ordnance Works (LOOW) creates a class of its own, comparable to only one or two other sites in the country. The mixed use of the 1,500 acres has lead to a complex of regulators that are responsible for radioactive and chemical hazardous. The presence of a school and residential housing on the site has raised community concerns. This site sets national precedence for the variety of waste and regulators responsible for the well being of the community and the environment.

The following stories are very brief overviews of some of the issues relative to a select group of hazardous sites in the three county region of Niagara. Some of these stories offer hope of remediation

for historic and on-going contamination; others present the history of repeated frustrations of community people to live in clean places; and all of them are stories of courage and intellectual power of individuals and groups in the face of danger to families and communities.



4.2 Hickory Woods

4.2.1 Summary

Hickory Woods is a residential subdivision with approximately 70 houses in South Buffalo. The property is located next to the former sites of the Donner Hanna Coke Mill and adjacent Republic Steel plant, a 211-acre Class '2' NYS Superfund site, also called an Inactive Hazardous Waste site. Despite records of contamination from the Republic Steel Site spreading to nearby properties, warnings from the NYS Department of Health (NYSDOH) in 1992, and concerns from the initial housing construction contractor, the City of Buffalo constructed homes in the community beginning in 1988, expanding the program in 1992 without a full environmental assessment of the land to be developed.

In 1999, a city inspector was called into a home to investigate an ooze leaking into one of the excavation of a foundation for a Hickory Woods basement. What was discovered was liquid black coke waste. Further inspection in 2000 by the City of Buffalo and the US Environmental Protection Agency (EPA) in 2002, identified elevated levels of coke waste, lead and arsenic in parts of the neighborhood. UB Professor Joseph Gardella was asked by residents in 2000 to evaluate the existing data for contamination hot spots and developed a geographic information analysis project from 2001 to 2009 (Milillo, Ph.D. dissertation, 2009, Gardella, et al., Civic Service, 2010).

The former Republic Steel Site when operating.
Source: Monroe Fordham Regional History Center, www.monroeFordham.org

Remediation of areas with high levels of contaminants in the Hickory Woods neighborhood was conducted through various state and federal programs. In 1999, following the initial discovery of contamination Abby Street, and testing along Abby, the City remediated four properties. Following the results of their testing, in 2003, the EPA remediated five vacant residential properties. Remediation of Boone Park, a public park, was completed by the City of Buffalo and the NY DEC through the NYS Environmental Restoration Program in August 2006. However, significant contamination within residential areas remains in place without a present plan for remediation.

The Former Republic Steel Site as it appears today.
Source: 2010 Microsoft Corporation, www.bing.com

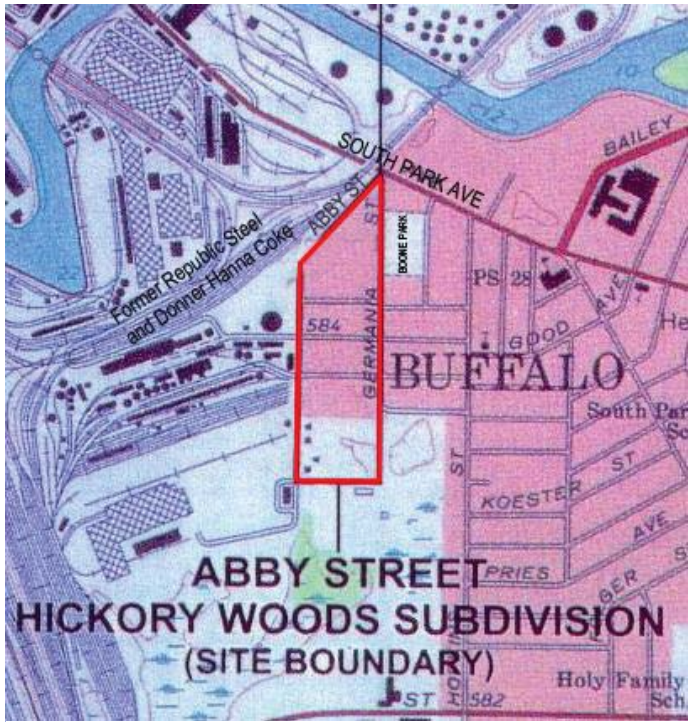
Public health concerns arose following the discovery of contamination in the Hickory Woods subdivision. Reports of thyroid problems in particular warranted a survey conducted by the NYSDOH in 2001. The

results of the survey showed residents of the Hickory Woods community had elevated rates of thyroid problems. When investigated further, these cases were attributed to preexisting conditions and not associated with chemical contamination in Hickory Woods.

Residents of Hickory Woods, through the Hickory Woods Concerned Homeowners Association, filed four lawsuits against the City of Buffalo for exposure to hazardous waste in 2000. In 2008 the group settled the lawsuits for a total of $7.2 million in compensation.

4.2.2 History

In 1988 construction began on several homes in a neighborhood in South Buffalo (Gardella, et. al, in Civic Service, 2009). The housing development was part of a new public housing program run by the City of Buffalo Planning Office that used federal and state housing funds to build subsidized homes. The neighborhood, now known as the Hickory Woods development, bordered the abandoned Republic steel mill and the Donner Hanna coke plant.



A map of the Hickory Woods site prior to development.
Source: Adapted from the US EPA Planning document for sampling in 2002/2003

During this first phase of the Hickory Woods development, the steel mill and coke plant were being demolished and the adjacent 211-acre property, called the Republic Steel site, was classified as a NYS Class 2 Superfund Site, an Inactive Hazardous Waste Site. Inspection of the property by the NYS Department of Environmental Conservation found a variety of waste materials in the 30-foot tall raised landfill. The waste included slag, precipitator dust, clarifier sludge, checker bricks, pickle liquor, blast furnace dust and basic oxygen dust generated by the Republic Steel Plant. A supplemental investigation in 1995 showed that heavy metals were leaking from the landfill to Tifft Nature preserve located 1,000 feet from the site.

The second phase of development in Hickory Woods began in 1992 under Mayor Anthony Masiello (Gardella, et al., in Civic Service, 2009). Larger and more expensive homes were built on property in the Hickory Woods neighborhood given to the City of Buffalo by Ling-Temco-Vought (LTV) Steel, the former owners of the Republic Steel/Donner Hanna plant. The new suburban-style homes were sold at market-price and were hailed as being an improvement to the area.

Despite concerns about potential soil contamination from the adjacent Republic Steel Superfund site, a letter from the NYS Department of Health in 1993, and requests by the housing developer, the City of Buffalo did not conduct an environmental assessment of the Hickory Woods area they were developing (Gardella, et al., in Civic Service, 2009). In 1999, a city inspector was called to a home on Abby St. in the

Hickory Woods community. The inspector found liquid coke wastes on the site. Further inspection revealed more black coke wastes, refractory bricks, and an oozing black substance in the excavated soils (Goldbaum, 2000, Gardella, et al., in Civic Service, 2009).

4.2.3 Public Health

In April 2001, the NYS Department of Health in cooperation with the US Agency for Toxic Substances and Disease Registry released a summary of an exposure study they conducted with help from community groups (NYS DOH "Health Consultation", 2001). The survey they conducted gathered information from people living in each residence, whether they had come in contact with chemical substances in the subdivision, and whether they had health concerns related to potential environmental exposures. When compared to national averages, the results obtained from the Hickory Woods subdivision suggested that there might be higher rates of thyroid conditions among Hickory Woods residents. The NYS Department of Health received detailed comments and a critique of methodology from faculty of the University at Buffalo's Environment and Society Institute (NYS DOH "Response to Comments", 2001). The Health Consultation had assessed contamination risk by evaluating the average concentration over the neighborhood, instead of exposure risks at high concentration spots. The methodology of evaluating risk and the calculation of averages was called into question.

In 2002, the City of Buffalo contracted a firm to perform a peer review of the 2001 Health Consultation (NYS DOH "Fact Sheet", 2004). The peer review panel consisted of three independent scientists. The public was invited to attend a peer review meeting and provide comments to the panel. The panel supported the ESI comments that the use of neighborhood averages was not correct. However, the contracted peer review supported the public health conclusions and the actions recommended as scientifically sound and protective of human health given the information available. Better geographic information analysis was suggested to consider areas of high concentration (hot spots).

The subdivision was developed adjacent to the fenced-off former Republic Steel Site.
Source: The Urban Design Project, 2010)

In response to the community's health concerns, related to a high rate of thyroid problems identified in the 2001 Health Consultation exposure survey, the NYS Department of Health contacted 10 residents who had reported thyroid problems (NYS DOH "Public Comment Draft", 2004). The medical background and symptoms of the eight participating residents was reviewed. No 'usual factors' were found to be in common among the individuals and instead, predisposing conditions were concluded to be the cause of the thyroid conditions.

4.2.4 Regulatory Action

When the City of Buffalo finally discovered high levels of carcinogenic coke waste on nine lots in the Hickory Woods subdivision in 1999, action began to be taken (Gardella, et al., in Civic Service, 2009). Five of the lots were undeveloped but the other four were built. Three of these were owner occupied. Residents were moved out of their houses and these properties were remediated.

In 2000, in response to community concerns, the City of Buffalo called on the US Environmental Protection Agency (EPA) to assist (Gardella, et al., in Civic Service, 2009). The EPA conducted a substantial soil study, taking six-hundred soil samples from 70 homes in the Hickory Woods community. The results of this study showed elevated levels of coke waste, lead and arsenic in parts of the neighborhood. The EPA also funded the remediation of five vacant properties with elevated contaminant levels (CERCLIS).

The NYS Department of Health and the Agency for Toxic Substances and Disease Registry worked with the US Environmental Protection Agency to conduct additional sampling at two 'hot spots', or areas of contamination above threshold levels (NYS DOH "Fact Sheet", 2004).Another 'hot spot' in deeper soil was not re-sampled because the homeowner refused to let the EPA access the property. The two sampled hot spots were excavated by the EPA and the soil was disposed of off-site.

Boone Park

Boone Park is a 3.3-acre property located between Boone and Germania Streets in the built-up residential and commercial area of the Hickory Woods Development (ERD). The park is owned by the City of Buffalo. Boone Park has a playground and was regularly used by community members for outdoor recreation. In 1999, when the US Environmental Protection Agency (EPA) conducted subsurface soil sampling in conjunction with activities at the Hickory Woods subdivision, high levels of contamination were detected in the park. Test results showed elevated levels of arsenic in the baseball field area of the park.

Boone Park, a popular neighborhood destination, was found to be heavily contaminated with arsenic.
Source: Urban Design Project

The park was closed by the City of Buffalo as a precaution (ERD). The site was entered into the NYS Environmental Restoration Program in 2003 by the City of Buffalo. The Environmental Restoration Program provides municipalities with funding to investigate and remediate eligible inactive hazardous waste areas. A site investigation, completed in 2004, supported previous findings. These results were used to compile a plan for public review (NYS DOH "Fact Sheet", 2004). In March 2006, a Record of Decision was passed stating remediation on the site was complete (ERD). Remediation of Boone Park was subsequently completed in August 2006.

The Environmental Protection Agency also sampled 22 residential yards around Boone Park to investigate whether the presence of arsenic contaminated surface soil was isolated to the area of Boone

Park (NYS DOH "Fact Sheet", 2004). The results of this study showed an average arsenic level comparable to the level found in typical NYS soils. Geographic Information Analysis of the data showed localized areas of elevated arsenic contamination on individual border lots (Milillo, Ph.D. dissertation, 2009, Milillo et al, Analytical Chemistry, submitted, 2010) The NYS Department of Health determined that the exposure and cancer health effects risk was at the same level as other areas in NYS. Community concern over arsenic contamination from Boone Park still exists.

4.2.5 Community Action

Residents began to get involved in the contamination issue following the identification of liquid coke waste on nine properties in the Hickory woods community and the subsequent relocation of three home-owners and remediation of the properties in 1999 (Gardella, et al. in Civic Service 2009). People raised concerns about the identification of contamination 'hot-spots', the source of contamination found in various areas around the neighborhood, and the transport of contaminated soil through their neighborhood by city employees. Residents were particularly uncertain about the limited scope of the remediation and the justification for it.

A demonstration at Hickory Woods.
Source: Hickory Woods Concerned Homeowners Assn.

To address these concerns, at the request of residents in 2000, a team of graduate students from the University at Buffalo, lead by Dr. Joseph Gardella, Jr. began a ten year project developing an approach to categorizing and analyzing the soils data from the EPA study and all previous studies by geographic information analysis (Gardella, et al., in Civic Service, 2009). Several graduate theses, culminated by Milillo's Ph.D. dissertation (Milillo, 2009), evaluated geographic distributions of contaminants and developed a remediation plan for the neighborhood, for elevated regions of land with high lead, PAH and arsenic. No further remediation has been planned, as the equity settlements of lawsuits are just concluding.

The Hickory Woods Concerned Homeowners Association is a non-governmental organization that formed in late 1999. The goal of the association is to provide the residents of Hickory Woods with a venue for gathering and disseminating information to resolve the issue of contamination in their neighborhood.

Rick Ammerman, leader of the Hickory Woods Concerned Homeowners Association stated: "The Hickory Woods development was funded by federal and state dollars and administered by the City of Buffalo, so there is a mistrust, and a founded mistrust, on the part of residents of any function of government. When we're asked to believe something from government, we want to have some kind of check on them from someone who is completely disassociated from this." (Goldbaum, 2000)

In 2000, 277 plaintiffs who presently or formerly resided in the Hickory Woods Development filed four lawsuits against the City of Buffalo in response to decision to develop on contaminated property (Cutler, 2008). The litigations were for personal injuries and any property damages that resulted from the

contamination of the site and its remediation. In October of 2008, the City of Buffalo and the Buffalo Urban Renewal Agency approved settlement funding of $7,200,000. The funding was held by a local FDIC-insured band and allocated by the City of Buffalo Court. The Court was made responsible for the allocation of funds to each resident and disbursing the settlement funds appropriately. Funds were distributed in accord with the following considerations; loss of value to the plaintiff's real or personal property, relocation or moving cost, lost quality of life, personal injuries, and economic losses.

Plaintiffs were responsible for presenting evidence on the nature and extent contamination impacted their quality of life. Their attorney Richard Lippes said, "Of the people who make the personal injuries, they run the gambit from birth defected children, people with cancer, to people with relatively minor injuries." (Sabadasz, 2007) After eight years of legal battles, the settlement was welcome by residents.

Many residents chose to continue living in the Hickory Woods Development. As a result, the City of Buffalo and the NYS Community Enhancement Facilities Assistance Program allocated a total of $625,000 for infrastructure improvements to the neighborhoods (Meyer, 2009). Improvements included new sidewalks and curbs for a 40-block area.

4.2.6 Current Status

Residents have continued living in the Hickory Woods subdivision since the discovery of contamination in 1999. The remediation of areas with high contamination levels has been completed on a total of 9 properties by the US EPA and the City of Buffalo. Remediation at Boone Park has also been completed and the park is once again open to the public.

Residents of the Hickory Woods community have received the funds for equity loss allocated to them after the settlement of four lawsuits against the City of Buffalo in 2009, eight years after the lawsuits were filed.

A birds-eye view of Hickory Woods today, with the former Republic Steel to the west of Abby Street(lower).
Source: 2010 Microsoft Corporation, www.bing.com

4.2.7 Lessons Learned

Hickory Woods is a reminder of the consequences associated with inadequate site testing prior to development. It was only after eleven years of development of the Hickory Woods subdivision that the City of Buffalo conducted soil sampling on the site. The discovery of coke waste and byproducts of coke manufacturing alarmed homeowners and led to a costly federal investigation of the area. In the end this negligence cost the City of Buffalo $7.2 million in settlement money and more in remediation efforts that would have been easier prior to the construction of the subdivision.

As a consequence of this case, the City of Buffalo has taken precautions to avoid repeating this scenario in other parts of Buffalo. The experiences at Hickory Woods and the discovery of contamination at the Sycamore Village following initial construction of a subdivision has led to a new regulation in Spring 2010 (Schulman 2010). The City of Buffalo now mandates that extensive soil remediation be performed on all properties intended for residential or commercial uses that have been purchased from the City of Buffalo. Developers are now responsible for excavating and removing two feet of soil from properties to insure future residents are not exposed to contaminants left over from Buffalo's industrial legacy.[i]

4.2.8 Citations

Cutler, Peter. "Mayor Brown Finalizes Hickory Woods Settlement." *The City of Buffalo – Archive Press Releases*. January 2008.

"Envirofacts; Superfund (CERCLIS)." The U.S. Environmental Protection Agency. Accessed May 24, 2010. http://oaspub.epa.gov/enviro/cerclis_web.report?pgm_sys_id=NYSFN0204229

"Environmental Site Remediation Database (ERD) - Search Details; Site Name: Republic Steel (LTV)" The NYS Department of Environmental Conservation. Accessed May 24, 2010. <http://www.dec.ny.gov/cfmx/extapps/derexternal/haz/details.cfm>

"Environmental Site Remediation Database (ERD) - Search Details; Site Name: Boone Park" The NYS Department of Environmental Conservation. Accessed May 24, 2010. <http://www.dec.ny.gov/cfmx/extapps/derexternal/haz/details.cfm>

Gardella, Joseph, Tammy Milillo, Gaurav Sinha, Gunwha Oh, David Manns, Eleanor Coffey. "Linking Community Service, Learning and Environmental Analytical Chemistry." *Analytical Chemistry*. 2007. 79(3); pp 810-818.

Gardella Jr., Joseph A., Tammy M. Milillo, Gaurav Sinha, Gunwha Oh, David C. Manns, and Eleanor Coffey, "Linking advanced public service learning and community participation with environmental analytical chemistry: lessons from case studies in Western New York", Chapter in Civic Service: Service Learning with State and Local Government Partners, David Redlawsk and Thomas Rice, Editors, Jossey-Bass, San Francisco, CA, 2009, pp 189-212.

[i] Many urban residential areas, in close proximity to former industrial sites and high urban automortive and truck traffic, have some level of chemical contamination. Thus, a law that specifies a testing procedure to determine safety would be useful before excavation is done.

Goldbaum, Ellen. “Students Tackle Hickory Woods Issue.” *The UB Reporter*. March 2000: vol. 31, num. 25.

NYS Department of Health, Center for Environmental Health. “Health Consultation; PUBLIC COMMENT DRAFT. Thyroid Condition Follow-Up Report, Hickory Woods Subdivision.” April 2004

Meyer, Brian. “Hickory Woods Infrastructure Improvements Planned.” *The Buffalo News*. April 10, 2009.

Milillo, Tammy M. *Applying Geostatistical Interpolation Methods to Studies of Environmental Contamination of Urban Soils and Image Analysis of Time-of-Flight Secondary Ion Mass Spectrometry*. Ph.D. Dissertation, Department of Chemistry, University at Buffalo, SUNY, May, 2009.

Milillo, Tammy M. , Christopher M. Case, Gaurav Sinha, Eleanor S. Coffey, Joseph A. Gardella Jr., Indicator Kriging Analysis of Surface and Subsurface Soil Contamination to Determine Background Concentrations of Arsenic and Lead", *Analytical Chemistry,* submitted.

NYS Department of Health, Center for Environmental Health. “NYS DOH and ATSDR Response to Comments on: Health Consultation; Evaluation of Environmental Data Collected in 2000, Abby Street/Hickory Woods Subdivision.” April 2001.

NYS Department of Health. “Fact Sheet – Hickory Woods.” May 2004.

Sabadasz, Michelle. “Hickory Woods Settlement.” *WKBW.* October 17, 2007.

Schulman, Susan. “Developers Critical of City Regulations Calling for Soil Remediation.” *The Buffalo News*. April 25, 2010.

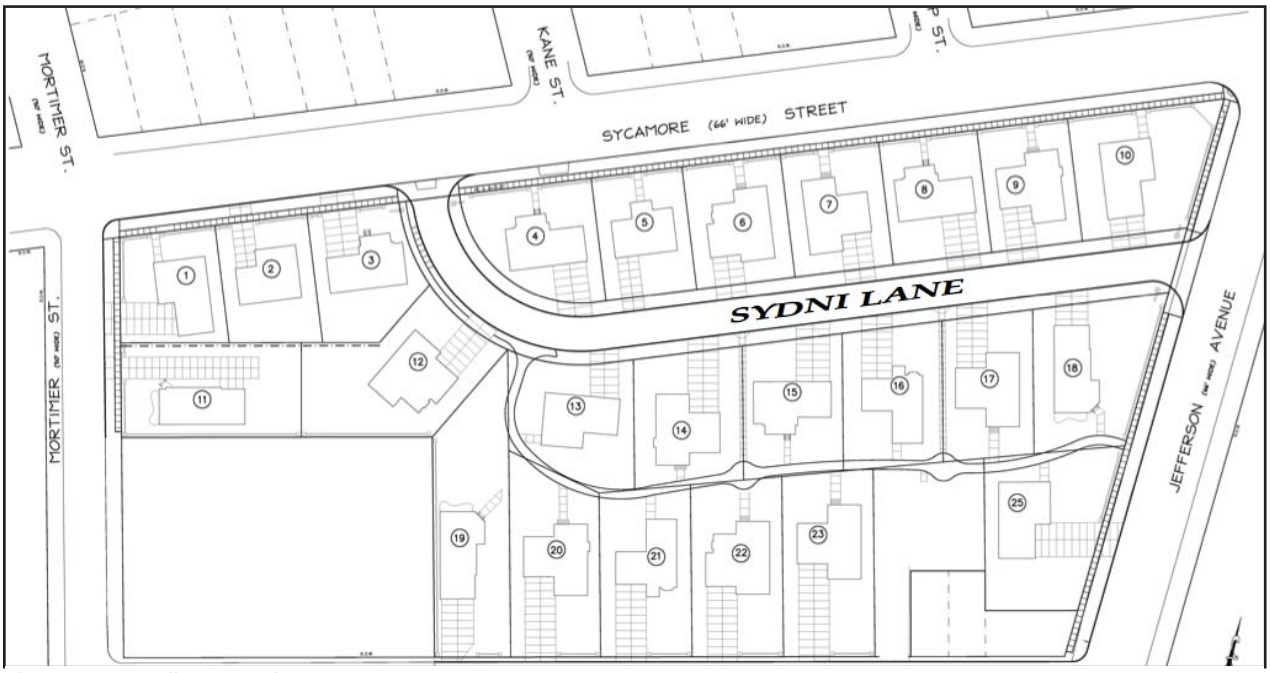
4.3 Sycamore Village

4.3.1 Summary

Sycamore Village is a residential development located in the City of Buffalo in Erie County. The development is on 3.86 acres, residentially/commercially zoned property located at the southwest corner of Jefferson Ave. and Sycamore St. There is a long history of commercial use of the Sycamore St. property. A soft drink bottling plant operated on the site from ~1920 to 1984. Other uses of the property included a cleaning business, and auto repair shot and a scrap yard. Soil contamination may also be attributed to the former Buffalo Forge Plant, located adjacent to the Sycamore St. property.

Contamination on the site was first detected by the City of Buffalo during the construction of residential buildings on the property in 2001. Subsequent investigations running from 2001 to 2005 found elevated levels of lead, mercury, chromium and polycyclic aromatic hydrocarbons. The site was classified as 'A' under the NYS Inactive Hazardous Waste Program, also known as the State Superfund Program. Investigation on the site and adjacent sites was completed in December of 2006 by the City of Buffalo through the NYS Environmental Restoration Program. Remedial action undertaken on the site included excavating all soil above bedrock on the property and relocating it offsite. The removal of contaminated soil cleared the land for unrestricted development by February 2007.

Fifteen new houses are now constructed on the site with nine more planned. Residents have been moving into the new homes. The development has gained positive attention from the community as a model of alternatives to the vacant, contaminated lots that are abundant in the area.



The Sycamore Village site-plan.
Source: City of Buffalo Office of Strategic Planning.

4.3.2 History

A large portion of the 3.86-acre Sycamore St. property was once the location of a soft drink bottling plant (ERD, 2010). Operations at the plant began between 1915 and 1929 and continued until 1984. Sheet, a sheet metal works was listed at the same address until 2001 when the building was demolished. Past uses for other parts of the site include an auto repair shop, a scrap yard, a cleaning business, and a paint/wallpaper store. Surface and subsurface soil contamination at the site; including lead, mercury, chromium, cadmium, and polycyclic aromatic hydrocarbons, could be associated with fill materials from onsite practices or dumping from activities that went on near the site. The former Buffalo Forge plant is located to the west of the block on the opposite side of Mortimer St.

In 2002, the Masiello administration of Buffalo hired M.J. Peterson developers to build homes on the Sycamore Village site (Schulman, April 2010). Despite the experiences at Hickory Woods, approval to begin construction at Sycamore Village was given by the Masiello administration's City of Buffalo Real Estate office, ***without*** the results from Phase I environmental assessment (Gardella, personal communication). Three homes were under construction when Phase I results showed extensive contamination with heavy metals including chromium, lead and mercury (Schulman, April 2010). The site was classified as an 'A' site under the NYS Registry of Inactive Hazardous Waste Sites, also called the NYS DEC Superfund Program.

The site sat vacant under the authority of the City of Buffalo until its cleanup (Cutler, 2008). In 2006 the three partially built houses were demolished by the City of Buffalo and remediation began under the NYS DEC Environmental Restoration Program.

A birds-eye view of Sycamore Village during construction.
Source: 2010 Microsoft Corporation, www.bing.com

4.3.3 Regulatory Action

Environmental Clean-up efforts at the formerly industrial Sycamore Village were funded through the NYS Environmental Restoration Program. The program contributed over $1 million to the Sycamore Village site remediation (Cutler, 2008).

The NYS Environmental Restoration Program is administered by the NYS Department of Environmental Conservation (NYSDEC) with authorization from the 1996 Clean Water/Clean Air Bond Act. The program awards grants to municipalities to clean-up hazardous waste or petroleum contamination caused by private entities. Grants are not eligible for funding if the property is listed as a Class 1 or Class 2 on the NYS Registry of Inactive Hazardous Waste Sites. The City of Buffalo identified the environmental, economic and public benefit that could be derived by the remediation of the Sycamore Village site through the NYS Environmental Restoration Program. As a result the Sycamore Village site was accepted into the program in 2005 (ERD, 2010).

Remedial investigation of the site was administered by the City of Buffalo under oversight by the NYSDEC. The history of investigation of the site included Phase I, completed in 2001, Phase II and III, both completed in 2002 (ERD, 2010). Another site investigation was conducted in 2005 under the Environmental Restoration Program. The area covered by the 2005 investigation included the Sycamore St. property and adjacent properties.

The investigations conducted on the site had similar findings. The investigations identified elevated levels of some metals (lead, mercury, chromium, and to a lesser extent cadmium) and polycyclic aromatic hydrocarbons in the surface and subsurface soils of the Sycamore St. property (ERD, 2010). Investigation of the site was completed in December of 2006 (ERD, 2010).

Remedial action on the site began in February 2006. It was conducted by the City of Buffalo through several contracted firms. Several on-site facilities were knocked down and removed (Cutler, 2008). By May 2006, all soil to the top of bedrock across the site had been excavated and disposed of offsite, at the Town of Tonawanda Landfill (ERD, 2010).

In September of 2006 a Proposed Remedial Action Plan was issued suggesting 'no further action' to be taken on the site (ERD, 2010). The Sycamore Village cleanup met the same standard of protection that applies to remedial actions taken under the NYS Inactive Hazardous Waste Disposal Site Remediation program (DEC ERP). The NYS DEC inspected the property after remediation was completed. They determined that cleanup was complete on the property and sufficient for the free use of the property in February of 2007 (ERD, 2010).

4.3.4 Community Action

Public comments were accepted for the Proposed Remedial Action Plan from September to November 2006 (ERD, 2010). The public was generally supportive of the proposed cleanup.

4.3.5 Current Status

The Sycamore Village property has been completely remediated in accordance with the NYS Environmental Restoration Program. Following cleanup of the property, the City of Buffalo began construction on the Sycamore Village development in November 2007. Fifteen homes were built in Phase 1 and Phase 2 of the project and another nine are planned for Phase 3 (Schulman, April 2010). There are four different suburban-style home designs in the development. The plan called for the construction of 20 market rate homes and 4 low to moderate-income units (Cutler, 2008). All of the homes received substantial subsidies from the City of Buffalo who was selling the higher priced

$225,000 homes for $178,000 (Schulman, March 2010). An additional incentive for residents is ten years of discounted property taxes.

The homes were meant to provide middle and some low income families with an affordable and comfortable place to live in Buffalo's East-side. Significant street and streetscape improvements to Sycamore, Jefferson, Mortimer and Mathews Streets accompanied the construction of the new development. In November of 2008, Sycamore Village was officially opened to the public by Mayor Byron Brown of Buffalo (Cutler, 2008).

Community interest in the Sycamore Village development built on the former hazardous waste site has resulted in the sale of 14 out of 15 homes built in Phase 1 and 2 of the project. Another 9 homes are planned but construction is undergoing review due to budget shortfalls. Discussion on the soil policy of the City of Buffalo is ongoing, following the passage of a new regulation for residential developers on City-owned property (Schulman, April 2010).

The Sycamore Village development was welcomed by local political leaders. "We hope that the bright future of this site and the collaboration that it represents will be an inspiration to other brownfield areas throughout the state," said NYS DEC Regional Director Abby Snyder at the developments opening (Cutler, 2008). There are hopes that the development will help stabilize a neighborhood that had been in transition for years. CPC's WNY Office, a partial financer of the developments' construction, believes the project will contribute to the growth and reinvigoration of Buffalo's East-side (Cutler, 2008).

The pedestrian-friendly community of new homes has been successful in attracting residents dedicated to the well being of the area. Professionals, including school administrators and corrections officers have chosen to live in Sycamore Village as opposed to similarly priced homes in Buffalo's suburbs. Keith Barnes, the realty agent for the development said, "Most of the customers who purchase in that part of the city have a consciousness about the community… they like the idea of being part of something new and part of revitalization" (Schulman, April 2010). The development has sparked controversy however, regarding City subsidies of the development and the affordability of the homes (Schulman, 2010).

Sycamore Village today.
Source: The Urban Design Project, 2010

4.3.6 Lessons Learned

The discovery of heavy metals on a site under construction for residential purposes alarmed the City of Buffalo. The cost of demolishing the three new homes built by M.J. Peterson in 2002 was a big financial loss to the City of Buffalo. The expensive demolition of the three homes built on the Sycamore Village site prior to cleanup, and lawsuits over contamination in the Hickory Woods neighborhood, has resulted in a new city regulation regarding developers' role in environmental remediation (Schulman, April 2010).

Beginning in the spring of 2010, the City of Buffalo requires extensive soil remediation prior to construction on a new house. The regulation applies to all residential development on land provided by the City of Buffalo. Under this regulation, approximately two feet of soil must be removed and replaced with certified clean fill to reduce the potential for exposure to heavy metals in the soil. The cost for this type of soil remediation is expected to be between $30,000 and $40,000 for developers. Although these costs can be reimbursed by the federal government 'development subsidy' program, they still present a barrier to some residential developers in the City of Buffalo.

The Sycamore Village development, like many other new housing developments in the city from the last three decades, includes only single family detached housing units on large lots. This 'suburban' style of development decreases population density, making it difficult for neighborhoods to support local retail, and increases automobile dependency.

4.3.7 Citations

Cutler, Peter. "Mayor Brown Officially Opens Sycamore Village to New Residents." *The City of Buffalo*. November 2008.

"Environmental Restoration Program." The NYS Department of Environmental Conservation. Accessed May 24, 2010. <http://www.dec.ny.gov/chemical/8444.html>

"Environmental Site Remediation Database (ERD) Search – Site Name: Sycamore Village." NYS Department of Environmental Conservation. Accessed May 24, 2010. <http://www.dec.ny.gov/cfmx/extapps/derexternal/haz/details.cfm>

Office of Strategic Planning. "The Sycamore Village Experience." The City of Buffalo. http://www.ci.buffalo.ny.us/Home/City_Departments/Office_of_Strategic_Planning/sycamorevillage

Schulman, Susan. "Sycamore Residents Devoted to East Side Revitalization." *The Buffalo News*. April 25, 2010.

Schulman, Susan. "Housing upgrades – at any cost." *The Buffalo News.* March 8, 2010.

Schulman, Susan. "Developers Critical of City Regulations Calling for Soil Remediation." *The Buffalo News*. April 25, 2010.

"The Sycamore Village Experience." The City of Buffalo. <http://www.ci.buffalo.ny.us/Home/City_Departments/Office_of_Strategic_Planning/sycamorevillage>

4.4 858 East Ferry

4.4.1 Summary

The East Ferry site is an example of community action driving the remediation of this residential-area hazardous waste site. The 858 East Ferry St. site is located in the Masten District of the City of Buffalo, Erie County. The site is a 3.32-acre property surrounded by approximately 21-acresof private property zoned as industrial.

The contamination found at the 858 E. Ferry St. site originated from a lead-smelting facility at 856 E. Ferry St. that was owned and operated by the Michael Heyman Company from 1917 to 1978. Lead ash was dumped on the surface of the 858 E. Ferry St. property. In 1997, the City of Buffalo tested the site and became aware of contaminates in the soil. Ownership of the site was turned over to the NYS Department of Environmental Conservation. A Record of Decision for the site was released in March 1999 and the site was classified as a Class 2 Inactive Hazardous Waste site, or Superfund site. Remediation of the site was put on hold until 2004 due to a lack of funding for the NYS Environmental Restoration Program. Investigation of the 858 E. Ferry St site and surrounding off-site properties was completed in August 2005. Remediation of the 858 E. Ferry St. site and moderate remediation of the surrounding sites was completed in 2009. Costs for the cleanup exceeded $9.5 million. The site was reclassified a “C” in 2009.

858 E. Ferry St. and the surrounding properties. The soil study site shows the extent of the area under investigation by the University at Buffalo for the Buffalo Lupus Coalition.
Source: Gardella, 2003.

Community involvement in the site began in response to high rates of lupus and other autoimmune disorders among former and current residents of the neighborhood around the East Ferry St. site with the formation of the Toxic Waste Lupus Coalition (TWLC), (Nakazawa, 2008). In collaboration with the University at Buffalo, the TWLC began the Buffalo Lupus Project and individuals pushed for justice for their relatively low-income African-American community. Their efforts were ultimately successful in not only cleaning the site, but making the public aware of environmental justice issues at a larger level.

4.4.2 History

The first known contamination at the East Ferry site was at the address 858 E. Ferry Street. This 3.32-acre site is currently zoned industrial (NYS DEC, 2005). Historic maps and photographs from the early 1900's indicate that a building has never occupied the site. The site was bisected from east to west by the Scajaquada Creek, which was redirected through the site in a sub-grade 'covered drain'. Soil sampling suggested that the property was used for ash disposal. There were two separate ash beds that were used to dispose of ash. Other waste like glass bottles and ceramic waste were also found buried in the beds.

The property immediately to the west, 856 E. Ferry, was the site of a zinc and lead smelting and refining company owned and operated by the Michael Heyman Company from 1917 to 1978 (Nakazawa, 2008). TNT Auto currently owns 856 East Ferry St. A pathway from the metal casting facility on the 856 site to the 858 E. Ferry St. site suggests that the Heyman facility is responsible for the lead-contaminated ash on the 858 E. Ferry St. site.

4.4.3 Public Health

The East Ferry site is currently an environmental justice area recognized by the NYS Department of Environmental Conservation in order to identify the disproportionate adverse environmental impacts that may exist in low-income and minority communities.

The neighborhood records a high rate of autoimmune disorders among former or current residents of the neighborhood around 858 East Ferry St. The history of poor health in the community is largely based on individual accounts (Nakazawa, 2008). Business owners, church leaders and other individuals involved in the community began noticing a pattern in their neighbor's woes; many dealt with community members developing lupus and other related autoimmune disorders. It's believed the trend started around 1985.

Lupus is an autoimmune disorder that approximately 1.5 million Americans currently have (Nakazawa, 2008). It can be detected through a simple blood test by an experienced doctor and symptoms can be controlled by steroids and immune-suppressing drugs. However, if it goes undiagnosed, the disease can quickly shift from short periods of mild symptoms to a life-threatening illness. These afflictions are caused by the malfunction of one's immune system. The immune fighter cells, which normally protect the body, turn against organ tissues, including the joints, kidneys, heart, lungs, brain, blood or skin. This inflicts severe pain, inflammation and significant cellular damage, leading to organ failure.

Few people in the predominantly African-American community around the East Ferry area could afford regular preventative medical visits and diagnostic tests that would allow for the early detection of lupus

(Nakazawa, 2008). Thus, many fell ill with varying symptoms and eventually found these were caused by lupus and other related autoimmune disorders like scleroderma.

4.4.4 Regulatory Action

The 858 East Ferry St. site under remediation.
Source: Sullivan 2008

Prior to proceeding with development plans at 858 East Ferry St., the City of Buffalo had the soil on the property analyzed (Nakazawa, 2008). The degree and intensity of contamination was investigated by the NYS Department of Environmental Conservation from 1997 to 1998 through the DEC's Environmental Restoration Program (NYS DEC, 2005). Soil and water samples showed high enough PCB concentrations to deem the site a hazardous waste site (Nakazawa, 2008). The DEC also reported that a heavy concentration of lead ash was intermingled with the topsoil all over the 3.32-acre site. Soil sampled showed lead levels ranging between 19,900 to 96,000 ppm, higher than the EPA's safety level of 1,000 ppm.

In March 1999, the New York State Department of Environmental Conservation (NYSDEC) approved a Record of Decision (ROD) for the 858 E. Ferry Street site (nys DEC, 2005). The ROD called for the excavation and off-site disposal of contaminated soil from the 858 East Ferry St. property under the State Superfund Act. The following year, the site was included in the NYS DEC registry of inactive hazardous waste sites as a Class 2 Inactive Hazardous Waste Site, also referred to as a Class 2 Superfund Site. Class 2 sites pose "a significant threat to public health or environment – action required."

The remediation of the 858 E. Ferry St. project was put on hold from 1999 to 2004, before it had started, because no money was left in the NYS Superfund Program (Nakazawa, 2008). No signs were put up by the NYSDEC or the City of Buffalo and residents could traverse the property. The investigation of the area was also preemptively halted. Normally sampling is done on properties near a Superfund site, but because no funding remained, no sampling was done on properties immediately surrounding the 858 E. Ferry St. site.

In 2001 a Phase II field investigation on 750, 810, and 828 E. Ferry St. properties began and was completed under the DEC's Environmental Restoration Program (NYS DEC, 2005). These sites were not included in the 1999 ROD. The 856 E. Ferry St property, owned by TNT Auto, was also investigated in 2002, as was the 812 E. Ferry St property. All of these properties were privately owned and zoned industrial. Average lead contamination levels for the properties were found to be below the industrial threshold, however contamination was found to be present over a much wider area than originally considered in the 1999 ROD. The 856 E. Ferry St/ TNT Auto property was found to have particularly high concentrations of lead (above 1000ppm) along its western and northern edges.

The official remedial investigation of 858 E. Ferry St. and off-site locations was completed in August 2005 (ERD, 2010). The investigation defined the extent of contamination by sampling 350+ sites, conducting a magnetic survey, and monitoring bedrock groundwater.

In April 2005,Timothy Wanamaker, former head of the City of Buffalo's Office of Strategic Planning,

wrote a letter to the NYSDEC indicating a change in the potential future usage of the 858 E. Ferry St. property (NYS DEC, 2005). In this letter, the City of Buffalo indicated that the intended future purpose of the property would require unrestricted use. This classification means the property must be remediated to residential standards (400ppm of lead) as compared to the industrially zoned property standards (1000 ppm of lead) the site was remediated to meet. This letter and its impact are attributed to the community's coalition building and arbitration (Sullivan, 2008).

In 2005 the NYS DEC, in consultation with the NYS Department of Health, issued an amended ROD for the inactive hazardous waste site at 858 E. Ferry St. Site (NYS DEC, 2005). This amended ROD addressed the increased volume of contaminated soil found since the 1999 ROD and the new requirements of the 858 E. Ferry St. property.

From 2005 to 2006, the NYS DEC took remedial action on the site. Contaminated soil was transported from the site to an off-site location and replaced with regulated backfill material as was called for in the 1999 ROD (NYS DEC, 2005). All contaminated surface and sub-surface soils with lead concentrations over the industrial threshold (1000ppm of lead) were excavated and removed from the investigated adjacent properties. A total of 136,234 tons of lead-contaminated soil was transported to an offsite facility (NYS DEC, 2008). Two underground storage tanks containing fuel oil, PCB contaminated soils, as well as old tires and concrete were also removed from the site. Remedial action of the 858 E. Ferry St. site was completed in March 2009 (ERD, 2010).

4.4.5 Community Action

The dynamic public response to the East Ferry St. Superfund site was successful in bringing attention to the effects of contamination in the community and spurring the remediation of the site. The account of the history of community involvement differs between the regulators of the site and the public. The residents in the surrounding community state they were not informed of the presence of an inactive hazardous waste site in their neighborhood by the government, despite the NYS Department of Environmental Conservation's alleged mailing of a bulletin in February 1999 (Nakazawa, 2008). As regulators of a Class 2 Superfund site, the NYSDEC was responsible for educating the public and obtaining input (NYS DEC, 2005).

Betty Jean Grant, a business owner and resident of the East Ferry neighborhood, was elected to City Council in 1999 as the representative of the Masten District of Buffalo (Nakazawa, 2008). When the NYSDEC announced with the release of the sites ROD in March 1999 that the remediation of 858 East Ferry St. was to be put on hold, Grant began pushing the issue at City Council. When both the NYSDEC and the City of Buffalo refused to put a fence up around the site, she wrote to local papers, informing residents of the toxic waste at 858 E. Ferry St and the possible correlation between this waste and the high number of autoimmune disease cases in the area. Grant organized people around the public health threat in their community, including community leaders like Reverend Darius Pridgen, of True Bethel Baptist Church, and residents living in proximity to 858 E. Ferry St. suffering from lupus or other autoimmune diseases. Another community activist, Rhonda Dixon Lee, worked closely with Grant, and went door-to-door in the dead of winter to spread news of the contamination and connect with sufferers (Sullivan, 2008).

In 2001, these concerned residents launched the Buffalo Lupus Project to address and organize the concerns of individuals afflicted with lupus or other autoimmune disorders (Murekeyisoni, 2006). The Buffalo Lupus Project is a partnership that developed between the University at Buffalo, the Systemic

Autoimmune Disease Research Center of WNY, and the Toxic Waste/Lupus Coalition to find out exactly how many people, particularly African-Americans, who had lived in proximity to the 858 E. Ferry St. had autoimmune diseases and why they were becoming ill. The group conducted a survey to form a citywide autoimmune registry using resources from a number of community organizations and local academic institutions (Sullivan, 2008). The results of this study, which concluded in 2006, found that 20% of people registered with an autoimmune disease currently lived in the area of the Superfund site, and 45% once lived in that area (Murekeyisoni, 2006). They also identified local exposure pathways, including the Scajaquada Creek that ran underneath 858 E. Ferry St.

Reverend Darius Pridgen of the True Bethel Baptist Church, located across the street from 858 E. Ferry St., attracted media coverage to the site (Sullivan, 2008). He held informal work clean-up parties at the 858 E. Ferry St. site, with participants wearing gas masks as a symbol of the toxicity of the area.

In 2004, the NYS DEC made a contact list for the community and fact sheets were mailed in March 2004 and June 2005 on the results of off-site investigations and remedies for the contamination found (NYS DEC, 2005). Two meetings were held with members of the public to discuss remediation alternatives for the 2005 amended ROD and collect feedback from the community. The Buffalo Lupus Project was integral in evaluating proposed remediation methods (Sullivan, 2008).

858 East Ferry today as seen from the True Bethel Baptist Church parking lot.
Source: The Urban Design Project, 2010

Following the 2005 remediation of the 858 E. Ferry Site, the True Bethel Baptist Church was awarded a Technical Assistance Grant for $50,000 by the NYS DEC (NYS DEC, 2008). The grant helped the recipient understand existing environmental data on the site, comment on remedial proposals and activities, and share information with the public. Their capstone event was a theatrical performance called “Behind the Fence” (Sullivan, 2008). In the play, East Ferry community members acted out the plight of autoimmune disorders and the struggle of living by a hazardous waste site and working through its regulatory process.

4.4.6 Current Status

Following remediation, the 858 East Ferry St. site is now awaiting reclassification. Classification is expected to change from a class 2 to a class 4 inactive hazardous waste site (ERD, 2010). A class 4 site indicates that the site is available for unrestricted use but is still being monitored by the NYS Department of Environmental Conservation. Groundwater monitoring is being conducted at the 858 E. Ferry St. site (NYS DEC, 2008). It’s expected that if groundwater is found to be consistently low, the site will be delisted (ERD, 2010). The City of Buffalo has ensured that the offsite, adjacent properties remain zoned for commercial/industrial use.

The East Ferry St. community is still organized and addressing environmental justice concerns in the area. The Buffalo Lupus Project is currently planning redevelopment strategies for the East Ferry neighborhood. They are also coordinating efforts to award remediation contracts to local minority-owned businesses and working with the Erie County Department of Health to increase the number of workers with Lead Abatement Contractor Certification.

New redevelopment projects are taking place within the surrounding neighborhood.
Source: The Urban Design Project, 2010

4.4.7 Lessons Learned

The Ferry Street example demonstrates that community activism is essential in identifying and addressing contamination issues (Murekeyisoni , 2006). It was the study of autoimmune disorders in the East Ferry Street Community that lead to federal funding for lead screening in children and lead abatement in old houses/buildings. Public efforts and subsequent media attention can be pointed to as the reason the NYS Superfund Law was reauthorized throughout New York. Their efforts also increased public awareness of environmental-justice issues, particularly the threat hazardous waste sites pose to low to moderate-income minority communities.

4.4.8 Citations

"Environmental Site Remediation Database (ERD) - Search Details; Site Name: 858 East Ferry Street." NYSDEC. Checked May 24, 2010. <http://www.dec.ny.gov/cfmx/extapps/derexternal/haz/details.cfm>

Murekeyisoni, Christine. "Community-Driven Research on Environmental Exposure and Autoimmune Diseases." *Community-Campus Partnerships for Health*. vol VIII(22). December 2006.

Nakazawa, Donna Jackson. The Autoimmune Epidemic; Bodies Gone Haywire in a World out of Balance and the Cutting-Edge Science that Promises Home. Touchstone, New York, NY. 2008. pp. 89 – 116.

NYS DEC Division of Environmental Remediation. "Record of Decision Amendment – 858 East Ferry Street Site, City of Buffalo, Erie County, NY, Site Number 9-15-175." NYSDEC. August 2005.

NYS DEC. "Fact Sheet – Environmental Cleanup Activities Completed at the 858 East Ferry St. Site." NYSDEC. January 2008.

Sullivan, John. "Behind the Fence: Forum Theatre on Lupus, Lead Poisoning and Environmental Justice." Community Arts Network Reading Room. February 2008. <http://www.communityarts.net/readingroom/archivefiles/2008/02/behind_the_fenc.php#>

4.5 Clean Air Coalition in Tonawanda

4.5.1 Summary

The Town of Tonawanda has a long industrial history and the Kenmore-Town of Tonawanda residents have long suspected that the bad odors in the community and the illnesses they experienced were from the smoke emitted from the Tonawanda Coke Corp. A group of residents formed the Clean Air Coalition of Western New York to address the communities concerns. The group tested the air quality and found the levels of benzene in the community were 75-percent higher than national guidelines.

The concerns of the Clean Air Coalition and the results of their study prompted the NYS Department of Environmental Conservation to conduct an air quality from July 2007 to July 2008. The study showed the Tonawanda Coke Corp. was contributing to high benzene concentrations in Tonawanda downwind from their facility. A ambient air study found that specific neighborhoods in close proximity to the facility exceeded a 100 in one-million cancer risk.

An investigation conducted in 2009 by the US Environmental Protection Agency discovered severely negligent environmental safety practices at the Tonawanda Coke Corp. They were found to be operating in violation of the Comprehensive Environmental Response Compensation and Liability Act for their failure to monitor and report environmental impacts, the Resource Conservation and Recovery Act for their failure to properly dispose of tar-sludge waste, and the Clean Air Act for failure to comply with emissions standards set by the US Environmental Protection Agency. They were also operating in violation of a number of New York State Environmental Standards set by the NYS Department of Environmental Conservation. The US Environmental Protection Agency and the NYS Department of Environmental Conservation gave the Tonawanda Coke Corp. list of required actions and they face a fine of $35,000 per day of federal law violations.

The Tonawanda Coke Plant.
Source: Clean Air Coalition of Western New York

4.5.2 History

The Town of Tonawanda borders the Niagara River and is one of the most heavily industrialized regions in Western New York (NYS DEC, June 2009).

In 1917, the first coke ovens were put into service at the approximately 160-acre Tonawanda Coke facility (Tonawanda Coke Corp., 2010). Allied Chemical Corp. operated the facility until a large storage tank collapsed in December 1977, igniting a fire that nearly destroyed the facility. During the period of its ownership, Allied Chemical Corp. dumped hazardous waste, including coal tar sludge, various demolition materials, and wood shaving impregnated with iron oxide and coal tar sludges, into three landfill areas on the property.

In 1978, J.D. Crane purchased the property under the name Tonawanda Coke Corporation. The facility continues to produce high-quality foundry coke. As is customary in the industry, Tonawanda Coke Corp. operates 24-hours a day, 365 days a year. It delivers foundry coke to the U.S. and Canadian foundry, insulation and sugar-beet industries.

4.5.3 Community Action

The history of action taken in response to hazardous air quality in the Town of Tonawanda begins with the Clean Air Coalition of Western New York. The group was founded by residents in Tonawanda, NY who suspected that their health problems and the smells associated with their neighborhood were linked to the 53 industrial plants in the area (CAC, 2010). The dark smoke emitted from the Town of Tonawanda was of particular concern.

Members of the Clean Air Coalition being instructed on how to use bucket air monitors to test air quality in the community during the spring of 2010.
Source: CAC, 2010.

In 2007, the Clean Air Coalition was awarded $24,000 in funding from the NYS Department of Environmental Conservation's (NYS DEC) Environmental Justice Community Impact Grant Program for an air quality study (NYS DEC, 2010). This study, titled, "Researching the Link between Air Pollution from Numerous Sources on Community Exposure and Health," investigated the then potential link between negative health impacts and air pollution from numerous sources, including the Tonawanda Coke Corp.

Sampling was conducted by members of the Clean Air Coalition working in cooperation with faculty from the University at Buffalo. They used the 'bucket' method, a simple air sampling device housed inside a 5-gallon plastic bucket and personal air monitoring badges. The Clean Air Coalition took samples in the community and sent them to a US Environmental Protection Agency (EPA) certified laboratory for testing. The results of the study found significantly elevated levels of benzene, but could not pinpoint the source of the pollution. Nonetheless, the study was the first to recognize air quality concerns in the Town of Tonawanda. The Clean Air Coalition worked with the NYSDEC and the EPA to confirm these results in subsequent studies, including an Air Quality Study done by the DEC that found benzene levels to be 75 percent higher than the national guidelines. The Tonawanda Coke Corp. was cited as a primary source of the emissions (NYS DEC, 2009) (EPA, 2009).

Community members were also responsible for alerting regulatory bodies of strong odors and an overall compromised quality of life due to air conditions in the Town of Tonawanda (NYS DEC, June 2009). Public health complaints and the results of the sampling conducted by the Clean Air Coalition prompted the NYSDEC's intensive investigation in 2007 (NYS DEC, October 2008). EPA Region 2 administrator also cited community involvement as being pivotal to their regulatory action saying, "I wasn't aware personally of the problems until it was brought to my attention by a local citizens group" (CAC,2010). A series of public meetings held by the NYSDEC during their 2007-2008 study were well attended and gave individuals a chance to voice their questions and concerns directly to a state regulatory body to address (NYS DEC, October 2009).

In 2008, the Clean Air Coalition was awarded additional funding through the NYSDEC Environmental Justice Community Impact Grant Program. The second study was titled, "Implementing Reduction Strategies for Benzene in the Workplace and Community."

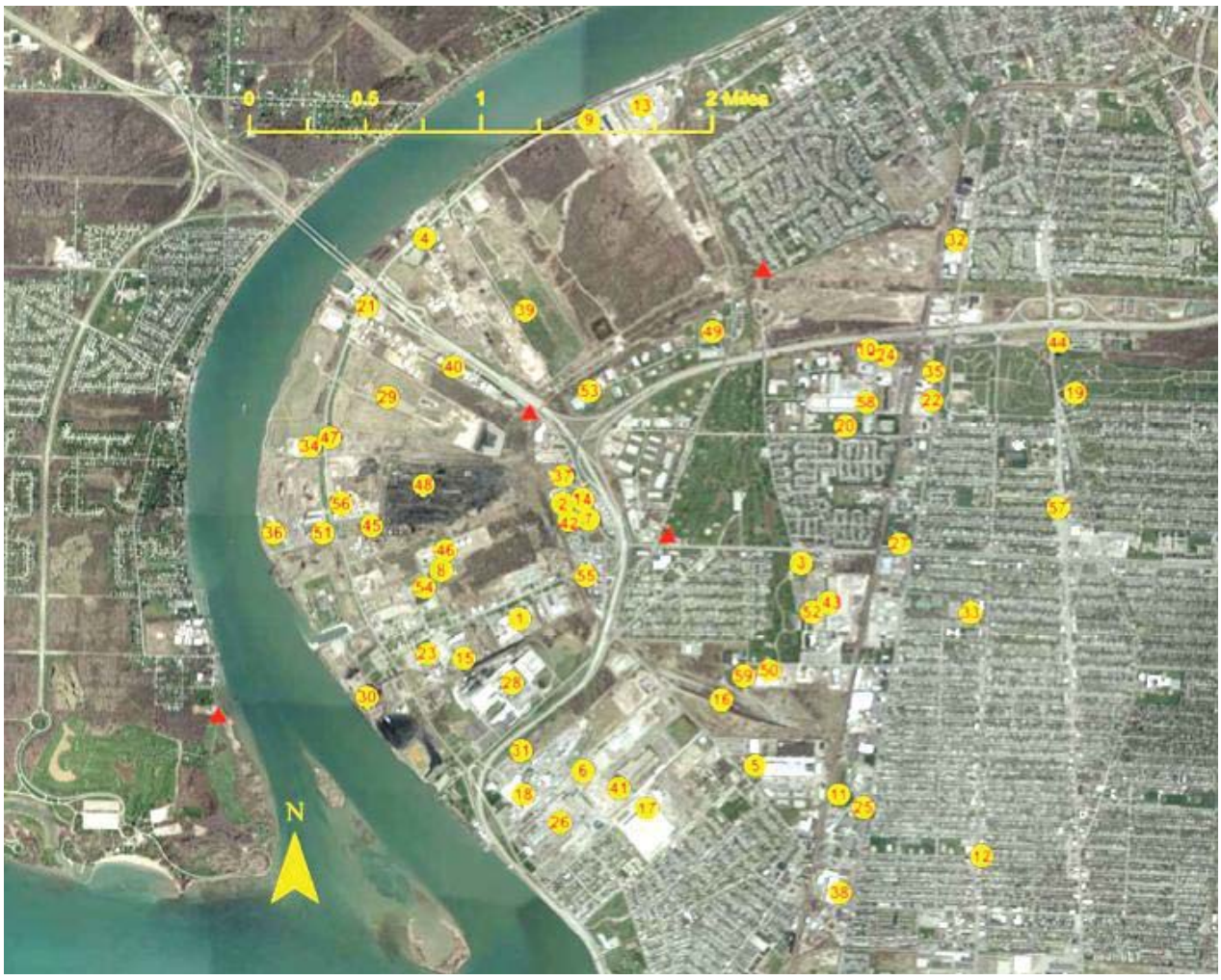
4.5.4 Regulatory Action

Prompted by sampling conducted by the Western New York Climate Action Coalition (WNY CAC), the results of the EPA's 1999 National Air Toxics Assessment for Erie County, and the EPA's Coke Oven Residual Risk Assessment, the New York State Department of Environmental Conservation (NYS DEC) applied to the US Environmental Protection Agency (EPA) for funding for an air study in August 2005 (NYS DEC, November 2008). The NYSDEC won $294,000 and contributed its own funds to sponsor the Tonawanda Community Air Quality Study.

In July 2007, the NYS DEC began a year-long community air quality monitoring study (NYS DEC, October 2009). The study measured concentrations of air pollutants in the community and evaluated their potential risk to public health. Four air-quality monitoring stations were installed at strategic spots in the Tonawanda industrial zone (NYS DEC, June 2009). Air samples were taken at these locations every 6 days for a 24-hour period. Sampling at these four air-quality monitoring sites concluded in July 2008. Two air-quality monitoring stations continued to collect data.

Sampling at these four locations allowed the NYSDEC to calculate annual average ambient air concentrations, characterize the risk to public health from specific pollutants, and evaluate the impact of wind direction on previous data collected (NYS DEC, June 2009). The results of this study found significantly elevated concentrations of benzene and formaldehyde compared to other areas of New York (NYS DEC, June 2009). The concentration of benzene was highest when the wind sourced it from the Tonawanda Coke Corp.

A public health evaluation was conducted by the NYSDEC using the results from the ambient air quality monitoring (NYS DEC, June 2009). The results of this analysis found that the annual average concentration for five air toxics exceeded the cancer risk screening level of one in one million and another air toxin exceeded the non-cancer standard value. Additional testing was done to measure air quality close in proximity to the Tonawanda Coke Corp. (NYS DEC, June 2009). Based on this assessment by the NYSDEC, the maximum individual cancer risk associated with facility-wide emissions from the Tonawanda Coke Corp. exceeded a lifetime cancer risk of 10 in one-million and specific neighborhoods in close proximity to the facility exceeded a 100 in one-million cancer risk. On June 12th, 2009, the NYSDEC officially confirmed that the Tonawanda Coke Corp. was the source of the high levels of the carcinogen benzene in the area (CAC, 2010).



NYS Department of Environmental Conservation monitoring sites, shown in numbered yellow points, and monitoring facilities that are shown as red points. They were located strategically throughout the Town of Tonawanda to monitor 44 air pollutants weekly from July 2007 to July 2008. Monitoring at two of the monitoring facilities continued after this period.
Source: NYS Department of Environmental Conservation, June 2009.

Tonawanda Coke Corporation

The Tonawanda Coke Corp. has a long history of noncompliance with environmental regulations. From 1981 through 1997, several investigations by the NYSDEC revealed widespread contamination affecting soil, sediment and groundwater quality on the 160-acre Tonawanda Coke Corp. property (NYS DEC, March 2008). In September 1996, the US Environmental Protection Agency (EPA) inspected the Tonawanda Coke Company for compliance with EPA's Oil Pollution Prevention regulation. The Inspection determined the Company had not implemented or maintained the functionality of several of the environmental provisions outlined in the Spill Prevention Control and Countermeasure rule (SPCC). Over the next year the company failed to take all necessary actions to comply with the rule. In April 1998, EPA issued a complaint to Tonawanda Coke Company charging that the company did not properly prepare and implement a SPCC plan to prevent oil spills on its property. After the EPA issued its formal complaint against Tonawanda Coke, the company amended its SPCC plan so that it now provides for increased protection against oil spills entering the environment. In a September 1998 inspection of the

facility, EPA confirmed that this new plan is fully implemented. In January 1999 the EPA fined Tonawanda Coke $40,000 for violations of oil spill prevention sections of the federal Clean Water Act. EPA also confirmed that these violations have been remedied (EPA, January 1999).

Both the EPA and the NYSDEC have ordered Tonawanda Coke to take immediate steps to address all violations of both state and federal laws. In 2005, an additional investigation by the NYSDEC confirmed the presence of volatile organic compounds, semi-volatile organic compounds, and metals on the Tonawanda Coke Corp. site, particularly in three abandoned landfill areas used by Allied Chemical Corp. from approximately 1930 t0 1978 (NYS DEC, March 2008). The sites were declared Class '2' NYS Inactive Hazardous Waste sites, also called State Superfund sites. A Record of Decision for two of three landfill areas was released in March 2008. No action was proposed for the sites so long as the Tonawanda Coke Corp conducted regular monitoring of the areas. The Tonawanda Coke Company has failed to submit regular reports of their performance measures and conduct monthly monitoring.

In June 2009, the US Environmental Protection Agency conducted a hazardous waste inspection on the Tonawanda Coke Company to test their accordance with the Resource Conservation and Recovery Act (US EPA, November 2009). The study found that the company was mixing its tar sludge on coal piles on the ground instead of placing it on an impervious pad designed to prevent the spread of hazardous waste (US EPA, January 2010). The remains of two storage tanks from a 2007 facility fire were also abandoned at the site. The EPA found leaks in the company's wastewater pipes causing unpermitted discharge of its processed and unprocessed wastewater. They ordered the company to stop this leakage of hazardous and toxic materials, which including coke 'liquor' containing contaminants such as cyanide, ammonia, and naphthalene. The EPA found that the Tonawanda Coke Company was also violating a NYS environmental requirement by not having the proper air pollution control technology, called baffles, on parts of its facility known as quench towers. A baffle is a low-cost device that captures particulates before they are released into the atmosphere.

A view of the Tonawanda Coke Plant smoke stacks.
Source: Clean Air Coalition of Western New York

Both the EPA and the NYSDEC have ordered Tonawanda Coke to take immediate steps to address all violations of both state and federal laws that have been detailed in a 60-page list (EPA, January 2010). If the company does not make the mandated changes required by the EPA, they face charges up to $35,000 per day they are out of compliance (CAC, 2010). These charges are for the violation of the Comprehensive Environmental Response Compensation and Liability Act, the Resource Conservation and Recovery Act and the Clean Air Act.

EPA and NYSDEC's enforcement of multiple violations of the Clean Air Act is Proceeding and investigation is ongoing. As a result of the Differential Absorption Light Detection and Ranging (DIAL) testing that occurred at Tonawanda Coke Corporation (TCC) in the fall of 2010, EPA has concluded that the facility's by-product area is a significant source of benzene emissions. EPA directed TCC to hire an independent engineering firm to evaluate the processes within this area to determine what equipment

needs repair/replacement to minimize these emissions. The results of this evaluation and a schedule for work completion will be submitted to EPA.

Investigations of Tonawanda Coke Company continued through the NYS DEC and the EPA (US EPA, January 2010). In January 2010, the EPA announced a series of new regulatory actions that included ordering the company to provide information about its processes and to conduct air pollution testing.

4.5.5 Current Status

Investigations of Tonawanda Coke Company continued through the NYS DEC and the EPA (US EPA, January 2010). In January 2010, the EPA announced a series of new regulatory actions. These include orders for the company to provide information about its processes and to conduct air pollution testing using differential absorption light detection equipment (DIAL). DIAL allows for the detailed and precise measurement of air pollutants, and is especially good at measuring benzene concentrations. In September 2009 the Tonawanda Coke Corp. objected to using DIAL technology, however the EPA overrode their objection. DIAL testing was completed before April 2010.

In accordance with the NYS Inactive Hazardous Waste Program, the NYSDEC is continuing investigation on soil and groundwater quality on the three landfills located on the Tonawanda Coke Corp. property (NYS DEC, March 2008). While responsibility for monitoring and remediation of two of the abandoned hazardous waste landfills has been given to the Tonawanda Coke Corp., the third landfill awaits investigation by the NYSDEC.

A final report from the June 2009 US Environmental Protection Agency (EPA) investigation into the Tonawanda Coke Corp. is being awaited (CAC, 2010).

The NYS Department of Health is exploring the possibility of a health study in the Town of Tonawanda. The potential study is prompted by the NYS DEC public health study that showed highly elevated cancer risks in neighborhoods in close proximity to the Tonawanda Coke Corp. as well as the health concerns of vocal community members (CAC, 2010).

Apart from the orders issued to the Tonawanda Coke Company, on December 23, 2009 the companies Environmental Control Manager, Mark Kamholz, was arrested in an EPA raid on the facility (US EPA, January 2010). He faced criminal charged filed by the US Attorney's Office of New York and the Department of Justice for failing to immediately notify government agencies regarding the release of coal tar sludge, a violation of the Comprehensive Environmental Response Compensation and Liability Act. The release of coal tar sludge was the result of the failed decommissioning of the two storage tanks burned in the 2007 facility fire. This is a violation of the Resource Conservation and Recovery Act. The alleged fire also charged a violation of the Clean Air Act for the high benzene emissions that were affecting public health in the community.

Ties between Tonawanda-area politicians and Tonawanda Coke Corp. have recently surfaced (McCarthy, February 2010). A review of campaign finance reports, conducted in part by the Clean Air Coalition, has found that Tonawanda Coke Corp. owner, J.D. Crane, has contributed $49,500 to local political campaigns. The largest amount was given to Erie County Executive Chris Collins. Community members point to these campaign contributions as a major factor of why Tonawanda Coke Corp. has been allowed to operate in violation of state and federal environmental restrictions for so long.

4.5.6 Lessons Learned

The endangerment of public health in the Town of Tonawanda, as a result of environmental negligence by the Tonawanda Coke Corp. has garnered a national audience. The study done by the Clean Air Coalition of Western New York in 2007, their subsequent call for regulatory action, and their involvement in the ongoing investigative process are great examples of community action. The impact the group had can be attributed to its cooperation with state and federal bodies and the scientific methods it used to support its claims of poor air quality.

Tonawanda Coke Corp.'s violation of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), the Resource Conservation and Recovery Act (RCRA), the Clean Air Act, as well as NYS environmental legislation was a disturbing realization by the NYS Department of Conservation and the US Environmental Protection Agency. The Clean Air Coalition has suggested that the negligence of area politicians to take action earlier has raises questions of the influence of campaign financing on political willpower concerning public health and safety.

At the time of the publication of Mapping Waste, we await a conclusive report from the US Environmental Protection Agency as well as a court hearing for Tonawanda Coke Corp's Environmental Control Manager. It is already apparent that the issue is a top priority for both state and federal environmental regulatory bodies. Hopefully the decisive actions taken, particularly by the US Environmental Protection Agency, will serve as a warning to other industries working with hazardous waste across the country.

While the Tonawanda Coke Corp. is making progress, there are still many challenges facing the community. The DEC also reported that there are five HAP's in Tonawanda that far exceed state and federal guidelines. A major challenge for the future is to get the state to look at the cumulative health impact of industry and regulate with health-based emissions standards in mind.

4.5.7 Citations

Clean Air Coalition (CAC). Website. Accessed May 28, 2010. <http://www.cacwny.org/>

"History." Tonawanda Coke Corporation. Website. Accessed May 28, 2010. <http://www.tonawandacoke.com/history.html>

McCarthy, Robert. "Tonawanda Coke Owner Contributed Heavily to Area Politicians' Coffers." *The Buffalo News*. February 22, 2010.

NYS Department of Environmental Conservation. "Environmental Justice Community Impact Grant Program." Accessed May 28, 2010. <http://www.dec.ny.gov/public/31226.html>

NYS Department of Environmental Conservation. "Fact Sheet – Cleanup Actions Proposed for Tonawanda Coke Site (Operable Units 1 and 2)." March 2008.

NYS Department of Environmental Conservation, Bureau of Air Quality Analysis and Research, Bureau of Air Quality Surveillance, and Division of Air Resources. "Tonawanda Community Air Quality Study – October 2009." October 2009.

NYS Department of Environmental Conservation. "Tonawanda Community Air Quality Study; Fact Sheet – June 2009." June 2009.

NYS Department of Environmental Conservation, Division of Air Resources. “Tonawanda Community Air Quality Study.” Public Presentation. Sheridan Parkside Community Center, Tonawanda, NY. November 18, 2008.

US EPA Region 2 Compliance Division. “Tonawanda New York Community Air Quality Study and Evaluation of the Tonawanda Coke Facility.” US EPA. November 2009.

US EPA. “Tonawanda Coke Settles with EPA; New Oil Spill Prevention Plan Now in Place, Company Fined.” Press Release. January 21, 1999.

US EPA. “EPA Orders Tonawanda Coke Corp. to Clean Up Its Act; Company Ordered to Comply with Clean Air Act, Fix Wastewater Leaks, Stop Dumping Coal Tar Sludge; Comply with NY Air Plan.” Press Release. January 28, 2010.

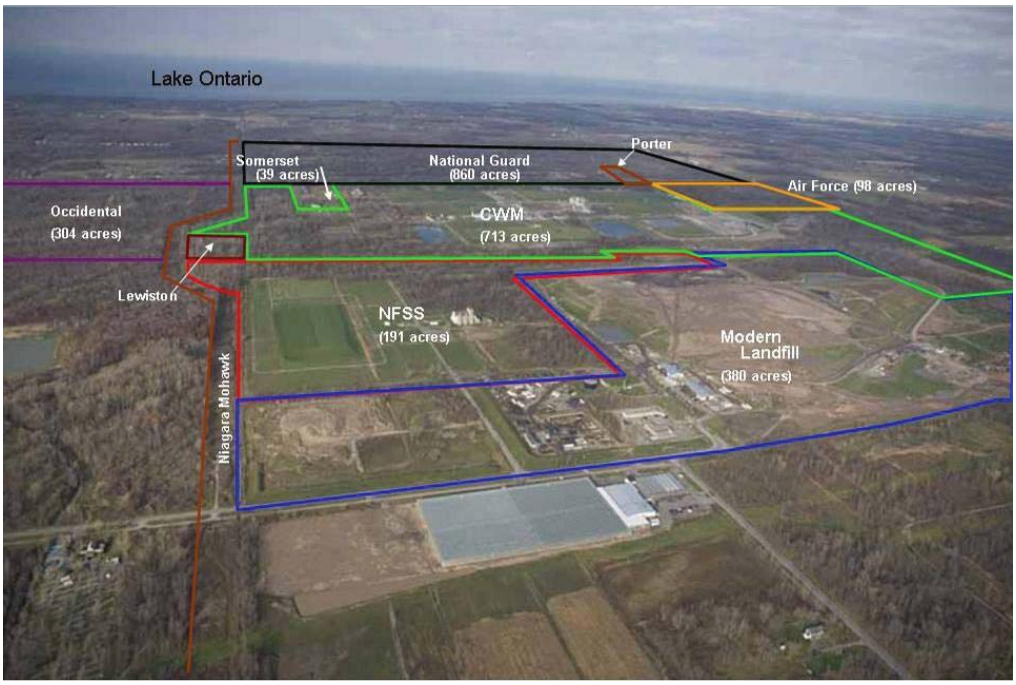
4.6 Lake Ontario Ordnance Works

4.6.1 Introduction

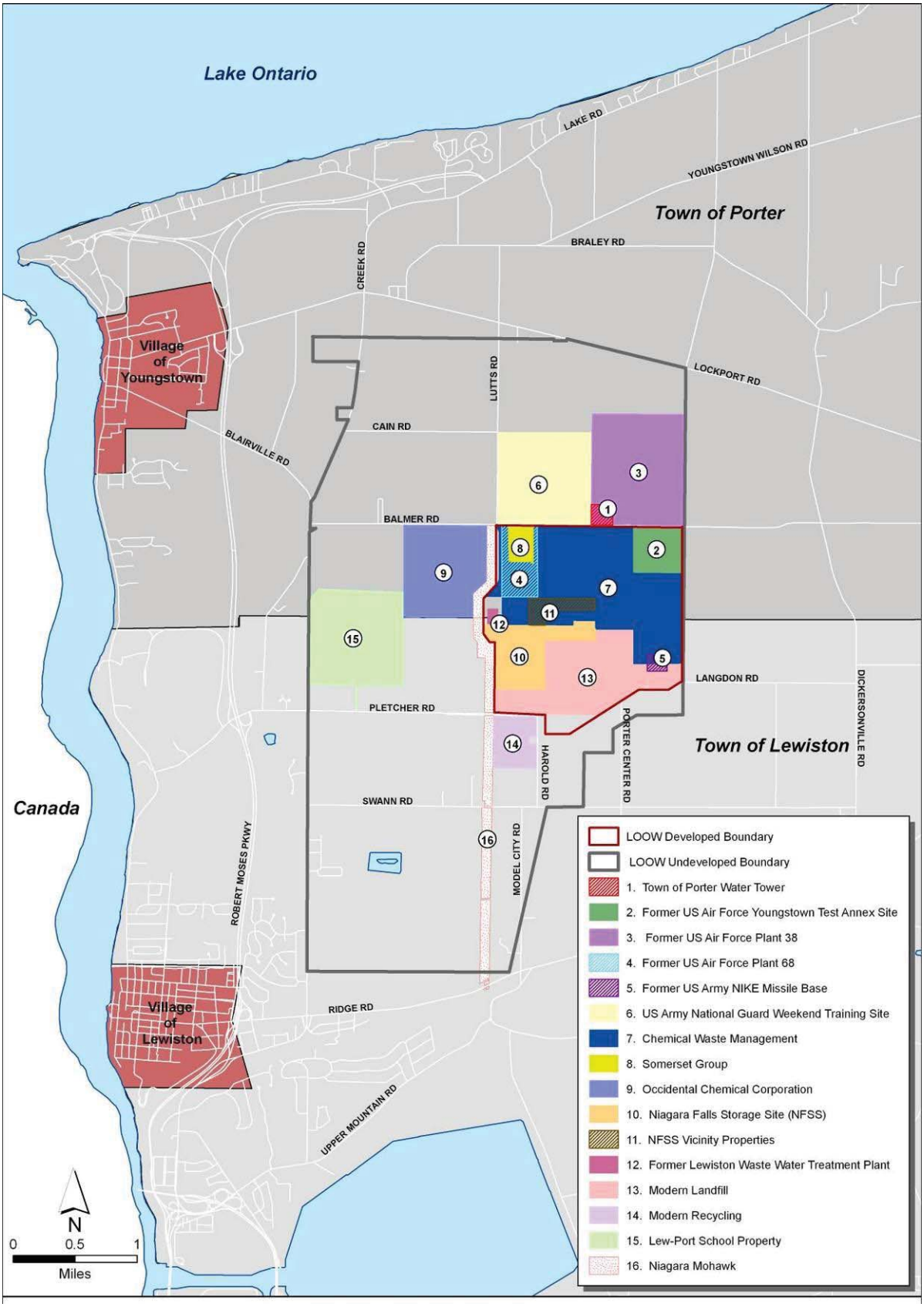
The former Lake Ontario Ordnance Works (LOOW) site is a 7,500-acre area located in the Towns of Lewiston and Porter in Niagara County approximately 3 miles from Lake Ontario and 2 miles from the Niagara River.

The LOOW site is distinct for the variety of environmental contaminates on the property, the number of owners of parcels within the original LOOW site and the complexity of regulatory oversight (NYS DEC, US Army Corp of Engineers, Department of Energy, and the Department of Defense). Properties contained within the former LOOW area include:

- Areas owned by the Town of Porter
- Air Force Nike Missile Base Launch Area
- U.S. Army National Guard Weekend Training Site,
- Chemical Waste Management (CWM)
- Chemical Services, LLC,
- Somerset Group
- Occidental Chemical
- Niagara Falls Storage Site (NFSS)
- Town of Lewiston Waste Water Treatment Plant
- Modern Landfill
- Lewiston Porter Central School Campus
- smaller properties (Acome Landfill, Walleye Hatcher, Fin, Feather and Fur Society) (King Groundwater Science, Inc., 2008).



LOOW Site in 2005 looking north.
Source: Gardella


Lake Ontario
Canada
Town of Porter
Town of Lewiston
Village of Youngstown
Village of Lewiston
LAKE RD
YOUNGSTOWN WILSON RD
BRALEY RD
CREEK RD
LUTTS RD
LOCKPORT RD
BLAIRVILLE RD
CAIN RD
BALMER RD
LANGDON RD
DICKERSONVILLE RD
PLETCHER RD
PORTER CENTER RD
HAROLD RD
SWANN RD
MODEL CITY RD
ROBERT MOSES PKWY
RIDGE RD
UPPER MOUNTAIN RD
N
0
0.5
1
Miles
LOOW Developed Boundary
LOOW Undeveloped Boundary
1. Town of Porter Water Tower
2. Former US Air Force Youngstown Test Annex Site
3. Former US Air Force Plant 38
4. Former US Air Force Plant 68
5. Former US Army NIKE Missile Base
6. US Army National Guard Weekend Training Site
7. Chemical Waste Management
8. Somerset Group
9. Occidental Chemical Corporation
10. Niagara Falls Storage Site (NFSS)
11. NFSS Vicinity Properties
12. Former Lewiston Waste Water Treatment Plant
13. Modern Landfill
14. Modern Recycling
15. Lew-Port School Property
16. Niagara Mohawk

4.6.2 History

The history of the Lake Ontario Ordnance Works (LOOW) began in 1942 when the US War Department acquired a 7,500 acre area in Niagara County for the construction of a manufacturing facility for trinitrotoluene (TNT) (Stevens and Cosme, 2003). TNT production began on 2,500 acres of the site, called the Developed Area. The TNT processing plant was in operation for less than a year. During the nine months it was in operation approximately 46.5 million lbs of TNT were manufactured at the LOOW site.

Site of TNT Testing in Undeveloped Area
Source: Fact Sheet, 2001.

The remaining 5,000 acres of the LOOW area was designated as a 'buffer' zone called the Undeveloped Area. Some TNT processing or testing activity is likely to have occurred in the undeveloped area as well (Fact Sheet, 2001). After TNT production ceased the Undeveloped Area was sold by the U.S. General Service Administration to private and public investors.

Town of Porter

In 1985, approximately 3.4-acres located in the 'igloo-region' owned by the US Army National Guard were conveyed to the Town of Porter for the construction of a water tower (King Groundwater Science, Inc., 2008). (See LOOW map site 1 – Porter Water Tower)

US Air Force

The US Air Force owned a 98-acre parcel of land, also called the Former Youngstown Test Annex Site (USACE June 2010). (See LOOW map site 2 – Former US Air Force Youngstown Test Annex Site) They also owned 332-acres, containing the former US Air Force Plant 38, (See LOOW map site 3 – Former US Air Force Plant 38) in operation from 1950 to 1992 and the former US Air Force Plant 68, (See LOOW map site 4 – Former US Air Force Plant 68) in operation from 1957 to 1959 (Niagara Health Dept., 2010). The history of these sites is covered in other sections with respect to the current owners of the property.

From 1954 to 1966, the US Army operated the NIKE missile base (King Groundwater Science, Inc., 2008). (See LOOW map site 5 – Former US US Army Nike Missile Base) The property was approximately 310-acres in size in the former LOOW TNT production area (the Developed Area). The base was divided into the Launch Area and the Control Area. The Control Area was sold to Chemical Waste Management. The Launch Area had 6 missile silos, dump sites, a sanitary sewer drainage system, underground storage tanks, and a missile fueling site. In 1966, the Launch Area was transferred to the US Air Force. In February 2008, the property was sold to Southport Rail Transfer LLC.

U.S. Army National Guard Weekend Training Site

The currently active US Army National Guard Weekend Army Training Site lies on 860-acres (King Groundwater Science, Inc., 2008). (See LOOW map site 6 – US Army National Guard Weekend Army Training Site) The property contains the former LOOW storage igloos and the former Air Force Plant 38. Initially the property was developed to store TNT in 25 concrete bunkers. When TNT production ceased

in 1943, the Chemical Warfare Service used the 'igloos' for the temporary storage of incendiary bombs, phosgene, and impregnite brought back from Europe after WWII (Cosme et al, 2003 and King Groundwater Science, Inc., 2008).

The US Air Force used the east end of the property for the operation of Air Force Plant 38 from 1950 to 1992 (King Groundwater Science, Inc., 2008). At Air Force Plant 38, Bell Aerospace performed testing of rocket engines for military use. The property was used for this until 1980, after which the property was used to test high-energy lasers which did not involve the use of hazardous materials.

The Army re-acquired the western 332-acres of the igloo storage area from the US Air Force in 1979 for the US Army National Guard Weekend Training Site (King Groundwater Science, Inc., 2008). Operations may have involved the use of hazardous materials or disposal of hazardous waste during this time. The Army acquired the remaining 529-acres from the US Air Force in 1992.

The Chemical Waste Management Landfill

The Chemical Waste Management (CWM) facility is located on 710-acres on the developed area of the former LOOW (CWM, 2006). (See LOOW map site 7 – Chemical Waste Management) Other operations at the site include the manufacture of TNT, the storage of munitions and chemicals as part of the Chemical Warfare Service's activities, the storage and burial of radioactive material, and the burial and burning of high energy fuel from the US Navy and Air Force (Cosme et al, 2003, and King Groundwater Science, Inc., 2008).

Throughout its history as a treatment, storage, and disposal facility, the landfill has been permitted for organic and inorganic hazardous waste and industrial non-hazardous waste. Operations at the facility began in 1971 under Chem-Trol Pollution Services, Inc. The Service Corporation of America, a subsidiary of Waste Management, Inc., operated the hazardous waste landfill. Dangerous conditions were reported at the facility, including surface water flows containing industrial waste, explosions and fires. In 1976, an explosion sent flames and exploding drums shooting into the air. Ownership was transferred to CWM Chemical Services, LLC and remains under their ownership.

In 2001, the Town of Porter Board decided to rezone portions of CWM land from light industrial use to heavy industrial use (Cosme, 2003). This allowed for the expansion of landfill operations on the property. The current operation at CWM, based on depositing hazardous waste in a cell known as RMU-1 is still possible, and capacity was expanded with the replacement of the cap with a thinner cap to make more room. Further, CWM has filed a permit application with NYS DEC for a second cell, RMU-2. Action on the permit is complicated by the legal requirement that DEC produce a geographically equitable hazardous waste plan. DEC has issued a Hazardous Waste Siting Plan, as required by law, and contends that it is geographically equitable. The assertion by DEC of legal compliance with the intent of the legislation geographic equity is almost certain to be challenged in court, as there were technical comments on the geographic information analysis of the data the would establish "geographic equity" during the public comment period on the draft plan. These technical comments asserted that there was no equity, and these comments were ignored. Thus, CWM has expanded capacity presently to continue operations, and proposed an extension and expansion of capacity with the proposed second cell, RMU-2.

Somerset

The history of operations on the current Somerset project parallels that of the Chemical Waste Management Landfill. The United States Navy constructed two plants to develop high-energy fuels on

the current CWM property and Somerset Group properties (Cosme et al ,2003). Both projects were transferred to the US Air Force in 1956. Operation at these facilities was concluded around 1960.

The Somerset Group began when residents John and Eileen Syms purchased 159-acres in 1970 (Cosme et al, 2003). (See LOOW map site 8 – Somerset Group) Their plans to develop an industrial park were halted in 1972 by the NYS Department of Health for contamination on the land. In 1980, they sold all but 39-acres of the land to CWM.

Occidental

The Occidental Chemical Corporation owns 304-acres near the CWM Chemical Corporation and the Niagara Falls Storage Site (King Groundwater Science, Inc., 2008). In 1975, Hooker Chemical and Plastics Corporations purchased the land from a private landowner. The property was then sold to Occidental Chemical Corporation. The property was never developed. (See LOOW map site 9 – Occidental Chemical Corporation)

Niagara Falls Storage Site (NFSS)

The history of the former LOOW site includes radioactive waste storage. During WWII the US Federal Government purchased uranium ore from the Belgian government under the stipulation that the residue from refining be returned to Belgium territory (Stevens and Cosme, 2003). From 1944 to 1952 the former Manhattan Engineer District and the Atomic Energy Commission deposited radioactive waste into the Niagara Falls Storage Site. (See LOOW map site 10 – Niagara Falls Storage Site)

The vented Silo that stored Radium 226 from the 1950's to early 80's. The silo was located in what is now the NFSS, until demolished in the early 80's.
Source: Gardella

In 1949, residues from the extraction of radium and uranium from the Belgium uranium ores were shipped to the LOOW site (NRC, 1995). Approximately 3,510 metric tons of residues were stored in a silo. The residues contained approximately 520,000 pCi/g of ^{226}Ra (radium) and 54,000 pCi/g of ^{230}Th (thorium). The residues also contained low concentrations of unseparated uranium, barium, lead, and molybdenum. Lower concentrations of the above contaminates were stored around the site and found their way into the soil. Contaminated wastes were found in approximately 179,500 m^3 of soil.

The Linde Ceramics Plant in Tonawanda processed uranium ore (NRC, 1995). These residues were originally stored in other locations of the NFSS. These residues contained have substantial levels of radon and thorium. They also contained about 3.5% of U_3O_8 which was intermixed with soil.

Under the WWII-era federal contract, Belgium was responsible for the removal of 14,000 tons of radioactive waste at the former LOOW site (Stevens and Cosme, 2003). In 1982, the Reagan Administration assumed ownership of the waste to allow for the deployment of a new US Defense strategy in Belgium.

NFSS Vicinity Properties

Vicinity Properties around the Niagara Falls Storage Site (NFSS) have been found to contain hazardous waste. Vicinity Properties G, E, and E' have all been cited by the US Army Corps of Engineers for having histories of hazardous activities on them (USACE, June 2004). (See LOOW map site 11 – NFSS Vicinity Properties G, E, E')

The 30-acre Vicinity Property G was the former University of Rochester Burial Area (US ACE, June 2004). A farmhouse was built on the property prior to any government activities and continues to stand at the site. During the Manhattan Engineer District Project in the 1940's, the University of Rochester was assigned the task of performing research in support of radiation safety. Some of this research involved testing the effects of radiation on animals. In 1951, the University of Rochester established the burial site on Vicinity Property G of the Niagara Falls Storage Site (NFSS) for the burial of test animal carcasses and other contaminated debris from their research laboratory.

Town of Lewiston Waste Water Treatment Plant

The Town of Lewiston owns the property that was once a waste water treatment plant for acid sewer and sanitary waste from the LOOW TNT plant (King Groundwater Science, Inc., 2008). (See LOOW map site 12 – Former Lewiston Waste Water Treatment Plant) Buildings were made for chlorination, acid neutralization, sludge beds, a mixing house, among other purposes. Wastewater was discharged through a pipe across the current LewPort school campus.

The Waste Water Treatment Plant was later used for Air Force Plant 68, the US Navy Interim Pilot Production Plant, the Boron-10 plant and the US Army NIKE Missile Base for sewage treatment. The plant is now inactive and has been for some time.

Modern Landfill

Modern Corporation is responsible for the Modern Landfill, a site for solid waste disposal. (See LOOW map site 13 – Modern Landfill and LOOW map site 14 – Modern Recycling) The Modern Landfill and its associated solid waste management facilities are located four miles northeast of the Village of Lewiston and four miles southeast of the Village of Youngstown on a 380-acre parcel (Modern Corp, 2010).

Modern Landfill has been developed in three sections (Modern Corp, 2010). Two of the sections were constructed with low-permeability liners in accordance with state regulations. The third section and all future sections will have double-composite liners, a new technology that is resistant to chemicals and protects groundwater.

Modern Landfill has operated using the area method of landfilling; delivering solid waste to the facility in large trucks or trailers, depositing them at the working face of the landfill, then transporting it and compacting it. Cover soils are applied regularly. The double-composite lining and landfill cell structures make this landfill 'state-of-the-art' (NYS DEC, 2001). Modern Landfill has an annual permit that allows it to process up to 815,000 tons per year. In 2008, 786,889 tons of waste was processed (NYS DEC, 2010).

In 2002, the Town of Lewiston turned over control of its dump to the Modern Corporation (Fischer, 2009). The dump was permitted as a non-hazardous waste dump.

Lewiston Porter Central School Campus

The Lewiston Porter (LewPort) School district is located on 376-acres on the undeveloped former LOOW site (King Groundwater Science, Inc., 2008). (See LOOW map site 15 – LewPort School District) In 1948, the LewPort school district obtained 4 parcels of land from the General Services Administration for the construction of a public school.

Five main buildings were built on the property for pre-school, elementary, middle and high school students. In 2008, major renovations were made to all of the buildings on campus. Much of the property has remained treed and running trails were constructed through the woods. The campus is bisected by a large outfall sewage line, which runs from the LOOW wastewater treatment plant into the Niagara River. From 1950 to 1976, the LewPort School used this line for the disposal of its sanitary waste. The sewage line has now been inactive for some time.

(Also See LOOW map site 16 – Niagara Mohawk)

4.6.3 Regulatory Action

The discovery of TNT processing in the undeveloped area of the LOOW site prompted concerns over hazardous levels, particularly at a ground scar west of the CWM site. In 2001 the USACE sampled the site and found TNT levels did not pose a hazard of detonation (Fact Sheet, 2001).

Regulatory history concerning public health has spanned properties and considers community health risks in the areas on and surrounding the former LOOW site, although particular attention has been given to neighborhoods around the Niagara Falls Storage Site.

The NYS Department of Health conducted a study in the Lewiston Porter area that analyzed 17 reported cancer cases (Cosme, 2003). They found that Hodgkin's disease was most frequently reported. The conclusion of this study was that cancer rates did not deviate from NYS averages.

The correlation between autoimmune diseases and a hazardous environment is hard to identify, especially over a large area like the LOOW site. In a study conducted by the University at Buffalo, elevated levels of multiple sclerosis were reported in 1976 in the Ransomville area (Cosme, 2003). However, these levels were not higher than expected based on information obtained from Niagara County.

Town of Porter

The land that contains the Town of Porter's water tower was transferred to the Town during the operation of Air Force Plant 38 in 1985 (King Groundwater Science, Inc., 2008). Fluoride, lead, chlorinated hydrocarbons and PCBs were found at Air Force Plant 38. No environmental surveys have been conducted on the small Town of Porter property.

US Air Force

From 1954 to 1966, the US Army operated the NIKE missile base including the Launch Area and the Control Area (King Groundwater Science, Inc., 2008). A survey on the Launch Area began in 1989. The field investigation involved soil boring, samples, well sampling and water and soil sampling in the site drainage system and at other areas of concern. During the investigation underground storage tanks were removed along with water and hydraulic oil from the silos. Asbestos and lead paint were also

assessed. PCBs were disposed of. In 1994 the NYS Department of Environmental Conservation concluded remediation on the site was complete.

U.S. Army National Guard Weekend Training Site

Many waterways transverse the 860-acre US Army National Guard Weekend Training Site. Until 1983, surface water was monitored through a SPDES permit. The regulatory history of the 860-acre US Army National Guard Weekend Training Site is indicative of its two previous owners; the US Army and the US Air Force.

The Air Force owned 529-acres from 1950 to 1992 for the operation of Air Force Plant 38 (King Groundwater Science, Inc., 2008). The Air Force Plant 38 was used for rocket engine testing until 1980 (NYS DEC, 2010). Preliminary investigations of the property were conducted by the Air Force. Fluoride, lead and chlorinated hydrocarbons were detected in drainage ditches and PCB's were detected in some of the facilities (King Groundwater Science, Inc., 2008). It was entered into the NYS Superfund Program for soil contamination of rocket fuel (NYS DEC, 2010). All underground fuel storage tanks and all other RCRA-identified contaminated storage sites were removed or excavated by December 1988. Two heating oil storage tanks were exempted and remain on the site (King Groundwater Science, Inc., 2008). In 1998 and 1999 the US Air Force confirmed that all RCRA-related activities were effective at removing hazardous constituents. Sampling of the remediated area by the US Air Force in 1990 confirmed that remediation of the property was complete. The site is now listed as a Class '5' in the NYS Superfund Program list.

In 1992, before the Air Force transferred its property to the US Army, it performed an environmental assessment on the former Air Force Plant 38 site (King Groundwater Science, Inc., 2008). Leaks of heating oil from above ground tanks were noted.

A soil investigation of the western portion of the property, called the Youngstown Weekend Training Site, found that surface water and sediment contamination existed (King Groundwater Science, Inc., 2008). The portion is awaiting additional sampling.

In 2005, asbestos abatement, building demolition and removal of PCB contaminated soil were undertaken on the entire 860-acre property. A petroleum spill in April 2005 was cleared in March 2007.

The Chemical Waste Management Landfill

The Chemical Waste Management Landfill is owned and operated by CWM Chemical Services, LLC. Prior to its use as a hazardous waste landfill in 1971, the site was owned by the US government and used for a variety of defense activities (CWM, 2006). During the 1960's, initial efforts were made by the Atomic Energy Commission to decontaminate this area as well as others in the undeveloped area.

A 1972 order from the State Department of Health directed that the CWM property not be disturbed due to contamination at the site (King Groundwater Science, Inc., 2008). Since 1975, the NYS Department of Environmental Conservation has had primary jurisdiction to regulate radioactive materials at the site. Upon obtaining a permit for the site, both Chem-trol and CWM Chemical Services, LLC were required to conduct radiation environmental monitoring (CWM, 2006). Monitoring includes sampling and analysis of groundwater, surface water, wastewater and air for specified radiological parameters.

In 1993, CWM finished an investigation into the nature and extent of contamination in the soil and groundwater throughout the operating treatment, storage, and disposal facility (CWM, 2006). They found that groundwater, surface and subsurface contaminant concentrations were in excess of

appropriately protective risk-based levels (CWM, 1999). Human exposure to contaminated soil or groundwater was found to be limited to construction work on the property and some normal operations. Contaminants of concern included volatile and semi-volatile organic compounds, PCBs and metals. A Resource Conservation and Recovery Act (RCRA) Investigation Summary Report was submitted to the NYSDEC. The US Environmental Protection Agency completed a Corrective Measures Study in 1996, proposing measures to address the contaminated areas. In 2001, the NYSDEC revised the CWM permit to require the corrective measures established in the 1996 report.

Due to intensive Department of Defense activities at facilities that are now part of CWM, CWM has been subject to past and ongoing investigations (King Groundwater Science, Inc., 2008). Particularly portions of the property were analyzed for TNT production-related contaminants and advanced fuels from Air Force Plant 68. Radioactive contaminants were found at CWM and remediated. All vicinity properties of the Niagara Falls Storage Site that are now part of the CWM landfill have been analyzed for radioactive contamination and found to be appropriate for unrestricted use.

CWM has a State Pollutant Discharge Elimination System (SPDES) permit, issued by the NYSDEC for runoff from the landfill (CWM, 2006). The permit has discharge limits and requirements for surface water outfalls into Four Mile Creek and Twelve Mile Creek. CWM treats site generated leachate and non-hazardous and hazardous wastewaters received from off-site through its aqueous waste treatment facility. The treated wastewater is then discharged into a series of facility ponds. The water is then tested to insure accordance with the facilities SPDES permit and discharged into the Niagara River.

Somerset

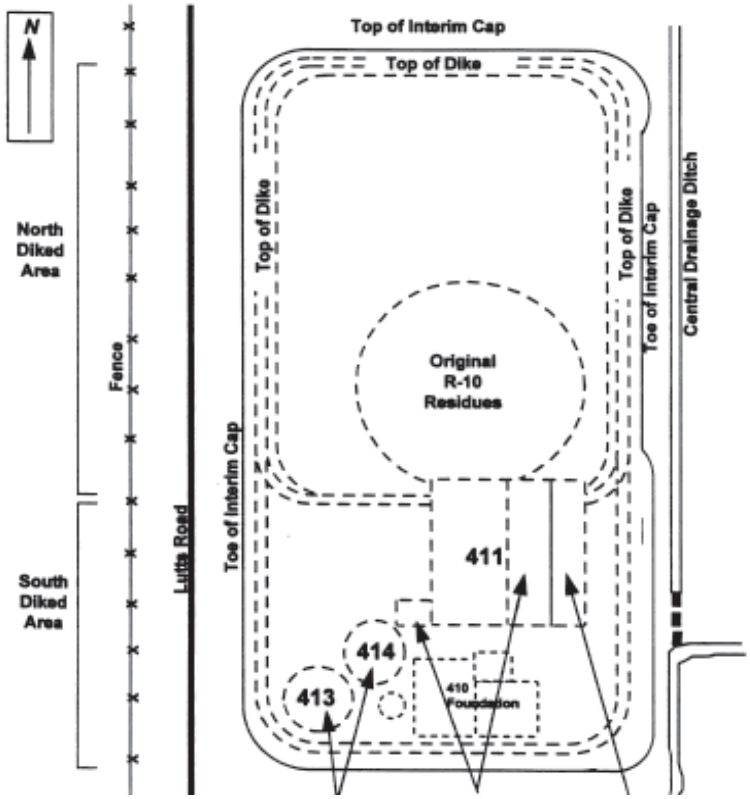
Plans to build an industrial plant the 159-acres were halted by the NYS Department of Health in 1972 (Cosme, 2003). The Somerset Group was sold the property by the US Government without being informed of radioactive contamination of the soil. After selling all but 39-acres of the land to CWM in 1980, they filed a lawsuit against the US Department of Energy for $25 million.

Occidental

The 304-acre area owned by Occidental Corporation is not developed (King Groundwater Science, Inc., 2008). Only limited investigations have been performed at the site beyond those performed on all US Army Corps of Engineers DERP-FUDS properties. Zinc concentrations were unusually high in surface soil samples. Groundwater sampling has never been performed.

Niagara Falls Storage Site (NFSS)

In 1982, the US Department of Energy initiated measure to consolidate and store all radioactive materials on the NFSS site and at adjacent properties (NRC, 1995). From 1983-1985 all high level residues of uranium, thorium,



Plan of the Waste Containment Structure in the NFSS. Shows the basements of storage sites # 410, 411, 413, and 414.
Source: NRC, 1995.

and radon were transferred by hydraulic mining from the storage silo to the reinforced concrete cellar of the converted water treatment plant that was already on site. This building is referred to as #411. Other high level radioactive materials were transferred to 411 and other earthen containment cellars of nearby previously existing buildings (# 410, 413, 414). This included the 3.5% of U_3O_8, which was intermixed with the soil sourced from the Linde uranium ore processing.

In 1986, the entire area encompassing buildings 411, 410, 413, and 414 was covered with a clay cap and named the Waste Containment Structure (NRC, 1995). This was the alternative chosen in the 1986 Final Environmental Impact Statement (FEIS) submitted by the Dept. of Energy and reviewed by the Environmental Protection Agency. The Dept. of Energy designated the cap as an interim facility cap designed to retard radon emissions and reduce rainwater intrusion. The Dept. of Energy calculated that radiation from the topsoil above the cap would be 0.0612 pCi/m^2/ sec, compared to radon releases of 0.24 pCi/m^2/sec from naturally occurring radon in soil. It was claimed in the 1986 FEIS that erosion or other adverse impact would not reduce the 25 to 50 year service life of the interim cap due to maintenance.

In the 1986 FEIS the Dept. of Energy indicated that the NFSS would remain under their ownership (NRC, 1995). They also indicated that the NFSS would be monitored and maintained, and corrective actions would be taken for 200 years.

It has been found that sampling frequency of the NFSS site, especially around the Waste Containment Structure, has decreased in frequency from the goals established in the 1986 FEIS. The 1995 NRC/NAS Report found that out of 43 ground water sampling sites, only 9 were sampled for uranium and 11 for radon.

NFSS Vicinity Properties

The Vicinity Property G, the former University of Rochester Burial Area (US ACE, June 2004), was first remediated by the Department of Energy in 1972 (US ACE, June 2004). They excavated the Burial Area to a depth of 10 feet and removed soil, drums and debris associated with the storage of radioactive material.

All of the vicinity properties now fall within the area covered by the US Army Corps of Engineer's Formerly Utilized Sites Remedial Action Program (FUSRAP). Beginning in 1999, the US Army Corps of Engineers has been conducting a Remedial Investigation of the Niagara Falls Storage Site, to address areas not addressed by the Department of Energy (DOE) during previous cleanup activities. The Vicinity Property G as well as Vicinity Property E and Vicinity Property E' were not thoroughly addressed by DOE activities.

In 2001, the US Army Corps of Engineers began an investigation of Vicinity Property G (US ACE, June 2004). They conducted a focused frequency domain electromagnetic survey of part of the property. This revealed an area of interest that prompted trenching activities and soil excavations in 2002. They found detectable concentrations of plutonium and strontium, two radioactive materials, in small animal bone, laboratory debris and subsurface soils. The conclusions of this study called for further investigation of Vicinity Property G.

Town of Lewiston Waste Water Treatment Plant

The former Lewiston Waste Water Treatment plant was investigated in 1999 during the LOOW Remedial Investigation by the US Army Corps of Engineers (King Groundwater Science, Inc., 2008). The area was

found to have elevated concentrations of PAH and metals in the soil and boron and antimony in the groundwater.

Modern Disposal Services

Modern Disposal Services is responsible for several properties at the LOOW site including; the Modern Landfill, Modern Recycling, and the former Town of Lewiston Dump.

The Modern Landfill is an operating landfill that receives waste not classified as hazardous waste under the Resource Conservation and Recovery Act (RCRA). Currently 239-acres of the 380-acre property is permitted by the NYSDEC for the disposal of non-hazardous solid waste from municipal, residential, commercial and industrial sources (Modern Corp, 2010). The landfill has a State Pollutant Discharge Permit (SPDES) permit for rainwater runoff from outfalls to tributaries of Four-mile and Twelve-mile Creek.

Modern Recycling is an operating site for recycled materials processing, located on 92-acres.

The former Town of Lewiston dump was turned over to Modern Landfill, Inc. in 2002 (Fischer, 2009). The dump is located on a 16-acre property and was closed in 1979. The dump was permitted as an inactive non-hazardous waste landfill and was covered with a clay cap. In 2008 the company discovered several buried drums labeled Hooker Chemical. Further investigation found that the drums were leaking trichloroethylene (TCE), a hazardous waste, into the soil and groundwater. Remediation of the property is planned. In response, Modern Landfill, Inc. has issued a lawsuit against the Town of Lewiston to cover the costs of remediation of the property.

Lewiston Porter Central School Campus

The 375-acre Lewiston Porter school campus and the health of students and staff has been the subject of much interest over the years (King Groundwater Science, Inc., 2008). Between 1989 and 2001 there were studies conducted investigating air quality, water quality, asbestos and soil (US Army Corps). More recently, the school water supply was tested in March 2002 (King Groundwater Science, Inc., 2008). Soil samples were taken from along the drainage ditch behind the school campus in May 2002, Chopra-Lee laboratories sampled soil in the summer of 2001, and radon testing was conducted in school buildings in June 2002. The soil was also sampled for inorganic and organic contaminants at the proposed site of a new playground. In 2003, a UB team of faculty and students led by Professor Gardella developed and implemented a public participation model for soil testing on the campus (Sinha, et al., PPGIS proceedings, 2004). An area of the campus was found to be contaminated by high levels of arsenic, and the area was tested further by Pan American Environmental, Inc., to develop a clean-up plan.

The US Army Corps of Engineers have addressed concerns of radiologic contamination on the Lewiston Porter school campus (King Groundwater Science, Inc., 2008). In December 2001, the US Army Corps conducted a gamma walkover survey in conjunction with the gamma walkover survey of the Niagara Falls Storage Site. The survey was conducted using a gamma detector and GPS equipment as a technician walked lines spaced 20 meters apart across the property. Radioactive activity levels were non-hazardous and attributed to natural materials. Mounds of debris in the wooded area and two areas under asphalt were found to be hot spots of radioactive activity. Radioactivity was lower than levels found at the US Army Weekend Training Site. Conclusions of the study determined there were no radiologic burials of other Department of Energy activity on the property that would cause elevated radioactive activity. Excavation and removal of radioactive hot spots is planned.

4.6.4 Community Action

The local community has been very involved in the issues surrounding the former LOOW site. There has been particular concern about the possible health effects these sites have had on individuals and their families (Cosme, 2003). As a result, several groups have formed. In general, these groups are involved and influence the regulatory decision-making process and gather information about the past and future activities at the LOOW and their effects on the environment and human health.

One of the most prominent groups is the Residents for Responsible Government (RRG) group (Cosme, 2003). This coalition was formed in 2001 and is open to all parties interested in the former LOOW site. As of 2003, the RRG was comprised of eight committees that consisted of volunteers. The committees were; CWM Expansion Curtailment, Stop Hudson River PCB's, Health and School Environment, Research Center, Publicity, Fundraising, and Grants. The projects are described with respect to LOOW-areas in more detail below.

The Restoration Advisory Board (RAB) was another group that was meant to operate in conjunction with the US Army Corps, the EPA, the NYS Department of Environmental Conservation, and the US Air Force (Cosme, 2003). The RAB was formed in compliance with federal legislation requiring community involvement in US Superfund Program actions. The group consisted of a steering committee and subcommittees including' membership, technical, historical, community outreach, advocacy, radiological and chemical committees focused on the Niagara Falls Storage Site (under the FUSRAP program) and associated properties under DERP FUDS. The US Army Corps sponsored RAB meetings.

In 2002, meetings were stopped due to 'a lack of funding,' although it is suspected the meetings were stopped due to flared tension between the US Army Corps and distressed residents. The RAB was reorganized with the help of an US Army Corps sponsored facilitator in 2003, and reconvened and met regularly with USACE participation until 2008, when the Corp announced that it was no longer in compliance with DOD Regulations (DOD RAB Rule, 2006).

Controversy over the status of the RAB has continued over the past two years, as the Steering Committee still meets monthly. The US Army Corp Buffalo District has attempted to substitute a Public Involvement Plan (US Army Corp Buffalo District, Public Involvement Plan, 2009) as a substitute for RAB participation, but controversy continues as the meeting structure is similar to that rejected in 2003 from the initial RAB structure. Consensus support from Niagara County elected officials has requested that the Corp reengage participation with the RAB. The New York State Attorney General, Andrew Cuomo, in April, 2008, (Cuomo to Hurley, 2008) wrote the USACE District Commander and presented evidence that the USACE had illegally ended RAB participation.

Currently, the status of the RAB is in conflict, but presently, the US Army Corp District Commander, is pursuing the hiring of a facilitator to create a new community outreach plan with the LOOW RAB possibly converted to a different structure. EPA, DEC, Lewiston Porter Schools and other groups have supported recognition of the existing LOOW RAB, with the provision of a facilitator to resolve concerns.

Another community group is the Residents Organized for Lewiston-Porter's Environment (ROLE) (Cosme, 2003). The group has been outspoken regarding policies and procedures of federal and state regulatory bodies that involve local residents.

In 1980, two concerned local residents did an informal health survey (Cosme, 2003). Concerned with the reports of autoimmune and cancer cases in their community, Dona Srock and Rita Wingo went door-to-door, surveying people living near the former LOOW site and the CWM landfills. They collected individual and family health history on a limited number of people. The results of the study reported a

high prevalence of many diseases, including cancer cases. In one case, an entire family was reported to have cancer. Although the interviewers were considered biased, the work has spurred research by the NYS Department of Health and other regulatory bodies.

Many of these groups and other community stakeholders have expressed concern over specific areas of the former LOOW site. Community concerns are addressed by property below.

The Chemical Waste Management Landfill

The Residents for Responsible Government (RRG) group has voiced concern over the impact the 710-acre hazardous waste landfill has on residents in the Towns of Lewiston and Porter (Cosme, 2003). The group was formed in response to the Town of Porter Board rezoning of the CWM property from light to heavy industrial use. As of 2003, the Expansion Curtailment subcommittee focused on an Article 78 legal action lawsuit. An article 78 proceeding is used to challenge action by government agencies, in this case the Town of Porter Board. The lawsuit was to rescind the Town of Porter Board decision, allowing CWM to expand their landfill outward and 50% higher.

The RRG subcommittee, Stop Hudson River PCB's, addressed the importation of 175,000 truckloads of PCB's to the CWM facility (Cosme, 2003). As of 2003, they worked to prohibit the importation of hazardous PCB's into the landfill. PCB's can leach through groundwater, although the technology in place at the CWM facility is state of art meant to prevent leaching. Several local politicians, including NYS Assemblywoman Francine Delmonte, were vocal against the shipment of PCB's into CWM.

Area politicians have also expressed concern for the expansion of CWM. The Democratic Park of Lewiston has spoken out against the expansion in letters to the Buffalo News and the Niagara Gazette.

Niagara Falls Storage Site (NFSS)

Nuclear waste left over from past defense activity or leaking from the NFSS is of extreme concern to residents and community leaders. The Battelle Report concluded that radioactivity from the NFSS was no threat to the community, but results were re-analyzed by John Vena and Tim Bryers who conducted a study to see if there was elevated cancer rates in the community (Cosme, 2003). The Battelle Report had analyzed measurements taken between 1973 and 1980 of community health. Vena and Bryers, using data from the NY Tumor Registry and the Surveillance Epidemiology and End results found that cancer rates in two neighborhoods near the former LOOW site were compared to results for all of New York State. They found that cancer rates in the neighborhoods near the NFSS were near the New York State average and their results matched those of the Battelle Report.

Modern Landfill

The Community Advisory Committee has been active advising political decisions made with respect to the Modern Disposal Services. In June 2009, the Committee submitted a recommendation to the Town of Lewiston board to reject a proposal by Modern Disposal Services to increase the tonnage limit for their operating landfill (Fischer, 2009). The committee also recommended a complete audit of the former Town of Lewiston Dump and Modern's compliance under the existing host community agreement. They found several specific issues that the Town of Lewiston addressed.

In response to the discovery of hazardous waste at the former Town of Lewiston Dump, Councilman Alfonso Bax, who serves on the Committee, stated, "We as a board are certainly concerned about the notice of toxic waste, but I can't say we would be surprised." Modern Landfill, Inc. has decided to not

involve the Community Advisory Committee in their lawsuit against the Town of Lewiston concerning the discovery of hazardous waste on the inactive dump they were given control over (Fischer, 2009).

Lewiston Porter Central School Campus

Concern regarding the 375-acre campus on the former LOOW buffer zone and the health of student and staff has prompted community involvement. School administrators have summarized environmental studies from 1989 to 2001 (King Groundwater Science, Inc., 2008). Their involvement in both sampling efforts and public outreach continues. The Residents for Responsible Government (RRG) subcommittee, Health and School Environment, also focuses on the Lewiston Porter School and is open to the public (Cosme, 2003). The group provides technical analysis and encourages remediation of contaminated areas on the school campus.

Soil sampling in 2001 by Chopra-Lee found elevated arsenic concentrations on the northern end of the campus (King Groundwater Science, Inc., 2008). In 2002, the University at Buffalo Environment and Society Institute initiated a program at the LewPort Board of Education's request, directed by Professor Gardella, for further testing and public outreach and involvement. A stakeholder listening committee was formed and developed a sampling plan. Soil samples were collected in July 2003 at forty locations. GIS was used to present and interpret the results for the public. Results found that PCBs were not detectable except near the roadway and other pollutants were at background concentration levels. Elevated arsenic concentrations were confirmed by the combination of all testing and geographic analysis to be in a localized area at the northeastern part of the developed campus. A second, follow-up study was accomplished in 2005 by PanAmerican Environmental, identifying the depth and extent of arsenic contamination, and a remediation plan was developed.

4.6.5 Current Status

The current status of the former LOOW site is highly variable and dependent on the owner of the property. While some properties have been abandoned and are no longer being used, properties like Chemical Waste Management are seeking to expand operations.

US Air Force

The remediation of the former Launch Area of the former US Air Force Nike Missile Base concluded in 1994 (King Groundwater Science, Inc., 2008). Chemical Waste Management, LLC, owns the other portion of the site, the former Control Area. In 2008, Southport Rail Transfer LLC bought the former Launch Area. Plans for the site are unknown.

U.S. Army National Guard Weekend Training Site

This site is currently used for US Reserve and National Guard trainings (King Groundwater Science, Inc., 2008). The facilities include areas for vehicle and helicopter training, storage bunkers, an explosive ordnance disposal range and a small arms range.

Air Force Plant 38 was listed as a NYS hazardous waste site in their State Superfund Program. Following remediation the property was reclassified as a Class '5' in the NYS Superfund Program list. This means that the property is fully remediated and does not require monitoring.

The Chemical Waste Management Landfill

The CWM Landfill continues to operate as a treatment, storage, and disposal facility for organic and inorganic hazardous waste and industrial non-hazardous waste. Solid waste is stored at the facility and hazardous and non-hazardous wastewater is treated at the facility and released into the Niagara River. The 1972 Department of Health order, which directs that land on the property not be disturbed, is still in place (King Groundwater Science, Inc., 2008).

CWM has filed a request for expansion of the operation, which is currently under consideration by the DEC, although delayed by the legal requirement that an equitable hazardous waste site plan must be developed. That latter action is in final draft form.

Somerset

Currently the Somerset Group owns 39-acres of property. No operations are being performed on the property.

Occidental

Occidental Chemical Corporation currently owns 304-acres. No operations are being performed on the property.

Niagara Falls Storage Site (NFSS)

Performance monitoring and environmental monitoring programs have been instituted at the NFSS (NRC, 1995). The performance monitoring program is responsible for testing the viability of the Waste Containment Structure. The program tests for rainfall infiltration minimization, ground water pollution prevention, and radon emanation prevention. The environmental monitoring program includes sampling networks for radon concentration in air, external gamma radiation exposure, and total uranium and radon concentrations in surface water, sediments, and ground water. Results from the environmental monitoring program are reported annually. Non-radioactive, toxic substances such as lead and barium are not monitored.

Thorium and Radium present a threat to human health at the concentrations found in the Waste Containment Facility (NRC 1995). Currently the total inventory of ^{226}Ra (Radium) in the Waste Containment Facility is 1,982 Ci. The total inventory of ^{230}Th is 296 Ci.

The NFSS is bounded on two sides by major waste disposal facilities, the Chemical Waste Management Chemical Services Inc. and the Modern Landfill, Inc (NRC, 1995). No monitoring is being done to address the present or long-term potential impacts of these sites on the residue and waste storage at NFSS. No evidence was found by the Committee responsible for the 1995 NRC/NAS report.

Available site sampling and monitoring information indicates that there is no immediate hazard to the off-site public from residues at the NFSS at their present configuration (NRC, 1995). However, it was concluded that high-level residues, including radon and thorium, pose a long-term risk to the public if they are left permanently at the NFSS (NRC, 1995). The proposed actions of replacing the interim cap with a ‘permanent’ cap and of long-term site maintenance and monitoring do not address the potential risk to the public for periods of time commensurate with the duration of the risk posed by radioactive contaminants (NRC, 1995). The alternative of solidifying high-level residue on site and shipping solidified materials to an off-site location has not been considered. This practice has been successful at the Fernald Environmental Management Project, a radioactive site in Ohio comparable to the NFSS.

After a series of Remedial Investigations and other analytical studies on the various sites, plans for the vicinity properties and the NFSS are being developed by DOE and US Army Corp. The US Army Corp will

soon begin the Feasibility Study for considering future actions at the NFSS, (removal, permanent storage, etc.).

The RAB remains unresolved but progress has recently been made with the US ACE Buffalo District announcing the funding of a facilitator.

NFSS Vicinity Properties

Three vicinity properties associated with the Niagara Falls Storage Site (NFSS) remain 'open', or incompletely investigated. Vicinity Property G is currently owned by CWM Chemical Services (USACE June 2004). The US Army Corps of Engineers has requested funding from Congress to characterize all vicinity properties not certified closed (Vicinity Properties G, E, and E'). They plan to conduct thorough Remedial Investigations of all properties once funding is made available.

A plan for remediation of the Vicinity Properties has been presented recently by the Department of Energy.

Town of Lewiston Waste Water Treatment Plant

The waste water treatment plant is no longer operational. The US Army Corp is considering a remediation plan with the Town of Lewiston for this site.

Modern Landfill

As of April 2002, Modern's remaining permitted capacity is 32-million cubic yards (Modern, 2010). At the current filling rate, this equates to an operating landfill at the site until 2047.

Lewiston Porter Central School Campus

The campus currently contains a complex of five buildings. Pre-school, elementary, middle and high school students attend the campus. Most of the property remains wooded. Students occasionally cross the SW drainage ditch to use running trails through the woods.

4.6.6 Citations

CWM Chemical Services, LLC. "Radiation Environmental Monitoring Plan." March 2006.

CWM Chemical Services, LLC. "RCRA – Corrective Action; Environmental Indicator RCRIS code CA725" February 5, 1999.

Fischer, Nancy. "Alleged Toxic Waste at Former Dump is Reason for Suit Against the Town of Lewiston." *The Buffalo News*. September 28, 2009.

Kelly, Geoff and Lou Ricciuti. "The Land that Time Forgot." *Artvoice*. vol 6(30). July 26,2007.

King Groundwater Science, Inc. "The Community LOOW Project: A Review of Environmental Investigations and Remediation at the Former Lake Ontario Ordnance Works." The Community LOOW Project. September 2008.

Modern Corporation. "Modern Landfill Inc." Webpage. Accessed June 1, 2010. http://www.moderncorporation.com/services_landfill.php

New York State Attorney General Andrew Cuomo to US Army Corp Buffalo District Commander John Hurley, April 2008.

Niagara County Health Department. "The Community LOOW Project (CLP)." Website. Accessed June 1, 2010. <http://www.niagaracounty.com/Health/loow.asp>

NRC Committee on Remediation of Buried and Tank Wastes. "Safety of the High-Level Uranium Ore Residues at the Niagara Falls Storage Site, Lewiston, NY." National Academy of Sciences. Washington, DC, 1995.

NYS Department of Environmental Conservation. "ENB Region 9 Completed Application; Applicant: Modern Landfill Inc." November 7, 2007.

NYS Department of Environmental Conservation. "Environmental Site Remediation Database." Accessed June 1, 2010.

Sinha, Gaurav, Steven Cosme, Gunwha Oh, David C. Manns, Tammy M. Milillo, Ann Roberts and J. A. Gardella, Jr. "Interactive Community Evaluation of Surface Soil Contaminants in the Lewiston Porter Schools", Proceedings of the Third Annual Conference on Public Participation Geographic Information Science, co-sponsored by the Urban and Regional Information Systems Association (URISA), Rural Geospatial Solutions (RGIS) and endorsed by the University Consortium of Geographic Information Science (UCGIS). University of Wisconsin, Madison, WI, July 17-20, **2004**, pp 172-189.

Stevens, Laura, and Steven Cosme. "An Overview of the LOOW Located in Lewiston and Porter, NY: Focus on History, Community Involvement, Past Studies, and Future Epidemiological Steps." Class Project. University at Buffalo Department of Social and Preventative Medicine. May 8, 2003.

US ACE Buffalo District. "Missions; LOOW and NFSS." US Army Corps of Engineers. Website. Accessed June 1, 2010. <http://www.lrb.usace.army.mil/derpfuds/loow-nfss/index.htm>

US ACE Buffalo District. "The Former Lake Ontario Ordnance Works (LOOW); USACE Update." Presentation. US Army Corps of Engineers. October 27, 2007.

US ACE Buffalo District. "Public Involvement Plan; Former LOOW Site Defense Environmental Restoration Program for Formerly Used Defense Sites and NFSS Formerly Utilized Sites Remedial Action Program for 2009-2010." US Army Corps of Engineers. May 2009.

US ACE Buffalo District. "Final History Search Report- Lake Ontario Ordnance Works - Niagara County, NY." US Army Corps of Engineers. Volume 2. August 1998.

US ACE Buffalo District. "LOOW Fact Sheet." US Army Corps of Engineers. Defense Environmental Restoration Program for Formerly Used Defense Sites. June 2001.

US ACE Buffalo District. "FUSRAP Fact Sheet; Niagara Falls Storage Site – Vicinity Property G." US Army Corps of Engineers. June 2004.

US ACE Buffalo District. "LOOW Site; Risk Assessment Fact Sheet." US Army Corps of Engineers. May 2009.

4.7 West Valley Nuclear Waste Facility

This report was prepared by Joanne Hameister, a member of the WNYEA Waste and Pollution Working Group, and the Coalition on West Valley Nuclear Waste.

In 1961, New York State acquired a 3,345-acre site of farmland and woods in Cattaraugus County, NY, mostly through the process of eminent domain, as a future site for a new venture encouraged by the federal Atomic Energy Commission (AEC). This new venture, then known as the West Valley Nuclear Facility, was the first and, as of this date, the only commercial reprocessing facility in the United States. Nuclear Fuel Services (NFS) was selected as the operator and did so from 1966 until 1972 when it suspended operations to apply for modifications and re-licensing.

Local citizens, including Carol Mongerson, were concerned about the reprocessing operations, radiation safety for the community and the effect(s) of contamination on the workers. The task of obtaining information was difficult, since the Atomic Energy Commission had the sole responsibility for the onset and duration of this facility. At that time, anything 'atomic' was cloaked in national security secrecy -- artifacts of the attitude spawned from Manhattan Project. In 1974, Carol and others formed the Springville Radiation Study Group (SRSG) in order to acquaint themselves with 'things nuclear' from other outside sources and to be able to ask relevant questions. SRSG tried to gain intervener status in the re-licensing procedures, but it required a lawsuit. Sierra Club's Radioactive Waste Campaign committee joined SRSG in a 1976 lawsuit and thereby formed the initial version of Coalition on West Valley Nuclear Wastes (CWVNW). The Coalition was successful in achieving legal standing in the re-licensing procedure and has continued to have legal standing in subsequent court proceedings.

CWVNW is a coalition of organizations and individuals, essentially a mailing list and a steering committee, and has survived on the generous donations of time and/or funding of participants. Participants and activities varied and were dependent upon the issues at the time. A steering committee made and continues to make decisions by consensus; for critical issues, such as whether to initiate a lawsuit, a vote of the steering committee is taken. New members to the steering committee are approved by the existing steering committee. Carol Mongerson chaired the steering committee until her death in 2005, except for a brief interlude in 1987 when Raymond Vaughan was chair. Since 2006, I have served as chair. The CWVNW is not incorporated, is not a member organization, is not a not-for-profit 501(c)3.

From the beginning, and starting with the SRSG, the mission of the Coalition has been to be a vocal and active participant in the public process to make sure that good decisions are made for the West Valley nuclear site. Since the WV site was planned, developed, and operated before the passage of the National Environmental Policy Act of 1969 (NEPA), siting was not required to be evaluated according to good practice criteria. The current physical/chemical/radioactive situation at the site continues to be complicated also by prior poor practices in terms of record keeping, policy and assignment of responsibilities. Even today, the issues of funding and responsibilities are the subject of a lawsuit between NYSERDA and DOE.

The Coalition's position is to advocate for monitored, above-ground, retrievable storage and long-term vigilance. We do not suggest moving it to somebody else's backyard until there is a verifiably safe repository.

Nuclear fuel reprocessing involved several complex operations: removing fuel assembly hulls, chopping fuel pellets, dissolving the pellets in an acid bath and extracting most of the fissionable (undepleted) uranium and plutonium, a fission by-product. The highly radioactive acid bath solutions were stored in

what are referred to as high-level tanks. For example, Tank 8D-2 eventually held a volume of 570,000 gallons and 35 million curies of a complexity of chemical and nuclear solutions and suspensions, some of which have precipitated and formed bottom sludge. As of this writing, the exact composition and hazard of that still existing sludge is speculative.

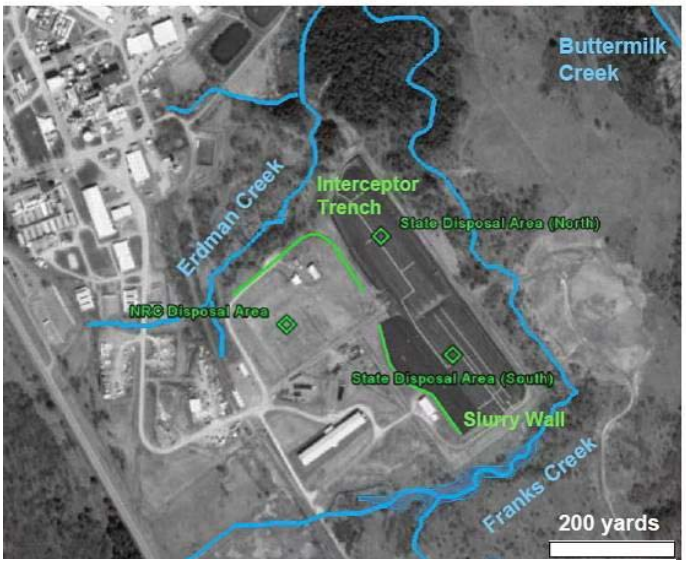
In 1996, a process called vitrification was initiated to solidify some of the contents of Tank 8D-2. A large portion of the liquid in 8D-2 was filtered through ion-exchange columns, resulting in two components: filtrate, comprised mostly of cesium, and supernatant. The liquid supernatant (significantly less radioactive, total of 4,000 curies) was mixed with concrete and poured into 20,000 72-gallon drums; these drums were shipped to the Nevada Test Site in 2006-2007. The highly radioactive filtrate and filters were mixed with molten glass and poured into 275 stainless steel canisters, with an estimated total content of 10 million curies. The canisters remain on site and must be handled remotely due to high, intense radiation.

Waste was placed in plain dug, unlined, erosion-prone trenches. The DOE and NYSERDA want the waste to remain in these trenches, while the CWVNW wishes for the waste to be exhumed.
Source: Joanne Hameister

The West Valley site problems today involve, but are not limited to, the main processing building, 4 storage tanks, several lagoons, 2 burial grounds (dug, unengineered trenches with no liners and filled with cartons, cans, crates and drums of radioactive wastes), a groundwater plume of radioactive strontium, an airborne surface deposition (prong) of cesium from a smoke stack filter blow-out. The site is drained by and riddled with highly erodible creeks, which flow into Cattaraugus Creek and thence to Lake Erie. Evidence of strontium and plutonium has been found in the delta of the Niagara River at Lake Ontario. The erosion probabilities are of great concern to the Coalition since the more than 20 acres of buried radioactive waste are at risk and also have had a history of 'bath tubbing' (overflowing) as a result of the area's wet climate.

As of this writing, the agencies involved with decisions at West Valley include the U.S. Department of Energy (DOE), U.S. Environmental Protection Agency (EPA), Nuclear Regulatory Commission (NRC), New York Energy Research and Development Authority (NYSERDA), New York State Department of

Environmental Conservation (DEC), New York State Department of Health (DOH), New York State Department of Labor (DOL) and New York State Office of the Attorney General (OAG).



Location of the NDA and SDA relative to local watersheds.
Source: Joanne Hameister

These intricacies of interaction with this plethora of agencies, each with its own and ever changing regulations, have been and continue to be a tortuous situation for the Coalition. For instance, the West Valley Demonstration Project Act of 1980 (1) put the U.S. DOE in charge of decommissioning and decontaminating the project premises, i.e. only that part of the site that was actually involved in the reprocessing operation (about 200 acres), and (2) gave only consultation (not enforcement) privileges to the NRC. Yet, in 1995, NRC began developing criteria for closure of the WV site and issued its License Termination Rule (LTR) in 2000. In 2008, DOE and NYSERDA issued a Draft Environmental Impact Statement (EIS) with a preferred alternative of a two-phase decision process. The first phase deals with less than 10 percent of the contamination problems and removes approximately 5 percent of the curies. Decisions for the remaining 90 percent (95 percent of the curies, including the most dangerous and long-lived radionuclides) might be made sometime in the future. The Coalition's dilemma is centered on the relationship between decisions for both phases and the License Terminal Rule, both of which are dynamic and can, probably will, change.

The Coalition has initiated news articles and a radio program, participated in press events and releases and demonstrations to call public and media attention to problems and opportunities for public involvement in decisions to be made at the West Valley Site. Perhaps the most notable (in my memory) was a launch in 1985 of black and white balloons, representing tritium and carbon-14 emissions from a proposal to incinerate nuclear waste and to indicate the wide-ranging dispersal of the by-products. Balloons were recovered as far away as Binghamton. Whether or not the balloon launch had an effect, the possibility of an incinerator never progressed beyond the proposal.

In 2006, a concerted effort by CWVNW, Center for Environmental Health and Justice (CHEF), Citizens' Environmental Coalition (CEC) and Nuclear Information Research Service (NIRS) obtained a New York State member grant from Senator Catherine Young to have a full cost accounting study performed by an outside, impartial, outside agency. That study was performed by Synapse Energy Economics, Cambridge, MA. The final report was released in November 2008 and concluded that the cost of full exhumation of the radioactive waste was less expensive than long-term monitoring and maintenance. The grant was administered through the New York State Department of Environmental Conservation.

Throughout the Coalition's history, members of the steering committee have served on boards and committees of other organizations because of a common issue, to share information and to coalesce support. Carol Mongerson, for instance, was a member of the Sierra Club's Radioactive Waste Campaign board. Ray Vaughan was a board member on Don't Waste New York and Erie County's

Environmental Council. I served on boards for the League of Women Voters at the local, county and state levels.

An on-going, active campaign of the Coalition is "Dig It Up" (www.digitup.org) to keep the issue of full clean-up and exhumation of the wastes at West Valley alive and in the public conscience. Through the (1) exchange of newsletters and alerts with/from other organizations and (2) attendance and/or participation in local, state and national conferences and seminars, the Coalition has kept current with attendant issues of 'things nuclear'. I currently am working with the Community Foundation of Greater Buffalo to form an environmental alliance of the 180 environmental groups in western New York, many of which are dealing with long-term hazardous risks and some dealing with radioactive contamination.

A birds-eye view of the SDA with a 15 acre geotextile cover. Source: Joanne Hameister

The time line below lists some of the major NEPA decision milestones for West Valley. The Coalition's collection includes statements and positions proffered relative to these government actions. The consensus of agencies and CWVNW is that this is the longest NEPA decision process to date; it is not over and will continue for at least another decade.

- 1980 The West Valley Demonstration Project Act passed in Congress. West Valley is the only site to have its very own act.
- 1982 DOE chose borosilicate glass matrix for the stabilization of the high-level liquid wastes in Tank 8-D2.
- 1986 DOE issued an Environmental Assessment (EA), proposing to pile the remaining waste in a tumulus on site.
- 1986 CWVNW sued DOE and United States, claiming a full Environmental Impact Statement was required for waste disposition, instead of an EA.
- 1987 CWVNW won its suit in Federal Court and a Stipulation of Compromise (SOC) was reached between DOE and CWVNW. This SOC remains as critical regulatory document and has afforded the Coalition continuing legal stakeholder status.
- 1988 DOE began the NEPA EIS process with a scooping hearing.
- 1996 DOE and NYSERDA released a Draft EIS (DEIS), a site-wide "Completion of WV Demonstration Project and Closure or Long-Term Management of Facilities at West Valley", commonly referred to as "Clean Up and Closure". (This document discloses potentially large radiation exposures long into the future.)
- 2000 NRC promulgates its 10 CFR 20 Subpart E, the License Termination Rule (LTR).
- 2000 DOE aborts the 1996 DEIS process and proposes a two EIS approach. CWVNW continues to reject this procedure as a DOE defiance of the NEPA process and intent.
- 2001 DOE issues "Notice of Revised Strategy for EIS", solicitation of scoping comments. This re-scoping of the 1996 DEIS thereby segmented the 1996 DEIS into (1) Waste Management EIS and (2) Completion and Closure EIS.

- 2003 DOE releases DEIS “Waste Management”
- 2003 DOE releases Final EIS on “Waste Management”
- 2005 18 months after release of FEIS, DOE issues Waste Management Record of Decision (ROD).
- 2005 CWVNW sues DOE on basis of segmenting the NEPA EIS process.
- 2008 DOE releases DEIS on “Decommissioning and/or Long-Term Stewardship at the West Valley Demonstration Project and Western New York Nuclear Service Center”
- 2009 NYSERDA releases its Consent Decree with DOE, settling the NYSERDA 2005 lawsuit
- 2010 DOE releases FEIS and ROD on Decommissioning DEIS, preferring a two-phased approach wherein the first phase addresses less than 10% of the waste and decisions for the second phase will not be made for another ten years.
- 2010 NYSERDA releases its SEQRA Findings Statement, agreeing with the DOE decision.

SUNY Fredonia, with a grant from NYS Document Heritage Program, agreed in 2008 to accept and archive the collection of documents and artifacts from the Coalition on West Valley Nuclear Wastes as both appropriate and important. The Coalition has been uniquely persistent as a true grassroots, homespun and local organization with decades of dedication, including, but not limited to, many of the same people from the early days. The Coalition also has more institutional memory of West Valley than does DOE or NRC or NYSERDA or EPA. Some of our records – particularly from the 1960’s and early 1970’s - quite possibly are one of a kind. The initial collection of documents from Carol Mongerson, Raymond Vaughan and me has been processed and will be available to the public this summer. Additional donations will be deeded to SUNY Fredonia every five years.

Helpful Links

West Valley Citizen Task Force: http://www.westvalleyctf.org/

Tonawanda Nuclear Site Information: http://nuclear.bfn.org/

Chapter 5: Conclusions and Next Steps

5.1 Summary

The project, "Mapping Waste: Setting the Stage to Clean up Niagara" presents a profile of the status of waste in three counties in WNY, Erie, Niagara and Cattaraugus as of 2010. Working with the Waste and Pollution Working Group of the WNY Environmental Alliance, we have outlined, to the best of our ability, the federal and state regulatory contexts that monitor, manage, oversee and permit waste in our region. Using the available data bases, we have produced an Atlas of maps of the various classes of waste (legacy and active), organizing all the information according to the agency responsible for its regulation. Besides the Atlas of information, we offer a series of case studies of waste identification and clean-up in our region, giving insight into the relationship among the agencies, the contamination, and community efforts.

Figure 5-1: Western New York has more than its fair share of Waste!

Western New York has a legacy of contamination and ongoing contamination that surpasses most other areas of New York State. As measured by distribution/county, at least one of the three study area counties was near the top of the list in total number of contaminated sites, including Superfund sites (inactive hazardous waste), the RCRA program (inactive and active hazardous waste), and landfills (inactive and active solid waste). With a small number of exceptions, Erie, Niagara and Cattaraugus counties had more than what would be a fair share by county in the state of New York (1.6%) of almost every contaminate studied.

Given the amount and complexity of the information available in current data bases that we used as our sources for this report, we have taken advantage of experts in agencies and non-profits to question some aspects of the data and verify our understanding. We are thankful that people have been generous with both their information and their time. This process and the structure of information were reviewed by the Community Foundation and Waste Working Group who had set the original agenda.

The intent of this project is to begin work on a 'Clean up Niagara' campaign by finding out what current conditions are. We seek to make this information publicly accessible to the groups working on issues of waste and contamination who are members of WNYEA and also to the public-at-large through the Community Foundation for Greater Buffalo's "GrowWNY" website.

In order to respond to the longer term goal of developing a broadly based comprehensive strategy and campaign to clean-up and restore the Niagara region in Western New York, we have, in the final section of the Atlas, generated maps of contamination by district for selected (state/federal) elected official. This information is a first step in identify for both the public and the officials, who, in addition to regulators, have the power to help clean up our region.

This project, *Mapping Waste* has accomplished its goals and objectives as outlined in the proposal. However, as the study progressed, a number of constraints became obvious to us that had to do with the structure and history of hazardous waste regulation in the United States that impacted our ability to get a clear picture of the waste of WNY. In addition, the limitations of our own work have become clearer related to the questions asked, the communication skill required, and the analysis. This last section will outline our assessment of both the institutional constraints as well as the limitations of the study itself. We close the conclusion with ideas for next steps on the WNY Environmental Alliance Waste agenda.

5.2 Constraints

In our work, we have learned – or have been reminded – of a number of important issues that we are outlining below. The constraints discussed make it difficult for the public to understand both the nature of the waste problem and the challenges associated with the ability to actually clean up historic contamination and prevent new waste from entering the environment.

- **Access to Information**: There is an enormous amount of information regarding waste in WNY available online, through conversations with the various agencies, non-profits, individuals and so on. It has been our experience that those responsible for this information seek to make it available to the public. The difficulties encountered as one seeks information relate to clarity and accessibility because the information is:
    - In format that most people can't use (such as GIS based or too technical);
    - Structured in a way that is difficult for the public to interpret or use;
    - Not always up- to-date;
    - Contradictory across more than one data base (e.g. federal information on the same sites might conflict with state information);

- **Hazardous Waste Regulation is an Evolving System**: We are all very new at the process of managing, regulating and cleaning up hazardous waste. There has been a steep learning curve and as a result, the system for regulation and permitting is an evolving one. Prior to the 1970s, there were almost no federal or state regulations for toxic material as a subset of waste management. Hazardous waste produced before this time, our legacy waste, was generated at a time when 'best practices' for the storage or removal of these materials were mostly to bury without safeguards or to put the material in waters.

  Since their establishment, the Environmental Protection Agency (EPA) at the Federal level and the Department of Environmental Conservation in the State of New York (DEC) have been responsible for overseeing the management of most of the waste – both legacy and currently produced waste. Other agencies, such as DOE, ACE and the state DOH have some responsibility as well. These agencies have learned as they have engaged in the practice of remediating, regulating and permitting over the last 40 years, and so regulations have been changed, modified, and updated, more materials have been included, and technologies have changed. What becomes quickly apparent as one seeks information is that the regulatory system itself is not as unified or logical as one would hope, nor is it transparent to someone who has not been a part of it. It has grown, changed and been modified to accommodate new information and insights, resulting in greater capacity on the one hand, but more complexity and less transparency on the other.

  In addition, there are difference in legacy waste and active waste in terms of their dynamics. The legacy waste is fairly consistent even while new sites may be added over time as they are uncovered. Active waste, on the other hand, changes frequently as new sites are opened, others closed, facilities report the storage and production and then cease using hazardous waste. This type of waste must be reviewed frequently.

- **Structural Inconsistency**: There is a significant structural tension within the enabling legislation and establishment of both the federal and state agencies responsible for the health of citizens and environment. EPA and DEC are charged with preserving the quality of environment and

controlling pollution AND giving permits to pollute for a fee, that in most cases, is used to pay staff in the agency. This issue is particularly difficult for many of us who assume that the government is protecting the people from hazards, not allowing anything that would harm humans into the water, air or land. And although one could argue that regulating and permitting the emission of hazardous material into the environment is a way of protecting in that it identifies the sources of contamination, this feels counterintuitive. Giving a company or municipality permission to emit a toxin in the earth/air/water is not the same as preserving the environment or protecting human health, particularly as we have so little science about the effects of the combination of toxins on the human body. However, this is the nature of the legislation and without citizen oversight, it is possible that an agency could facilitate pollution more than protect the environment.

- **Cumulative Impacts**: The regulation of hazardous waste is managed according to categories of waste as evident by the structure of this report. Different people with different expertise address different issues. Places and residents could be impacted by various toxins even while the regulation lies across different areas of expertise and bureaucracy. Cumulative impacts are particularly problematic in the permitting process where the requirements for receiving a permit are outlined on an individual basis and not on a geographic area basis. For example, the ongoing work by DEC and EPA in Tonawanda NY examining the synergistic effects of multiple (in that case, 50) permitted air pollution emitting sites in a small (2 square miles) is a breakthrough study that could affect new approaches to regulation of permitting in small areas, according to a recent discussion with Judith Enck, Region 2 EPA director.

- **Remediation and Clean-up Does Not Mean "Clean:"** Sites are rarely treated exactly the same, and the 'end state' of the remedial process is usually different for each site. The response to a site remediation depends on many things such as the nature of the contamination, the proposed use of the site, the proximity to populations and so on. A site that has been 'remediated' is deemed no longer 'dangerous' and a threat to human health, but it is not necessarily restored.

  Remediation ranges from a variety of on-site containment methods (meaning that much of the waste remains on site even if in a protected area and monitored) to full removal of contaminated materials. There are a number of reasons for the differences depending on the actions taken. One is that remediation is geared toward a final use: clean-up for industrial purposes does not require the same level of remediation as clean-up for residential use. It is deemed appropriate in many situations to keep the contamination on site. For example, all of the waste from the Love Canal tragedy remains at Love Canal; in fact, tons are still ***in*** the canal under a clay cap.

Figure 5-2: Hazardous Waste Storage Versus Treatment

Of particular concern for our region is the overpopulation of landfills and waste disposal in WNY, and not just for municipal waste and garbage, but for hazardous (toxic) waste (e.g. CWM) and other wastes (e.g., landfills used to house the products of "remediation"). In other words, hazardous components that are "cleaned up" end up in another burial site, although with better containment technology and monitoring. This is likely the product of poor land-use planning, the lack of regional planning and the low cost of land, making profitable the business of landfilling wastes.

On the scientific and engineering front, this hampers the implementation of modern decontamination technologies as the immediate costs of burial never outweigh the benefits of decontamination. Thus, as a region, we are enabling the continued use of technologies for waste defined in the mid- 20th century. The penalty we pay as a region are the long term costs of monitoring and the danger of leaks, spills and emissions, especially given the risk of geological faults.

Given the regional stake involved with our water sources and the risk to millions of Americans and Canadians, a regional discussion about **treating waste, rather than storing**, needs to take place.

What We Don't Know: A final reminder about the constraints of fully comprehending an assessment of waste is that those areas identified, remediated and monitored do not include all of the hazardous wastes sites in the three counties. One reason is that a contaminated area or water supply may not have been identified, or it may contain types of chemicals such as pharmaceuticals or other chemicals that are endocrine disruptors that we currently don't measure or know how to clean up. Unless a property has been identified as contaminated, or its condition becomes evident in the transfer of property, it will continue to be an open toxic area unless, and until, someone calls attention to it through the transfer of property, community concerns, or its public use. In other words, the sites identified in this report are a summary of **known** hazardous waste sites.

Since the initiation of the study, a couple of sites have come to our attention that are not included in the inventory of hazardous waste sites. After investigation, one of these sites, a landfill in Wheatfield, has been forwarded to DEC with a request for further investigation as there is a possibility that it contains material from Love Canal but at this time, is only regulated as a closed landfill. More sites such as this are probably in WNY.

Further, the current regulatory framework for toxic sites includes the NYS DEC brownfields programs. The most recent legislation leaves a broad definition of brownfield – suggesting that many formerly industrial, manufacturing and urban areas may be contaminated and warrant investigation before reuse. This is a very broad range of sites – some may be serious hazardous and others with minimal problems are also included. In other words, having a lot of brownfields may not be exceptionally hazardous but rather reflect earlier land uses, but the word connotes toxic places to most. Some argue that there is a value to the general name in that it is broad enough to be inclusive of many sites that have been excluded in more precise terms, and many of these needs some level of remediation; the term's imprecision may be useful.

The p**ublic** demand for knowledge and information regarding the health of the environment continues to grow and governmental responses try to accommodate them. However, as can be seen from the list above, the process of preserving, and restoring the common environment – the air, water and land – is hampered by the processes we have put in place in addition to insufficient science or, the unmentioned aspect in this report, political will.

5.3 Limitations of the Study

We begin with the statement that we have, to the best of our ability, attempted to understand, decode, and re-present the information on hazardous and other types of waste in the selected three counties. But in some instances, we are not sure we have the most accurate up-to-date information, nor if we have totally understood the statutory context of the regulation and regulators. We anticipate that any shortcomings of our part can be adjusted once this report is public and agency staff, officials and non-profits have the time to review the details and provide feedback. Further, we are aware that this report is limited by the constraints listed above regarding the regulating and permitting of toxic waste. It is important that expectations of this work be placed in context.

The report presents a snapshot of hazardous waste in Western New York as of August 2010. The printed maps and charts are therefore limited. However, they reference the source of all information, and can be accessed in an interactive GIS format. All of the data files on the accompanying CD are interactive and can be updated, if an entity steps forward to do the updates.

5.4 Proposed Next Steps

From the initiation of this project, it has been clear that this is a beginning only. Having the information is the first step in organizing a campaign to pressure both state and federal officials to speed up the remediation of the region, and also to argue for 'no more waste' in Western New York. It is our hope that the Waste and Pollution Working Group will continue to meet and work toward an organized campaign.

As a result of this study, we are suggesting the following steps be taken.

1. Agency / Expert Review: We have engaged in a good faith effort to name and identify the waste of WNY. We urge the Task Group to request the involved agencies to review all the material to be sure we have accurately portrayed the situation. We are proposing a series of steps in this review process to include having appropriate individuals look at the material related to their project. Another ideas is to actively involve agencies and their staff by inviting them to a WNYEA round table to discuss, with interested stakeholders, how this kind of information could become more available to the larger public. Another aspect might be to hold a symposium on the agenda and issues raised at the WNYEA roundtable in collaboration with federal and state commissioners and directors such as Abby Snyder, NYS DEC Region 9 director, Ralph van Houton, NYS DOH (Rochester/Buffalo) and Judith Enck, EPA Region 2 director . It would also be very helpful to all if the matter of 'environmental justice' were brought to this level of discussion

2. Develop a communication plan with WNYEA members and the Steering Committee ? or Waste task force: Determine what and how to present to others in service of the longer term goal of "Clean up Niagara". How can the material be organized, presented and used by the larger WNY community. There are people who are experts in this kind of communication and they may have insights to use in the campaign.

3. Active and Permitted Waste: The legacy waste, although chilling, is recorded in such a way that we were able to make comparisons among all the counties. The same cannot be said for the status of ongoing waste production, storage and remediation that is permitted and regulation by DEC and EPA. It would be good to continue the research on regional environment to find out if WNY has a disproportional amount of active waste in the same way we were able to identify our status among states for legacy waste. This would require additional funding.

4. Elected Officials Campaign: Now that we have generated the maps that identify how much and what kind of hazardous waste is located in each of the elected official districts, how should we engage this information? The Steering Committee needs to decide whether or not to to send letters, schedule visits, publicly display maps, and so on.

5. "Stories Project" for NF Manhattan Project: One of the issues that emerged and for which it was difficult to get clear information, was the historic nuclear history in Niagara Falls that support the development of the atomic bomb. We are suggestion that we access a grant to initiate a project by gathering a few stories to serve as a pilot for a larger project

Appendix A: Key Individuals

Overview of the List of Key Individuals

The following list of key individuals is derived from the case study research and includes people with significant knowledge of the case studies. The list is not comprehensive but includes some of the community activists and concerned scientists instrumental to the each of the case study's remedial processes. Additionally, the list acknowledges Steering Committee participants and major consultants for the project including individuals from the Urban Design Project and the Community Foundation for Greater Buffalo.

Steering Committee Participants

- Jay Burney, Learning Sustainability
- Katy Duggan-Haas, Resource Recycling Systems
- Judy Einach, Coalition on West Valley Nuclear Wastes
- Andrew Goldstein
- David Hahn Baker, Environmental Justice Action Group
- Joanne Hameister, Coalition on West Valley Nuclear Wastes
- Diane Hofner
- Bill Nowak, Former Senator Thompson
- Frank Scarpinate
- Melanie Shorey, Former Senator Thompson
- Richard Tindell, Buffalo Niagara Riverkeeper
- John Weare

Community Foundation for Greater Buffalo

- Cara Matteliano, Vice President of Program Department
- Rebekah Williams, Environmental Program Coordinator

The Urban Design Project Staff

- Emily Bauer, Research
- Joseph Gardella, Co-PI
- Jamie Hamann-Burney, Research
- Jajean Rose-Burney, Project Management

- Lynda Schneekloth, Co-PI
- Ziyan Wu, GIS
- Jinwon Bae, GIS

Hickory Woods

- Rick Ammerman, head of the Hickory Woods Concerned Homeowners Association
- Richard Lippes, attorney for Hickory Woods plaintiffs
- Joe Gardella, UB Department of Chemistry

Sycamore Village

- Dennis Sutton, City of Buffalo Environmental Ecologist

858 East Ferry

- David Hahn Baker, Environmental Justice Action Group
- Rhonda Dixon Lee, concerned citizen
- Rev. Darius Pridgen, pastor of the True Bethel Baptist Church
- Betty Jean Grant, former City of Buffalo Common Council, current Erie County Legislator
- Joe Gardella, UB Department of Chemistry

Tonawanda Air

- Erin Heaney, Executive Director of the Clean Air Coalition of WNY
- Jackie James-Creedon, Founder of the Clean Air Coalition of WNY
- Joe Gardella, UB Department of Chemistry

Lake Ontario Ordnance Works (LOOW)

- Wendy Swearingen, President of Residents for Responsible Government
- April Fidelli, Vice President of Residents for Responsible Government
- Amy Witryol, concerned citizen
- Scott King, King Groundwater Services, Community LOOW Project
- Dan Stapleton, Niagara County Deptartment of Health, Community LOOW Project
- Dr. William Boeck, Niagara University, RAB Radiological Chair
- Joe Gardella, UB Department of Chemistry

West Valley Nuclear Wastes

- Joanne Hameister, Coalition on West Valley Nuclear Wastes
- Judy Einach, Coalition on West Valley Nuclear Wastes

Appendix B: Data Sources and Waste Site Location Information

Table B-1: Mapping Data Sources	
	Data Source
Hazardous Waste	
Inactive	
US EPA Superfund Program	US EPA Superfund Site Information <www.epa.gov/superfund/sites/> (2012)
NYS DEC Superfund Program	NYS DEC Environmental Site Remediation Database < www.dec.ny.gov/geodata/ptk > (2010)
NYS DEC Brownfield Program	NYS DEC Environmental Site Remediation Database < www.dec.ny.gov/geodata/ptk > (2010)
Active	
US EPA Resource Conservation and Recovery Act (RCRA)	US EPA Envirofacts <www.epa.gov/enviro/index.html> (2011)
Treatment, Storage and Disposal Facilities (TSDF)	US EPA Envirofacts <www.epa.gov/enviro/index.html> (2011)
Large Quantity Generators (LQG)	US EPA Envirofacts <www.epa.gov/enviro/index.html> (2011)
Corrective Action	US EPA Envirofacts <www.epa.gov/enviro/index.html> (2011)
US EPA Toxic Release Inventory System (TRIS)	US EPA Envirofacts <www.epa.gov/enviro/index.html> (2010)
US EPA Assessment, Cleanup and Redevelopment Exchange System (ACRES)	US EPA Envirofacts <www.epa.gov/enviro/index.html> (2010)
US EPA Risk Management Plan (RMP)	US EPA Envirofacts <www.epa.gov/enviro/index.html> (2010)
US EPA Section Seven Tracking System (SSTS)	US EPA Envirofacts <www.epa.gov/enviro/index.html> (2010)
NYS DEC Hazardous Waste Treatment, Storage and Disposal Facilities (TSDF)	NYS DEC Hazardous Materials Database < www.dec.ny.gov/geodata/ptk > (2007)
NYS DEC Hazardous Materials Bulk Storage Program	NYS DEC Hazardous Materials Database < www.dec.ny.gov/geodata/ptk > (2010)

Solid Waste	
Inactive	
NYS DEC Inactive Landfills	Source: NYS DEC Division of Solid and Hazardous Waste (2009)
Active	
NYS DEC Solid Waste Program	Source: NYS DEC Division of Solid and Hazardous Waste (2009)
Water Pollution	
IJC Areas of Concern (AOC)	US EPA Great Lakes Areas of Concern < www.epa.gov/glnpo/aoc/ > (2005>
NYS DEC State Pollutant Discharge Elimination System (SPDES)	NYS DEC Division of Water (2010)
Air Pollution	
NYS DEC Air Emission Inventory System (AIRS)	NYS DEC Division of Air Resources (2010)
Resource Extraction	
NYS DEC Mined Land Reclamation Program	NYS DEC Division of Mineral Resources (2010)
NYS DEC Oil, Gas and Other Regulated Wells Program	NYS DEC Division of Mineral Resources (2010)
Radioactive Waste	
US EPA Radiation Information System	US EPA Radiation Information Database <http://www.epa.gov/enviro/html/rad/ > (2008)
NYS DEC Radioactive Control Permit	NYS DEC (2010)
NYS DOH Radioactive Materials Licensing	NYS DOH (2010)
Defense Related Sites	
US ACE Formerly Utilized Sites Remedial Action Program (FUSRAP)	NYS DEC (2011)
US ACE Defense Environmental Restoration Program - Formerly Used Defense Sites (DERP - FUDS)	NYS DEC (2011)

Names, locations and other information on all sites mapped in this report can be found in the digital database as excel files under the folder: Waste Site Location Information

Appendix C: Briefing Reports for Individual Officials

Table C-1: Legacy Waste Sites for Individual Officials							
Districts	Superfund Sites				US ACE FUSRAP	US ACE DERP-FUDS	AOC
	NYS DEC Class 2	NYS DEC Class 4	US EPA NPL (Current)	US EPA NPL (Deleted)			
Federal House of Representatives							
23: Thomas Reed	6	6	3	1	0	0	
26: Brian M. Higgins	25	36	1	3	6	6	Include
27: Kathleen Hochul	12	19	3	2	3	9	Include
NYS House of Representatives							
140: Robin Schimminger	5	9	0	0	5	1	
141: Crystal Peoples-Stokes	3	6	0	0	0	2	
142: Jane Corwin	5	1	0	0	1	0	Include
143: Dennis H. Gabryszak	3	8	0	1	0	1	
144: Sean Ryan	7	5	1	0	2	1	Include
145: Michael P. Kearns	9	19	3	3	1	7	Include
146: Raymond Walter	0	1	0	0	0	0	
147: Daniel J. Burling	1	2	0	1	0	1	Include
148: Raymond Walter	6	6	3	1	0	0	Include
149: Joseph M. Giglio	4	4	0	0	0	2	Include
NYS Senate							
57: Catharine M. Young	6	6	3	1	0	0	
59: Patrick M. Gallivan	1	4	0	0	0	2	
60: Mark Grisanti	7	9	0	1	5	4	Include
61: Michael H. Ranzenhofer	1	1	0	0	0	0	
62: George D. Maziarz	15	27	4	3	3	7	Include
63: Vacant	13	14	0	1	1	2	Include

Table C-2: Active Waste Sites for Individual Officials							
Districts	NYS TRIS	NYS AIRS	DEC SPDES		Radioactive Control Permits	Radiation Information System	LOOW
			SSO	CSO (Municipality)			
Federal House of Representatives							
23: Thomas Reed	21	18	0	2 (1)	1	1	
26: Brian M. Higgins	195	122	28	103 (6)	3	0	
27: Kathleen Hochul	83	60	8	40 (2)	0	1	Include
NYS House of Representatives							
140: Robin Schimminger	45	21	2	24 (3)	0	0	
141: Crystal Peoples-Stokes	36	19	0	1 (0)	1	0	
142: Jane Corwin	36	10	6	30 (1)	0	0	
143: Dennis H. Gabryszak	34	15	9	8 (1)	1	9	
144: Sean Ryan	29	23	0	31 (1)	0	0	Include
145: Michael P. Kearns	46	55	5	21 (2)	1	1	Include
146: Raymond Walter	3	7	9	0 (0)	0	0	
147: Daniel J. Burling	17	14	3	0 (0)	0	0	
148: Raymond Walter	21	18	0	2 (1)	1	1	
149: Joseph M. Giglio	32	18	2	28 (1)	0	0	
NYS Senate							
57: Catharine M. Young	21	18	0	2 (1)	1	1	
59: Patrick M. Gallivan	35	19	11	3 (1)	0	0	
60: Mark Grisanti	73	37	9	51 (2)	1	0	
61: Michael H. Ranzenhofer	9	11	9	0 (0)	0	0	
62: George D. Maziarz	76	72	0	54 (3)	0	1	Include
63: Vacant	85	43	7	35 (2)	2	0	

Appendix D: Mapping Database

Contents of the Mapping Database

The mapping database is included on a separate DVD as an appendix to this report. The data in this database can be used for further mapping and analysis. The database includes the following:

- GIS Shapefiles of all remedial programs, permitting programs, and other database information included in the Atlas of Maps for the three county study area. The Shapefiles are only compatible with ESRI ArcGIS software. Each Shapefile includes attributes that identify the waste issue (e.g. hazardous waste), the remedial or permitting program (e.g. US EPA Superfund), the category and subcategories of the sites (e.g. current or deleted NPL), the county location, the site name, the data source and data year.
- A .mdb database file with all Shapefiles compatible with ESRI ArcGIS software.
- An .mxd file, or an ESRI ArcGIS map file, with each Shapefile already linked and organized by issue.
- An Excel file for each of the GIS Shapefiles (Waste Site Location Information folder).
- An Excel file for all original statewide data (unedited data; only includes data if provided at the statewide level).
- All maps from the Atlas of Maps in a high resolution PDF.