

Potential Landfill Leachate Runoff Into Seneca Lake

Abstract:

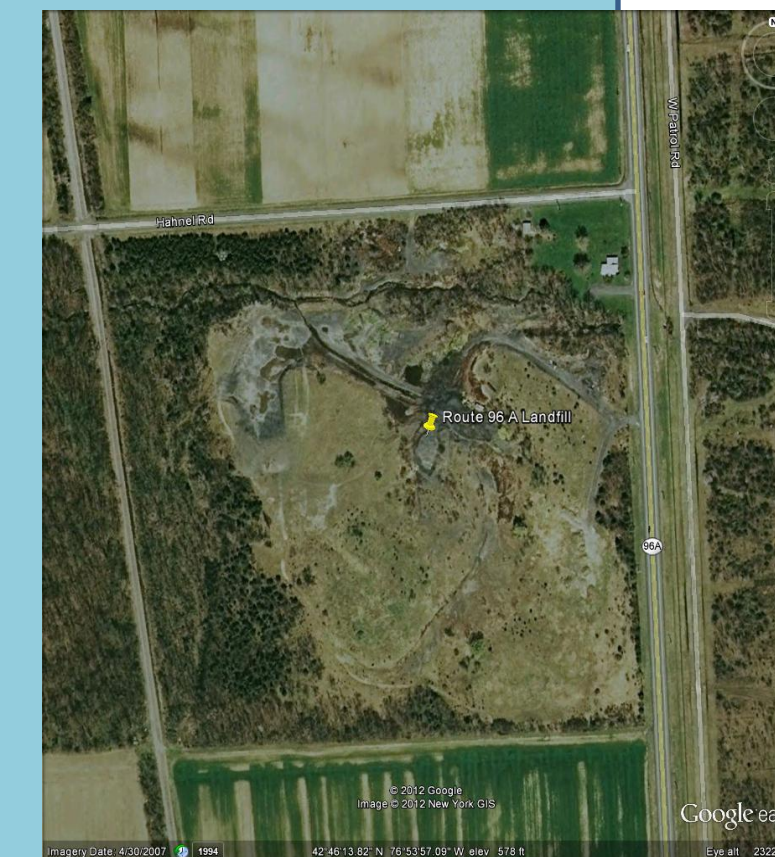
Seneca Lake provides drinking water for about 85,000 people, it is also the location for recreational activities (e.g. fishing). Currently Seneca Lake's water quality is slowly deteriorating which causes a problem for the communities living on the watershed. Groundwater contamination on the watershed through landfill leachate causes a potential threat to Seneca lake, i.e., landfills that were built before the New York State Department of Environmental Conservation began their mandatory liner regulations might cause pollution to Seneca Lake. I created two maps to help visualize the proximity of the five landfills to Seneca Lake. The Genesee/Finger Lakes regional planning council provide a table with information on the inactive landfills around Seneca Lake, problems associated with the landfills are also stated on the table. A number of inactive landfills on the watershed reported leachate problems shortly after closing and many caused surface and groundwater contamination. In order to determine if landfill leachate is polluting Seneca Lake, and also help improve water quality, water monitoring is required.

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Landfills on the watershed:

For this project I chose to focus on five inactive landfills on the Seneca Lake watershed, from the five landfills in my project three of them were classified as hazardous waste sites, those landfills are located on Catherine creek, Geneva and long point sub-watershed. Hazardous waste sites cause environmental problems, acid rain and water pollution are some of these problems which can alter aquatic life. The inactive landfills on the Seneca Lake watershed were not built in order to prevent leachate percolation because leachate problems were not premeditated, many of the landfills around the Seneca Lake watershed did in fact suffer leachate problems shortly after closing. Once the NYSDEC began landfill regulations it became mandatory for new and expanding landfills to have a plastic or rubber liner that would help prevent the percolation of leachate into the soil and eventually into groundwater. Before the DEC began implementing the new regulations on landfills Seneca Lake had 20 active landfills around the watershed, currently there are only two active landfills around the watershed.



Alternatives and Remediation:

The Seneca Lake watershed once had many unlined landfills, which were shut down because of leachate issue. There are a few alternatives to landfills, the main three waste disposal alternatives are composting, incineration and the three R's, which are reuse, reduce and recycle. Currently there is a lack of data from groundwater monitoring, in order to investigate the potential pollution of Seneca Lake caused by landfill leachate groundwater needs to be monitored. Monitoring both groundwater and surface water is a great way to begin pollution investigations, with more data on this issue we can determine a form of remediation.

Conclusion:

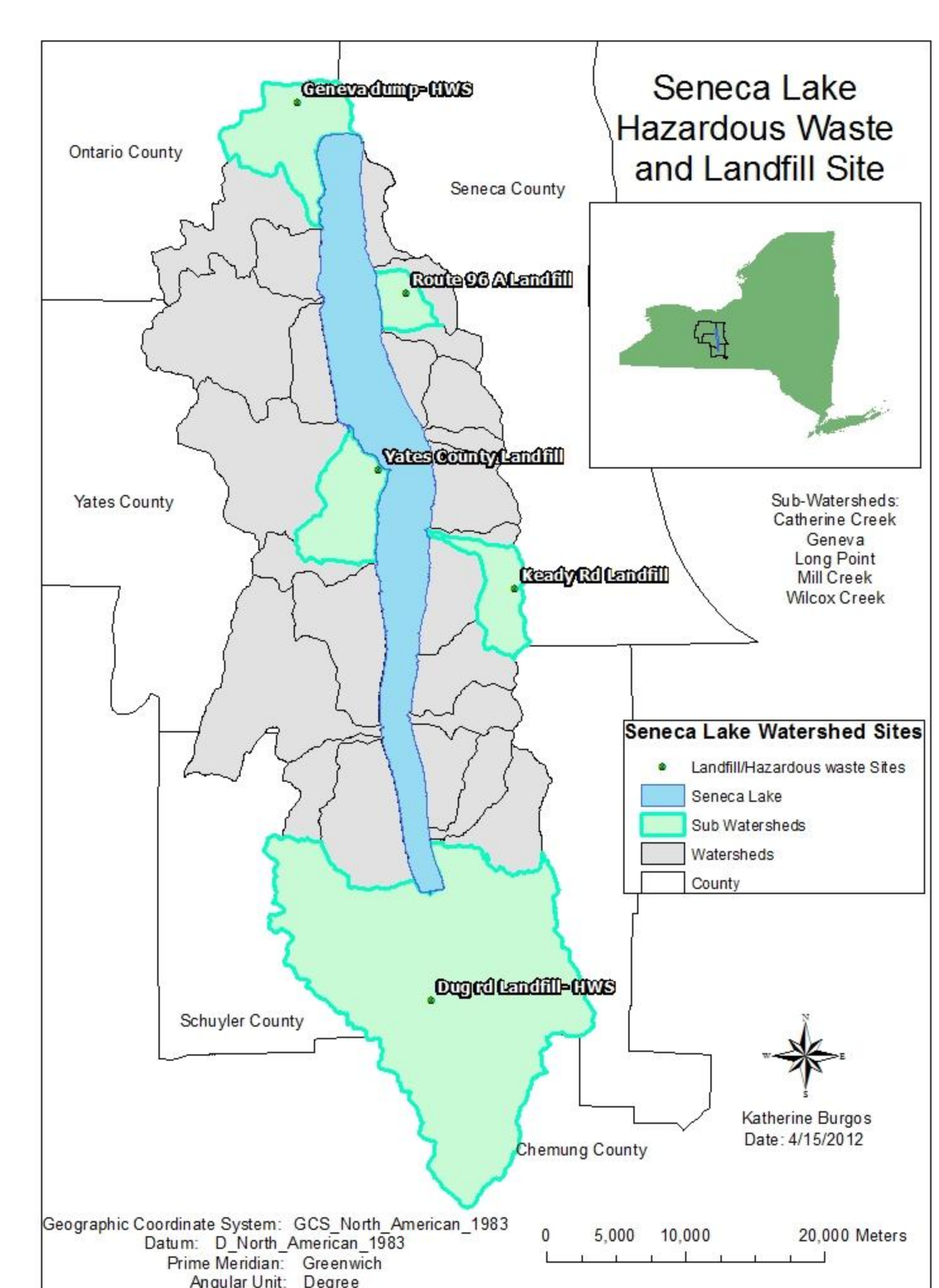
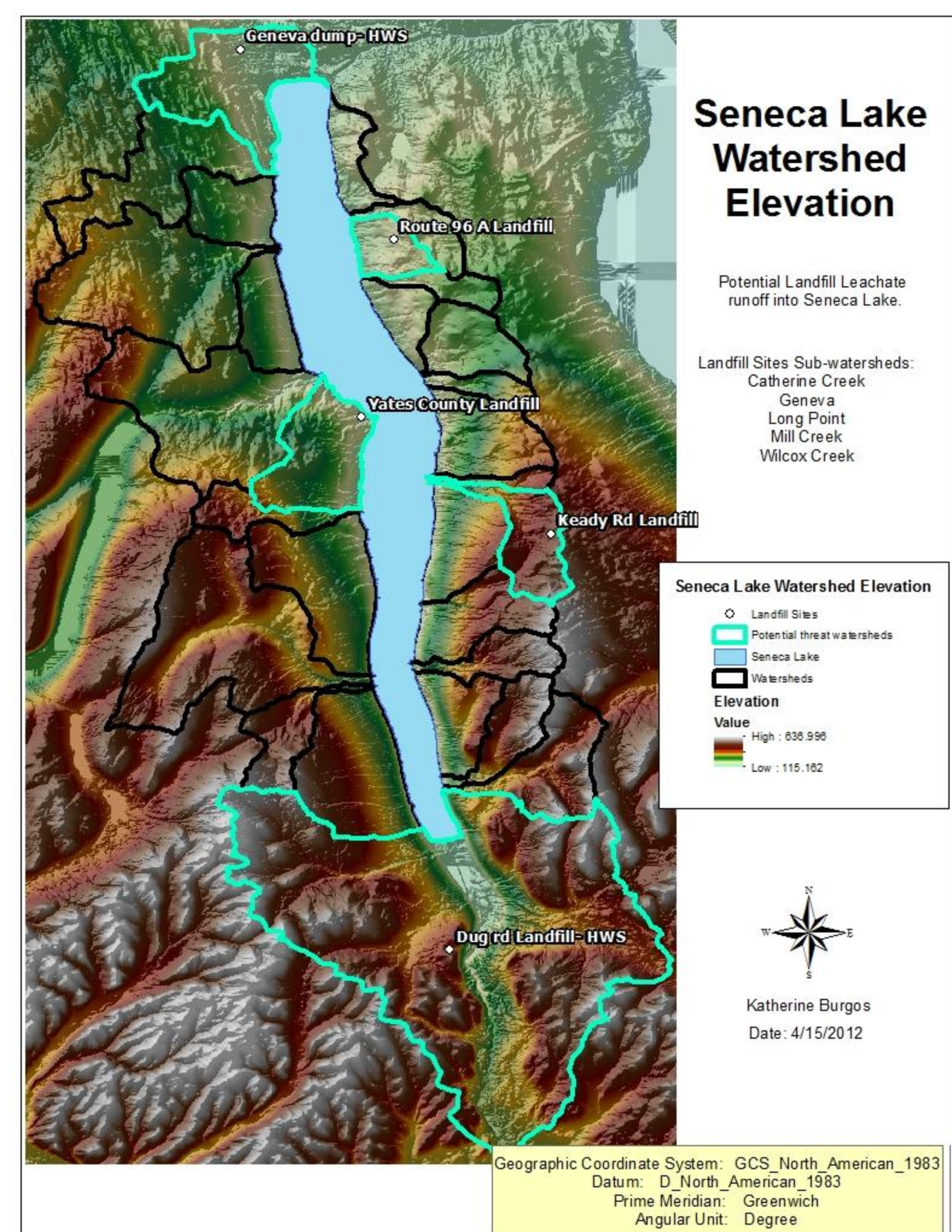
With the help of the NYSDEC regulations leachate prevention and treatment remediate the production and release of new leachate, the problem of past leachate in the groundwater system may still be a major issue. Landfill leachate poses a threat to water quality and also human health, since Seneca Lake is important for both drinking water and fishing. With a number of abandoned landfills on the watershed, for which many classify as hazardous waste sites, pollution potential from leachate runoff is very high.

References:

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Introduction:

Landfills and dumps are the oldest forms of waste disposal. Unfortunately there are a lot of problems associated with the use of landfills and dumps. Water contamination due to liquid waste runoff causes a number of environmental problems and health issues, acid rain is associated with landfill runoff and toxic waste. Landfills were a big problem before 1980 before regulations were implied, there is a possibility that the same landfill runoff and toxic waste that was released into the groundwater system many years ago may still be accountable for current groundwater contamination. It is important to check the groundwater on the Seneca Lake watershed for possible toxic waste and landfill waste because reports from the inactive landfills have linked landfills to groundwater contamination, which can affect Seneca Lake's water quality. This is an issue because Seneca Lake is used for drinking water by many towns on the watershed.

Problem:

For many years waste disposal was never thought to be an issue, it was normal to dispose of waste in wetlands, streams and lakes. It was not until the 1970's when the New York State Department of Environmental Conservation (NYSDEC) began regulating the dumps on the Seneca Lake watershed. Operating the landfills became very expensive after the new regulations implemented by the NYSDEC, by the 1980's many landfills had to be closed down because they were unable to compete with the new regulations. New York State was forced to evaluate each site and give it a classification code depending on how poorly it was closed. Many of the closed landfills were believed to have had hazardous waste dumped before the NYSDEC began the regulations. Sites that leak are a potential threat to human health and are required to go through the landfill site ranking process. There are three major categories in the site raking process, first is contaminant generation, then contaminant transport and finally receiving waterbody.

