Using GIS for NPDES Phase II Stormwater Compliance

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What is NPDES?

- NPDES is an acronym that stands for National Pollution Discharge Elimination System
- In response to the 1987 Amendments to the Clean Water Act (CWA), the U.S. Environmental Protection Agency (EPA) developed Phase I of the NPDES Stormwater Program in 1990.

Source: National Pollutant Discharge Elimination System (NPDES). (2008, January 10). From http://cfpub.epa.gov/npdes/stormwater/swphases.cfm

What is NPDES?

- NPDES Phase I required permits for the discharge of stormwater to waters of the state from:
  - Medium and large municipal separate storm sewer systems (MS4s) located in incorporated places or counties with populations of 100,000 or more;
  - Eleven categories of industrial activity which includes construction activity that disturbs five or more acres of land

Source: National Pollutant Discharge Elimination System (NPDES). (2008, January 10). From http://cfpub.epa.gov/npdes/stormwater/swphases.cfm

NPDES Phase II

- The Phase II Final Rule, published in the Federal Register on December 8, 1999, requires NPDES permit coverage for stormwater discharges from:
  - Certain regulated small municipal separate storm sewer systems (MS4s); and
  - Construction activity disturbing between 1 and 5 acres of land (i.e., small construction activities).
    - Source: National Pollutant Discharge Elimination System (NPDES). US Environmental Protection Agency. (2008, January 10). From http://cfpub.epa.gov/npdes/stormwater/swphases.cfm

NPDES Phase II Minimum Control Measures

- NPDES Phase II MS4 permits require small municipalities to develop a program to implement 6 Minimum Control Measures.
  - Public Education and Outreach
  - Public Participation and Involvement
  - Illicit Discharge Detection and Elimination
  - Construction Site Runoff Control
  - Post-Construction Runoff Control
  - Pollution Prevention and Good Housekeeping
- GIS can be used meet the requirements of all these measures

Source: Small MS4 Stormwater Program Requirements. US Environmental Protection Agency. (2008, January 10). From http://cfpub.epa.gov/npdes/stormwater/permreq.cfm

Public Education and Outreach

- Requirements
  - distribute educational materials to the community
- GIS Application
  - Map included in flyers that shows where pollutants would flow.
    - Source: Small MS4 Stormwater Program Requirements. US Environmental Protection Agency. (2008, January 10). From http://cfpub.epa.gov/npdes/stormwater/permreq.cfm

Public Participation/Involvement

- Requirement
  - Comply with public notice requirements;
- GIS Application
  - Public notice residents and businesses near proposed installation of stormwater infrastructure
    - Source: Small MS4 Stormwater Program Requirements. US Environmental Protection Agency. (2008, January 10). From http://cfpub.epa.gov/npdes/stormwater/permreq.cfm

Illicit Discharge Detection and Elimination

- Requirements
  - **A storm sewer system map**,
  - a prohibition on non-stormwater discharges
  - A plan to detect and address non-stormwater discharges,
  - The education of public employees, businesses, and the general public about the hazards associated with illegal discharges
    - Source: Small MS4 Stormwater Program Requirements. US Environmental Protection Agency. (2008, January 10). From http://cfpub.epa.gov/npdes/stormwater/permreq.cfm

Construction Site Runoff Control

- Requirements
  - Require the implementation of proper erosion and sediment controls, as wells other waste controls
  - Site plan review of construction plans
  - Procedures for site inspection and enforcement
  - Sanctions to ensure compliance
  - Receive and consider information submitted by the public
- GIS Application
  - Construction site inspection

Source: Small MS4 Stormwater Program Requirements. US Environmental Protection Agency. (2008, January 10). From http://cfpub.epa.gov/npdes/stormwater/permreq.cfm

Post-Construction Runoff Control

- Requirements
  - Require the implementation of post-construction runoff controls
  - Ensure adequate long-term operation and maintenance of controls;
- GIS Applications
  - Site Plan review and analysis
  - Post-construction BMP inspection

Source: Small MS4 Stormwater Program Requirements. US Environmental Protection Agency. (2008, January 10). From http://cfpub.epa.gov/npdes/stormwater/permreq.cfm

Pollution Prevention/ Good Housekeeping

- Requirements
  - an operation and maintenance program with the ultimate goal of preventing or reducing pollutant runoff from municipal operations
  - employee training
- GIS Application
  - Inventory and history of infrastructure maintenance

Source: Small MS4 Stormwater Program Requirements. US Environmental Protection Agency. (2008, January 10). From http://cfpub.epa.gov/npdes/stormwater/permreq.cfm

And the funds

- To run this program we implemented a Storm Sewer Utility that is funded by a storm sewer fee.
- Fees are based on the amount of impervious surface on a property as determined by digitizing from an aerial photo.

Finally, EPA oversight

- The State of Utah has primacy over this program and has announced they will begin auditing communities for compliance later this year. GIS can be a repository for everything they may look for in an audit.

Demonstration

- ArcGIS 9.2 with Spatial IM extension from Gateway Mapping is used to manage
  - History
  - Hyperlinks
  - Reporting

Conclusion

- GIS can be used in all 6 Minimum Control Measures set out in the NPDES Phase II Program
- Orem is looking to move forward with
  - A post-construction inspection application
  - A street sweeping history application
  - A land cover analysis

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