2017 Award Nomination

*Please email completed form to nygis77@gmail.com

Date:
9/7/17

Category:
- ☐ Lifetime Achievement
- ☐ Individual Contribution to the Profession
- ☐ GIS Champion
- ☐ You Tube Sensation
- ☐ UAV Innovation
- ☒ Geospatial Applications Program (*skip to entry form below*)

Nominee (please include name, address, phone, and email)
Geospatial Applications Program - See Attached.

Submitted by (please include name, address, phone, and email)
Syracuse Metropolitan Transportation Council
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Point of Contact: Andrew Frasier afrasier@smtcmpo.org

Sector:
- ☐ Local Government
- ☐ State Government
- ☐ Tribal Government
- ☐ Private (For Profit)
- ☐ Private (non-Profit)
- ☐ Academic

Functional Area:
- ☐ Transportation
- ☐ Urban Planning
- ☐ Emergency Response
- ☐ Environmental
- ☐ Infrastructure
- ☐ Other (please note)

Narrative Description of Contribution. (Attach separate file or pages as necessary. Please refer to the Narrative Guidance for additional information on the narrative description.)

Geospatial Applications Program - See Attached.

2017 NYS Geospatial Applications Awards Competition Entry Form

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Please use the below template to submit your entry for the **2017 NYS Geospatial Applications Awards Competition**. By entering the competition, you grant permission for the NYSGIS Association to publish and publicize your entry. Click here to view the 2016 submissions.

Required Information

Sponsoring Organization: The Town of DeWitt, on behalf of the Central New York Stormwater Coalition

Stakeholder/Participant List (by Organization):

- Central New York Regional Planning and Development Board (CNYRPDB)
- Syracuse Metropolitan Transportation Council (SMTC)
- Town of DeWitt
- Onondaga County
- City of Syracuse
- Town of Camillus
- Village of Camillus
- Village of Central Square
- Town of Cicero
- Town of Clay
- Village of East Syracuse
- Village of Fayetteville
- Town of Geddes
- Town of LaFayette
- Village of Liverpool
- Town of Lysander
- Town of Manlius
- Village of Manlius
- Town of Marcellus
- Village of Marcellus
- Village of North Syracuse
- Town of Onondaga
- Village of Phoenix
- Town of Pompey
- Town of Salina
- Village of Solvay
- Town of Van Buren

Title: Syracuse Urban Area Comprehensive Storm Sewer Mapping Project

Abstract:
In 2016, the Syracuse Metropolitan Transportation Council worked with the Central New York Regional Planning and Development Board to develop the region's first interactive digital municipal storm sewer system map. The map is designed to assist regulated Municipal Separate Storm Sewer System (MS4) operators in the Syracuse Urban Area (SUA) protect and improve regional surface water quality in compliance with the New York State Pollution Discharge Elimination System General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems. The online map provides municipal users access to current data and information regarding features of their MS4 (catch basins, outfalls, and flow direction). Feature locations can be viewed as an overlay on a series of 21 GIS data layers that include receiving surface waters and wetlands, watersheds, soils, land cover, and topography. When non-stormwater (illicit) discharges from the MS4 to a receiving waterbody are detected in the field,

the map serves as a tool to help jurisdictional municipalities effectively trace the source of the discharge back to its origin where it can be eliminated. GIS data provides an additional tool for assessing current MS4 capacity relative to new development, and for siting drainage remediation and retrofit projects, as well as water quality remediation projects.

Statement of the Problem:

In order to comply with NYS stormwater regulatory requirements, operators of small MS4s must develop and implement stormwater management programs that protect and improve surface water quality. The NYS Department of Environmental Conservation required that these programs contain six minimum control measures, including the identification and elimination of non-stormwater discharges to their MS4. Because MS4s discharge directly to receiving surface waters without the benefit of treatment, any pollutants that are discharged into the MS4 system eventually make their way into surface waters where they negatively impact water quality, aquatic life and habitat, and recreational usage. Under current NYS regulations, MS4s must map and inspect only the points where their MS4s discharge (stormwater outfalls). While this is useful in identifying when illicit discharges occur, a more comprehensive regional storm sewer system map that includes stormwater collection points (catch basins) and flow paths is needed to trace the illicit discharge back to its source for elimination. MS4s in the SUA have engaged in storm system mapping at different levels ranging from “planning to start” to “system fully mapped.” Data collection protocols and mapping formats varied at the same scale. As a result, MS4 response efforts have been variable in terms of efficiency and effectiveness across the region.

Response to the Problem:

The Central New York Stormwater Coalition (the Coalition) is made up of 30 MS4 operators in the SUA that are regulated under the NYS Pollution Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Small MS4s. Collectively, members of the Coalition are working under the leadership of the CNYRPDB to eliminate duplicative costs associated with meeting common regulatory requirements. Development of an interactive regional online storm sewer system map for MS4 communities in the SUA was identified as an attainable way to improve municipalities’ ability to efficiently respond to illicit discharges when they are detected. Development of a data dictionary was carefully crafted to include specific system data elements to enhance the online database as a tool for improving MS4 asset management planning, including long-term system operation and maintenance programs that will further protect and improve water quality and protect municipal budgets. A wide range of GIS data was incorporated into the online map interface to further expand the utility of the map as an accessible tool for assessing and understanding the impacts of proposed development on the MS4 and local receiving waters. Participating communities were given flexibility in directing available mapping assistance within a standard set of parameters thereby allowing them to fill individual priority mapping gaps while maintaining data consistency across the region.

Results:
The Syracuse Urban Area Comprehensive Storm Sewer Mapping Project is advancing cooperative efforts to build a regionally integrated program for addressing stormwater planning and illicit discharge detection and elimination at both the local and regional levels. The regional storm sewer map is built on recommendations made by the NYS Department of Environmental Conservation regarding comprehensive storm sewer mapping and has positioned MS4s to better understand and plan for the impacts that new development and changing land use patterns may have on their stormwater infrastructure, both within the context of what is happening in their own communities, as well as at the watershed level. As a result, additional opportunities for enhanced inter-municipal and regional planning are being identified and acted upon. Users are more in tune to where MS4s are interconnected and where multiple MS4s are impacting the same waterway. The Syracuse Urban Area Comprehensive Storm Sewer Map continues to be a work in progress and grow as additional data is collected and added to the application.

Municipal users responsible for inspecting MS4 systems and prioritizing maintenance operations are transitioning from reliance on using paper maps to GIS to guide and direct field investigations. Improved access to a wide range of system data while in the field has been cited for improving efficiency. By clicking on any mapped system feature, field crews, supervisors, and engineers have immediate access to feature identifiers, materials, depths, diameters, flow directions, and physical conditions needed to understand system functioning, capacity, and influences on observed conditions. Previous inspection reports and photos are also linked to feature points allowing users to verify current observations and/or identify trends, and establish priorities for further action, including maintenance and repair. Other GIS layers, such as soil types, flood zones, aerial photos, waterbody classifications, and topography round out data elements that are used to improve efficient decision making in the field.

Return on Investment/Cost-Benefit Analysis. **Do your best to use the ROI benefit and cost formulas found at GISCalc. Your project can then be used to strengthen GISCalc metrics:**
By leveraging membership fees paid for staff support to the CNY Stormwater Coalition, participating MS4 communities are realizing a very high return on their investment in this project. From cost sharing the local 25% match share of the NYS Water Quality Improvement Program grant that funded the initial project startup, all project costs are jointly shared between the members of the Coalition – including the purchase of data collection equipment and software licenses, GIS staff support and field data collection efforts, and long long-term operation and maintenance efforts that will ensure the online map is current and consistent for all MS4 communities in the SUA. Additionally, this project provides reliable GIS data access to MS4s that lack GIS capacity.

Key Participants: (Name, Organization, Title)
Edward Michalenko, Town of DeWitt, Town Supervisor
Christine Manchester, Town of DeWitt, Sustainability Coordinator
Kathleen Bertuch, CNYRPDB, Program Manager
Jason Deshaies, SMTC, Senior Transportation Analyst

Elizabeth Hassett, STMC, Transportation Analyst
Andrew Frasier, SMTC, Transportation Analyst
URL (if applicable):

Link to the online Syracuse Urban Area Comprehensive Storm Sewer Map, available through ArcGIS Online:

https://cnyrpdb.maps.arcgis.com/apps/View/index.html?appid=21aa9a1d3e334075947255b8655fbb5d

Contact Information:

Name	Phone #	Email
Kathy Bertuch	(315) 422-8276	kbertuch@cnyrpdb.org
Jason Deshaies	(315) 422-5716	jasondeshaies@smtcmpo.org

Deadline & Submission Information

The deadline for entries is Friday, September 8th, 2017. Please email this completed template to the NYSGISA Awards Committee at nygis77@gmail.com, with **"GIS Applications: [Name of Submitting Organization]"** in the message Subject line.

Thank you for your submission and Good Luck!