

Genesee-Finger Lakes Regional Impervious Surface Scan

Final Report

June 2011

Prepared by the Genesee/Finger Lakes Regional Planning Council
For the New York State Department of Environmental Conservation

American Recovery and Reinvestment Act (ARRA) Clean Water Act Section 604(b)



Final Report

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Project/Organization Information

Project Information

Project Name	Genesee-Finger Lakes Regional Impervious Surface Scan		
Primary Project Type	Phase II Stormwater for Municipal Separate Storm Sewer Systems (MS4s) and Construction Planning		
State Contract Number	C304270		
Project Start Date	Feb 1, 2010	Project End Date	Jun 30, 2011
ARRA Award Amount	\$13,887.00	Total Project Cost	\$13,887.00

Organization Information

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Introduction

Project Introduction & Description

The primary purpose of the project should be described, along with a general overview of major project goals and outcomes. Affected bodies of water and project locations should also be noted.

The objective of the *Genesee - Finger Lakes Impervious Surface Scan* was to provide greater insight regarding the impacts of impervious cover (IC) on regional aquatic systems by providing a basic screening tool to watershed planners. Percentages of impervious cover (%IC) have been generated at the catchment level in urbanized areas of the Genesee - Finger Lakes region. %IC is mapped and reported in accordance with the standard %IC ranges as described by the Center for Watershed Protection. Information is represented in a series of thematic maps that identify various other geographic attributes and identifiers (political boundaries, watershed boundaries, adjacent waterbodies, etc.).

With the completed catchment-level %IC GIS geo-database in-hand, an intermediate-level GIS user can begin to investigate the implications of impervious cover as it relates to water quality in the Genesee - Finger Lakes region with relative ease. It provides informed users with a useful screening tool that can be applied in a rapid watershed assessment process to prioritize geographic focus areas within a watershed, narrow down the scope of potential applicable planning and remediation projects, and quickly identify practical watershed restoration goals for areas with high levels of impervious cover.

Maps included in this report help to illustrate and describe the issue of IC to the general audience. The scale of analysis utilized - the catchment - is an ideal size for conducting a sub-watershed analysis. While these static maps and data clearly lack the full functionality and dynamics of a GIS, individuals with particular interest on a specific watershed or waterbody can begin to investigate the degree to which IC is present.

Summary of Activity

Objectives, Tasks, & Outcomes

Work plan objectives should be clearly linked to final project outcomes. For each objective listed on the work plan, a brief summary of the tasks and activities should demonstrate how project deliverables and outcomes have accomplished that objective.

Objective

Develop methodology and approach

Task Summary & Project Outcomes A literature review was conducted in order to determine the variety of conventional approaches that could be applied. A variety of journal articles and academic papers on the subject were identified and reviewed. A methodology and outline for the final report were developed using this information.

Objective

Acquire all necessary data

Task Summary & Project Outcomes Impervious surface data from the 2001 National Land Cover Dataset (NLCD) for the nine-county Genesee-Finger Lakes region was downloaded from the USGS website. Additional data needs were identified during finalization of the draft methodology. NLCD 2006 Provisional Products and Supplementary Layers were utilized for the final analysis when they became available in February 2011.

Objective

Conduct full analysis of data

Task Summary & Project Outcomes A GIS geodatabase of geospatial information on impervious cover across the nine-county Genesee-Finger Lakes region was created which utilizes the “catchment” as the geographic unit of analysis for measuring and reporting the degree of impervious land cover in a given location. The % Impervious Cover (%IC) value within each catchment that intersects a portion of the Census-delineated urbanized area (circ. 2000) has been calculated and recorded in a GIS attribute table by project staff. %IC was calculated for over 2,000 individual catchments across the G-FL region. This information can be readily accessed by any skilled GIS practitioner and used to plan for the protection and restoration of aquatic systems. The GIS data will be made available upon request from any interested party.

Objective

Draft a final report which compiles and summarizes data and findings

Task Summary & Project Outcomes The entire process, results, and salient conclusions are provided in the final report, “Genesee - Finger Lakes Impervious Surface Scan.” Impervious cover data is represented in a series of thematic maps which identify political boundaries, watershed boundaries, adjacent and/or major waterbodies, and associated measurements of impervious surface cover. This final product is displayed in an atlas format.

Objective

Complete Reporting as Required

Task
Summary
& Project
Outcomes

Quarterly reports, expenditure reports, and the final report were prepared and submitted to DEC by the deadline in the contract.

Problems Encountered/How Solved

A comprehensive summary of any problems encountered during the life of the project and how those problems were resolved should be listed. The list should include any information reported in the "Problems Encountered/How Solved" box on the Quarterly Report Cover Pages throughout the project.

No major problems were encountered. Two minor problems were encountered and reported during quarterly progress reports.

A problem was encountered during the initial stages of project execution. Identifying an appropriate geographic scale of analysis under which to conduct the impervious surface scan proved to be problematic. At the time the proposal was made, it was believed by project staff that the 12-digit Hydrologic Unit Code watershed boundary would be an appropriate scale to use in the analysis. After a thorough literature review and consultation with DEC staff, it was determined that this scale would be too large to produce useful or accurate results. A smaller scale therefore needed to be developed. The catchment was determined to be the most ideal geographic scale under which such an analysis should be conducted. Catchment boundaries were obtained through the National Hydrology Dataset; these boundaries establish the foundation for impervious cover analysis and information dissemination utilized herein.

In addition, during the winter of 2011 it was discovered that an updated version of land cover data was released by the USGS. The 2006 NLCD was released in February of 2011, updating the 2001 NLCD that was originally proposed to be used in this report. The 2006 NLCD is considered to be a superior source of land use information than the 2001 NLCD and was therefore utilized to calculate % impervious cover.

Changes to Project Work Plan

Any changes that were made to the project work plan during the life of the project should be noted, including a brief description of why the changes were necessary.

No significant changes were made to the workplan.