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

Case Study: Lower Swatara Township
Dauphin County, Pennsylvania

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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
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**

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**HRG**
Herbert, Rowland & Grubbs, Inc.
Engineering & Related Services
AN EMPLOYEE-OWNED COMPANY

[ BUILDING RELATIONSHIPS. DESIGNING SOLUTIONS. ]
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:

1. **Project Understanding Requirements**
2. **Database Design**
3. **Data Collection**
4. **Data Conversion / Migration**
5. **Application Selection / Development**
6. **Installation / Implementation**
7. **Continued System Support / Growth and Advancement**
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

**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

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

**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?

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