Utilizing Simple Affordable Web-based Technologies for the Inventory, Operations and Maintenance of your Assets

Case Study: Lower Swatara Township
Dauphin County, Pennsylvania

Howard S. Hodder, Jr., MGIS, GISP
hhodder@hrg-inc.com
Agenda

• Welcome and Introduction
• Sanitary and Storm Sewer Statistics
• Project Understanding Overview
• Project Challenges
• Critical Success Factors
• Processes
• ArcGIS Online
• Results
• Thank You / Questions and Answers
**Introduction**

**Howard S. Hodder, Jr., MGIS, GISP**

- HRG’s Geomatics Service Group Practice Area Leader
- Bachelor’s degree in Geography from Bloomsburg University
- Master’s degree in GIS from Penn State University (MGIS)
- Certified GIS professional (GISP)
- President (PA-MAPPS)
- Board Member – PA State Geospatial Coordinating Board
- PA-AWWA It Committee
- Extensive experience with both municipal and private GIS application development, GPS data collection, and database development
HERBERT, ROWLAND & GRUBIC, INC.

- Founded in 1962 in Harrisburg, PA
- ~200 employees
- Full Service Firm
- 7 Offices
- Over 60 Retainer Municipal Clients, some of which have been with us for 30+ years

Professional Engineers | Professional Land Surveyors | Certified GIS Professionals
Professional Geologists | Registered Landscape Architects
Lower Swatara Township:

Township Statistics:

- 1st Class Township
- Southwest Dauphin County, ~6 miles outside Harrisburg
- ~40 Mile Township Roads / ~20 Miles State Roads
- Adjacent to the Susquehanna River
- ~8,268 Residents (2010)
Lower Swatara Township:

Sanitary Sewer Statistics:

- ~1,330 Manholes / 53 Cleanouts / 5 Air Release Valves
- 13 Pump Stations
- ~282,500 linear feet of mains
- ~4,275 EDU’s (1 EDU = 217 GPD)
- System Established in 1960’s
Lower Swatara Township:

Storm Sewer Statistics:

- ~1,200 Inlets, 44 Manholes and 236 Outfalls
- ~61 Cross Pipes
- ~112,000 Linear Feet of Pipe
- ~45 Storm Basins cover ~18 acres
Project Understanding Overview:

Data Collection
- Township
- Consultant
- Combination

Data Maintenance
- Township
- Consultant
- Combination

Interface / Database Development
- Township
- Consultant
- Combination

Hardware
- GNSS
- Desktop
- Server
- Mobile Devices

Software
- Web-based
- Desktop
- Asset Management
- Document Management

Training
- ESRI
- Consultant
- Combination
Project Understanding Overview:

Aspects to Asset Management

1. Data Collection / Migration / Integration
   • Collecting / Mapping / Inventorying Assets (GNSS/GPS, Digitizing - Spatial)
   • Collecting / Migrating / Inputting Data for Assets
     • (Paper Maps, Employees, Field Inspections, etc.)

2. Maintaining Information
   • Updating the collected assets information
   • “History Tracking”
   • If the information is not current accurate analysis can not be performed

3. Analyzing Data
   • Effective Decision Making using the inputted information
   • (Maintenance, Replacement, Budgeting, etc.)
Project Understanding Overview:

**Project Understanding / Requirements**
- Project Kick-Off
- Stakeholder Discussions
- Data Review
- Hardware / Software Review

**Database Design**
- Table Structures
- Data Relationship Development
- Schematic Development
- "Final" Database Structure

**Application Selection / Development**
- Desktop
- Web-based
- Mobile

**Data Collection**
- GNSS/GPS/Digitize Collection
- Attribute Input
  - Field Data Collection
  - Paper Map and Existing Databases
- QA / QC

**Data Conversion / Migration**
- Data Migration
- QA / QC

**Installation / Implementation**
- Database Delivery
- Application(s) Installation
- Training

**Continued System Support / Growth**
- Troubleshooting
- Q & A
- Future Database Updates and Additions
- Additional Project(s)
  - Data Layer Development
  - Custom Application(s)
  - External Database Connections
  - Etc.
Project Challenges:

Sanitary and Storm Sewer

• Challenge #1: Tightening Regulations – i.e. MS4, Sign Retroreflectivity
• Challenge #2: Infrastructure Inventory and Assessment
• Challenge #3: Limited Budget and Timeframe
• Challenge #4: New Staff with Limited Systems Knowledge
• Challenge #5: Technology?
Critical Success Factors:

**Budget**
- Limited Budget – hardware, software and data collection
- Township / HRG Cooperation and Work Share
- Return On Investment (ROI)

**Technology**
- Ease of Use – Implementation and Deployment
- Flexible and Dynamic for Expansion
- On-going Support
Critical Success Factors:

Quality

• Planned for more than one purpose and use
  – “Do it correct the first time”

• Limited Reference Materials

• Aged Staff and Turn-Over in Personnel and Knowledge

• QA/QC and On-Going Support

• Continued Use – Trust in the End Product Deliverables

• Meet/Exceed Required Mandate(s)
Critical Success Factors:

Holistic Approach To Operations and Maintenance

- Township Staff Actively Involved
- Ability for Capital Improvement Project Identification
- Future Planning – Proactive vs Reactive
- Mandate Fulfillment and Reporting
- History Tracking
- Solutions Expansion
- Asset Management
Processes:

• Solution(s) Selection
• Geodatabase Development / Configuration
• Township vs HRG Roles
  • Storm Water
  • Sanitary Sewer
• Training / Deployment
• Spatial Data Enhancement
• QA/QC and Continued Support
Results:

- Highly Detailed Systems Mapping
- Ability for Continued Enhancement and Expansion
- Actively Involved Staff with “Buy-In”
- Adopted Adaptive Technologies
- Time Savings / Money Savings
- Meet / Exceed Mandate Requirements
- Continued Expansion and Daily Use
  - Not just another tool
  - History Tracking
  - Other Infrastructure (i.e. Signage)
Results:
Thank You For Your Time
Questions and Discussions?

Herbert, Rowland and Grubic, Inc.
369 East Park Drive
Harrisburg, PA  17111
(717)564-1121

Howard S. Hodder, Jr.  MGIS, GISP
Geomatics Practice Area Leader
hhodder@hrg-inc.com

Dan Wagner
Public Works Superintendent
Lower Swatara Township
717-939-9377
dwagner@lowerswatara.org