

STATE OF THE ENVIRONMENT

SCHENECTADY COUNTY, NEW YORK

2011-2012 ANNUAL UPDATE



Schenectady County Environmental Advisory Council

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MESSAGE FROM THE CHAIR

The 2012 State of the Environment (SOTE) report for Schenectady County represents the efforts of eleven SCEAC Council members (Mary Werner, Rich Wilk, Dick Westergard, George Runkel, Ruth Bonn, Nancy Peterson, Andy Vitolins, Dave Geisinger, Jacqueline Allaman, Kathy Fisher and Kathy Rowland), two SCEAC Committee members (Gunnar Walmet and Eve Hawkins), and three staff members of the Department of Economic Development and Planning (Claudia Battaglia, Jeff Edwards and Jason Pelton). Many thanks to all who contributed to this report for their diligence in conducting the research, compiling & analyzing the data, writing their sections and reviewing & editing others. We especially thank Ray Gillen, the Commissioner of the Department of Economic Development and Planning, for his valuable input and for assigning staff time and resources. The Council hopes that this report will be informative and useful to the Legislature and general public.

At this time, we would like to remember two former members of SCEAC who we lost in the past year: Don Snell and John F. Brown. Don Snell served on SCEAC from for fourteen years from 1998-2011. John F. Brown served on SCEAC for five years from 1983-1988. The dedication and great contributions of these men will enable future generations in our community to have a healthy environment and experience its natural beauty.

Finally, on behalf of SCEAC, and personally, I would like to thank Mary Werner for her many years of service to SCEAC. Under her leadership as Chair for the past four years the activities and accomplishments of the Council have been unparalleled. Her knowledge of environmental issues and dedication & leadership will be greatly missed on the Council. Fortunately, she will remain connected to SCEAC as the chair of the Air, Energy and Climate Change Committee and serve on the Executive Committee as the Past Chair.

Richard D. Wilk

Chair

HIGHLIGHTS

Air and Energy

Schenectady County has undertaken a project to develop a Climate Action Plan. Financed by a grant from NYSERDA, this project will help the County set priorities for energy conservation projects and to create a comprehensive framework for defining, tracking and measuring results of initiatives that reduce greenhouse gas emissions. A subcommittee of SCEAC was established to advise the contractor on the project. This subcommittee was comprised of a diverse group of stakeholders representing SCEAC, Cornell Cooperative Extension, County government, utilities, DEC, higher education and industry. In addition, input from the general public was solicited through a public meeting and from a survey distributed through the County website. In the first phase of the project, a greenhouse gas (GHG) inventory will be developed for the County which will assess sources and amounts of energy consumption and greenhouse gas emissions from County operations and from the community at large. This will serve as a baseline against which progress toward reduction in energy use and GHG emissions can be measured. The second phase of the project is to develop strategies to reduce energy consumption and GHG emissions. The types of strategies to be considered include leading by example; providing technical support, communication & planning; pilot programs and expansion of existing services. These strategies will focus on heating & lighting of buildings, transportation and waste management.

SCEAC has initiated an extreme weather study to determine possible local climate change trends. Significant changes are evident in some of the normal climate indicators over the last century for this region.

Ambient air pollution (the air quality of the air), in Schenectady County (since 2008) continues to be in compliance with the National Ambient Air Quality Standards (NAAQS) as established by the EPA and monitored by New York State DEC.

Water

The Great Flats Aquifer is a source of potable water for the County, supplying approximately 30 million gallons per day to approximately 150,000 residents in 5 communities of Schenectady County as well as some communities outside the County. The municipal water districts in cooperation with the County Health Department and the New York State Department of Health performs routine monitoring of the drinking water to ensure it meets State water quality standards. The Watershed Rules and Regulations, adopted in 1991, are overseen and enforced by the Inter-municipal Watershed Rules and Regulations Board to protect the aquifer. The sand and gravel mines and major transportation lines (such as rail) that are adjacent to the water supplies are viewed as the most likely potential threats to the aquifer. A more direct threat to the water supply is the trichloroethylene (TCE) contaminated groundwater at the former Scotia Naval Depot located within the General Aquifer Recharge Area for the Great Flats Aquifer. A 2011 agreement with NY DEC commits the Federal General Services Administration (GSA) to implementing a clean-up program. The proposed remedy involves the installation of a zero valent iron permeable reactive barrier beneath the surface of the depot.

In late August of 2011, Hurricane Irene followed by Tropical Storm Lee, caused unprecedented flooding throughout eastern New York. The flooding had a devastating effect on the lives of many County residents in communities along the Mohawk River. This flooding also had a major environmental and economic impact on Schenectady County. The County played a major role in managing flood response, remediation and recovery efforts. As of this writing, recovery efforts are still underway in some of the hardest hit areas in the County.

Stormwater, and its management, present challenges to the protection of water bodies. Stormwater can pick up pollutants from impervious surfaces, lawns and agricultural areas and transport them to receiving water bodies. Impervious surfaces increase the rate of stormwater runoff, prevent the recharge of

groundwater and decrease the base-flow of streams which can lead to the altering of natural hydrology, and potential loss of aquatic habitat. An increasing number of green infrastructure techniques are becoming available to reduce the impacts of stormwater on aquatic ecosystems. Some of these are being used by the County and local businesses.

Environmental Restoration: Superfund, Brownfield and Other Cleanup Programs

There are currently over 30 Superfund and Brownfield sites in Schenectady County. No new sites were added in 2011. Progress is being made to clean up almost every existing site. Contamination is being removed and, in many cases, these sites are being redeveloped. The Schenectady Metroplex Development Authority continues its leadership in working with businesses to effectively utilize State and Federal programs and focus commercial and industrial development within the County to these sites.

Toxics in the Environment

Total on-site release of toxic compounds, from facilities required to report in Schenectady County, have declined steadily from approximately 1,000,000 pounds per year prior to 1990 to 61,371 pounds in 2010. The majority of on-site releases were from point sources [the stack or the drainage pipe] (68%), while 30% were fugitive emissions, and 2% were to surface waters.

Solid Waste, Recycling and Hazardous Waste

In Schenectady County, the community generated 174,249 tons of Solid Waste. Of this, 147,542 tons were deposited in landfills or disposed of at Waste-to-Energy (WTE) plants and 26,707 tons were recycled or composted. For just municipal solid waste (which excludes industrial, construction and demolition waste) 126,487.02 tons were generated in Schenectady County in 2011, making the average per day per capita waste generation is 4.47 lbs. per person per day, which is at about the State average.

The diversion rate for MSW, including both recycling and composting was seventeen percent. The recycling rate was seven percent for recycling only.

The County Household Hazardous Waste (HHW) program collected 9,351 gallons of liquids and 14,355 pounds of solid hazardous waste. As a result of the recent NYS Electronics Product Stewardship Law, manufacturers are responsible for the collection of covered electronics and this has led to free collections at locations throughout the County. In addition, the County accepts electronics as part of its normal operation of the Residential and Small Business Recycling Center at the County Farm.

Open Space and Land Use

The County is actively pursuing Smart Growth as a way to preserve open space and revitalize urban areas. Metroplex is active in reclaiming and reusing abandoned properties and Brownfield sites, the largest currently being the ALCO site in Schenectady. A summary of the status of land use planning by each of the five towns is presented as is the proposed steps for developing an Open Space Plan for Schenectady County.

Environmentally-Related Illnesses

Lyme Disease and West Nile Virus are two environmentally-related illnesses of concern to public health. Lyme Disease is a bacterial infection transmitted through the bite of deer ticks. The incidence of Lyme Disease has been increasing steadily since it first appeared in the local area in the mid-1980's, with one hundred thirty one documented cases in Schenectady County in 2009. West Nile Virus appeared in the US in 1999 and affects humans and certain bird species. It is transmitted by mosquito bites. In 2011, there were three cases confirmed in birds and none in humans in New York State.

Habitat Issues

Loss of habitat is a major reason for the loss of animal and plant species. A number of animals and plants on the NYS DEC list of threatened and endangered species either have been documented, or can be expected to be found in Schenectady County. Non-native or invasive plant species are also a concern. Giant hogweed, a federally listed weed that can cause injury to humans who come into contact with it, has been found in the County.

RECOMMENDATIONS

In the transportation sector, SCEAC should work with CDTA, the County Department of Economic Development & Planning and the County Communications Director as well as ECOS to promote increased bus ridership, bicycling and other forms of alternative transportation. SCEAC should also review the Capital Region Transportation Committee (CDTC) New Visions Plan and may also want to consider forming a Transportation Committee.

Effective sustainability programs and buildings that become LEED certified in the County should be recognized and promoted. SCEAC should consider forming a Committee to recommend programs and buildings to the full Council and the Legislature for recognition.

The SCEAC Air, Energy and Climate Change Committee should be prepared to assist the County in setting priorities and monitoring the implementation of the Schenectady County Climate Action Plan once it is released.

The next ten year solid waste/materials management plan should be developed and should focus on implementing food waste composting systems, construction & demolition recycling and deconstruction projects and on implementing pay as you throw (PAYT) programs. The SCEAC Solid Waste and Recycling Committee should monitor development of the Plan and make recommendations as appropriate to the County Department of Economic Development and Planning.

An Open Space Plan for the County of Schenectady should be developed by working with municipalities to create a tool which communities can use to help protect Schenectady County's natural resources, agricultural land, forests, parklands, scenic views, and expansive Mohawk River frontage from negative impacts of unplanned residential and commercial growth. The following tasks should be carried out in the development of the Open Space Plan:

Continue to compile and develop an open space inventory and map that includes natural and environmental assets within each municipality including identified sensitive areas and areas which are already protected, aquifer protection zones, agricultural properties, sizable undeveloped parcels, 100-year flood plains, scenic views, NYSDEC wetlands, stream corridors, water bodies and headwaters. Some of the mappings for this task have already been accomplished

Share the map identified above with the municipalities and work with them to share it with their communities. This effort should seek to develop a consensus regarding areas that merit special consideration with regard to development and methods for protecting the desired resources.

Develop a toolbox of open space protection strategies and work with the municipalities to match identified priority resources with appropriate tools.

Investigate the form and content of other county open space plans in NYS to seek to develop a useful County Open Space Plan.

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INTRODUCTION

The Schenectady County Environmental Advisory Council (SCEAC) was established in 1971 by Local Law Number 5-1971 to advise the County legislature and inform the public on environmental issues. SCEAC is mandated by this governing legislation to issue an annual update of the State of the Environment of Schenectady County. Copies of recent reports can be found at www.schenectadycounty.com/sceac. Last year marked the 40th anniversary of the establishment of SCEAC and the 2011 report chronicled the environmental activities that occurred at the federal, state and local levels during this 40 year period culminating with a description of the current status of the County's air, water, land and ecology.

The 2012 State of the Environment Report continues and updates the discussion of current environmental issues of importance to Schenectady County and makes recommendations for further actions. The report was a collaborative effort with contributions from several members of the full SCEAC Council, its constituent subcommittees, and County Economic Development & Planning Department staff. The write-ups were compiled, reviewed, and approved by the full Council on July 16, 2012.

The report presents the current status of air and water quality in the County and discusses issues relevant to the protection of the water quality in the Great Flats Aquifer. A summary of the state, as of the writing of this report, of the Climate Action Plan (CAP) being done for the County to quantify and establish a baseline greenhouse gas inventory and develop a climate action plan is presented. A description of the impacts on the environment of the 2011 flooding is presented along with a broader discussion of issues related to stormwater management. The report looks at the status of Brownfield site clean-up and redevelopment, solid waste management, recycling, hazardous waste management and open space and land use planning by the municipalities and the County. Finally, the report describes some environmentally related illnesses and plant and animal habitat issues

relevant to the County. The narrative in the report is supported by an extensive list of references and a significant compilation of data in the Appendix.

SCEAC invites comments and additional information regarding any of the issues discussed in this report.

AIR AND ENERGY

Air Quality

The New York State Department of Environmental Conservation (DEC) monitors air quality in compliance with United States Environmental Protection Agency (EPA) requirements. The EPA sets National Ambient Air Quality Standards (NAAQS) for sulfur dioxide, SO₂; carbon monoxide, CO; ozone, O₃; and inhalable particulate matter, less than 2.5 microns in size (PM_{2.5}). For an in-depth discussion of the DEC's methods please see pp. 7 – 13 in SCEAC's State of the Environment Report for 2008 – 2009 at sceac.org.

In DEC Region 4, which includes Schenectady County, air quality is excellent.

Pollutant Sampling Site Standard Measured

SO ₂	Schenectady	500 x 10 ³ ppm	78 x 10 ³ ppm
O ₃	Schenectady	< 0.075 ppm	0.065 ppm
CO	Loudonville	< 9 ppm	1.0 ppm
PM _{2.5} /Loudonville		<15 ug/m ³	7.4 ug/m ³

The last time Schenectady exceeded any standard was in 2008, for ozone. The pollutants listed above generally come from automobile exhaust and from power generation plants. They may also be produced in open burning or in firing outdoor wood boilers. Ozone pollution in Schenectady is mainly caused by upwind (as in Ohio) power generation. As efficiencies and pollution controls have increased, air quality in our region has benefited. Additionally, to address this issue the New York State Department of Environmental Conservation has banned open burning and regulated the use of wood-fired boilers.

The major remaining air pollutant created in Schenectady County is carbon dioxide, CO₂. The Clean Air Act of 1963 and its 1972 amendments did not recognize CO₂ as a pollutant because its function as a greenhouse gas, thus a contributor to destructive climate change, was largely unknown at the time. In 2009 the Schenectady County Legislature passed a resolution calling on the County to join the NYSDEC's Climate Smart Community Partnership Program, pledging to take the steps prescribed by the Program to reduce GHG emissions and plan for the changes that are likely to take place. During the past year, a draft greenhouse gas source inventory was developed (see below).

Residential building heating & lighting and transportation together account for nearly two-thirds of the CO₂ emissions in Schenectady County. Therefore, improvements in efficiency of residential power utilization are most likely to contribute to decreases in CO₂ emissions. The County should make energy conservation information widely and easily available to citizens. However, the methods for communicating information about the importance of energy conservation, how to do it and how to get assistance are very important. The success rate of adoption, by individuals, of new behaviors that are suggested by government, range from zero to nearly sixty percent, depending upon the nature of the communications.¹

People certainly need to know that personal sacrifices are not the most effective way to make progress. "By changing their selection and use of household and motor vehicle technologies, without waiting for new technologies to appear, making economic sacrifices, or losing sense of well-being, households can reduce energy consumption by almost 30% - about 11% of total U.S. consumption."²

Local government can also help the people to conserve by making public transportation ever more widely available and by making every effort to increase environmentally friendly commuting. Bus ridership can be an effective means for reducing energy consumption. The BusPlus program, a limited stop service along

the 17-mile stretch of Route 5 between downtown Albany and downtown Schenectady provides a good opportunity for efficient and low-cost commuting. A large literature in design for human powered commuting is appearing to help communities plan.³

Schenectady County Climate Action Plan⁴

Schenectady County has undertaken a Climate Action Plan to establish baseline energy use and climate emissions data, and to help the County set priorities for energy conservation, alternative energy projects and other actions that could reduce greenhouse gas emissions. The project will also create a comprehensive framework for defining, tracking and measuring the effectiveness of initiatives undertaken resulting from The Plan. The project is studying the climate impact of both county government operations and also the impacts of the Schenectady County community as a whole.

The benefits to the County of the project include that it will help the County determine actions to save energy and reduce climate emissions that will save the County money in the long run. The project will also help determine the most effective ways to finance these projects. Additionally, The Plan will identify important projects that could compete favorably for grant programs that will almost certainly become available in the future. Finally, The Plan will place Schenectady County in a position to be recognized nationally as a leader in helping the United States achieve energy independence and reduce the worldwide impacts of climate change.

The project is funded by a grant from the NYS Energy Research and Development Authority (NYSERDA) through the Federal Energy Efficiency and Conservation Block Grant (EECBG) as part of the American Recovery and Reinvestment Act (ARRA) commonly known as the Federal Stimulus.

A subcommittee of SCEAC was established to advise the project comprising a core group of members of the environmental council. Additional members included representatives from the Cornell Cooperative Extension, New York State Department of Environmental

Conservation, Schenectady County Legislature, Union College, National Grid, and a local high school. Several meetings of this group were held to contribute ideas on and evaluate the two phases of the project: greenhouse gas inventories and climate action strategies.

A public meeting was also held to seek input on the project. The purpose of this workshop was to gather local knowledge of business, energy, social and environmental challenges and opportunities and to assist in developing recommendations for policies, initiatives, and next steps. This effort was broadened by posting a survey on the County website.

The first part of the project is the development of a greenhouse gas emissions (GHG) inventory which assessed total energy consumption and GHG emissions from County buildings and operations as well as from the community. This inventory will serve as a baseline against which progress towards reducing energy use and GHG emissions can be measured. Calendar year 2010 was selected as the baseline year for the inventory. GHG emissions were reported in units of metric tons of carbon dioxide equivalent.

The contractor estimated the total GHG emissions from all sources in Schenectady County in 2010 to be about 1.3 million metric ton equivalents of carbon dioxide. The emissions come mainly from residential and commercial buildings, mobile (transportation) sources, industry and small amounts from agriculture, wastewater treatment, solid waste disposal and fugitive emissions. Looked at by source, the GHG emissions come mainly from electricity generation, gasoline, and natural gas use, and smaller amounts from other fuels such as oil, diesel and propane. Other small sources of emissions include agriculture, sewage waste, and fugitive emissions.

As a share of the total, the part of the GHG emissions attributable to Schenectady County government operations is quite small, just under 10,000 metric tons equivalent of carbon dioxide, or a bit less than one percent. Greenhouse gas emissions from county government operations come mainly from the heating and lighting of buildings, operation of vehicle fleets, and

employee commuting, with additional small contributions from solid waste, outdoor lighting and airport operations.

The average annual electricity use is about 6700 KWH per household per year or about \$1200 per year (this number is simply a division of all energy used by all sectors into the number of households; it does not mean that the average household used that much electricity). Natural gas is mainly burned for residential and commercial heating, with a much smaller amount used by industries. Natural gas is the heating fuel of choice, at eighty-three percent, while oil and propane contribute most of the rest of the fuel used in heating.

Mobile emissions of greenhouse gasses come from three main sources. Over sixty percent comes from travel on local, non interstate roads. Smaller amounts come from travel on interstate roads (part of which is the result of activities in Schenectady County and part is the result of through traffic) and the remainder is from off road vehicles and equipment of many different types, including construction equipment, agricultural equipment, lawn and garden equipment, aircraft, and boats.

As noted above, solid waste disposal is responsible for only a small part of the total GHG emissions in the County, about three percent. Of that solid waste, eighty eight percent is landfilled and the rest incinerated.

However, the portion of GHG emissions attributable to solid waste activity only considers emissions from landfills and incinerators. It does not include the emissions of vehicles collecting waste, recyclables or compostables from generators, transporting them to management facilities or emissions from the equipment involved in landfill, incineration, recycling or composting operations. It also does not include GHGs emitted from the manufacture of products where the use of recycled materials could reduce those emissions. For example, the use of recycled aluminum to produce new aluminum products requires five percent of the energy that would be needed to make the same product using raw materials. Therefore, increasing recycling and other types of waste diversion (especially waste prevention) will have a greater

effect on GHG emission reductions than reflected by the percentage of GHG emissions found in this study, and strategies to divert waste merit greater consideration than the three percent of GHG emissions reflect.

Schenectady County has already taken a number of important step in reducing GHG emissions. To name just a few: By partnering with Monolith Solar which will install and maintain a Solar Photovoltaic (SPV) System on ten County buildings. The County will purchase electricity generated by the 50 kW systems at a 30 percent discount to the regular electricity rate, saving at least \$20,000 per year while demonstrating that SPV systems are a viable renewable energy technology.

Another notable activity in Schenectady County related to the study of climate change is ongoing at the New York Air National Guard facility in Scotia. The 109th Airlift Wing is the only unit in the United States military equipped with ski landing gear. This allows planes to provide airlift support for the National Science Foundation's South Pole research project which involves drilling ice cores to establish a climate and greenhouse gas history.

Finally, adding to the growing list of green jobs in the County, the General Electric Company is building its advanced sodium battery plant at the main plant site in downtown Schenectady.

The project is expected to result in several types of strategies that County and municipal governments could employ to reduce energy use and GHG emissions:

Lead by example and provide technical support

Communication and education through planning, marketing and training

Pilot programs and expansion of existing services

These strategies will be built around several sectors, including energy use, transportation, and waste management. GHG emissions could be reduced through such measures as promoting energy efficiency audits and retrofits through collaboration with NYSEERDA and National Grid and other community partners. Enhancing the renewable energy sector could be

implemented through education on renewable energy technologies and NYSEERDA's subsidies for solar electric, solar thermal and geothermal residential installations. GHG emissions and energy costs could be reduced through the establishment of green building standards for county-funded projects. Additional strategies could involve providing green-lease training for tenants and landlords to help find common ground and promoting use of electric vehicles by identifying appropriate locations for charging stations throughout the County.

Transportation strategies to reduce GHG emissions could include: promotion of smart growth development in projects funded by the County and its municipalities; park and ride lots to increase bus ridership; working with CDTC and CDTA to expand the number of Bus+ routes; and measures to increase use of bicycle paths and public transportation options. SCEAC should review the CDTC New Visions plan and promote appropriate recommendations in the Plan.

Several waste management strategies can be employed to reduce GHG emissions including various recycling initiatives; diversion of organics from municipal waste stream; organic composting; and programs such as Pay-As-You Throw which creates financial incentives for waste diversion.

An important part of the County's Climate Action Plan will be to provide public education on the Climate Action Plan strategies and updates on status of the Plan. Measures must be taken to increase awareness of and participation in the recommended strategies as well as to provide financial and other resources to help carry out the Plan.

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Extreme Weather Study

A research project was initiated by SCEAC to document one of the effects of climate change in Schenectady County by documenting historical trends pertaining to extreme weather events. Preliminary results show that the average annual temperature in the Capital Region is increasing and that the highest average temperatures have all occurred in recent years. Executive Committee members Richard Westergard, Certified Consulting Meteorologist and President of Shade Tree Meteorology, LLC and Dr. Richard Wilk, Professor of Mechanical Engineering at Union College, are gathering data and analyzing it to determine possible regional climate change trends with the goal of incorporating the resulting information into long term county planning efforts. The methodology involves using information from the National Oceanic and Atmospheric Administration (NOAA) Storm Data event database as well as other archived sources.⁵

Extreme weather events are defined as drought, floods, high winds, hail, lightning, snow and ice, thunderstorm winds, and temperature. Regional extreme weather event data is available from NOAA from 1993 on. To obtain a better understanding of longer term trends, other sources must be used, in particular, newspaper archives. However, more typical climatological information, like average daily temperatures and precipitation, is available over a much longer term. For this local region, local climatological data is available back to 1938 from the NOAA weather station at the Albany International Airport, and before that from the station at the office in the city of Albany, with historical data going back to the 18th century.

For some initial results of this study, the 74 year period dating back to 1938 was selected to look at trends in mean daily temperature. Figure 4 shows a plot of the annual average of mean daily temperature from 1938 to 2011 and a fitted linear trend line. This data shows an increase in the annual mean daily temperature of 3.2°F increase over this period. In addition, the four highest annual average mean daily temperatures in the 74 year period (all above 50 °F) have occurred since 1990.

Air and Energy Recommendations

In the transportation sector, outreach should be conducted to promote increased bus ridership including promotion of Bus+, bicycling and other forms of transportation. SCEAC should also study the New Visions Plan by the Capital Region Transportation Committee.

SCEAC should work to recognize effective sustainability programs and buildings that become LEED certified in the County, including seeking resolutions of recognition from the County Legislature.

SCEAC should monitor implementation of the County's 2012 Climate Action Plan and Climate Smart Communities pledge (see SCEAC's "2010 State of the Environment" report at www.sceac.org).

WATER

The Great Flats Aquifer is a valuable resource, providing the County with an abundant supply of high quality drinking water. The Aquifer is the potable water supply for approximately 150,000 residents of Schenectady in the municipalities of Schenectady, Scotia, Glenville, Niskayuna and Rotterdam. The municipal water districts in cooperation with the New York State Department of Health and the County Health Department perform routine monitoring of the municipal drinking water wells to ensure its suitability as drinking water. Water supplies are tested for a suite of possible contaminants, and meet State water quality standards. Aquifer water levels are measured to determine quantity of available groundwater. The five County communities withdraw approximately 30 million

gallons of water per day from the aquifer which constitutes only about 50% of the permitted withdrawal.

In 1991, Watershed Rules and Regulations were adopted to protect the aquifer. The five communities utilizing the aquifer formed the Inter-municipal Watershed Rules and Regulations Board to enforce the regulations. These regulations protect the aquifer by regulating land use and activities within the land areas which constitute the recharge zones of the aquifer.

In 1978, a consultant to the County identified possible contaminant sources to the aquifer. These threats have largely been addressed.⁶ The most important remaining threats to the aquifer are addressed below.

Sand and Gravel Mines

In many cases, sand and gravel deposits are important natural resources for two potentially conflicting uses: mining construction aggregate and the use as a water supply from saturated portions of the deposit. This is certainly the case in Schenectady County portions of the Great Flats Aquifer, as shown on Figure 5, where there are three major sand and gravel mines in close proximity to three major municipal well fields. Two of the mines located near the Village of Scotia well field and the Town of Glenville well fields are active and owned by Scotia Sand & Stone. The sand and gravel mine located near the Town of Rotterdam well field in Rotterdam Junction is no longer in operation and is now owned by the Town of Rotterdam. At each of these mines, sand and gravel has been extracted to depths below the water table. As such, these surface water bodies represent an outcropping, or an exposure, of the water table.

Overall, the sand and gravel mines are not necessarily sources for contamination. Other than petroleum products used for operating equipment, very little chemical storage and usage occurs at these sites. Instead, the presence of sand and gravel mines, especially mines that have been excavated to depths below the water table, make the aquifer more vulnerable to contaminants.

Inherent in most river basins, where early settlement was occurred, are major transportation corridors. In Schenectady County, this includes several railroad lines, the New York State Thruway, Interstate-890, and New York State Route 5. The potential for accidents along these corridors that could cause spills of chemicals that could impact drinking water wells, in combination with the reduced capacity of the aquifer to filter these contaminants caused by the mines, likely represents the most significant threat to the nearby municipal drinking water wells and the quality of water in the Great Flats Aquifer itself.

Recognizing this concern, the Schenectady County Inter-municipal Watershed Rules and Regulations Board has sent letters to educate and alert railroads that have rail lines that pass through the sensitive wellhead and recharge areas. An initial meeting, coordinated by the Schenectady County Office of Emergency Management was held with Canadian-Pacific representatives. As part of the Schenectady County All Hazard Mitigation Plan, Jim Kalohn, a senior planner with the Schenectady County Economic Development and Planning Department, made subsequent arrangements with Canadian-Pacific to provide emergency response training for Schenectady County responders. Most recently, a meeting was held with CSX to discuss sensitive aquifer areas and spill response procedures and reporting. CSX was provided with maps showing the Great Flats Aquifer protection zones and aquifer recharge areas relative to rail line locations. The Town of Glenville has also formed a Well-Field Protection Committee chaired by Dr. Carl George, to better understand several potential threats to the operation, quality, and quantity of the water supply for the Town of Glenville. One of these issues specifically relates to the mining of sand and gravel near the well field. The Committee is looking at possible reclamation alternatives, along with characterizing surface and ground water conditions over time, to determine if the mining operation is adversely impacting the water supply.

Scotia Naval Depot

In March 2010, the New York State Department of Environmental Conservation (NYSDEC) issued a Record of Decision for the Scotia Naval Depot Site (Inactive Hazardous Waste Disposal Site ID No. 447023). The Record of Decision (ROD) is a legal document that outlines the elements of the final remedy to provide protection to human health and the environment. Cleanup at the Scotia Naval Depot is necessary to address a persistent trichloroethylene (TCE) groundwater plume. TCE is a chlorinated compound often used in solvents for industrial purposes as a degreaser. It was likely used during repair and assembly of trucks and other vehicles at the former Navy Depot. As shown in Figure 7, investigations at the Scotia Naval Depot identified TCE dissolved in groundwater in an area extending generally east to west across the 200, 300, and 400 blocks of what is now Glenville Business and Technology Park. Groundwater beneath the Depot occurs at a depth of approximately 60 to 70 feet beneath the ground surface and flows east to west toward the Mohawk River. The Naval Depot along with the dissolved TCE groundwater plume is located within Aquifer Protection Zone III, or the General Aquifer Recharge Area of the Great Flats Aquifer. Zones I, II and III make up the Great Flats Aquifer in Schenectady County. Zone IV refers to the watershed that recharges the Aquifer. (see Figure 6).

In August 2011, the General Services Administration (GSA), signed a Federal Facility Site Remediation Agreement with the NYSDEC. The Agreement commits GSA to implementing the clean-up program at the former Scotia Naval Depot per the Record of Decision. Under terms of The Agreement, the federal government is responsible for cleaning up the environmental issues caused when the Depot was in operation. Most Navy operations at the site had ended by the mid-1970s. The GSA recently secured funding to complete the remedial design phase of the remedy and expects to secure funding for the full implementation of the remedy during the design program.

The remedy outlined in the March 2012 Record of Decision involves the installation of a zero

valiant iron permeable reactive barrier beneath the surface of the Depot. This type of barrier has proven to be effective in addressing TCE groundwater plumes and breaking down the TCE to non-toxic byproducts. The barrier would be installed perpendicular to groundwater flow and positioned to intercept the TCE plume. The exact location and dimensions of the permeable reactive barrier will be determined during the pre-design investigation. Once installed, a long-term monitoring program will be implemented to confirm that the barrier is effectively addressing the groundwater contamination.

Impacts of 2011 Flooding

Impacts of Flooding on Agriculture and Gardening

On August 28, 2011, Hurricane Irene, followed by Tropical Storm Lee in early September, caused unprecedented flooding in eastern New York. Along the Schoharie Creek, a major tributary to the Mohawk River, flooding was upwards of 15 feet, in some areas, well above the 500 year floodplain determined by the Federal Emergency Management Office (FEMA). In the area of the 100-year flood plain FEMA estimated over \$3 million in damage with total property damage of \$4,470,000. They inspected over 613 properties. (See Table 1)

The impact on the land from this onslaught involved huge amounts of debris, structural damage, and total decimation of many buildings. Some of this debris was displaced miles downstream from its original location. Flooded areas were covered with silt as the flood waters receded. Additionally, flooding and erosion were responsible for making certain slopes more susceptible to landslides. There were also major losses and displacement of valuable agricultural soil, with associated loss and damage to crops. This included direct losses of livestock. One dairy farmer worked frantically to get his cows to the safety of high ground only to have them break and run down to the "safety" of their barn where they all drowned.

Agricultural Recovery

Money used in Schenectady County for agricultural clean-up and reclamation came from New York State's Agriculture and Community Recovery Fund, or ACRF. Schenectady County spent \$38,000 from ACRF, largely for land reclamation and debris clean-up involving six farms: four dairy farms, one produce farm and one horse boarding operation. Damage from potentially contaminated sediments was not covered by this program. Farmers were advised to dispose of crops covered by flooding and to turn the land over. This work was performed through the Soil and Water Conservation District, which normally provides technical assistance and would not normally have done this kind of work.

Farmers can get financial assistance to replace and install electric and natural gas systems damaged during these storms. These funds are available through the Agriculture Disaster Energy Efficiency Program through NYSEERDA which provided one greenhouse/produce farm in Schenectady County with \$38,770.

Flood Impacts on Streams

The Schoharie Creek, located on the border between Schenectady and Schoharie counties, is a major tributary of the Mohawk River and experienced record breaking flooding during Irene. The Environmental Study Team at the Schoharie River Center has been monitoring water quality in the Schoharie River at Burtonsville since 2002. The Environmental Study Team consists of high school students trained and supervised by adults in the collection and assessment of physical, chemical and biological stream data. The River was monitored eight times following the flood from September 25, 2011 to February 16, 2012. The Team presented their results at the Mohawk Symposium at Union College in March 2012. They concluded that although there was a decrease in water quality, after the flood, water quality has been steadily improving and returning to the quality measured in pre-flood sampling.

The NYS Department of Environmental Conservation also did monitoring of streams

following the floods. They observed significant impacts both from the flood and the in-stream channel work many municipalities conducted after the flood. The streams that were only affected by the flooding (i.e., had no channel work completed) have almost fully recovered. Streams and rivers (and the organisms which inhabit them) are naturally adapted to the effects of floods. However, when heavy machinery and excavating equipment so significantly manipulate the habitat, there is little that biological communities (fish, invertebrates, etc.) can do to survive.

Potential Pollution of Residential Properties

There is concern about pollution of flooded residences from sediments, silt, dust and mold remaining after the cleanout of buildings subjected to the flooding. Some residents have also expressed their concern about exposure to pollution by working on their gardens or eating produce from them, or from doing yard work. Cornell College of Agricultural & Life Sciences Soil Health Testing services provides testing services and can advise residents regarding risks from pollutants.

Basic package: recommended for conventional grain and forage crops and non-agricultural applications - \$45/sample.

Standard package: recommended for vegetable production, organic and problem diagnosis in landscaping and other urban areas, and for first time soil assessment - \$75/sample.

Add-on test for soluble salts: recommended for home gardens, lawns and urban areas, heavily composted areas and landscaped areas - \$7.50.

Add-on test for heavy metals: recommended for urban areas, and gardens, home gardens, playgrounds, heavily composted areas and brownfields - \$17.

Further details are available at

<http://soilhealth.cals.cornell.edu/extension/test.htm>.

Recovery of Residential Areas

Damage from the flood had a major effect on the lives and well being of the residents. Unfortunately this human dimension is beyond the capacity of this study to assess. We can only consider here the recovery from damage to the homes of the residents. As of April 2012, recovery is almost complete in the Stockade section of the City of Schenectady, where residents have experienced many episodes of flooding over the years. Approximately eighty percent recovery has been accomplished in the Village of Scotia and the Hamlet of Alplaus. Much work still needs to be done in the Hamlet of Rotterdam Junction, the hardest hit community in Schenectady County.

One small potential bright spot in the flood is the possible increase in the value of some agricultural property where the floods have added deposited topsoil and created deltas. Although these deposited soils may contain contaminants they may instead contain fertile nutrients.

Municipal land use planning and building code regulations should take the increased probability of severe weather resulting from climate change into consideration.^{7 8}

Stormwater Management

The Challenge of ‘Green’ Stormwater Management

Much progress has been made in reducing the negative impacts of pollutants that reach water bodies from ‘point sources’ such as discharges from waste water treatment plants and industrial activities. Discharges of hazardous materials to water bodies have decreased dramatically over the past 22 years as shown by Figure 9. Waste water from these ‘point sources’ is treated prior to discharge and the quantity of pollutants which can be discharged are regulated by permits from DEC.

However, reducing the impacts of non- point sources of pollution carried by stormwater poses a different set of challenges to the protection of water bodies. Stormwater is water from rain or melting snow that doesn't soak into the ground

but runs off directly into waterways. Stormwater is not amenable to the ‘end of pipe’ treatment used to control point sources of pollutants. Thus, prevention of pollution from stormwater depends on taking action at the stormwater’s source.

New York State is required to report to the federal EPA a list of water bodies impacted by pollutants. There are two lists the 303D list of water bodies that are impacted to the point where they cannot sustain their designated use. A second list that does not meet the 303D criteria but that the NYSDEC also considers impaired. The only water body in Schenectady County that appears on either of these lists is Collins Lake (which appears on the 303D list). These lists can

be found at <http://www.dec.ny.gov/chemical/31290.html>

The State also performs a rotating river basin study that assesses the quality of water bodies. The studies are done every five years each of the river basins. This study was last done on the Mohawk River Basin in 2010. It found that just about every water body is somewhat impacted by human activity and the vast majority are impacted from non-point sources of pollution. A complete list of its findings for The Lower Mohawk River Basin (from Cohoes to Fort Hunter) can be found at <http://www.dec.ny.gov/chemical/36739.html>.

Pollutants in Stormwater

Storm water picks up many pollutants as it flows over impervious surfaces such as roof tops and pavement as well as sloped lawns and agricultural pastures and fields. These pollutants are transported to receiving water bodies, which may be streams or lakes. Many people do not realize that the storm drains on many urban and suburban streets drain directly to surface waters.

Pollutants in stormwater include:

Oil, grease, and gasoline are present in runoff from gas stations, convenience stores, commuter parking lots, and streets

Salt and sand spread on roads in winter is carried to water bodies by storm water and meltwater.

One study of four Adirondack streams found severe impacts to stream biota due to road salt (Demers and Sage, 1990)

Pesticides and plant nutrients are present in runoff from lawns and agricultural fields

Bacteria are present in storm water which has come in contact animal waste, from pets or from agriculture

Silt and soil is carried by storm water flowing over construction sites and other areas with exposed soil. Silt causes turbidity in streams, the siltation of the stream bottom and, degrades aquatic habitat (such as that of fish spawning sites)

Thermal pollution can result from runoff from impervious surfaces such as rooftops and pavement. This can result in increased temperature in receiving waters, adversely impacting aquatic organisms (such as trout that require cooler water conditions). Data suggest that increasing development can increase stream temperatures by between five and twelve degrees Fahrenheit. The temperature increase is related to the level of impervious cover in the drainage area.⁹

Stormwater Alters Natural Hydrology

Development of a site entails a large increase in impervious surfaces such as roofs, streets and parking lots. Storm water moves rapidly over impervious surfaces and is unable to infiltrate the soil. The runoff from a site increases sharply with an increase in the percentage of impervious surfaces. A one-acre parking lot can produce 16 times more storm water runoff than a one-acre meadow each year.¹⁰ The increase in storm water runoff can overwhelm the existing drainage system. As a result, the drainage system is often “improved” to rapidly collect runoff and quickly convey it off site. Typically the stormwater is collected through the use of curbs and gutters and transported off site in enclosed storm sewers, and cement lined channels.

Large quantities of storm water rapidly flowing into streams can result in the scouring of stream channels. In extreme cases, this erosion can lead to undercut stream banks and can result in the

loss of trees and physical infrastructure located along stream banks. The increased volume and velocity of storm water from developed areas leads to an increase in the ‘peak’ flows in streams that follow precipitation events. The frequency and magnitude of maximum flows increases dramatically with increased development, increasing the potential for flooding.

Rainfall on impervious surfaces cannot infiltrate through the soil and recharge groundwater. It is groundwater that feeds the ‘base flow’ of a stream that occurs between precipitation events. Thus, during prolonged periods of dry weather, stream flow may be sharply diminished and aquatic habitat lost. In some situations, reduced baseflow can result in a small perennial stream becoming intermittent.

‘Green’ Stormwater Control

Careful land use and open space planning is key to the ‘green infrastructure’ approach to the management of storm water to protect aquatic ecosystems. Most of the planning techniques used in ‘Smart Growth’ and ‘Low Impact Development’ have the effect of reducing storm water flow off-site among their many other benefits. A carefully thought out Comprehensive Plan as well as land use laws which encourage low impact development will go a long way towards reducing the negative effects of development on aquatic ecosystems.

Open space planning by a municipality can protect properties with high ecological value through purchase or easement. Many of these properties are not suited to development as they often contain quality wetlands, lakes or streams and thus cannot be developed without significant impacts to aquatic ecosystems. Land kept in its natural state helps to maintain a watershed’s natural hydrology and protect aquatic ecosystems. Urban sprawl, with its increase in roads, parking lots, and other impervious surfaces, has major impacts on streams and lakes due to increases in the volume and pollutant load of storm water.

On a smaller scale, the use of ‘clustered development’ significantly reduces impacts on water bodies relative to more traditional

development. In cluster development, housing is concentrated in a relatively higher density in one portion of the site while open space is conserved in the remainder of the property. Clustered development can reduce the percentage of impervious surfaces on the site and increases the area kept in its natural vegetated state. Thus, more precipitation is taken up by plants or infiltrates the soil to recharge groundwater, leading to reduced stormwater flows. Note that while lawn areas produce less runoff than impervious surfaces, studies have shown that the use of fertilizer on lawns is a major source of phosphorus, a plant nutrient that can lead to the development of nuisance aquatic vegetation and algae.

The New York State Dishwasher Detergent and Nutrient Runoff Law (Chapter 205 of the laws of 2010) may help address this last issue.

This law that was passed in July of 2010 and went into effect on January 1, 2012 restricts use on lawns of fertilizers that contain phosphorous.

It also outlawed the sale of dishwashing detergents that contain phosphorous after October 13, 2010.

For more information visit <http://www.dec.ny.gov/chemical/67239.html>.

Green Infrastructure Techniques

There are many green infrastructure techniques to reduce storm water impacts on aquatic ecosystems. All of these techniques serve to reduce impervious surfaces and/or preserve natural vegetation. Some of these techniques are listed below:

Avoidance of development in sensitive areas such as wetlands or steep slopes

Reduction of clearing and grading to the minimum amount required

Maintenance or establishment of vegetated buffers along streams. These buffers slow stormwater velocity and filter out sediments and the organic pollutants that adsorb to them. Trees also provide shade that helps maintain cold-water streams

Use of vegetated swales that follow natural or designed drainage channels in place of concrete open conduits

Use of tree planting or preservation to reduce storm water runoff, increase nutrient uptake, and provide stream bank stabilization

Disconnection of rooftop runoff. Runoff from rooftop areas is directed to designated pervious areas so the runoff can soak into the soil

Use of rain gardens to control and treat small volumes of runoff using a soil bed and plantings to filter runoff stored within a shallow basin

Storm water planter/bioretention systems. Similar to rain gardens, but generally bigger, these planters use soil infiltration and natural biological and chemical processes to decrease storm water quantity and improve water quality

Reduction of impervious cover by reducing the size of roads, sidewalks, driveways, and cul-seacs

Use of green roofs to capture runoff by a layer of vegetation and soil installed on a roof. The vegetation facilitates through evaporation and uptake by vegetation

Soil restoration. Restoring the site's original soil properties ensures that runoff reduction practices, such as grass channels, tree clusters, and downspout redirection conduits function as designed.

Use of porous pavement which is designed to allow infiltration of rainfall through its surface, thereby reducing runoff from a site and providing some pollutant filtration in the underlying soils

The choice of stormwater control techniques must be compatible with site conditions such as soil type and depth to groundwater and bedrock. For example, using porous pavement over naturally impervious clay will not allow infiltration to occur. The construction of a bioretention system would not be appropriate if the site has a shallow depth to groundwater. When developers meet with town planners, discussion of stormwater control is among the first issues discussed. New York encourages the use of Green stormwater control techniques

when they are compatible with site conditions. Several recent or planned projects in the County have utilized innovative storm water control methods:

Schenectady County is planning on rebuilding an 18,000 square foot parking lot with access from Summit Avenue which will incorporate the use of porous pavement and four infiltration rain gardens. Runoff from the parking lot is to Veeder Avenue and carries sediments and pollutants to the city of Schenectady's storm sewer system.

CVS pharmacies located in Glenville and Niskayuna has used rain garden/bioretenion systems for stormwater management.

The Key Bank in Glenville uses porous pavement in its parking lot.¹¹

ENVIRONMENTAL RESTORATION:

SUPERFUND, BROWNFIELD AND OTHER CLEANUP PROGRAMS

Schenectady was a leader in the industrial revolution and birthplace of industrial giants such as American Locomotive and General Electric. The City was once known as "the City that Lights and Hauls the World." That 19th and early 20th century activity led to numerous contaminated sites throughout the County as these industrial leaders and others managed the dangerous chemicals that they used based on the information of the day. As knowledge and public concern increased, controls improved and the need to clean up from past practices was recognized.

As a result, both the Federal and State government have established regulations to drive industry and commercial businesses to clean up their facilities. These regulations were generated under the authority of, the Federal Resource Conservation and Recovery Act (RCRA) and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Additionally, there are a number of programs at the federal and state levels to assist communities like Schenectady with assessing and cleaning up and redeveloping contaminated sites, For

information on federal programs visit: http://www.epa.gov/brownfields/grant_info/index.htm For information on State Programs visit: <http://www.dec.ny.gov/chemical/brownfields.html>. Siting new business activity at sites that previously functioned as industrial sites may prevent these activities from being sited at pristine "greenfield" locations and thus preventing sprawl and unnecessary encroachment on open space. In recent years Schenectady County, the Metroplex Development Authority and local communities within the County have partnered, successfully taking advantage of these programs.

Superfund

Comprehensive Environmental Response, Compensation, and Liability Act of 1976 (CERCLA) is the base Federal law that drives site remediation activities.¹² [1] CERCLA was enacted by Congress in 1980 in response to the threat of hazardous waste sites, typified by the Love Canal disaster in New York, Times Beach and the Valley of the Drums in Kentucky.¹³ [2] Superfund is the common name for CERCLA. Superfund created the Agency for Toxic Substances and Disease Registry (ATSDR), and it provides broad federal authority to clean up releases or threatened releases of hazardous substances that may endanger public health or the environment. The law authorized the Environmental Protection Agency (EPA) to identify parties responsible for contamination of sites and compel the parties to clean up the sites. Where responsible parties cannot be found, the Agency is authorized to clean up sites itself, using a special trust fund.

The Superfund Amendments and Reauthorization Act of 1986 (SARA) made several important changes and additions to CERCLA including increasing the funding of Superfund to \$8.5 billion and providing for studies and the use of new technologies.¹⁴

New York State also has its version of the Federal Superfund program called The Inactive Hazardous Waste Disposal Site Program (IHWDSP) commonly known as the State Superfund program. For information on this

program visit
<http://www.dec.ny.gov/chemical/8439.html>.

The Superfund Programs are mandatory cleanup programs requiring the site owners to clean sites up. This is the best method in some cases but carrying out the enforcement actions and lawsuits to compel companies to clean up is costly and time consuming. Additionally in many cases the companies that caused the contamination were no longer in business and the federal and state Superfund Programs soon ran short on funds to do the cleanups in those cases.

Voluntary Cleanup Programs or Brownfield Programs

As a result of the limitations of the Superfund Programs both the Federal and State Government decided to take supplement these programs with another program to address sites that had not yet been classified under these mandatory cleanup programs. Voluntary Cleanup or Brownfield Programs, as they have come to be known, were initiated to create incentives for businesses and municipalities to assess and clean up contaminated sites. Businesses would not be required to clean up their sites under the stricter Superfund regulations if they participated in voluntary assessment and clean up programs. These voluntary clean up programs also allowed municipalities to take over the sites and perform the cleanups with financial and technical assistance from these programs. For more information on the federal Brownfield Programs visit

http://www.epa.gov/brownfields/grant_info/index.htm.

Brownfield sites are often abandoned or under utilized industrial and commercial facilities available for reuse. Expansion or redevelopment of such a facility may be complicated by real or perceived environmental contaminations. Typically this involves land previously used for industrial purposes or certain commercial uses. The land may be contaminated by hazardous waste or pollution but has the potential to be reused once it is cleaned up. Land that has already been classified as a Superfund site does

not qualify for voluntary cleanup assistance under the voluntary or brownfield cleanup programs. Common contaminants found on brownfield sites include spills of petroleum or other fuels, solvents, pesticides, heavy metals such as lead (e.g., paints), coal tars (gas plants) and asbestos.

New York State Voluntary Cleanup Programs

Nearly every community in New York State is affected by contaminated and abandoned properties, or brownfield sites. Left untouched, brownfields pose environmental, legal and financial burdens on a community and its taxpayers. However, after cleanup, these sites can again become the powerful engines for economic vitality, jobs and community pride that they once were. Promoting site cleanups, New York offers incentives in the form of technical and financial assistance, as well as liability relief, to encourage the cleanup and reuse of contaminated sites. Incentive programs target both the public and private sector.

The State's Brownfield Program is focused on promoting site cleanups by offering incentives in the form of technical and financial assistance, as well as liability relief, to encourage the cleanup and reuse of contaminated sites. The programs shown below target both the public and private sectors and are in addition to programs available at the federal level.

The Brownfield Opportunity Area (BOA) program is a planning grant program set up to help communities identify brownfields and establish plans for remediation and development in designated areas.

The Environmental Restoration Program (ERP) is designed to provide assistance to local governments in cleaning up sites that they own.

The Brownfield Cleanup Program (BCP) provides tax incentives to private companies to clean up and develop contaminated sites.

The Voluntary Cleanup Program (VCP) was a precursor of the BCP. No incentives are provided to participants. Participants receive a letter from the DEC when the project is complete stating that the participant has fulfilled their requirements.

for more information on the State programs visit <http://www.dec.ny.gov/chemical/brownfields.html>

Assessment

As indicated in previous reports the Schenectady Metroplex Development Authority has been and continues to be a leader in working with businesses to effectively utilize these state and federal programs and focus commercial and industrial development within Schenectady County on brownfield and infill locations. Additionally, the Metroplex Development Authority and the Watershed Rules and Regulations Board (Watershed Board) have been working closely with NYSDEC to expedite the cleanup of contaminated sites, particularly those sites within the aquifer area and sites with a high degree of development potential.

Recent actions to clean up identified brownfield sites and Superfund sites in Schenectady County continue to yield significant results. Progress is being made in investigating or cleaning up almost every site on the list within the County. Not only is the contamination being removed, but also in many cases these sites are being redeveloped, instead of lying vacant and unproductive. Several examples of the success of these programs are the Golub (Price Chopper) Headquarters project that was executed under the auspices of the Brownfield Cleanup Program at the old Big N Plaza and completed in 2010, the College Park development of the old Ramada Inn into the Union College Conference Center and the Riverside Technology Park. Other examples of these programs in Schenectady County include the former Ladd's Gas station (parking for Stockade) and the Gillette House (offices).

Currently, there are three parcels identified in the BCP that are associated with the redevelopment of the former ALCO site in the City of Schenectady. This is a significant redevelopment project that will provide for the redevelopment of a significant riverfront site. Progress has been made over the past year in the remedial investigation phase under the Brownfield Cleanup Program being carried out on the site. Samples have been taken of groundwater, soil borings and soil vapor for analyses, with results anticipated by July 2012.

Samples will also be taken from sediment cores from the Mohawk River. Contaminant levels in these samples will have to meet applicable standards as set forth in New York State regulations (6 NYCRR Part 375) in order for work to continue on plans to develop the parcels under investigation. The NYS Department of Environmental Conservation will then issue a Certificate of Completion which will be available to the public, along with final plans for the site, at the Schenectady County Library.¹⁵

The figures below provide a summary of the restoration programs that have taken place in Schenectady County, the programs that have been advantage of and the status of those projects. The current list of identified contaminated sites in Schenectady County and their status is shown in Table 2. There have been no new sites in Schenectady County added to the Federal [NPL](#) (The list of sites in the Federal Superfund Program) or State or proposed for the NYS IHWSDP (State Superfund list) during the 2011-2012 period covered by this report.

Figure 1 - Distribution of Schenectady County Brownfield and Superfund sites according to restoration program

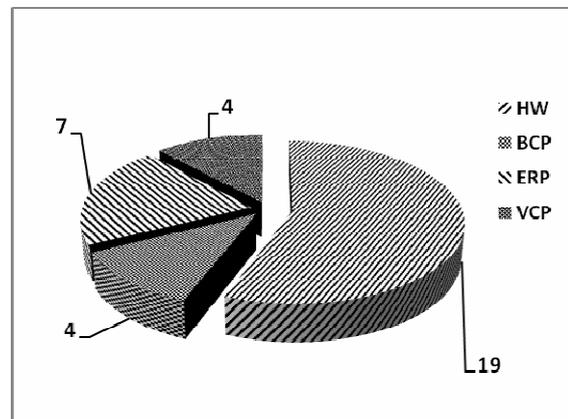
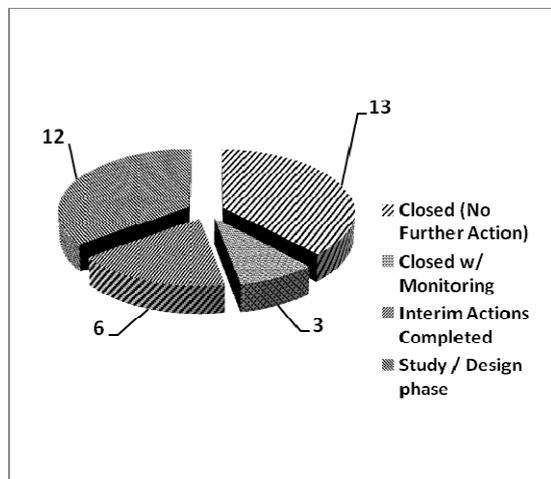


Figure 2 - Current Status of Schenectady County Restoration Projects



TOXIC RELEASE INVENTORY

The Toxics Release Inventory (TRI) is a publicly available database of information on the release of toxic chemicals and waste management activities that is made available by the U.S. Environmental Protection Agency (EPA). This information is provided annually by or for the federal government on covered industry groups and facilities. The law does not cover toxic chemicals that reach the environment from traditionally non-industrial activities such as dry cleaners, auto and transportation servicing, or farming and mining operations, regardless of their size. The primary purpose of the TRI is to inform communities and citizens of chemical hazards in their geographic area. Additionally, the law requires businesses to report the location and quantities of chemicals stored on site to state and local governments. This information helps communities prepare responses to chemical spills, fires and similar emergencies that could result in the release of these chemicals and to support informed decision making at all levels by industry, government, non-governmental organizations, and the public.

The TRI inventory was established under the Emergency Planning and Community Right to Know Act (EPCRA) of 1986. Data on onsite

releases, disposal and off site transfer of wastes must be reported by any firm within certain covered industrial categories (by SIC code) that has released at least one of the covered chemicals above the threshold quantity. There are three such industrial firms in the County listing thirty different chemicals that have been released above threshold quantities by one or more of the firms. Additional details on the TRI program can be found at <http://www.epa.gov/tri/>.

History and Significance in Schenectady County

The TRI information represents data from the County's manufacturing businesses that meet the TRI reporting thresholds regarding their release of hazardous chemicals to the environment. The most recent available data are for 2010 (see Tables 3 and 4). Any observed trends are general indicators of government regulation and industry's commitment to moderate its impacts.

As of 2010, there are 24 chemicals shown in the TRI database for Schenectady County. This list is substantively different than the original list and has undergone a number of changes since 1998. Some of the chemicals shown on the 1989 list have been dropped from the program; these include acetone, ammonia, and sodium hydroxide solutions. Other chemicals have moved off of the reporting list by virtue of substitution or processes changes eliminating their use; some examples include 1,1,1-trichloroethane, toluene-2,6-diisocyanate and di(2-ethylhexyl)phthalate.

The total on-site releases of reportable toxic chemicals from facilities required to report in Schenectady County have declined steadily since the late 1980s. In the late 1980s nearly a million pounds per year of toxic chemicals were reported. This level declined to under seventy-thousand pounds in 2010, as illustrated in Figure 8.

This change can be largely explained by near elimination of releases to surface waters over the last ten reporting years as illustrated by Figure 9. Figures 11 and 12 shows the distribution of releases by type in 1990 vs. 2010.

The reporting of onsite land releases (including purposeful disposal) have been generally low

since the inception of TRI. This reflects the fact that none of the industries reporting have historically reported any significant onsite disposal operations (i.e., landfills or incineration) since TRI reporting began in 1989. This in large part is due to the enactment of RCRA in 1976. RCRA's permitting and performance requirements, relating to the treatment and disposal of waste, shifted waste management activities to off-site treatment facilities, better able to meet stringent environmental standards. Reported land releases are thus typically from material spills due to handling or equipment failures.

Reporting of persistent, bio-accumulative, toxic chemicals (PBTs) was instituted starting in 2000. Only lead and mercury have been reported, and neither of these PBT chemicals has been reported since 2004. The release of these chemicals from industrial sources in Schenectady County no longer threatens our land, air or water resources.

Releases to the atmosphere continue to be the largest source of toxic releases accounting for 98% of the total toxic emissions reported in the County. Direct discharges and fugitive emissions (those not emitted through a stack or vent) account for 68% of these air emissions. Although there has been some significant reductions in fugitive releases, these emissions are often difficult to control, requiring technology improvements and/or significant investment, as illustrated by the long time periods where no significant reductions were attained, and by the small reduction gains since 2006.

However continued efforts to control fugitive emissions provide significant benefit, as these emissions represent a greater exposure of risk to both employees and nearby residences both because they occur close to the ground and because of their unexpected and uncontrolled nature. These releases also tend to persist in the atmosphere.

Assessment

The TRI program in conjunction with improved chemical and petroleum management regulations at the State and Federal levels has

moved industry to higher levels of performance and to the substitution of less hazardous chemicals. This is borne out by the steady reductions and changes in the chemicals being reported over the years. The pollution to our air, water, and land from industrial sources has greatly declined since the TRI began measuring them.

SOLID WASTE MANAGEMENT AND RECYCLING

The section describes the status of solid waste management in Schenectady County. Also included is a discussion of the household hazardous waste (HHW) program and the conditionally exempt small quantity generator (CESQG) program. Efficient management of solid waste is important in order create jobs, reduce climate change, preserve resources and reduce pollution. Solid waste professionals are in the process of transitioning their concept of solid waste management to viewing it under the large rubric of materials management. In order to effectively manage the residue of our society we not only need to look at how to manage the residual itself but we need to also look at the large systems that determine what and how we manufacture products. For example we can only recycle a residual if it is in a recyclable form and made of recyclable material. Also, it only makes sense to recycle the by-product if it can be used as a raw material for future manufacturing. It is also important to create a system of waste management responsibility that provides incentives at all levels of the materials management system to divert waste from disposal. Ideally, such systems incorporate product stewardship and pay-as-you-throw (PAYT) components (these concepts are described in more detail in the recommendations section).

Regulatory Environment

Federal

At the federal level the regulation of solid waste is governed by Title D of the Resource Conservation and Recovery Act (RCRA). RCRA establishes minimum requirements for landfill design but for the most part delegates

responsibility for regulating non-hazardous waste to the states.

State

Waste Management in New York State is governed by the Solid Waste Management Act of 1988. This act is primarily enforced through Chapter 6 of the New York State Rules and Regulations Part 360 (6NYCRR360). The Law also requires communities to write and implement solid waste management plans and encourages communities to ban together to do this. The Solid Waste Management Act also sets a 50% diversion rate goal for the State to be met by 1994. It also required municipal governments to mandate that all “persons (this includes all legal entities including businesses)” recycle “all materials that are economically feasible to recycle.”

The State published in 2010 a new Solid Waste Management Plan, “Beyond Waste: A Plan for Sustainable Materials Management”. This plan sets a goal of reducing the average per person per day waste generation from 4.5 lbs per person per day currently to 1.6 lbs. per person per day within thirty years.

The NYSDEC is also in the final stages of adopting updated Solid Waste Management Regulations, a complete rewrite of 6NYCRR360.

Regional

In 2011 Albany County lead an eight County effort to do a study of the feasibility of a regional solid waste authority. Such an authority would be able to take advantages of economies of scale to build large waste management facilities. It would also be able to consolidate management of regulatory requirements (such as annual reporting) and take advantage of regional media markets effectively to promote waste diversion programs.

On the other hand it may lead to regional requirements that are not in line with local desires. It does not appear that the study has lead to further movement toward regional cooperation in solid waste management.

Local

The Schenectady County Department of Economic Development and Planning is the lead agency of the Schenectady County Inter-Municipal Solid Waste Planning Unit. The Department is in the process of writing its second Solid Waste Management Plan after the first one expired at the end of 2010. All the local governments within Schenectady County have laws on the books that meet the mandatory recycling requirements set forth in the Solid Waste Management Act of 1988. For the most part these local laws require the same materials to be recycled throughout the Schenectady County Planning Unit. However, enforcement is lacking.

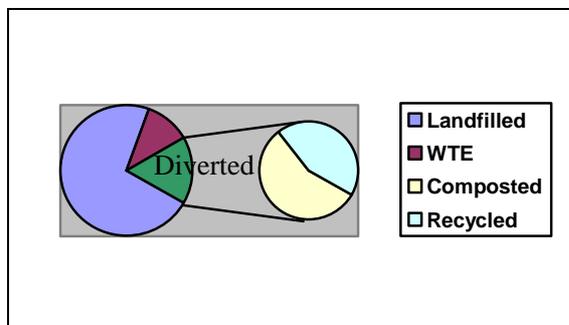
Solid Waste Management Quantities and Methods

Residents, businesses, industry, institutions and not-for-profits (hereafter referred to as the community) generated 174,249¹⁶ tons of residual material. Of this, 147,542 tons was disposed of in landfills or at WTE facilities and 26,706.67 tons was recycled or composted. Therefore, the recovery or waste diversion¹⁷ rate was 15%.

One category of waste that is particularly meaningful is called municipal solid waste (MSW). This category excludes industrial waste and construction and demolition waste in most analyses. 126.487 tons of MSW were generated within Schenectady County in 2011. The waste diversion rated for MSW within Schenectady County was 17%. The average person in Schenectady County generates 4.47 pounds per day¹⁸.

Most of the recovered or diverted material (according to this analysis) was yard waste that was collected to create compost or mulch. If yard waste was removed from the equation you get what is commonly referred to as the recycling rate. The recycling rate in Schenectady County is 8% based on this analysis.

Figure 3 - MSW by Management Method



Methodology

Information for this section of the chapter on solid waste largely came from annual reports submitted to the New York State Department of Environmental Conservation (NYSDEC) by solid waste facility operators. These facilities include landfills, waste-to-energy (WTE) plants [sometimes referred to as waste combustors or waste incinerators], recycling facilities, composting facilities, HHW facilities and transfer stations. In the past facility operators were not required to break down how much of what material came from where. In the last couple of years NYSDEC has been progressively more successful in requiring facilities to report how much of each material they handle came from which Planning Unit and how much was delivered to which other facilities. Therefore, in the past the Schenectady County Planning Unit obtained information by sending surveys to waste haulers and major waste generators. This was a cumbersome and time consuming process. Now, that useable information is being generated by the facility reports, that process has given way to simply analyzing those reports.

Limits of the Analysis

This solid waste study is the most comprehensive study that has been done on the Schenectady County waste stream. However, there are some issues. The issue that is mostly likely to impact the analysis is the quantification of yard waste material. Yard waste coming into the two composting facilities in Schenectady

County (the Schenectady County Compost facility and the Town of Rotterdam Compost Facility) are measured in cubic yards. These quantities need to be converted to tons. The second issue is that there is no distinction in the facility reporting that distinguishes the type of incoming material. Density obviously varies greatly between the different types of material from leaves to stumps or tree trunks. With no information available as to the distribution of the incoming material the factor used to convert cubic yards to tons (.2 cubic yards/ton) is really no more than a guess. Since yard waste made up the bulk of recovered materials in this analysis the recovery rate would vary greatly depending on the conversion factor used.

The second issue is that material that was collected by the City but not sent to a facility required to report is not included. In the case of the City of Schenectady's curbside collection, bulky items are sent to a private scrap yard and thus are not included. This number is not likely to significantly influence the macro analysis.

Tied to this issue is that scrap yards are not required to file annual reports that cover this information. Therefore, recycling done by the major recycler within Schenectady County, TA Predel is not included except where the company volunteered this information with regard to material collected by school districts.

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Waste Diversion Programs in Schenectady County

Waste Diversion Programs in Schenectady County can be divided into three categories: collection, processing and education.

Collection

Curbside recycling collection is available either publicly or privately to all residents within Schenectady County. Additionally, there are two drop off centers for recycling with the County, the County Composting and Recycling Center and the Niskayuna Transfer Station.

The County also runs an HHW collection eight times a year and a CESQG collection 3 times a year. More information on these programs is described later.

Processing

There are two composting facilities in Schenectady County, the County Composting and Recycling Center and the Rotterdam Composting Facility. The City of Schenectady also opened a sewage sludge digestion plant that creates methane which is used by the City Waste Water Treatment Plant.

Education

In addition to the educational efforts of waste and recycling haulers and municipalities, as of the spring of 2012, the County Department of Economic Development and Planning is in the third year of a three year contract with Cornell Cooperative Extension of Schenectady County to do recycling education. This effort includes maintenance of a Schenectady County Recycles Webpage, a Schenectady County Recycles Facebook Page, the distribution of a monthly recycling newsletter, the offering of a Master Composter/Recycler program as well as other activities.

Household Hazardous Waste and Conditionally Exempt Small Quantity Generator Waste

The Schenectady County Household Hazardous Waste (HHW) Program collected 435 drums of material of which 426 were in 55 gallon drums. The program collected 9,351 gallons and 14,355 lbs. of hazardous waste. 858 residential cars were serviced. The program cost \$92,684.54. The cost per car was \$107.99. The cost to the County per car was \$55.77. The total cost per drum of material collected was \$217.54 including the cost of advertising and residual solid waste disposal.

The County ran three conditionally exempt small quantity generator programs in 2011 and serviced 9 generators, most of which were schools. Quantity and types of material handled are not available. The program did not cost the County money.

Also of major importance was the first full year of implementation of the New York State Electronics Product Stewardship Law. Product stewardship or enhanced producer responsibility is the concept of putting the responsibility for the disposal of a product in the hands of the company or class of companies that manufacture that product or type of product. Product stewardship systems create incentive for manufactures to build recyclability into the design of their products. It also puts the burden of the cost of recycling or disposal onto the manufacturer and the consumer rather than the general taxpayer or waste generator. Although

the role of consumer, taxpayer and waste generator are often played by the same person, the manner in which costs are assessed effects behavior. Product stewardship creates incentives for manufacturers to create products that are easier to recycle. It also creates incentives for manufacturers to make recycling easier and more convenient and for consumers to recycle the end of life products.

This particular law requires manufacturers to be responsible for the collection of used electronics, primarily computer equipment and televisions. The law has lead to free regular collection of covered electronics at locations throughout Schenectady County. The County now accepts electronics as part of the normal operation of the Residential and Small Business Recycling Center at the Composting and Recycling Center at 24 Hetcheltown Road and no longer operates electronics collection events.

SICM Household Hazardous Waste (HHW) Project

Schenectady Inner City Ministry (SICM) completed its three-year household hazardous waste project the last Saturday of June 2011. This project was funded by a grant from the New York State Department of Environmental Conservation Office of Environmental Justice. The \$50,000 grant was for education in the inner city about proper handling and disposal of household hazardous waste, and for two collection dates, one in 2010 and one in 2011. Both took place at the SICM Food Pantry parking lot, centrally located and easily accessible to the population being serving. The project demonstrated the need for this service. The three-year grant program has served as a demonstration of the need for the city or county to follow by providing HHW collection locations that serve various communities within the County.

HHW Management During Flooding

In September of 2011 after the flooding of Hurricane Irene and Tropical Storm Lee, the County invited the Federal Environmental Protection Agency (EPA) in to the County to perform curbside household hazardous waste collection in the effected areas. EPA's

contractor, Environmental Restoration worked out of the County Household Hazardous Waste Collection Area and after notifying residents of the service by literature drop-off, collections were performed in the Stockade area of Schenectady, Rotterdam Junction, Alplaus and Scotia. This service was paid for by the Federal Emergency Management Agency (FEMA). The project took five days including the literature drop off.

Conclusions

Although Schenectady County recovery and diversion rates appear to be low and are much lower than state goals, Schenectady County's per person waste generation is in line with the State average. Schenectady County, along with all of New York State has a long way to go to implement the goals set in the 1988 law, let alone those set forth in Beyond Waste, the new State materials management plan.

Also Schenectady County's contract with Cornell Cooperative Extension for recycling education services is ending early in 2013 and this will leave a hole in the County's recycling education efforts.

Recommendations

The next step for Schenectady County is to produce its next ten year solid waste/materials management plan. This plan should focus on implementing food waste composting systems, construction and demolition recycling and deconstruction projects and on implementing pay as you throw (PAYT) programs. PAYT programs create incentives for residential generators to divert waste by requiring them to pay for their waste collection based on the quantity of waste that they generate. SCEAC should perform activities to educate appropriate audiences about these issues. Additionally, with Cornell Cooperative Extension's contract for waste education services ending, SCEAC may be asked to step up and assist the Department of Economic Development and Planning with educational services supporting waste prevention, reuse and recycling.

OPEN SPACE AND LAND USE

The population of Schenectady County grew 5.6% from the year 2000 through 2010, the second highest rate in the Capital District. The City and the towns of Duanesburg, Glenville and Niskayuna have seen growth at more than twice the statewide average of 2.12% since 2000.¹⁹ The economic focus on high tech and the building of several facilities in the region is contributing to this growth and is leading to development pressure.

Nationally, land is being consumed at three times the rate of household formation.²⁰ This development is consuming prime agricultural land, forest and fragile natural areas.²¹ “The total amount of urbanized land in Upstate grew by 30 percent between 1982 and 1997, while its population grew by only 2.6 percent reducing the density of the built environment by 21 percent.”²²

County Government and Metroplex Smart Growth Activity

The County is actively pursuing Smart Growth as a way to preserve open space and revitalize urban areas. Metroplex is active in reclaiming and reusing abandoned properties and brownfields. The largest reclamation project is the 60 plus acre ALCO site between the Mohawk River and Erie Boulevard. In the past year deteriorated buildings have been removed, soil has been trucked in for future use and contaminant monitoring is being conducted.

Access to the Mohawk River is being restored which is also opening up a scenic vista. A multi-use trail is planned along the riverfront to connect to the existing Mohawk-Hudson Bike Trail through the City.

The County is also adding to preserved open space. An addition to the Indian Kill Preserve in Glenville has been approved. This 15 acre parcel will add grassland habitat to the heavily wooded preserve.

The County has also agreed to clean up and convey to the Town of Rotterdam a County-owned half-acre parcel contiguous to the Great

Flats Nature Trail preserve. The Town will annex the parcel to the preserve.

Additionally, the County purchased a twelve acre parcel adjacent to the County’s Almy D. Coggeshall Plotterkill Preserve in Rotterdam in 2011. A federal grant assisted with the financing of the purchase and also helped pay for the construction of a trail from Lower Gregg Road to the preserve’s trail network.

A Town by Town Summary of Comprehensive Planning

In preparation for the following writeups on land use planning by the Towns, meetings were held with Joe Landry, Niskayuna Town Supervisor and Kathy Matern, Town Planner on May 1, 2012; René Merrihew, Duanesburg Town Supervisor on May 15, 2012; Gino SantaBarbara, Princetown Town Planner, on April 26, 2012; and Peter Comenzo, Rotterdam Town Planner, April 25, 2012.

Duanesburg

Duanesburg, the largest town in the County at 73.5 square miles, is a rural town that has become a bedroom community for the region. Residential development is slowly changing the character of the town. Between 2000 and 2010 the Town has grown at a rate was 5.4%, the second highest of the towns in the region.²³ As the population of the Town continues to grow subdivision and development of land will continue as well.

The Town landscape is predominantly agricultural with some sweeping panoramic views that are cherished by many residents and visitors alike. Duanesburg has the most remaining farmland in the county including several large dairy farms. Residents indicate high support for encouraging use of land for open space in the town and almost universal support for using land for farming.²⁴ A quarter of the town land area is in the County Agricultural District and the Town has enacted a right to farm law. Most of the 74 farms in the town are small, non-commercial farms. The larger dairy operations farm an average of 250 acres each.

Duanesburg contains over 1000 acres of preserved land including the 660-acre Featherstonhaugh State Forest, the 105-acre County Forest and the 96-acre Nature Conservancy-owned Christman Sanctuary. The Town recently acquired a 90-acre parcel adjacent to the County Forest and dedicated it as parkland. As of this writing the Town is in discussions with a Boy Scout Troup that plans to complete a nature trail this summer that would connect the trails in the new park with the trails in the County Forest and the County Forest trail head on Lake Road. A veteran's memorial park on the triangle at the intersection of State Routes 7 and 20 is planned. This property was the former Marx gas station. The County acquired the site, cleaned it up and in the spring of 2011, ownership was transferred to the Town.

The Town also contains extensive water resources. Among them are: substantial wetlands (including 30 state regulated wetlands), three lakes, two reservoirs, and several significant watercourses. The Schoharie Creek, which was severely affected by the August floods, provides about eight miles of the town's western boundary. The Norman's Kill is the major contributor to the Watervliet Reservoir in Guilderland, which is the water supply for the City of Watervliet and the Town of Guilderland. The water supply wells for a water district serving the southern portion of the town of Princetown are also located in the Town along the Norman's Kill.

Much of the Town is undeveloped. Land listed as "vacant" amounts to 29 percent of the town's area. Over 50 percent of the town is forested to some degree. The forests and wetlands support a large variety of wildlife.

The town adopted a new Comprehensive Plan in 2006 in order to both maintain the rural flavor of the Town and at the same time, accommodate the projected growth. The Town's land use goal, stated in the Plan, is "to preserve the rural character of the Town by promoting a land use pattern that strengthens existing hamlet centers, protects important natural resources,...and fosters an orderly pattern of growth and development."²⁵ It has been working on zoning regulations to support the plan since. Currently,

the new Zoning Ordinance is under review but has not been adopted as of this writing.

The greatest impediment to future development, identified in the Plan, is the lack of a developed sewer and water infrastructure.

One strategy discussed in the Plan for accommodating continued growth while maintaining the rural character of the Town is to channel development into existing population centers. The Village of Delanson and the hamlets of Quaker Street, Duanesburg and Mariaville are residential and commercial centers. Maintaining and extending the existing pattern of small lots, interconnected streets and walkable neighborhoods in these centers is recommended in the Plan. The Plan also recommends developing the infrastructure in these centers to provide the capacity for growth in both small commercial and residential development. Delanson, Quaker Street and Mariaville have sewer systems. Delanson has the only water district in the town. A Sewer system is being planned for the hamlet of Duanesburg.

Another strategy is to encourage cluster development in new subdivisions. This strategy can prevent subdivisions of rural land from eliminating the agricultural land and open space that characterize the Town. The design and pattern of subdivisions are critical in establishing the pattern of future development. "Consequently, the pattern and design of subdivisions may play a more critical role in the Town's future appearance than home construction rates."²⁶ Flexible design of subdivisions proposed on farmland, such as conservation/cluster subdivisions, is recommended by the Plan to preserve good agricultural soils, minimize disturbance of the farm area and retain rural character.²⁷

Regulations allowing conservation or "cluster" subdivision are in place. Three cluster developments have been approved. A small one in Mariaville is being developed. Plans approved include a major cluster subdivision on Knight Road which will include trails for horseback riding.

It is hoped that increased clustering can also prevent the compromise of view sheds that are

already being affected by piecemeal building along the highways in some places.

The Comprehensive Plan, in addition to addressing protection of agricultural resources, addresses issues of protection of other significant natural areas including: water resources, steep slopes and sensitive forests. It recommends building setbacks and natural buffers along these resources (especially the Normanskill) as well as along roads to buffer the effects of traffic from surrounding open space. It proposes working with private organizations to protect important natural areas and working landscapes.²⁸ The Plan also recommends that the "Parkland" reserve fund be used carefully to protect the Town's most valuable natural resources. The Town established the fund a number of years ago to provide financial resources to purchase and set aside open space in the Town. Developers are required to contribute to this fund when a subdivision is created.

Glenville

Glenville's western portion still retains its rural character while the eastern portion, which includes the village of Scotia, is largely developed. The town adopted an Open Space Plan in 2008. The plan identifies various environmental, natural and scenic areas in the Town as well as historic and cultural sites and existing publicly owned open spaces. Ten open space areas in the town are identified as areas where open space preservation should be given significant consideration during development project review due to environmental sensitivity, the clustering of natural resources and amenities or the presence of already existing protected land that could be added to.

An Open Space Areas Map was developed which should be consulted when a site plan or subdivision application is being considered. If the property is in one of the open space priority areas, then potential open space impacts of the proposed development are carefully weighed. The applicant may be required to incorporate open space preservation into the plan, or to design a layout that protects features on and near the project site.²⁹

Glenville also adopted a Town Center Master Plan in 2004 which is informed by smart growth principles. A traditional pattern of development with a network of walkable streets, buildings fronting the streets and public spaces is planned. The Town Hall, Library, Police Station and history center are the focus of the town center and shopping is within walking distance. Townhouses behind the municipal area have been built. Redevelopment of the long vacant K-mart parcel for a Target is underway. A sidewalk will be constructed on Route 50 and Glenridge Road around the Target site. These steps demonstrate realization of the vision laid out in the plan.

Several streams run through Glenville: Horstman Creek, the Indian Kill and Alplaus Creek. Some parkland borders sections of both the Indian Kill and Alplaus Creek. The Mohawk River forms the southern border of the town. Several riverside areas are preserved including the riverfront park in Scotia and riverfront near the exit 26 bridge. Several islands in the river are preserved. Wolf Hollow was noted by the State as a "priority conservation area" in the 2009 Open Space Plan. The Mohawk Hudson Land Conservancy is focusing on the area surrounding Hoffman's Fault, which includes Wolf Hollow. Development rights have already been acquired by the Conservancy on several parcels along the in the area.

Niskayuna

Niskayuna is close to full build out. It has no open space plan as such, but the "Parks and Recreation" section of the Comprehensive Plan looks at the issue. The town has actively planned for parkland with a focus on recreation, both active and passive. The town now has over 1100 acres of green space composed of parkland, open space, preserves and playgrounds. It has also worked to establish greenways to link parks and open space to allow for pedestrian and bicycle access.

A Subcommittee on Trails was established in 2011 by the Town Board and charged with evaluating town property for hiking trails. The Subcommittee identified the linking of the Mohawk River State Park, Lock 7 Park and Jeff

Blatnick Park as a priority corridor for trail development. A trail along this route was named after the subcommittee chair, John Brown, was completed in the spring. Next on their agenda is Niskayuna's 20-acre Woodlawn Preserve parcel.

Linking is also a concern of the Safe Routes Committee. It developed a town-wide safe routes plan which identifies safe routes for walkers & bicycles to schools, town parks, recreation facilities, the town center district and commercial areas using existing streets and bike paths. Niska Isle and Rosendale Road connections to the Bike Trail have been built. New signs have been placed around town for the Bike Trail. A new walking trail is currently being constructed on Hillside Avenue. The Town Planning Board now considers input from the Safe Routes Committee on how new projects can be made more pedestrian friendly. Sidewalks or multiuse paths are required in new developments.

Niskayuna, the most built out of the towns, has set in place land conservation requirements for development. It requires subdivision developers to set aside 10% of their site for community open space or pay a fee to support purchase of parkland.

Cluster development is also an option for developers within the Town. Cluster development, sometimes referred to as average density zoning, conservation subdivisions or planned unit development (PUD), is an approach to preserving open space in which individual lot sizes are decreased, but the extra acreage is put into shared open space. Fieldstone Estates, a housing development project on 100+ acres along Consaul Road used average density zoning to develop 47 town-house units and 54 single-family homes but preserved over 65 acres of open space with walking trails open to the public.

The Town has successfully used infill development to continue to grow despite a limited amount of available undeveloped land. "...Consolidating and concentrating commercial development and not allowing its indiscriminate proliferation" ³⁰ is a stated goal of the Town Comprehensive Plan. Working with Metroplex to fully utilize its commercial areas, the Town

has engaged in a number of successful development projects in the last decade. The old Mohawk Mall, was taken down in 2000. The new Mohawk Commons shopping area was built on the site of the old mall. In the fall of 2011, Shop-Rite Corporation opened a grocery store that re-uses long vacant space in the St. James Square shopping area. A new retail center, Mansion Square, is being developed opposite Mohawk Commons, on the 12-acre site of the historic Stanford House. The historic building will be preserved and reused, but the green space with 300 year old oak trees has been lost.

Niskayuna is currently engaged in revision of its comprehensive plan, last revised in 2003. A committee is meeting monthly. Special attention is being paid to needs of the various neighborhoods in the latest version of the Plan. The town's waterways and its historic sites are areas of focus as well.

Princetown

Princetown has experienced very little development pressure in the last 10 years. The town has two existing subdivisions, the last one developed in the 1990's. The town's topography does not lend itself to large subdivisions. The clay soils present poor drainage for septic systems. The hilly terrain and wetlands are also issues. Residential development consists of individual lots lining the county and state roads in the town. The development of about 12 one-lot subdivisions a year is the norm. Princetown does not have a town center. Desire for a town center was expressed by residents and is a goal in the draft Comprehensive Plan. Near the Town Hall was the favored location. The probable costs of developing a town center concern the town decision makers. Industry and large businesses are discouraged from locating in Princetown by the lack of infrastructure. Large businesses want sewers and town water. Town water is supplied to the lower part of the town only. If sewers are put in along Route 7, the situation will change. Currently, less than one percent of land in the town is commercial.

Princetown has no town parks or preserves because of concern about costs of liability and maintenance. The only preserved land in the

town is a conservation easement on 67 acres of land under the auspices of the Mohawk Hudson Land Conservancy. Six wetland complexes, comprising approximately 350 acres, in the town are regulated by the DEC. Twenty-one percent of the town is in the County Agricultural District.

A Comprehensive Plan draft was developed in 2009 by a committee created by the Town Board. As of April of 2001 The Town Board has not yet approved the Plan. This draft Plan addressed the issue of coping with future development and its potential impact. It presented steps that could be taken to achieve the goals expressed by residents through surveys and public meetings during the development of the Plan. Goals stated in the draft plan include:

Preserve the rural character of Princetown; preserving and enhancing the natural resources of the Town, including but not limited to: woodlands, wetlands, streams, open spaces, groundwater resources, wildlife habitats and other environmentally sensitive areas

Ensure that growth and development is sensitive to, and compatible with, the Town's natural environment

Remain "farm friendly" by preserving agricultural opportunities and important farmlands

Establish a town center that strengthens the Town's identity and quality of life ³¹

Protect the town's scenic vistas

Measures suggested include:

Assessing the aesthetic impact of a project using a visual impact survey

Incorporating development standards in local land use laws to minimize the impact of new development on scenic resources

Adopting ridgeline protection measures. ³²

Critical Environmental Inventory - The Plan also stated, "The Town should conduct a critical environmental inventory that includes scenic views, wildlife habitat, historic sites, wetland and water resources, and prime farmland." ³³

Use of overall density zoning instead of minimum lot size, encouraging cluster development instead of the usual every house on its own same-sized lot, are approaches that can be used to save open space and preserve community character. Zoning is in place for residential planned development districts. Compressed development on smaller lot sizes would be allowed in exchange for preserving open space. Parcels of 25 acres or more are eligible. To date, this provision has not been used.

Rotterdam

Rotterdam's 36 square miles contain urban, suburban and rural communities. The southeastern part of the town is essentially an extension of the city of Schenectady. Developed following World War II, it is largely single-family houses and small businesses on small lots fronting the sidewalk. Suburban style developments occur in the southwestern section. The other two thirds of Rotterdam are rural in character. The hamlet of Rotterdam Junction is in the northeastern part of town, on the Mohawk River.

In the last ten years population increase has been low, at 2.75%. ³⁴ Development in the Town is restricted due to the lack of infrastructure in most of the town and poor soils for septic systems. Only two major subdivisions have been started in the last 10 years. In Helderberg Meadows development is ongoing. This development on 320 acres, much of which is wetland, has preserved 200 acres as forever wild. Smaller lots are permitted in exchange for land preservation. The residences are built along two miles of meandering roads. The road and sewers were put in by the developer.

The Town has a number of protected open spaces. The 67 acre Town-owned Great Flats Nature Trail preserve, which is located over the aquifer, contains a variety of woodland and wetland habitats. In early April, The County agreed to clean up and convey to the Town of Rotterdam a County-owned half-acre parcel contiguous to the Great Flats Nature Trail preserve. The Town will annex the parcel to the preserve A 12 acre parcel was added to the 632-

acre Plotterkill Preserve and a new trailhead on Gregg Road is planned. The Nature Conservancy owned 81-acre Moccasin Kill Sanctuary is also located in the Town.

The Rotterdam 2001 Comprehensive Plan exhibits concern about the impact of development on the environment. A stated Town objective is: “to preserve the Town’s character and identity while allowing for environmentally sound growth and development.” The Town should: “Provide an effective stewardship of the environment to protect critical and sensitive areas, maintain water quality, and conserve land, air, water, and energy resources...”³⁵ “It is the Town of Rotterdam’s goal to ensure that future growth and development are compatible with the Town’s natural environment.” Specifically mentioned are nature preserves, state-designated wetlands, aquifer protection zones and streams buffered by 100 year floodplains.³⁶

The “Parks, Open Space and Recreation,” section of the Comprehensive Plan, advises that an inventory of existing open space, parkland and recreation resources should be created. This inventory has not been completed. Encouraging cluster development as a way of preserving open space is suggested as well as continuing to require developers to set aside parkland in developments or pay a fee to a recreation site fund.³⁷ Adding pedestrian, transit and bikeway facilities to highway repair projects and new developments as well as pursuing right-of-ways for bike and recreational paths are suggested.³⁸ A current Parks and Recreation plan reiterates the need for an inventory of open space in the Town. Developing a multi-use trail system in the Town which connects with the Canalway trail and trails in other towns is also a goal.³⁹

The Comprehensive Plan has been amended with a number of Transportation and Land Use studies. Exit 25 and Thruway Exit 26 were studied in 2008. The Exit 25A, (Burdeck Street Corridor) study was updated in 2001.⁴⁰ A major rezoning effort took place in 2009.

Exit 25A, the Burdeck Street corridor, has a prime location for development but it lacks sewers needed for any large scale development. The present zoning is ‘agricultural.’ The town is waiting for a proposal to respond to before

specifying what the town wants. All three studies emphasize creating safe routes for pedestrians and cyclists and improving accessibility of transit stops.

The Hamburg Street/Exit 25 study recommends a pedestrian friendly, mixed use development on the vacant Grand Union site. It notes a “confused identity” with a “mixing of incompatible uses,” single family residential interspersed with auto-oriented (park in front) businesses making it unattractive and unsafe for walkers or cyclists.⁴¹

The Exit 26 study recommends a “green ribbon” of open space along the Mohawk River front. Some key land would need to be acquired.

The Bonded Concrete site would become a Town park. The residential mixed use found in Lower Rotterdam Junction would be retained and expanded.⁴²

A Transportation Study of the Five Corners area (Route 7, Route 159, Broadway) has been recently completed, and is now waiting the town board’s approval and adoption as part of the Comprehensive Plan. Smart growth principles inform the study. Development of a town center is envisioned at the Five Corners area with buildings, instead of parking lots, fronting the road. A double roundabout to facilitate traffic movement, provision for bus transit and development of pedestrian walkways and bicycle friendly routes are proposed.⁴³

A grant-funded Brownfield Opportunity Area Study was completed last summer for Rotterdam Junction. Due to destruction in the area caused by the flood following Hurricane Irene in August, publication of the recommendations was postponed as revision of information was necessary. This study complements the earlier study of the Exit 26A area to the East. The study looks at an area of 624 acres including potential brownfields in the aquifer protection zone. Development of much of the area for recreational use is proposed. A multiuse trail along the Mohawk River connecting to Main Street and the Mohawk Hudson Bike Hike trail, improved river access, and recreational areas are proposed. In the hamlet, rezoning of Main Street to encourage small scale mixed use, side and

rear shared parking, façade improvements, setback requirements, design guidelines and regulated signage, street tree planting and landscaping are recommended.⁴⁴

The town has established “Land Conservation Districts” (LC) as a result of the 2001 Plan. Development is limited or prohibited in these zones due to special or unusual environmental features such as steep slopes, poor drainage soils, streams, wildlife habitats, forests, natural storm water drainage or other natural resources. Farming or single family homes may be permitted in some LC districts.⁴⁵

A Development Map which shows environmental constraints such as limited soils, NYS wetlands and floodplains, as well as transportation options, has been developed and appropriate land uses clarified. Land Conservation Zone regulations were adopted in 2010.

Smart growth efforts in Rotterdam are focused in the urban part of town. Infill and redevelopment projects are the emphasis. Development is encouraged where infrastructure already exists. Sprawl is not viewed as an issue in Rotterdam.

Recommendations

County-wide Open Space Map

SCEAC should work with the towns to generate a County-wide map of existing and priority open spaces. This map would serve as a tool to assist towns with adoption of open space plans. The existing preserved areas and parkland should be inventoried, and environmentally sensitive, natural, scenic, cultural and historic features of the throughout the County should be identified. Agricultural lands and forested lands need to be noted. Mapping these areas creates a useful graphic that identifies regions where valuable open space exists. The potential impacts of development proposed in these areas can then be carefully considered. Development of a plan and sensitivity to its objectives on the part of members of the Town Board, the Planning Board, Zoning Board of Appeals, and Conservation Advisory Council is an important means of shaping the future development of a

community in a desirable direction. This map, generated by the SCEAC, with the assistance of the County Department of Economic Development and Planning and input and approval of the Towns themselves, could serve as the starting point for the Towns to adopt open space plan maps.

Smart Growth

SCEAC should start putting on annual Smart Growth workshops for Planning Board, Zoning Board of Appeals and Town Board Members to inform them about Smart Growth principles and techniques for implementing them. These workshops should also address the benefits to a community of Smart Growth Practices such as the fact that preserving open space by planning for compact development rather than sprawl keeps taxes lower. The average cost for local roads with compact development is 25% less than with sprawl. Savings are also found on utilities, schools and other municipal services.⁴⁶

Cluster development

SCEAC should work with the County Department of Economic Development and Planning to develop model Cluster development ordinances (also called conservation development or average density development). All five towns have regulations permitting it, but it is not often used. Niskayuna has used this technique, most notably in Fieldstone Estates. Wider use could be encouraged by requiring developers to submit a cluster development plan in addition to a traditional plan for proposed subdivisions.

Reducing automobile dependency

SCEAC should consider forming a transportation committee, or find another way to work on transportation issues, in order to investigate ways to increase the use of alternative transportation and improve the walkability and bikeability of communities throughout the County. This Committee should start by reviewing the New Visions Plan of the Capital District Transportation Committee (CDTA).

This committee could potentially also hold workshops for Town Conservation

Commissions, Planning Boards, Zoning Boards of Appeal and Town Boards to provide training on how to integrate the needs of walkers and cyclists into new projects and how to review proposed road projects to improve bicycle safety by including bicycle stop lines at intersections, bicycle safety zones for non-turning cyclists where right turn lanes are planned and the inclusion of striped crosswalks at intersections. The need to maintain ownerships of rights of way along roadways to allow for future expansion of bike routes should also be included in these forums.

The Committee could also work with the Land Use Open Space Committee to include bicycle/pedestrian linkages from residential areas to employment centers, schools, libraries, recreation areas and shopping centers into its Open Space Plan.

Additionally, the Committee could work with “Walking School Bus”, “Safe Routes to School” and other programs that facilitate and promote pedestrian or bike transportation.

Finally, the Committee could advocate for better access to public transit through the use of consideration of safe pedestrian access to transit stops, provision of bus shelters, paved waiting areas, and the impact on pedestrians in the development of bus turnouts and turnarounds.

Areas of significance in the NYS Open Space Conservation Plan 2009

SCEAC should work to inform municipalities and the general public about the ‘areas of significance’ within Schenectady County that are listed in the NYS Open Space Plan. Their protection should be given priority by towns and the County. Listed are: The Albany Pine Bush (a part of which is in southeastern Schenectady County and includes the Woodlawn Pine Barrens and Wetland Complex in Niskayuna and the City of Schenectady), the Mohawk Valley/Barge Canal Corridor specifically Wolf Hollow in Glenville, the Great Flats Aquifer, buffer land adjacent to the Mohawk River State Park in Niskayuna and linkage parcels for the Canalway Bike-Hike Trail.

Also listed is the Schoharie River Valley Corridor. About an eight mile stretch of the

Schoharie Creek marks a portion of Schenectady County’s western boarder with Montgomery County and Schoharie County. The Schoharie Creek in Duanesburg marks about eight miles of Schenectady County’s western border with Schoharie County. Providing for public access to the creek and protection of the creek and its tributaries, are concerns that are in need of greater attention according to the State Plan.⁴⁷

Schenectady County Open Space Plan

Development of a Countywide Open Space Plan is recommended as an important step in the protection of Schenectady County’s environmental riches and achieving a balance between the needs of the natural world and the needs of the human community.

Development of an Open Space Plan for the County of Schenectady is a goal of the Schenectady County Environmental Advisory Council and its Land Use/Open Space Committee. The Committee will work with municipalities on developing this plan. It will create a tool which communities can use to help protect Schenectady County’s natural resources, agricultural land, forests, parklands, scenic views, and expansive Mohawk River frontage from negative impacts of rapid residential and commercial growth. Producing a Schenectady County Open Space Plan that has the support of municipalities and the public will involve the following tasks.

Task 1: Map sensitive areas and currently protected parcels. Environmentally sensitive areas such as steep slopes, wetlands, floodplains and prime agricultural soils can be identified and mapped using GIS by County Planning Staff.

Task 2: Compile an open space inventory. A listing of natural and environmental assets within each municipality would include previously identified sensitive areas and areas which are already protected (such as parks, preserves and easements), Aquifer protection zones, agricultural properties, sizable undeveloped parcels, 100-year flood plains, scenic views, NYSDEC wetlands, stream corridors, water bodies and headwaters and historic sites. Some of the mapping for this task has been accomplished. The inventory of

publicly (and privately) owned open space has been compiled.

Task 3: Solicit community input and participation. Natural and scenic areas important to communities but not previously identified can be added.

Task 4: Produce a county open space map: A map of the identified open space and ecologically sensitive areas in each community will be developed.

Task 5: Develop criteria. The Land Use & Open Space Committee has adopted nine criteria for open space preservation in the county along with a scoring system for use in determining which parcels should be protected. Those criteria entitled, "Goals for Open Space Preservation in Schenectady County" are included in the appendix to this report.

Task 6: Use the Criteria in an iterative manner to identify priority areas.

Task 7: Identify the strategies and planning techniques, with municipal staff, that would be useful to protect each of the identified priority areas. Provide assistance in developing plans, ordinances, etc. as needed.

ENVIRONMENTALLY RELATED ILLNESSES

Lyme Disease^{48 49}

Lyme Disease is a bacterial infection transmitted through the bite of deer ticks. First discovered in Lyme, Connecticut in 1975, the incidence of the disease (caused by a spirochete, *Borrelia burgdorferi*) has been steadily increasing in all counties of New York State. Symptoms of Lyme Disease include a bulls-eye rash around the bite site, which presents in approximately 85% of cases; flu-like fever; headache; fatigue; and joint pain. In later stages, the disease can cause more serious neurological, cardiac, or musculoskeletal conditions.

The deer tick that carries Lyme Disease (*Ixodes scapularis*) spends part of its life cycle on mammals including white-footed mice and white-tailed deer. Consequently, contact with deer ticks is most likely in areas containing

woods and high grasses. The map in Figure 14 illustrates the relative rate of infected ticks found in New York State. Lyme Disease is treated with antibiotics, but reinfection can occur.

Available Data

Lyme Disease first appeared in the Capital District in the mid-80's. Because the disease's symptoms can vary between individuals, and are similar to symptoms of many other illnesses, the disease can be difficult to diagnose. In addition, standard tests for the disease can give inconclusive results. This lack of reliable testing methods has led to the development of specific criteria that are required in order to confirm a case of Lyme Disease. Lyme Disease cases have steadily increased in Schenectady County as in other New York State counties. From a low of seven recorded cases in 1994 (when the State began tracking annual incidence), Schenectady County had 131 confirmed cases of Lyme Disease in 2009 (see Figure 13).

Prevention

Deer ticks thrive in moist, shaded areas with adequate deer and mice populations. Some researchers believe that the amount of acorns produced in the fall will affect the mouse population, and therefore can be used to determine the level of risk during the following summer.⁵⁰ Home owners can reduce the amount of suitable deer tick habitat by cutting back brush and trees, and otherwise making areas less attractive to deer and mice. Other preventative measures include wearing light colored, long-sleeve clothing when outside in wooded or overgrown areas, and checking for ticks on skin and clothing. The use of DEET-based insect repellents is recommended. Any attached ticks should be removed immediately. If a rash or flu-like symptoms occur, a physician should be consulted. Although ticks are most active between the spring and fall months, according to the American Lyme Disease Foundation, "Generally, deer ticks can be active any time the temperature is above about 45° F."⁵¹ Changing weather patterns will affect the annual timeframe in which exposure can occur.

Programs

Programs at the state and local level are aimed at increasing public awareness of Lyme Disease. These programs provide recommendations for avoiding tick-infested areas, dressing appropriately, using insecticides containing DEET, and being aware of the symptoms of Lyme Disease. There has been a recent increase in other tick-borne diseases, with at least 10 bacterial or parasitic diseases (e.g., ehrlichiosis and babesiosis) documented in ticks found in the United States. Prevention programs are similar in reducing exposure to all types of ticks and tick-borne diseases.

New legislation is being proposed on the state and national level to raise awareness of Lyme Disease and make a concerted effort to address this problem. For the past two years, Governor Andrew Cuomo has proclaimed May to be “Lyme Disease Prevention Month”; and recently Congressmen Paul Tonko and Chris Gibson proposed the creation of a federal advisory council to promote research and coordinate efforts related to tick-borne diseases.

West Nile Virus^{52 53}

In 1999, a disease known as West Nile Virus (WNV) appeared in the United States. The virus is known to affect humans and other mammals, as well as certain species of birds. Symptoms of the virus in mild cases include a slight fever and/or headache. More severe cases can involve a high fever with head and body aches, disorientation, tremors, and convulsions. The most serious form of this disease (encephalitis, or inflammation of the brain) occurs in approximately 1% of WNV cases and can be fatal.

Available Data

In New York State for the year 2011 there were three confirmed cases of West Nile Virus in birds, but no confirmed cases in humans or other animals.⁵⁴ Although the incidence in the past few years has been lower than a decade ago, public health officials still consider West Nile to be a public health concern due to the nature of the illness.

Control Programs

Schenectady County has implemented a West Nile Virus Response Plan involving control of populations in the larval form, and monitoring of mosquito populations and dead birds. In order to control the number of mosquitoes before they hatch into adults, the County has coordinated with the towns of Glenville, Niskayuna, Rotterdam to distributed larvicide dunks containing BTI (*Bacillus thuringiensis israelensis*) or Altosid (active ingredient: (S)-Methoprene) in culverts, storm sewers, and other areas of standing water. As part of its surveillance program, the County Health Department’s Environmental Health Unit trapped adult mosquitoes, identified the species, and tested the mosquitoes for WNV. In addition, dead birds of certain species (e.g., American crows) were collected and tested for WNV.⁵⁵

Treatment and Prevention

There are no vaccines for WNV, and antibiotics have no effect on the virus. Currently, WNV infections are handled by treating the symptoms until the patient recovers.

There are two main preventative measures that can be taken to minimize the risk of contracting West Nile Virus. The first involves reducing the mosquito populations.

While the County’s larvicide program will deal with mosquito populations in some areas, individuals throughout the County can reduce their risk of contracting West Nile Virus by reducing the number of mosquito breeding areas on their properties. This can be accomplished by changing water regularly in bird feeders and water bowls, emptying or removing containers that capture water during rainfall, cutting back vegetation, and other measures. The County Health Department recommends elimination of standing water as a primary method for reducing the mosquito population. A comprehensive listing of preventative measures can be found on the Department’s website.⁵⁶ Residents can purchase mosquito dunks through local garden stores.

The second method of preventing West Nile virus is to avoid exposure to adult mosquitoes. This includes staying indoors if possible during

mosquito feeding hours (early morning and evening), and wearing long-sleeve clothing. As an additional preventative measure, the use of DEET-based insect repellents is recommended, with attention to proper application.

HABITAT ISSUES

Endangered Species

When air, land, water, plants and animals support each other in a healthy environmental system, all species, including humans, flourish. Alone among the animals, humans have the power to throw the system out of balance, to damage key elements in the web of life beyond repair. But the same knowledge and technology that make humans uniquely destructive also give us the ability to prevent damage to the environment and to care for the environmental support system on which our very survival depends.

Focusing on the most sensitive elements in the system, DEC's Endangered Species Program is designed to perpetuate and restore native animal life within New York State for the use and benefit of current and future generations, based upon sound scientific practices and in consideration of social values, so as not to foreclose these opportunities to future generations.⁵⁷ After a long history of expanded protection efforts, the latest regulation includes three rarity categories (endangered, threatened, and rare) and one non-rare protection category (exploitably vulnerable).

The federal Endangered Species Act of 1973 was designed to prevent the extinction of plants and animals, addressing problems of both exploitation and habitat destruction. The Act defines an endangered species as any species of animal or plant that is in danger of extinction over all or a significant portion of its range. A threatened species is defined as one that is likely to become endangered.⁵⁸ Thus, federal and state regulations work together to protect rare species of plants and animals.

The NYS Department of Environmental Conservation website lists numerous species of threatened and endangered animals (including

insects, mollusks, and fish), and only six plants. Only the following might be expected to be found in Schenectady County:

One the Federal Endangered or Threatened Species List

E - Indiana Bat - *Myotis sodalist*

E - Karner blue butterfly - *Lycaeides Melissa samuelis*

NYS List of threatened (T) and endangered (E) species that might be expected to be found in Schenectady County

T - Upland sandpiper - *Bartramia longicauda*⁵⁹

T - Northern Harrier - *Circus cyaneus*

E - Peregrin falcon - *Falco peregrines*

T Bald eagle - *Haliaeetus leucocephalus*

T Henslow's sparrow - *ammodramus henslowii*

T Least bittern - *Exobrychus exilis*

T Pied-billed grebe - *Podilymbus podiceps*

T Timber rattlesnake - *Crotalus horridus*

E American Strawberry-bush - *Euonymus americanus*

T Bicknell's sedge - *Carex bicknellii*

E Calypso orchid - *Calypso bulbosa*

T Cork Elm - *ulmus thomasii*

T Dragon's mouth orchid - *Arethusa bulbosa*

E Hooker's Orchid - *Platanthera hookerii*

E Lowland Yellow Loosestrife - *Lysimachia hybrida*

E Nodding pogonia orchid *Triphora trianthophora*

E Orange fringed orchid *Platanthera ciliaris*

T Ram's head ladyslipper *Cypripedium arietinum*

E Rough avens *Geum virginianum*

E Small yellow ladyslipper *Cypripedium parviflorum var parviflorum*

E Small's knotweed - *Polygonum aviculare*
buxiforme

T Yellow fiant hyssop - *Agastache nepetoides*⁶⁰

This is a sampling of NYS listed threatened and endangered animals and plants. The list of plants has many more; notably many types of sedge are listed.

Finally, a word about bees. Although they don't appear on the lists of endangered or threatened species, there continues to be considerable concern about the decline in bee populations widely evident for the past couple decades or so. To quote the New York state Biodiversity Project:

“There is much concern about the potential detrimental effects humans may be having on naturally occurring pollinator species, including native bees. Much of our food and economy depends on pollinators, and yet we pay little attention to the long-term conservation of pollinating insects. So much concern has been raised about the potential catastrophic effects of pollinator loss that an entire issue of the journal *Conservation Ecology* was devoted to this issue.”⁶¹

Given that much of the New York State economy is based on agriculture and that much of the state has been altered by human activities, including urban, suburban, and agricultural development, we believe native bee conservation is of considerable importance. Approximately 25% of New York State is agricultural land. Agricultural land, while obviously important, replaces natural plant communities, and some agricultural plants (such as corn and wheat) are incapable of sustaining pollinator populations.”⁶²

Invasive Species

For a more complete picture of invasive species in Schenectady County, see the 2011 State of the Environment Report. Giant Hogweed (*Heracleum mantegazzianum*) was not covered in that report but is now reported in our county. Here is the description of this plant from the DEC website:

“Giant hogweed (*Heracleum mantegazzianum*) is a federally listed noxious weed. Its sap, in combination with moisture and sunlight, can cause severe skin and eye irritation, painful blistering, permanent scarring and blindness. Contact between the skin and the sap of this plant occurs either through brushing against the bristles on the stem or breaking the stem or leaves.”⁶³

According to DEC Region 4 Forest Health and Protection Program, Giant Hogweed has been located on Van Antwerp Road in the Town of Niskayuna and remediation was being carried out as of June 18, 2012.

Appendix I - Criteria for Evaluating Open Space and Open Space Scoring System

GOALS for OPEN SPACE PRESERVATION in SCHENECTADY COUNTY

(Prepared by the Land Use/Open Space Committee, March.2010)

File: Environmental Issues/OpenSpaceComm./OpenSpaceGoals2.7.10

Preserve sites of historical, cultural or scenic importance that give the county its distinctive character.

Promote patterns of land use that preserve green space; these include using existing infrastructure for new development, reusing abandoned sites, clustering development, land conservation zoning, planned unit development, conservation subdivision design etc.

Protect water resources through a watershed approach by protecting aquifer recharge zones, stream corridors, ponds, wetlands, and aquatic ecosystems.

Protect working landscapes that also contribute to scenic landscapes, wildlife habitat, and a rural way of life.

Protect environmentally sensitive areas and significant wildlife habitats to preserve biodiversity and to ensure the protection of healthy and sustainable ecosystems such as wetlands, floodplains, steep slopes, unique geologic formations, etc.

Protect scenic resources such as scenic vistas, viewsheds, countrysides, and unique landforms all of which contribute a community's sense of place.

Expand and improve parks, trail systems and passive recreational areas; improve access along stream corridors and the Mohawk River; and provide accessible high quality outdoor recreation on both land and water.

Link protected open space areas through greenway corridors that will also provide lineal parkways and wildlife corridors.

Value the "Quality of life" associated with open space conservation that serves to protect the county's special qualities and contributes to its livability... those locational attributes that add to the quality of life.

The next page is a scoring system for use in helping to determine which parcels should be protected.

OPEN SPACE SCORING SYSTEM---adapted from the Glenville Open Space Plan

Edited 3.13.10

Aquifer recharge areas

Wellhead protection zone 5

Primary recharge zone 4

New York State freshwater wetlands

Wetland 3

100' buffer 1

100-Year flood plain 3

Slopes in excess of 15% 2

Rivers and streams

Property adjacent to Mohawk River 4

Class AA , A , B, or C stream flows through or borders the property 1-3

Trout stream on property 3

all other year round streams—flow through or adjacent 0.5

Significant plant or animal habitat 4

Undisturbed natural area

Contains rare or endangered flora or fauna

Fragile ecosystem

Variety of habitats

Unique geological resource 3

unique terrain or geologic formations

important visual place marker

Historic or Cultural Significance

Structure on National or State registry 4

Historic marker identifying structure	3
Historic site	3
Historic marker citing property	2
Adjacent to historic structure	1.5
Archeological sites—Indian paths, settlements, etc	3
Working landscapes	
Active farm	4
Class I and II (“prime”) soils	3
Adjacent to an active farm	2
Forestry property tax exemption	4
Adjacent to public park or preserve	5
extends or reshapes parks or preserves	
connects parcels of protected open land	
Recreational	
Downhill ski area	4
Hiking , biking, skiing trails	4
Hunting, fishing	3
Sledding hills	3
Proposed parks, playgrounds, trails, etc	3
Boating access	3
Scenic vistas	
Property is part of a significant view shed	3
Mohawk River view	3
Ridgelines and hillsides comprising a vista from public lands or roads	1
Roadside vista adjacent to property	1
Adjacency to linear features	
To picturesque ravines, streams, etc.	4
To Mohawk-Hudson (or other) Bike-hike trail	3

To proposed bike paths	3
To any proposed greenways, waterways, or linkages	3
Quality of life considerations	
Would provide parkland/green space to benefit an urban/built-up area	5
Preserves natural or historic features important to community identity	4
Size	
Over 50 acres	5
Over 25	4
10-25	3
Under 10	2

**Appendix II Schenectady County Solid Waste Planning Unit 2011
Annual Report**



County of Schenectady

NEW YORK

Ray Gillen
Commissioner

**DEPARTMENT OF ECONOMIC DEVELOPMENT
AND PLANNING**

(518) 386-2225 FAX (518) 382-5539
Schaffer Heights, 107 Nott Terrace, Suite 303
Schenectady, New York 12308

Mr. Ted Robak
NYSDEC Region 4
Headquarters
1130 N. Westcott Rd
Schenectady, NY 12306

Dear Mr. Robak,

I have enclosed the 2011 Annual Report for the Schenectady County Inter-Municipal Solid Waste Management Planning Unit. Please feel free to contact me with any questions, comments or concerns.

Sincerely,

Jeffrey S. Edwards
Planner

JSE/jse

Enclosure

Cc: Gerard Wagner, NYDEC Central Office
Ray Gillen, Commissioner of Economic Development and Planning



NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
 DIVISION OF MATERIALS MANAGEMENT
ANNUAL REPORT FORM – PLANNING UNIT RECYCLING REPORT

(Use additional sheets if necessary)

REPORT YEAR: 2011	PLANNING UNIT NAME: Schenectady County Inter-Municipal Planning Unit
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ADDRESS: Schaffer Hieghts, Suite 303, 107 Nott Terrace, Schenectady, NY 12308	COUNTY: 47 - SCHENECTADY
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CONTACT PERSON: Jeff Edwards	EMAIL: jeff.edwards@schenectadycounty.com	TELEPHONE NUMBER: 518-386-2225 Ext. 224
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SOURCES OF DISPOSAL AND RECYCLING DATA (check all appropriate boxes):

<input type="checkbox"/> Scale Weights	<input type="checkbox"/> Hauler Surveys	<input type="checkbox"/> Estimates
<input type="checkbox"/> Truck Counts	<input type="checkbox"/> Facility Surveys	<input checked="" type="checkbox"/> Other

LIST FACILITIES IN YOUR PLANNING UNIT WHICH ARE INCLUDED IN THIS REPORT	
FACILITY NAMES	REGISTRATION / PERMIT NUMBER
See Attached Appendix A	

WASTE DISPOSED

WASTE STREAMS	LANDFILLED		COMBUSTED	
	Name & Address	Tons	Name & Address	Tons
Municipal Solid Waste (MSW)	See Attached Appendix B		Dutches County RRF 90 Sand Dock Road, Pough. NY	32.73
			Covanta Pitsfield MA	1,104.1
			Wheelbrator, Hudson Falls, NY	15,686.59
C & D Debris (C&D)	See Attached Appendix B			
Non – Hazardous Industrial Waste	Colonie Landfill	1.29		
	High Acres Landfill	193.38		
Biosolids	Colonie Landfill	126.73		
	Senica Meadow	76		

ANNUAL REPORT FORM – PLANNING UNIT RECYCLING REPORT

(continued)

(Use additional sheets if necessary)

RECYCLABLES RECOVERED		
Do not report recyclables that result from the Returnable Container Act or are part of a Beneficial Use Determination		
PAPER::	END USE OR DESTINATION FACILITY <small>(Name and Complete Address)</small>	TONS <small>(to each facility)</small>
Newspaper	TA Predel, 201 Edison Ave. 12305 (from Nisk. Trans. Station)	43.33
Corrugated Cardboard	TA Predel, (From Nisk. Trans. Station and from Schools)	22.18
Paperboard / Boxboard <small>(e.g. cereal, shoe, gift boxes & light cardboard)</small>		
Office Paper		
Magazines		
Junk Mail		
Other Paper (specify): Mixed Paper	Sierra Processing Colgate Paper Stock (From Weaver St. Transfer Station) T.A. Predel (From Schools)	3,056.19 683.35 235.63
GLASS:	END USE OR DESTINATION FACILITY <small>(Name and Complete Address)</small>	TONS <small>(to each facility)</small>
Glass Containers <small>(all colors)</small>		
Glass Non - Containers <small>(e.g. vases, windows)</small>		
Industrial Scrap Glass		
Other Glass (specify):		

ANNUAL REPORT FORM – PLANNING UNIT RECYCLING REPORT

(continued)

(Use additional sheets if necessary)

RECYCLABLES RECOVERED		
Do not report recyclables that result from the Returnable Container Act or are part of a Beneficial Use Determination		
METAL:	END USE OR DESTINATION FACILITY <small>(Name and Complete Address)</small>	TONS <small>(to each facility)</small>
Tin / Aluminum Containers		
Aluminum Foil / Trays		
Enameled Appliances / White Goods		
Bulk Metal <small>(from residents)</small>	TA Predel (from Niskayuna Transfer Station) Schdy Cnty RR Ctr. and City Curbs. No Documenta.	44.92
Metal Reported By <small>(automobile dismantlers, junkyards, scrap metal processing)</small>		
Metal Recovery from Municipal Waste Combustor		
Industrial Scrap Metal		
Other Metal (specify):		
PLASTICS:	END USE OR DESTINATION FACILITY <small>(Name and Complete Address)</small>	TONS <small>(to each facility)</small>
PET (Plastic #1)	Colonie Landfill (from Niskayuna Transfer Station)	1.41
HDPE (Plastic #2)		
Other Rigid Plastics <small>(#3 - #7) <small>specify quantity & type of recyclable</small></small>		
Plastic Containers <small>(#1 - #7) <small>not collected & marketed commingled</small></small>		
Plastic Film & Bags		
Industrial Scrap Plastic		
Other Plastic (specify):		

ANNUAL REPORT FORM – PLANNING UNIT RECYCLING REPORT

(continued)

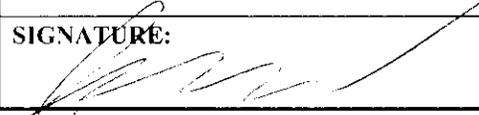
(Use additional sheets if necessary)

RECYCLABLES RECOVERED		
Do not report recyclables that result from the Returnable Container Act or are part of a Beneficial Use Determination		
COMMINGLED:	END USE OR DESTINATION FACILITY <small>(Name and Complete Address)</small>	TONS <small>(to each facility)</small>
Commingled <small>(paper & containers)</small>	Sierra Processing	6,021.77
Commingled <small>(containers only)</small>	Sierra Processing, 865 South Pearl Street, Albany 12205	931.46
ORGANICS:	END USE OR DESTINATION FACILITY <small>(Name and Complete Address)</small>	TONS <small>(to each facility) Do NOT use CUBIC YARDS</small>
Leaves & Grass	Schenectady County Compost Facility, 24 Hetcheltown Road, Glenville, 12302	8,286.4
	Town of Rotterdam Compost Facility, Burdeck Street, Rotterdam, NY 12306	6,000
Brush / Branches / Trees / Stumps	Leaves and Grass above includes this material. A conversion of .2 yards to tons was used to derive the numbers above. Santoro Landfill, Pangburn Rd. Rotterdam	80
Food Scraps <small>(e.g. kitchen scraps, grocery & restaurant food waste)</small>		
Food Processing Waste <small>(e.g. brewery waste, fish, fruit, vegetable & dairy processing waste)</small>		
Biosolids	Town of Colonie Landfill	126.73
	Senica Meadows Landfill	76
Other Organics (specify):		
MISCELLANEOUS:	END USE OR DESTINATION FACILITY <small>(Name and Complete Address)</small>	TONS <small>(to each facility)</small>
Textiles		
Electronics	RCR&R, 7318 Victor Mendon Rd. Victor, New York, USA, 14564	6.92
	from County Residential Recycling Center	
Tires	County Residential Recycling Center, 24 Hetcheltown Rd.	6.37
Wood Pallets		
Other Miscellaneous <small>(specify):</small>		

ANNUAL REPORT FORM – PLANNING UNIT RECYCLING REPORT

(continued)

(Use additional sheets if necessary)

RECYCLABLES RECOVERED		
Do not report recyclables that result from the Returnable Container Act or are part of a Beneficial Use Determination		
C & D DEBRIS:	END USE OR DESTINATION FACILITY <small>(Name and Complete Address)</small>	TONS <small>(to each facility)</small>
Asphalt / Pavement		
Brick		
Concrete	Jackson Demolition, 2754 Aqueduct Road, Niskayuna NY 12309 Santoro C&D Landfill	800 500
Drywall		
Other Masonry Materials		
Petroleum Contaminated Soil (PCS)		
Rock		
Soil (Clean)		
Roofing Shingles		
Wood		
Land Clearing Debris <small>(including brush, branches, trees, & stumps NOT included in Organics Section)</small>		
Other (specify):		
NAME: Jeffrey S. Edwards		DATE: 5/17/2012
SIGNATURE: 		TITLE & ORGANIZATION: Planner I, Schenectady County Dept. of Economic Development and Planning

Send Completed Forms to the Addresses Listed in Appendix A

ANNUAL REPORT FORM – PLANNING UNIT RECYCLING REPORT

(continued)

APPENDIX A – NYS DEC REGIONAL AND CENTRAL OFFICE ADDRESSES

PLEASE SEND A COPY OF THIS REPORT TO YOUR REGIONAL OFFICE AND A COPY TO THE DEC CENTRAL OFFICE

REGIONAL OFFICE ADDRESSES	COUNTY	TELEPHONE	CENTRAL OFFICE ADDRESS
REGIONAL MATERIALS MANAGEMENT ENGINEER NYS DEC – REGION 1 50 CIRCLE ROAD STONY BROOK, NY 11790-3409	Nassau, Suffolk	(631) 444-0375	<p align="center"> NYS Department of Environmental Conservation Division of Materials Management Attn: Bureau of Permitting & Planning 625 Broadway, 9th Floor Albany, NY 12233-7253 (518) 402-8678 (518) 402-9041 Fax Email: planning@gw.dec.state.ny.us </p>
REGIONAL MATERIALS MANAGEMENT ENGINEER NYS DEC – REGION 2 1 HUNTERS POINT PLAZA 47-40 21 ST STREET LONG ISLAND CITY, NY 11101-5407	New York City (Bronx, Kings, New York, Queens, Richmond)	(718) 482-4894	
REGIONAL MATERIALS MANAGEMENT ENGINEER NYS DEC – REGION 3 21 SOUTH PUTT CORNERS ROAD NEW PALTZ, NY 12561-1696	Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster, Westchester	(845) 256-3136	
REGIONAL MATERIALS MANAGEMENT ENGINEER NYS DEC – REGION 4 1130 NORTH WESTCOTT ROAD SCHENECTADY, NY 12306-2014	Albany, Columbia, Delaware, Greene, Montgomery, Otsego, Rensselaer, Schenectady, Schoharie	(518) 357-2346	
REGIONAL MATERIALS MANAGEMENT ENGINEER NYS DEC – REGION 5 1115 ROUTE 86, PO BOX 296 RAY BROOK, NY 12977-0296	Clinton, Essex, Franklin, Fulton, Hamilton, Saratoga, Warren, Washington	(518) 897-1241	
REGIONAL MATERIALS MANAGEMENT ENGINEER NYS DEC – REGION 6 317 WASHINGTON STREET WATERTOWN, NY 13601-3787	Herkimer, Jefferson, Lewis, Oneida, St. Lawrence	(315) 785-2513	
REGIONAL MATERIALS MANAGEMENT ENGINEER NYS DEC – REGION 7 615 ERIE BOULEVARD WEST SYRACUSE, NY 13204-2400	Broome, Cayuga, Chenango, Cortland, Madison, Onondaga, Oswego, Tioga, Tompkins	(315) 426-7419	
REGIONAL MATERIALS MANAGEMENT ENGINEER NYS DEC – REGION 8 6274 EAST AVON-LIMA ROAD AVON, NY 14414-9519	Chemung, Genesee, Livingston, Monroe, Ontario, Orleans, Schuyler, Seneca, Steuben, Wayne, Yates	(585) 226-5408	
REGIONAL MATERIALS MANAGEMENT ENGINEER NYS DEC – REGION 9 270 MICHIGAN AVENUE BUFFALO, NY 14203-2999	Allegany, Cattaraugus, Chautauqua, Erie, Niagara, Wyoming	(716) 851-7220	

Appendix A – Facilities included in Report

Schenectady County Compost Facility

Schenectady County Residential and Small Business Recycling Center

Town of Rotterdam Compost Facility

Town of Niskayuna Transfer Station

Allied Waste Transfer Station

Appendix B - Disposal Facilities

MSW Landfilled Facility	Tons	Source	MSW Cumbusted Facility	Tons	Source
Rapp Road Landfill 525 Rapp Rd. Albany	20,912.51	^{1, 9, 10}	Dutchess County RRF 90 Sand Dock Rd, Poughkeepsie	32.73	⁸
Colonie Landfill 1319 Loudon Rd, Colonie	3,453.94	^{2, 10}	Covanta Pitsfield MA	1,104.10	⁸
High Acres Landfill 425 Perinton Parkway, Monroe	45,939.58	³	Wheelbrator Hudson Falls	15,686.59	^{7, 9, 10, 11}
Senica Meadows 1786 Saloman Rd, Waterloo	39,357.58	^{8, 9, 10, 13}			
Landfilled Total	109,663.60		WTE Total	16,823.42	

C&D Disposal

Rapp Road Landfill 525 Rapp Rd. Albany	251.84	¹
Colonie Landfill 1319 Loudon Rd, Colonie	1,226.69	^{2, 12}
High Acres Landfill 425 Perinton Parkway, Monroe	12,157.30	^{4, 8, 11}
Senica Meadows 1786 Saloman Rd, Waterloo	7,291.49	^{8, 12}
C&D total	20,927.32	
Non-Haz Ind. Waste	1.29	²
Bio-Solids	126.73	²
Waste Total	147,542.36	

Source Key

- 1 Rapp Road Landfill Facility Report
- 2 Colonie Landfill Facility Report
- 3 Senica Meadows Landfill Facility Report
- 4 High Falls Landfill Facility Report
- 5 Covanta Poughkeepsie Facility Report
- 6 Conanta Pitsfield Facility Report
- 7 Wheelabrator Hudson Falls Facility Report
- 8 Weaver Street Transfer Station Facility Report
- 9 County Waste TS Clifton Park Facility Report
- 10 County Waste TS Burden Ave. Troy Facility Report
- 11 Waste Management TS Boat St. Albany Facility Report
- 12 Republic Ind. Runway Ave. Transfer Station Latham Facility Report
- 13 Murphy's Waste TS Facility Report

**Appendix III - Schenectady County Household Hazardous Waste
Facility 2011 Annual Report**

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF MATERIALS MANAGEMENT
HOUSEHOLD HAZARDOUS WASTE COLLECTION & STORAGE FACILITY REPORT
FOR CALENDAR YEAR ENDING DECEMBER 31, 20 11



Please read and follow all instructions on the back before completing this report form. Please Type or Print Clearly. Red highlighted fields must be completed.

GENERAL INFORMATION					
1.	Facility Owner Name: County of Schenectady		2.	Contractor Name: CARE Environmental Corporation	
	Street: Schaffer Heights, Suite 303 107 Nott Terrace			Street: 10 Orben Drive	
	City/State/Zip: Schenectady / New York / 12308			City/State/Zip: Landing, New Jersey, 007850	
	Contact: Jeff Edwards	Telephone Number: (518)386-2225 Ext. 224		Contact: Diane Cilenti	Telephone Number: 1-800-494-2273
3.	Dates and Hours of Operation: 8:00AM - Noon	Days Per Year Open: Eight	4.	Facility Permit #: 4-4222-00214/00001	Date of Issue / Expiration: Expiration - 8/5/2012
5.	Total Population of Area Served: 154, 727 (2010 Census)			Facility Location: 24 Hetcheltown Road, Glenville, NY. 12302	
	# of Participants During the Year: 858 Households:			Farmers: NA	CESQGS: 9
CESQGS: = Conditionally exempt small quantity generators					

HOUSEHOLD HAZARDOUS WASTE COLLECTION / DISPOSAL DETAILS							
6.	Antifreeze	495	Gallons	7.	Hazardous Paint	7,270	Gallons
8.	Automotive Batteries	NA	Pounds	9.	Hazardous Household Batteries	NA	Pounds
10.	Pesticides (Solids)	4,800	Pounds	11.	Pesticides (Liquids)	520	Gallons
12.	Mercury Containing Devices	200	Pounds	13.	Bulk Mercury	0	Pounds
14.	Fluorescent Bulbs	865	Pounds	15.	# CRTs		Pounds
16.	# TVs		Pounds	17.	Other Electronics		Pounds
18.	Other HHW (Solids)	8,470	Pounds	19.	Other HHW (Liquids)	1066	Gallons
20.	Miscellaneous Solid Waste (Solids)	32,740	Pounds	21.	Miscellaneous Solid Waste (Liquids)	3665.2	Pounds

NOTE: Attach copies of all manifests or shipping papers to this form for submittal to Regional Office and submit a copy of this form to Central Office.

OTHER INFORMATION / DATA			
22.	Disposal Costs, Including Contractor Fees:	89,485.14	
23.	Other Costs:	\$311.20 for traffic cones	
24.	Publicity and Educational Costs:	\$3,199.40	
25.	Total Cost (22 + 23 + 24):	92,684.54	
26.	Comments: Participation and quantities of material accepted in 2011 was lower than last year due to budget constraints. Electronics were collected by the County at its recycling drop off program and not the HHW program and thus are not included here.		

CERTIFICATION: I hereby affirm under penalty of perjury that information provided on this form and attached statements and exhibits was prepared by me or under my supervision and direction and is true to the best of my knowledge and belief, and that I have the authority as Planner I (title) of Sch'dy County Dept. of Econ. Dev. & Planning (entity) to sign this report form pursuant to 6NYCRR Part 360. I am aware that any false statement made herein is punishable as a Class A misdemeanor pursuant to Section 210.45 of the Penal Law.

PREPARER'S INFORMATION AND SIGNATURE			
Name (Printed / Typed): Jeffrey S. Edwards	Title (Printed / Typed): Planner I	Signature: 	Date: 1/24/2012

Appendix IV - Tables

Table 1 - Residential/commercial property damage in Schenectady County from Hurricane Irene and Tropical Storm Lee

Municipality	Public Infrastructure Damage Irene and Lee	Residential/ Commercial Damage FEMA Estimates
County	\$3,095,753	
City of Schenectady	\$2,951,096	\$1,864,122.00
Village Of Delanson	\$61,119	\$78,536.22
Village of Scotia	\$403,562	\$351,320.93
Town of Duanesburg	\$377,115	\$273,632.98
Town of Glenville	\$191,776	\$54,965.78
Town of Niskayuna	\$240,981	\$37,648.60
Town of Princetown	\$583,581	Not Available
Town of Rotterdam	\$548,585	\$1,810,391.12
	\$8,453,568	\$4,470,617.63

Table 2: Contaminated Sites in Schenectady County

Site Code	Site Name	Program	Site Class	County	City/town	Address	Status	Status Year
C447037	College Park (Former Big N Plaza)	BCP	C	Schenectady	Schenectady	1520 Maxon Road	Actions Complete	2009
C447042	ALCO-Maxon Site - Parcel A	BCP	A	Schenectady	Schenectady	301 Nott Street	Remedial Investigation Work Plans - approved	2011
C447043	ALCO-Maxon Site - Parcel B	BCP	A	Schenectady	Schenectady	301 Nott Street	Remedial Investigation Work Plans - approved	2011
C447044	ALCO-Maxon Site - Parcel C	BCP	A	Schenectady	Schenectady	301 Nott Street	Remedial Investigation Work Plans - approved	2010
B00049	Former Ladd's Gas Station	ERP	A	Schenectady	Schenectady (c)	302 Erie Boulevard	Closed w/ monitoring	2002
B00053	Riverside Technology Park	ERP	C	Schenectady	Schenectady (c)	2205 Technology Drive	Actions Complete	2008
B00167	Gillette House Properties	ERP	C	Schenectady	Schenectady (c)	250 and 252 Union Street	Actions Complete	2006
E447034	714 Broadway	ERP	C	Schenectady	Schenectady	714 Broadway	Actions Complete	2008
E447035	312 Broadway Site	ERP	A	Schenectady	Schenectady	312 Broadway	Investigation completed	2008
E447036	314 Clinton Street Site	ERP	A	Schenectady	Schenectady	314 Clinton Street	Interim measures completed	2008
E447038	1705 Broadway	ERP	A	Schenectady	Schenectady	1705 Broadway	Interim measures	2008

Table 2: Contaminated Sites in Schenectady County								
Site Code	Site Name	Program	Site Class	County	City/town	Address	Status	Status Year
							completed	
447001	Schenectady International	HW	2	Schenectady	Rotterdam Junction	Route 5S	Interim measures completed	2003
447004	G.E. Main Plant	HW	2	Schenectady	SCHENECTADY	1 RIVER ROAD	Interim measures completed, Final remedial design completed	2009
447005	G.E. Riverview Plant (Von Roll)	HW	2	Schenectady	Rotterdam	1 Campbell Road	Phase One Assessment complete	
447006	Campbell Plastics	HW	C	Schenectady	Rotterdam	Campbell Road	Actions Complete	1999
447007	Schenectady International - 10th St Plant	HW	2	Schenectady	Schenectady	10th Street	Implementing final remediation plan	2010
447013	G.E. Research & Development	HW	4	Schenectady	NISKAYUNA	RIVER ROAD	Closed w/ monitoring	1981
447015	Turnbull Road	HW	C	Schenectady	Duanesburg	Turnbull Road	Actions Complete	2004
447016	Lyons Ventures, Incorporated	HW	C	Schenectady	Schenectady	34 Freemans Bridge Road	Actions Complete	2008
447018	United Plating	HW	2	Schenectady	Schenectady	1776 Foster Avenue	Actions Complete	2009
447021	Pedone Landfill	HW	3	Schenectady	Glenville	Route 5 and Route 103	Actions Complete	1989

Table 2: Contaminated Sites in Schenectady County

Site Code	Site Name	Program	Site Class	County	City/town	Address	Status	Status Year
447022	Scotia Air National Guard	HW	3	Schenectady	Glenville	Air National Guard Road	Investigations Complete w/ proposed remedial action plan	2010
447023	Defense National Stockpile Center Scotia Depot	HW	A	Schenectady	Glenville	NYS Route 5	Remedial Action Plan Prepared	2010
447024	Don's Laundry	HW	4	Schenectady	Rotterdam	1410 Curry Road	(See voluntary cleanup below)	
447025	NM - Seneca St. - Schenectady MGP	HW	C	Schenectady	Schenectady	308 Seneca St	No Further Action	2007
447026	NM - Broadway - Schenectady MGP	HW	A	Schenectady	Schenectady	790 Broadway St	RAP in Design	2009
447027	Shoporama Shopping Center	HW	C	Schenectady	Rotterdam	1300 Altamont Avenue	(See voluntary cleanup below)	
447028	34 Freeman's Bridge Road	HW	2	Schenectady	Scotia	34 Freeman's Bridge Road	Actions Complete	2008
447030	Dambrose Cleaners	HW	4	Schenectady	Schenectady	1517 VanVranken Avenue	Periodic monitoring + Environmental Easement	2012
447032	Former Kenwood Cleaners	HW	2	Schenectady	Schenectady	445 Duane Avenue	Remedial Action Plan in design	2010
447039	Former Kenco Chemical Company, Inc.	HW	2	Schenectady	Glenville	107 Freemans Bridge Road	Interim measures and Site investigation initiated	2009

Table 2: Contaminated Sites in Schenectady County								
Site Code	Site Name	Program	Site Class	County	City/town	Address	Status	Status Year
447040	Former Marlou Formal Wear	HW	2	Schenectady	Schenectady	1108 State Street	Site Characterization initiated	2011
V00011	Shoporama	VCP	C	Schenectady	Rotterdam	1300 Altamont Avenue	Actions Complete	1998
V00063	Don's Laundry	VCP	C	Schenectady	Rotterdam	1410 Curry Road	Actions Complete	2001
V00408	Kaiser Permanente Schenectady Health Cen	VCP	C	Schenectady	Schenectady	530 Liberty Street	Actions Complete	2001
V00474	NM - Clinton Ave - Schenectady MGP	VCP	A	Schenectady	Schenectady	Clinton Street	Interim measures completed	2008

Table 3 TRI Reporting For Schenectady County - Total Releases By Chemical Pounds in 2010

Chemical	On-site Fugitive Air	On-site Point Source Air	On-site Water Discharges	Surface Discharges	On-site Other Land Disposal	Total On-site Disposal or Other Releases	Total Off-site Disposal or Other Releases
1,2,4-TRIMETHYLBENZENE	0.9	1.8	0		0	2.7	0
4,4'-ISOPROPYLIDENEDIPHENOL	5	5	5		0	15	0
BENZO(G,H,I)PERYLENE	0.013	0.001	0		0.101	0.115	0
CERTAIN GLYCOL ETHERS	0	49	19		0	68	0
CHROMIUM	5	0	0		0	5	1005
CRESOL (MIXED ISOMERS)	0	81	0		0	81	0
DICYCLOPENTADIENE	0	0	0		0	0	0
ETHYLBENZENE	1452	1671	1		0	3124	236
ETHYLENE GLYCOL	0.04	0.08	0		0	0.12	0
FORMALDEHYDE	2314	446	423		0	3183	579
M-CRESOL	0	9	0		0	9	0
MALEIC ANHYDRIDE	0.8	1.4	0		0	2.2	0
METHANOL	5396	238	592		0	6226	46
METHYL ISOBUTYL KETONE	0	0	3		0	3	0
N-BUTYL ALCOHOL	0	1	1		0	2	0
NICKEL	5	0	0		0	5	1005
O-CRESOL	0	246	0		0	246	0
P-CRESOL	0	6	0		0	6	0
PHENOL	2752	23794	7		0	26553	9949
POLYCYCLIC AROMATIC COMPOUNDS	0.333	0.121	0		15	15.454	0
STYRENE	32	324	0		0	356	0
TOLUENE	2533	4959	1.08		0	7493.08	0
XYLENE (MIXED ISOMERS)	4036	9403	1		0	13440	961
ZINC COMPOUNDS	250	250	35		0	535	1731
Total	18782.1	41485.4	1088.1		15.1	61370.7	15512.0

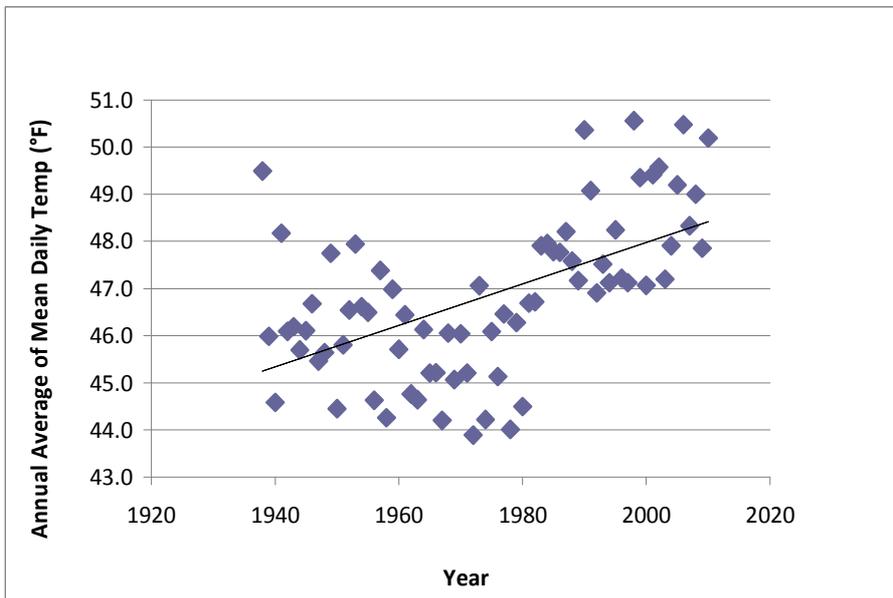
Table 4 - Chemical Releases by Facility for 2010

Facility	Chemical	Fugitive Air Emissions	Point Source Air Emissions	Surface Water Discharges	Other Land Disposal	Total On-site Disposal or Other Releases	Total Off-site Disposal or Other Releases
GE CO.1 RIVER RD BLDG 273-1029, SCHENECTADY NEW YORK 12345 (SCHENECTADY)	Facility Totals:	10	0	0	0	10	2,010.00
	CHROMIUM	5	0	0	0	5	1,005.00
	NICKEL	5	0	0	0	5	1,005.00
GE GLOBAL RESEARCH.1 RESEARCH CIR K1/2C7, NISKAYUNA NEW YORK 12309 (SCHENECTADY)	Facility Totals:	0.033	0.081	0	15.101	15.215	0
	BENZO(G,H,I) PERYLENE	0.013	0.001	0	0.101	0.115	0
	POLYCYCLIC AROMATIC COMPOUNDS	0.02	0.08	0	15	15.1	0
KING ROAD MATERIALS CORDELL ROAD FACILITY.145 CORDELL RD, SCHENECTADY NEW YORK 12303 (SCHENECTADY)	Facility Totals:	0.313	0.041	0	0	0.354	0
	POLYCYCLIC AROMATIC COMPOUNDS	0.313	0.041	0	0	0.354	0
SI GROUP INC.1000 MAIN ST, ROTTERDAM JUNCTION NEW YORK 12150 (SCHENECTADY)	Facility Totals:	15,502.0 0	35,414.00	1,088.00	0	52,004.0 0	13,502.00
	4,4'- ISOPROPYLID ENEDIPHENO L	5	5	5	0	15	0
	CERTAIN GLYCOL ETHERS	0	49	19	0	68	0
	CRESOL (MIXED	0	81	0	0	81	0

	ISOMERS)						
	ETHYLBENZENE	1,336.00	1,455.00	1	0	2,792.00	236
	FORMALDEHYDE	2,314.00	446	423	0	3,183.00	579
	M-CRESOL	0	9	0	0	9	0
	METHANOL	5,396.00	238	592	0	6,226.00	46
	METHYL ISOBUTYL KETONE	0	0	3	0	3	0
	N-BUTYL ALCOHOL	0	1	1	0	2	0
	O-CRESOL	0	246	0	0	246	0
	P-CRESOL	0	6	0	0	6	0
	PHENOL	2,752.00	23,794.00	7	0	26,553.00	9,949.00
	STYRENE	0	265	0	0	265	0
	TOLUENE	0	255	1	0	256	0
	XYLENE (MIXED ISOMERS)	3,449.00	8,314.00	1	0	11,764.00	961
	ZINC COMPOUNDS	250	250	35	0	535	1,731.00
VON ROLL USA INC.200 VON ROLL DR, SCHENECTADY NEW YORK 12306 (SCHENECTADY)	Facility Totals:	3,269.74	6,071.28	0.08	0	9,341.10	0
	1,2,4-TRIMETHYLBENZENE	0.9	1.8	0	0	2.7	0
	DICYCLOPENTADIENE	0	0	0	0	0	0
	ETHYLBENZENE	116	216	0	0	332	0
	ETHYLENE GLYCOL	0.04	0.08	0	0	0.12	0
	MALEIC ANHYDRIDE	0.8	1.4	0	0	2.2	0
	STYRENE	32	59	0	0	91	0
	TOLUENE	2,533.00	4,704.00	0.08	0	7,237.08	0

Appendix V -Figures

Figure 4 - Historical View of Annual Average of Mean Daily Dry Bulb Temperature for the Region



Source: Local Climatological Data from the NOAA station at the Albany, NY International Airport.

Figure 5 - Wellfields relative to sand and gravel mining operations

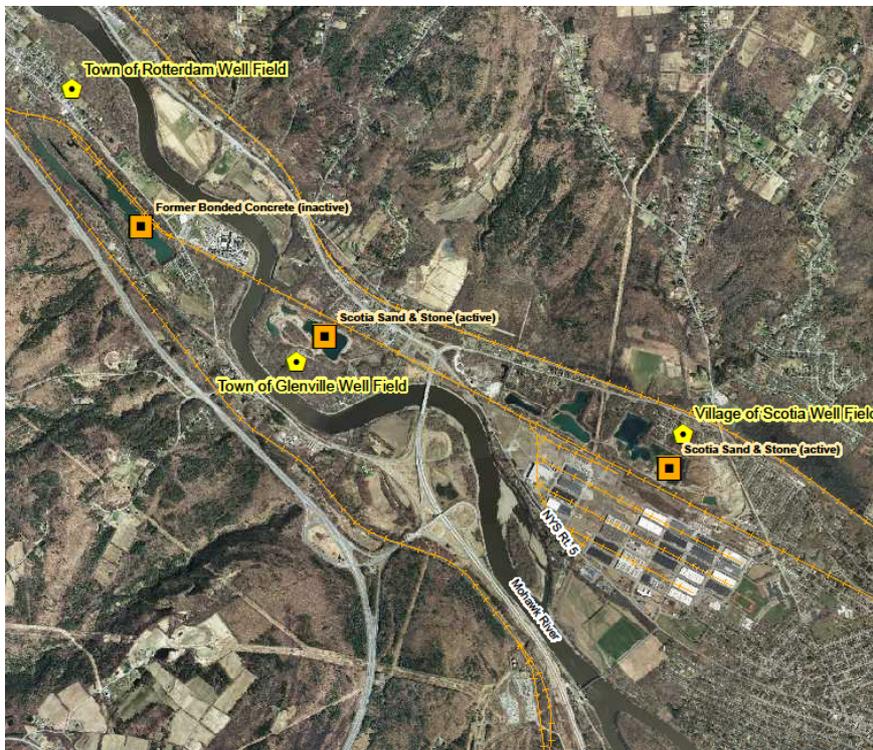


Figure 6 - Scotia Naval Depot and Aquifer Protection Zones

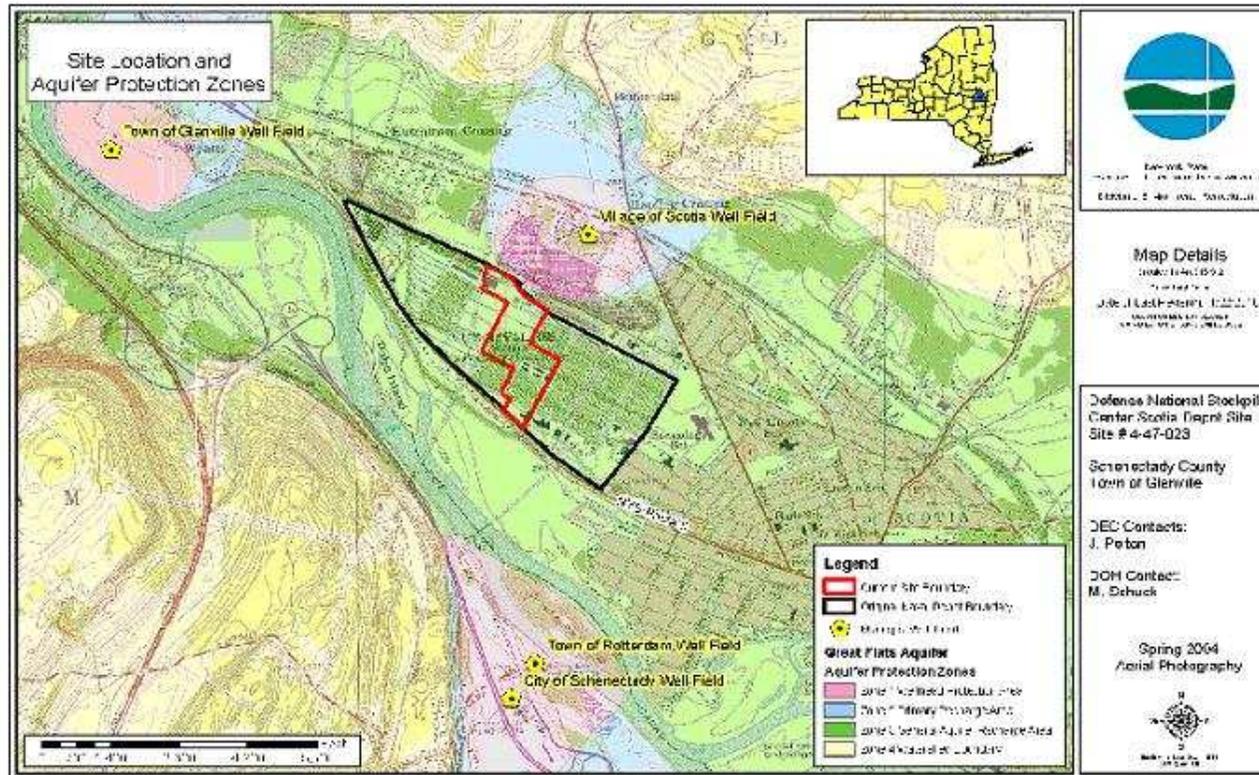


Figure 7 - Scotia Naval Depot proposed remedial actions and treatment zone

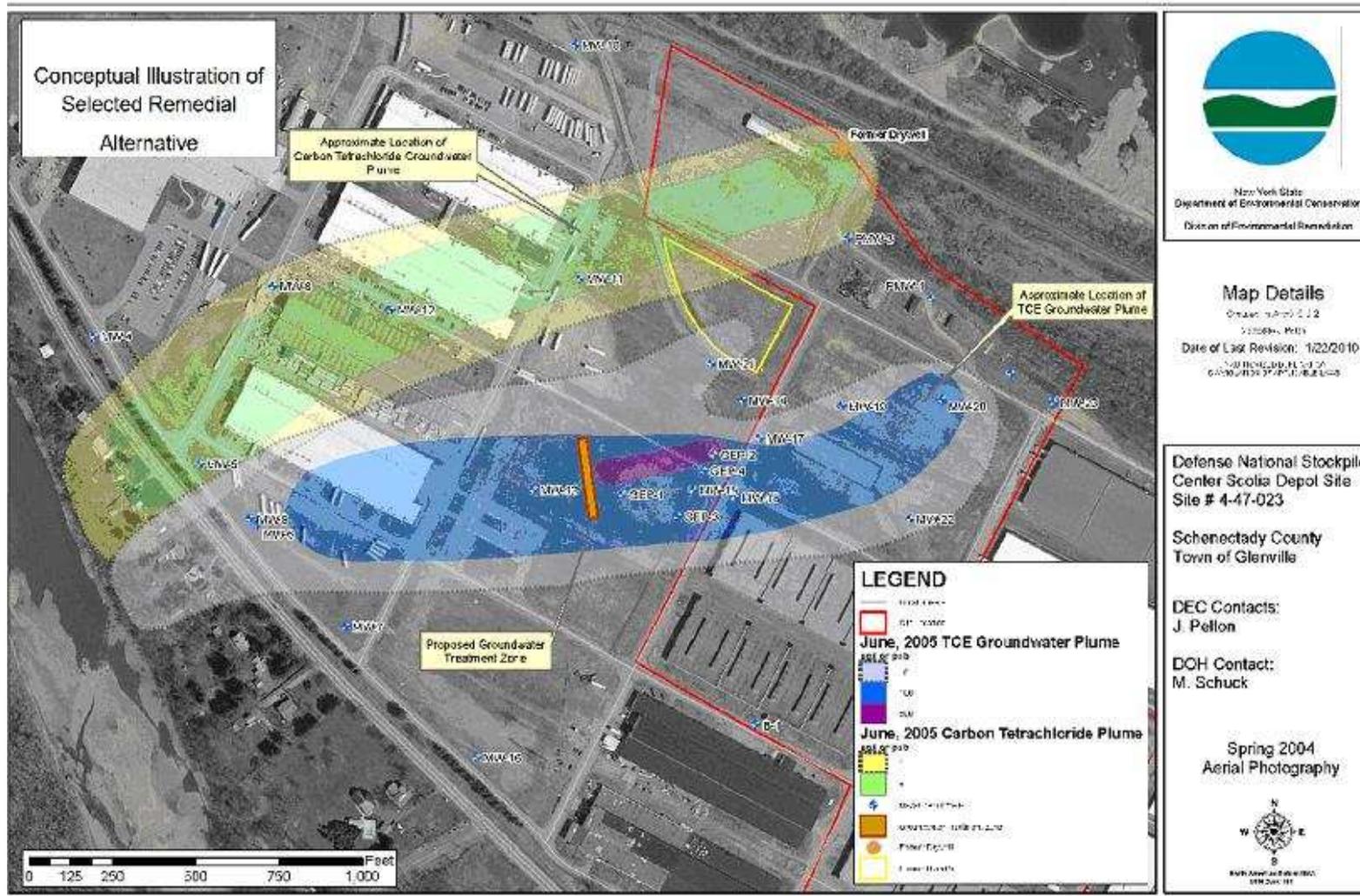


Figure 8 - TRI Total On-site Releases in Schenectady County from 1988 through 2009

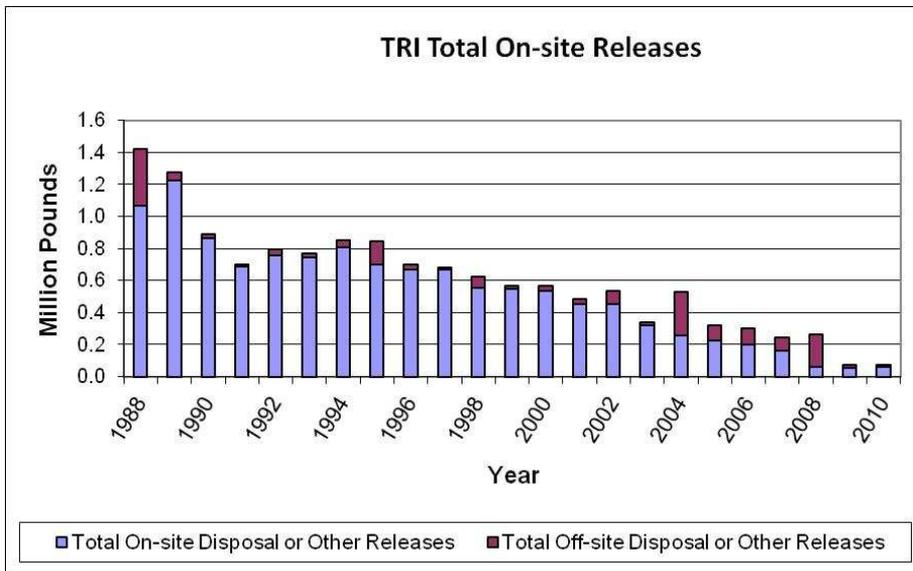


Figure 9 – TRI On-Site Water Discharges in Schenectady County 1998-2010

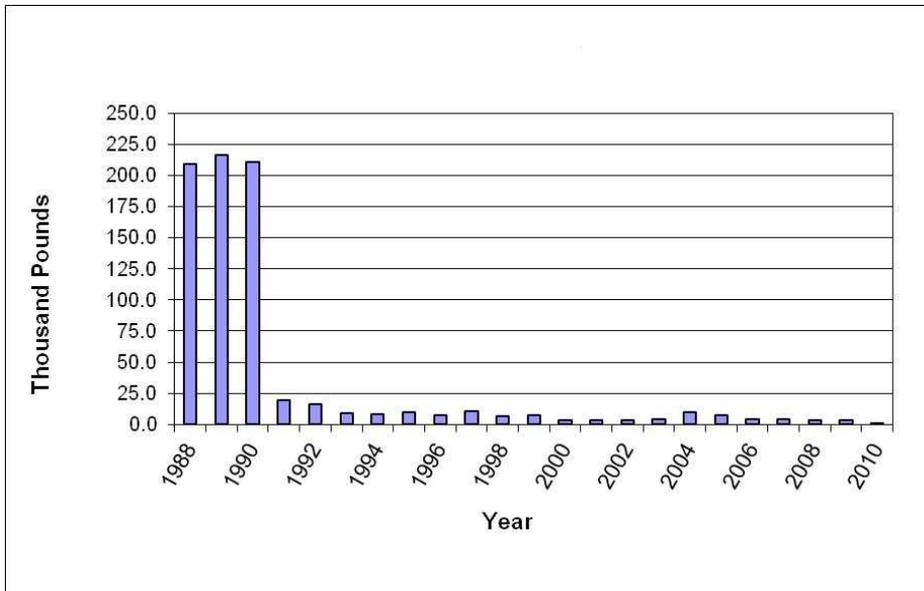


Figure 10 – TRI Onsite Air Emissions in Schenectady County from 1988 through 2010

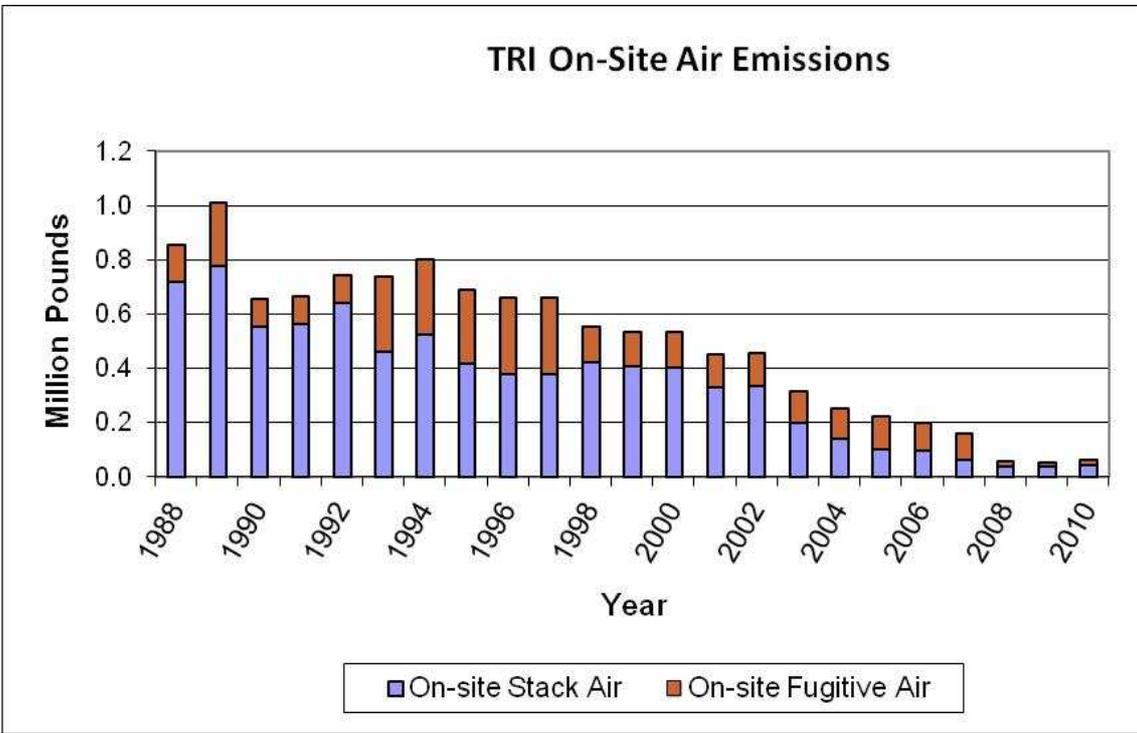


Figure 11 - Distribution of TRI releases in Schenectady County in 1990

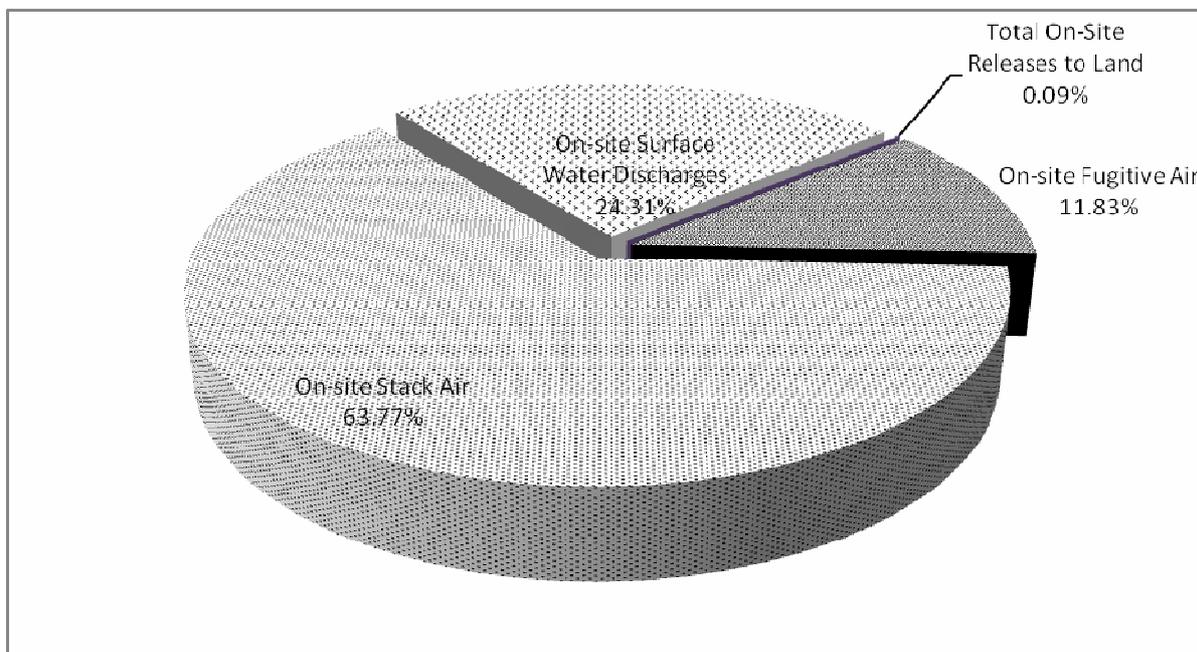


Figure 12 - Distribution of TRI releases in Schenectady County in 2010

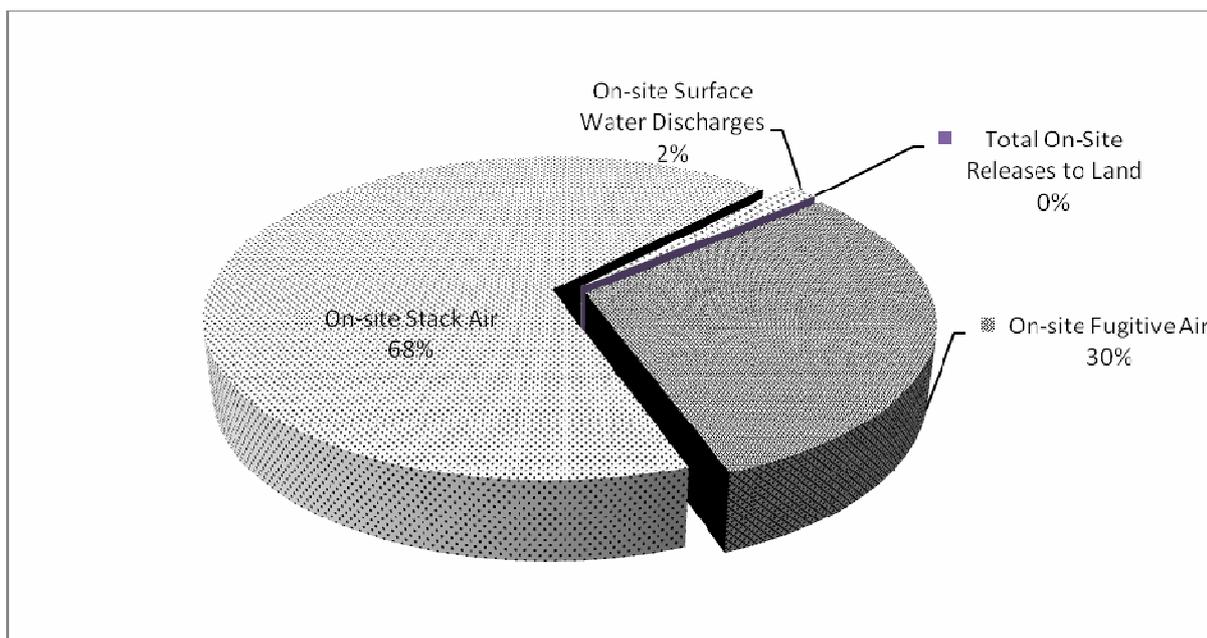
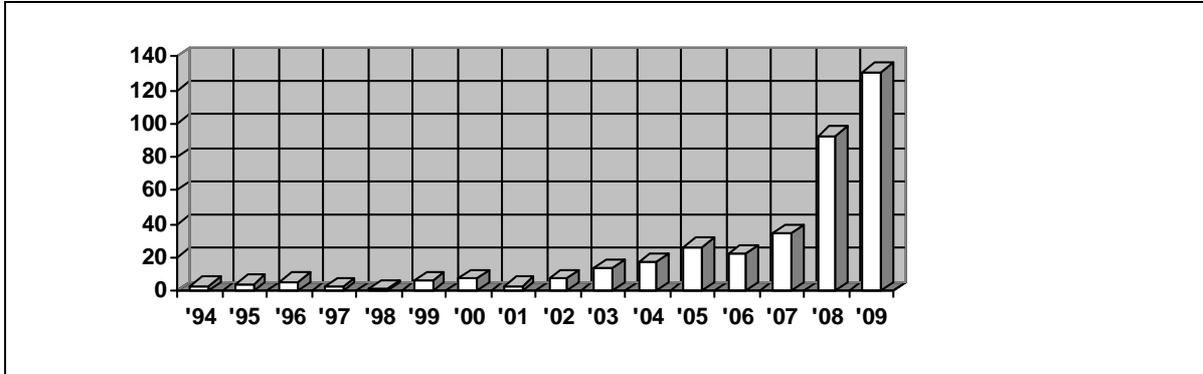


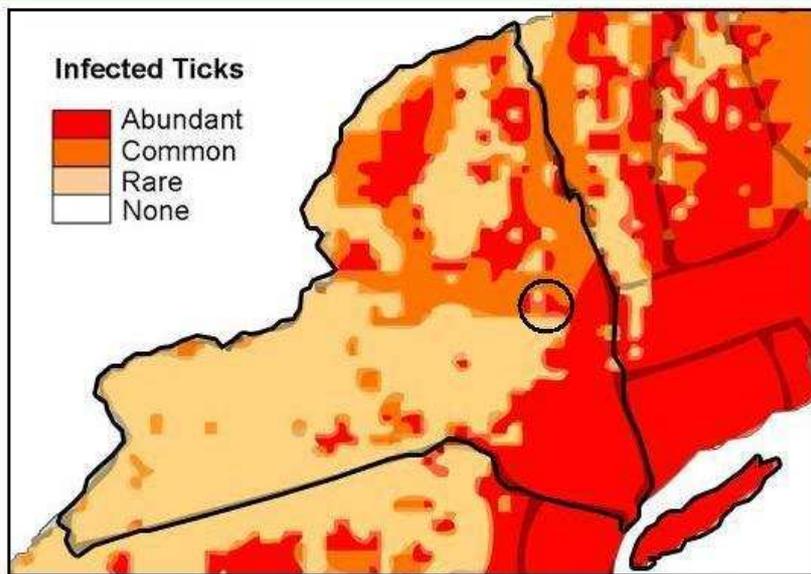
Figure 13 - Lyme Disease Cases in Schenectady County, 1994 - 2009



Data Source: 1994-2009 figures are from the NYS Department of Health, County Health Indicator Profile, Communicable Disease Annual Reports.

Figure 14 – Map of Lyme Disease Risk in New York State, 2010

Lyme Disease Risk in New York



Circle includes Schenectady County and surrounding areas.

Appendix VI References

¹ [Environment Magazine - Psychology, Climate Change & Sustainable Behavior](#) (Accessed June 2012)

² [Environment Magazine - The Short List: The Most Effective Actions U.S. Households Can Take to Curb Climate Change](#) (Accessed June 2012)

³ Bicycle Commuting - Urban Design and Planning (UrDP) - Subject and Class Guides at University of Washington Libraries (Accessed June 2012)

⁴ Source: Schenectady County Climate Action Plan, Written for Schenectady County by VHB, Engineering, Surveying and Landscape Architecture, P.C. and Subcontractors, June 2012.

⁵ (http://www7.ncdc.noaa.gov/IPS/lcd/lcd.html?_page=1&state=NY&stationID=14735&_target2=Next+%3E)

⁶ “State of the Environment of Schenectady County, Annual Update,” July 2011, Schenectady County Environmental Advisory Council

⁷ Sources: Jim Kalohn (County Economic Development and Planning), Dave Mosher (Soil and Water Conservation District), and Chris Logue (Cornell Cooperative Extension), and Alexander J. Smith (NYS Department of Environmental Conservation)

⁸ “A Post Hurricane Irene and Tropical Storm Lee Bio-assessment of the Schoharie Creek in Burtonsville NY,” Schoharie River Center Environmental Study Team. Results presented at the March 16, 2012, Symposium at Union College by John McKeeby

⁹ (Galli, 1991).

¹⁰ (Schueler, 1994).

¹¹ Sources: NY DEC website, NY State Stormwater Design Manual, Jim Kalohn (Schenectady County Department of Economic Development and Planning), Michael Burns (Town of Glenville Planning Department), and 2010 State of the Environment Report

¹² P.L. 96-510, [42 U.S.C. §§ 9601–9675](#), December 11, 1980

¹³ *Code of Federal Regulations*, [40 C.F.R. 300.415](#)

¹⁴ "[Superfund: 30th Anniversary Report: 30 Years of Protecting Communities and the Environment](#)," USEPA. (Accessed June 2011)

¹⁵ John Strang, NYS Department of Environmental Conservation, Region 4, May 7, 2012

¹⁶ Some industrial waste was likely not captured by this analysis as was not handled by regional facilities.

¹⁷ Diversion includes waste prevention and reuse. However, no attempt was made to measure these components of diversion in this analysis.

¹⁸ This is determined by dividing the total amount of MSW generated in the County by the population of the County. So that all the waste, including that generated by business is included.

¹⁹ 2010 Census Shows Continued Growth in Schenectady County.
www.schenectadycounty.com/Print.aspx (Accessed May 2012)

²⁰ The Costs of Sprawl Revisited: Literature Review. Transit Cooperative Research Project.
http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_39-b.pdf, p.6, accessed June 2012

²¹ Ibid. pp.3,4

²² Pendall, Rolf. Sprawl Without Growth: The Upstate Paradox.
<http://www.brookings.edu/research/reports/2003/10/demographics-pendall> accessed May 2012

²³ 2010 Census Shows Continued Growth in Schenectady County.
www.schenectadycounty.com/Print.aspx

²⁴ Duanesburg Comprehensive Plan. Appendix A

²⁵ Duanesburg Comprehensive Plan. p.29

²⁶ Duanesburg Comprehensive Plan. p.19

²⁷ Duanesburg Comprehensive Plan. p.26

²⁸ Duaneburg Comprehensive Plan, p. 40

²⁹ Town of Glenville Draft Open Space Plan; Executive Summary. p.2

³⁰ Niskayuna 1971 Comprehensive Plan. p. 7

³¹ Princetown Draft Comprehensive Plan: version 4.3. p. 47

³² Ibid. p. 49

³³ Ibid. p. 53

³⁴ 2010 Census Shows Continued Growth in Schenectady County.
www.schenectadycounty.com/Print.aspx

³⁵ Town of Rotterdam Comprehensive Plan. p.7

³⁶ Ibid. p. 8

³⁷ Ibid. p.16

³⁸ Ibid. p.16

³⁹ Vision 2020 Plan; www.rotterdamny.org

⁴⁰ Burdeck Street Corridor Update, 2001. www.cdcmpo.org/linkage/burdeck.htm

⁴¹ NY7/NY146 Land Use and Transportation Study. Capital District Transportation Committee, May 2008. www.cdcmpo.org/linkage/exit25

⁴² NYS Thruway Exit 26 & 890 Land Use and Transportation Study. Capital District Transportation Committee, May 2008. www.cdcmpo.org/linkage/exit26

⁴³ Town of Rotterdam, Five Corners Transportation and Land Use Linkage Study. rotterdamny.org

⁴⁴ Brownfield Opportunity Study. rotterdamny.org

⁴⁵ Ibid. p. 9

⁴⁶ The Costs of Sprawl Revisited, http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_39-b.pdf, p. 6

⁴⁷ NYS Open Space Conservation Plan, Draft 2009. pp. 75-77

⁴⁸ NYS Department of Health, <http://www.health.state.ny.us/>

⁴⁹ Centers for Disease Control and Prevention, U.S. Department of Health and Human Services, <http://www.cdc.gov>

⁵⁰ (http://www.caryinstitute.org/press_2012-03-15.html)

⁵¹ (<http://www.aldf.com/lyme.shtml>)

⁵² Schenectady County Department of Public Health, <http://www.schenectadycounty.com/FullStory.aspx?m=39&amid=808>

⁵³ NYS Department of Health, <http://www.health.state.ny.us/>

⁵⁴ (http://www.cdc.gov/ncidod/dvbid/westnile/USGS_frame.html).

⁵⁵ (<http://www.schenectadycounty.com/FullStory.aspx?m=350&amid=1016>).

⁵⁶ (<http://www.schenectadycounty.com/FullStory.aspx?m=349&amid=1015>)

⁵⁷ <http://www.dec.ny.gov/animals/7181.html>

⁵⁸ <http://www.dec.ny.gov/animals/30393.html>

⁵⁹ <http://www.dec.ny.gov//animals>

⁶⁰ <http://www.dec.ny.gov/natureexplorer/app/location/county/results.3>

⁶¹ (<http://www.consecol.org/Journal/vol5/iss1/index.html>)

⁶² <http://www.nybiodiversity.org/nysbp.html>

⁶³ <http://www.dec.ny.gov/animals/39809.html>