

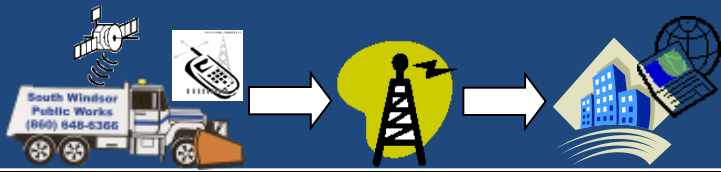


Using GPS/GIS Technology via BlackBerry Phones for Managing Public Works Programs

Scott E. Roberts, GISP, Director of Information Technology

NEURISA 2010

October 18, 2010



Our Vision-How Did We Start?

How Did We START?

Need to Do more with Less!

*** Can We Save Money or Reduce Future Costs?**

Looked at Mapping Leaf Program

Knowing Location of Assets During an Event/Program Can Help Us Manage the Operations Better!

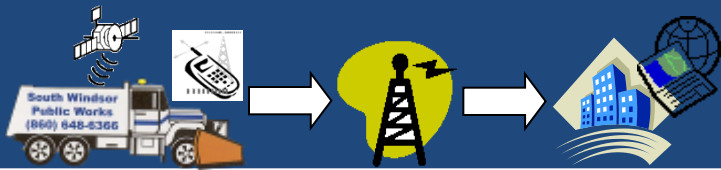
There Has to Be a Better Way!

*** Need to Improve Program Efficiencies.**

Can We Use Smart Phones / Hand Held Devices?

***Need Flexibility - Move from Equipment to Equipment – Program to Program.**

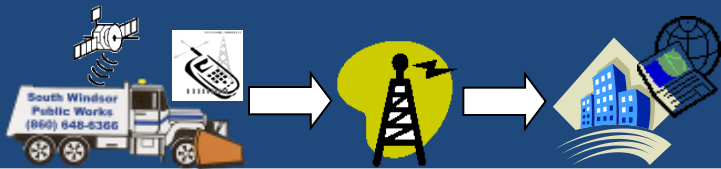
How Can We Integrate GPS with Our GIS ESRI Mapping software?



Evaluation Process

- Staff Objectives
 - Locations of Assets (Real-Time)
 - Review Patterns for Efficiency
 - Track & Spatial Locate Complaints
 - Provide Feedback & Updates to Public
- Implementation Goals
 - Simplicity - One Device (Phone, Email & GIS)
 - Flexibility - Not connected to a Dump Truck
 - Economically - Reasonable priced solution
 - Efficiently - Fast to production use
- Vendors Selected (Total Cost - \$12,295)
 - TDC Group-Freanace (GIS Linking Software)
 - Sprint (Telecommunications Network)
 - RIM – BlackBerry Phones (Hardware/BES/GPS)





Challenges

- **Implementation Challenges**

- **Equipment**

- Use of a Blackberry (Getting Users Comfortable)
- Protection of Device (Work Environment)

- **People**

- Staff Fear (Big Brother Knows All)
- Learning Curve (Cell Coverage, GPS Satellites & Phone)

- **Software**

- PostgreSQL connection to ArcGIS 9.X

- **Runtime Challenges**

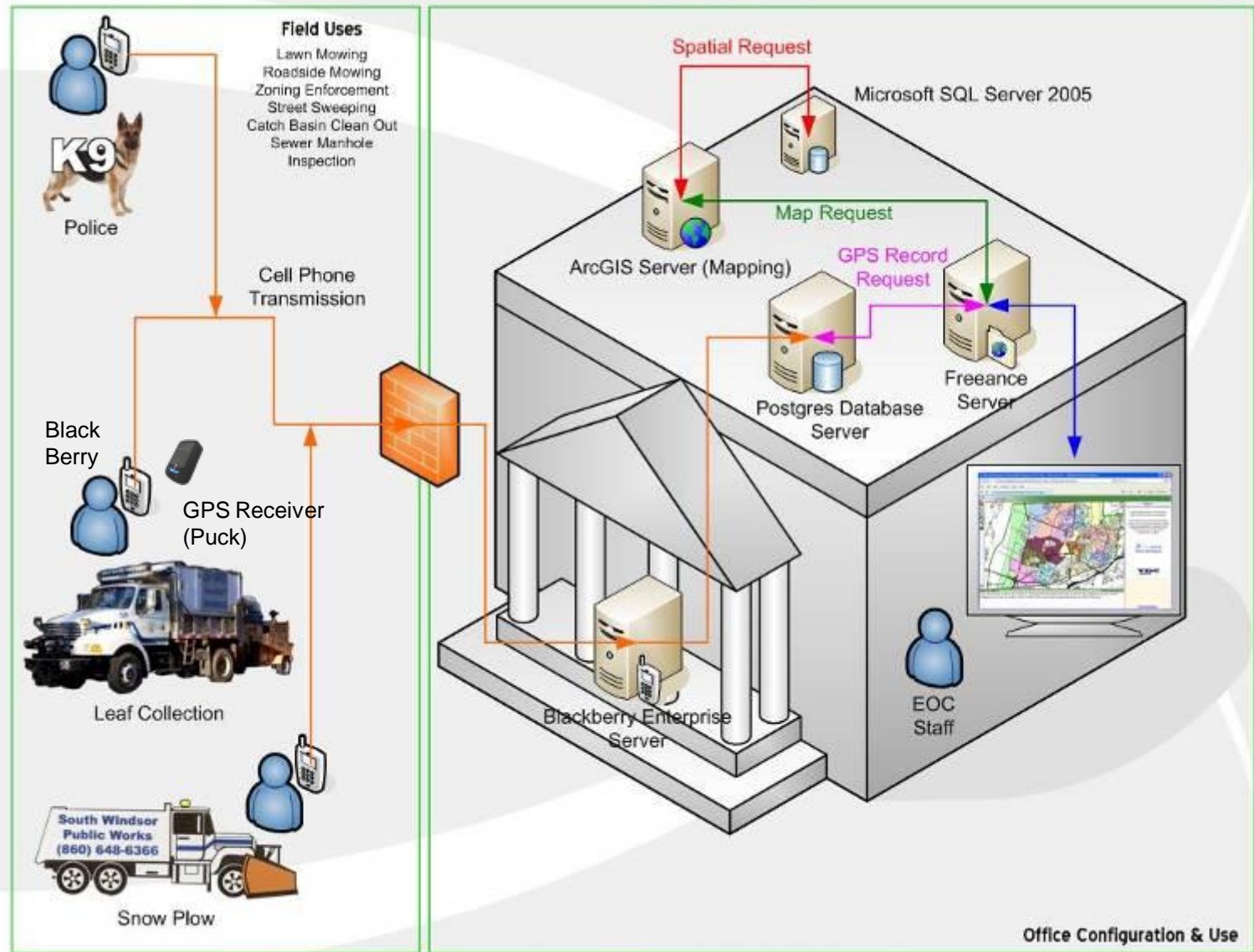
- GPS / Cellular Signal Strength / Availability
- Environment Issues (Dust, Water and Vibrations)
- Battery Life (Phone vs. GPS Puck)
- Equipment Availability (Charging – Emergency Ready)
- Vendor Equipment Differences (Snow Plow Trucks)
- Making Sure Employees Follow Directions



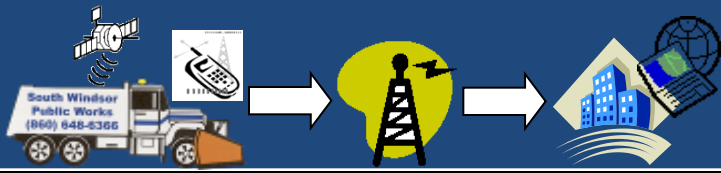
CHARGING STATION



Our System Diagram



Office Configuration & Use



Leaf Collection Program

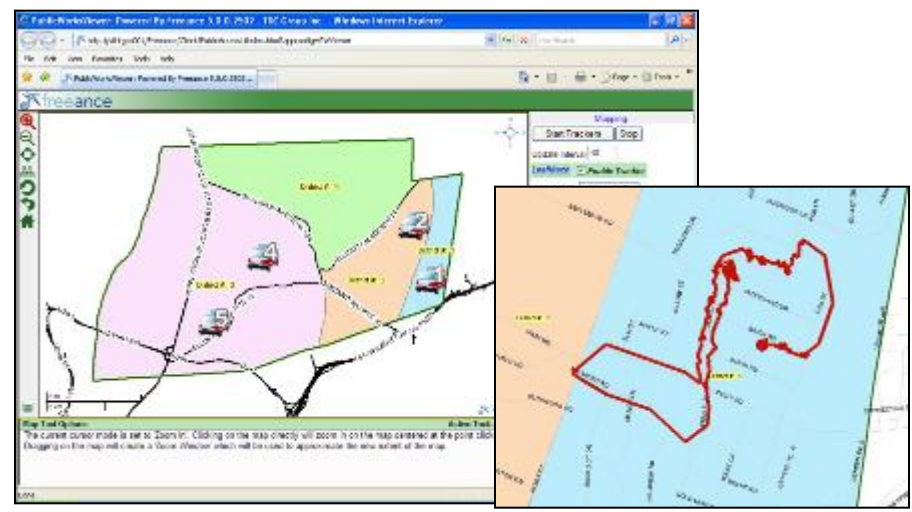
- Four Week Project in Fall – 5 Crews
- **Lots** of Communication Required
 - From PW Managers to Crews
 - To Public via Hot Line and Town Website
- Saves Staff Time
- Happy Residents
- No one wants frozen leaves



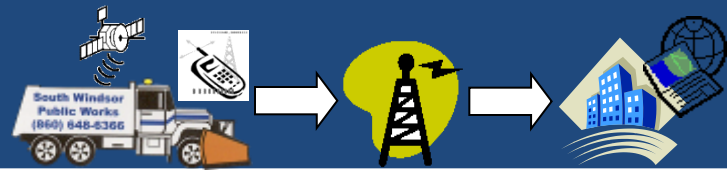
FIELD DATA COLLECTOR



FIELD CREWS IN ACTION



COMMAND CENTER DASH BOARD



Mowing & Sweeping Programs

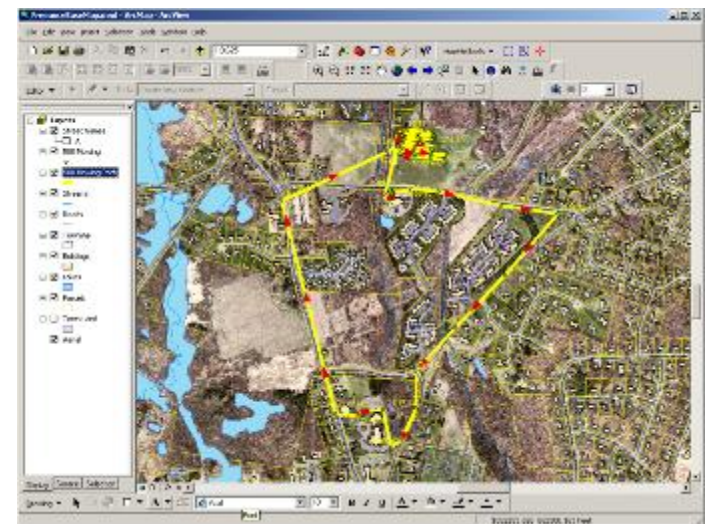
- Spring / Summer Programs
- Numerous Athletic Fields and Road Miles
 - Mapping Locations
 - Routing Equipment
 - Tracking Productivity
- Reporting & Evaluating
 - Mowing Routes & Schedule
 - Sweeping Coverage and Production Rates / Mile

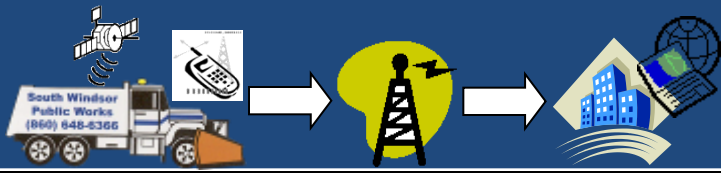


MOBILE SWEEPER



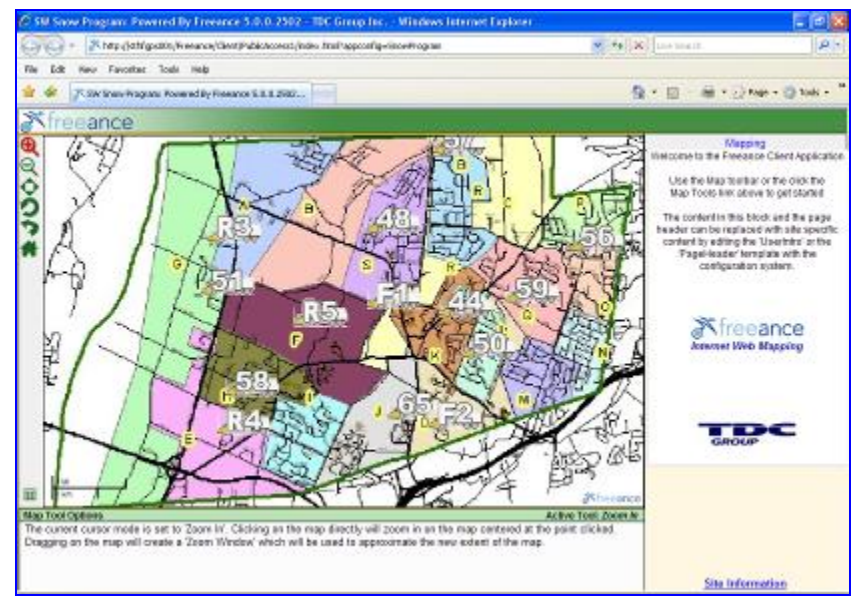
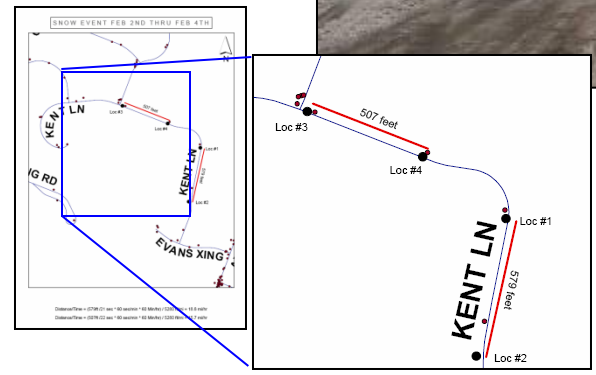
MOWERS

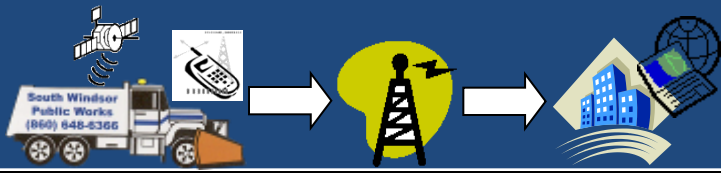




Snow Program

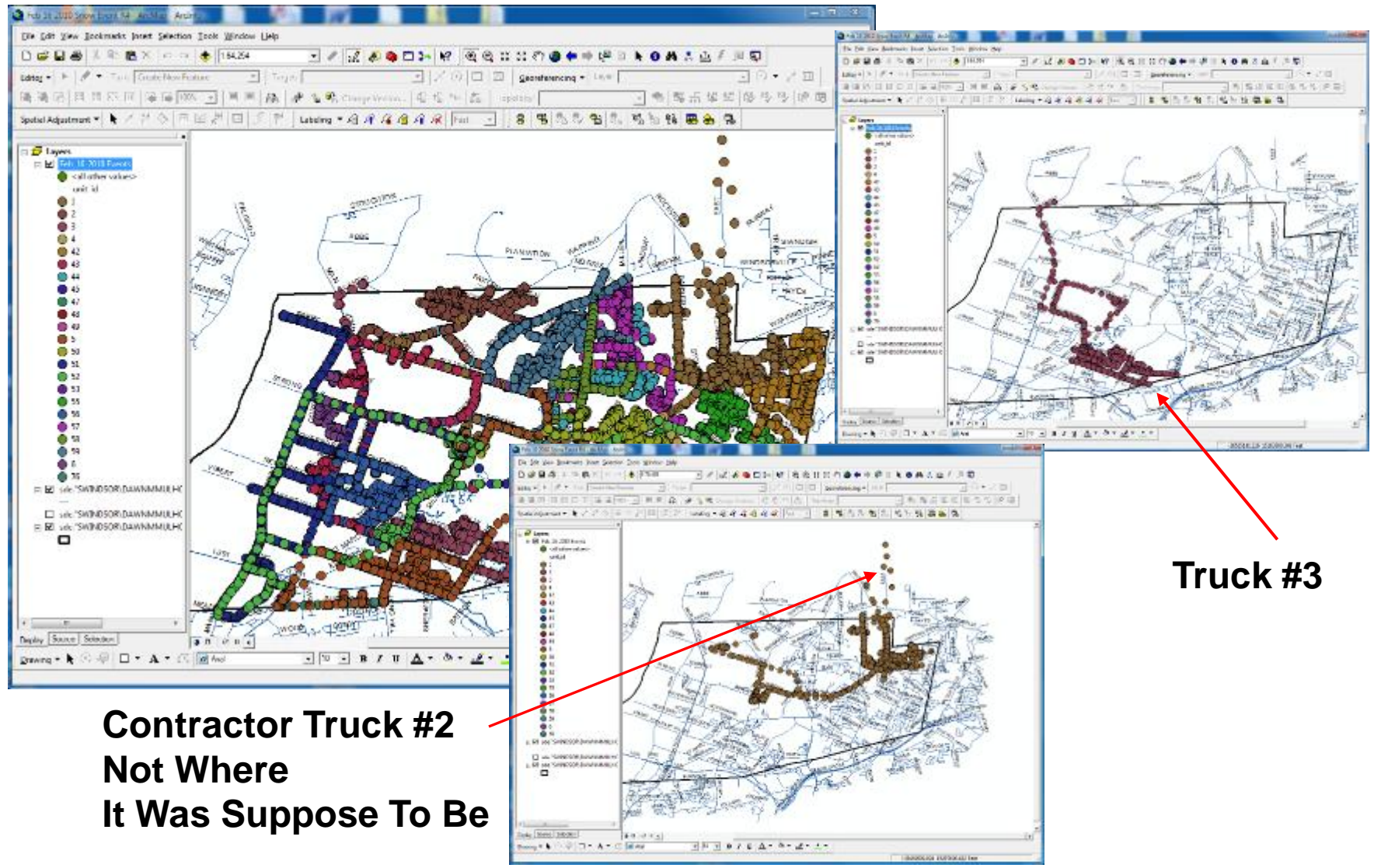
- **Winter Program – Roads and Parking Lots**
- **Twenty-Four Trucks – Two Supervisors**
 - Emergency Dispatching
 - Citizen Calls for Service
 - Private Contractors Tracking
 - Streets Plowed (All)
 - Real-Time Feed to Storm Center
- **Reporting & Evaluation**
 - Post Storm Analysis
 - Totals (Plow & Treat)
 - Speed of Trucks
 - Plow Route Planning
 - Program Anomalies





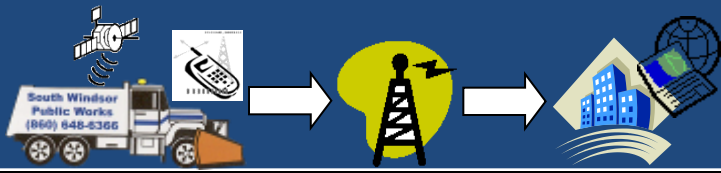
Post Event Analysis

Feb 16, 2010 Post Storm Analysis



Truck #3

**Contractor Truck #2
Not Where
It Was Suppose To Be**



K9 Officer



“The technology allows for extremely **accurate records** of the actual paths and locations the team visited during tracks for suspects, missing persons and evidence recovery. The GIS interface allows the points to be displayed on an **aerial view map**, showing landscape features and buildings. When accessed via a **webpage** and **viewed in real-time**, the public safety dispatchers and **incident commanders** will be able to watch the teams’ location and **deploy resources** as needed.”



Sergeant Scott P. Custer
Public Information Officer



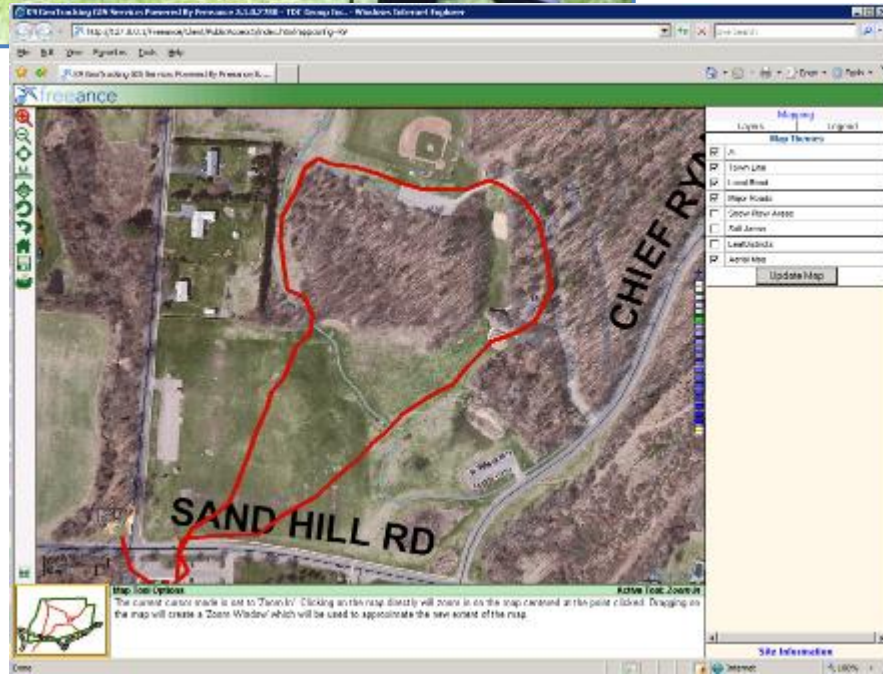


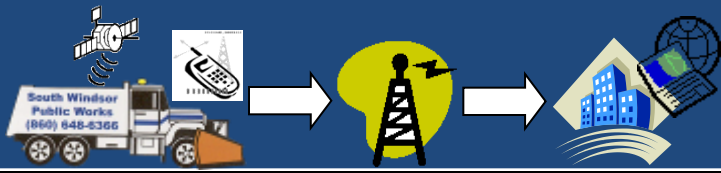
K9 Team Tracking



K9 GeoTrack	
GPS Data [On] [Sat Count0]	
-72.5532	
41.82956	
2009-06-30T14:35:39	
Track Type	
Missing Person	
Notes/ Case Number	
Missing Child / P200914769	
Unit Type	
K9 Officer	

Evidence
Missing Person
Suspect
Vehicle Search





Other Applications

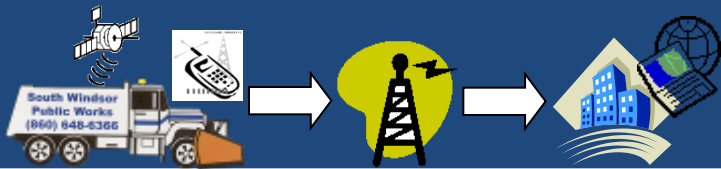
- Sanitary Sewer Line Cleaning
- Inventory & Inspection Screens
 - Fire Hydrant
 - Sidewalk
 - Street Signs
 - Trails
 - Storm Catch Basins
- Zoning Enforcement
- Emergency Management Deployment
 - MDA #31
 - Hurricanes Debris Management
 - Ice Storms

Animal
Buffers
Certificate of Occupancy
Dead/Decayed/Diseased Trees
Debris
Dilapidated Structure
Earthwork
Grass Weeds > 12 Inches
Illegal Use - Comm/Indust
Illegal Use - Residential
Landscaping over Sidewalk/Sign
Lighting
Outdoor Storage
Permanent Sign
Temporary Sign
Unregistered Car(s)

Sewer_Inv
GPS Data [27] [Sat Count:9]
-72.55309
41.82958
2009-07-09T18:30:41
Unit_id
Line Cleaning Truck
Note
N/A
Repair
Replace

Line Cleaning Truck
Camera Truck
Truck 83

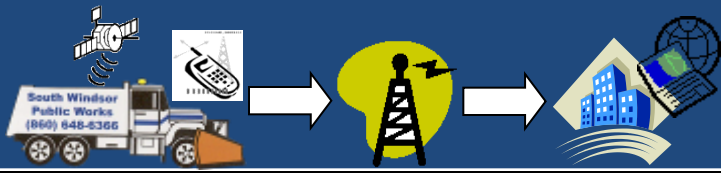




What's Next

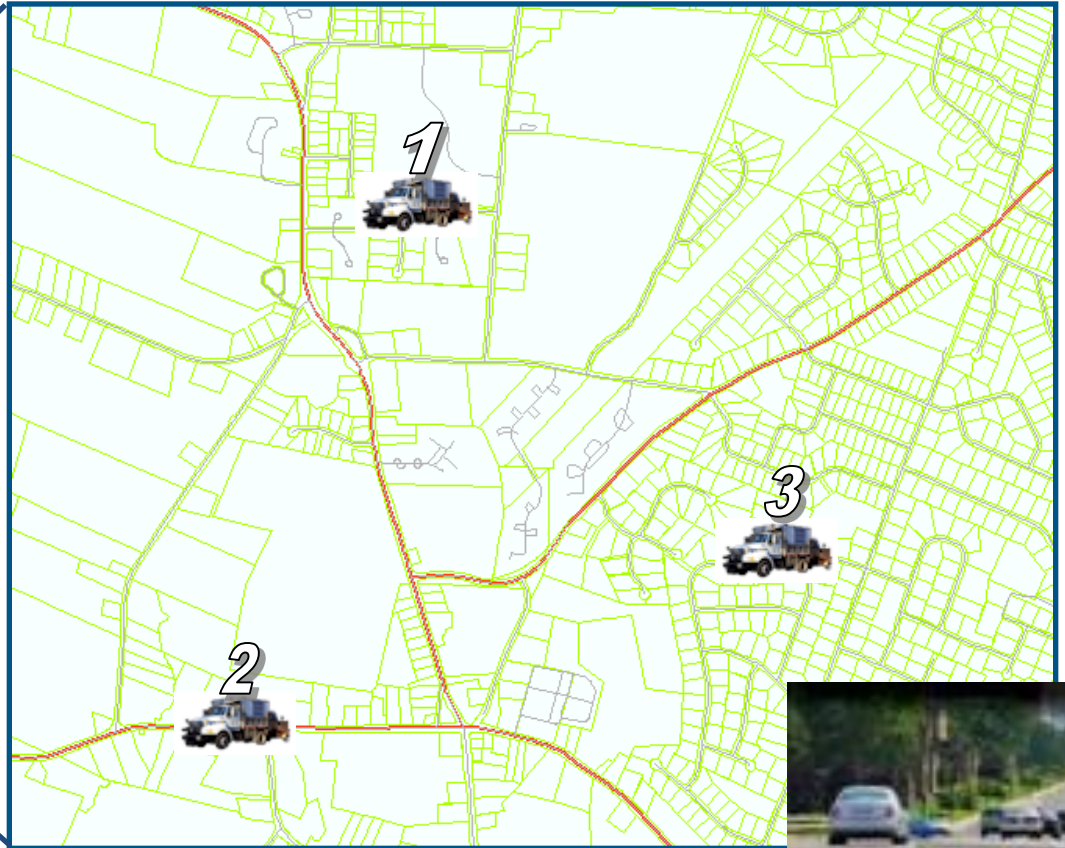
- Supervisors Truck
 - REDFLY Mobile Companion
 - BlackBerry Linked to laptop
 - Ergonomics
- Real-Time Locations
 - Trucks
 - Mowers
 - Leaf Machines
 - Staff
- Allows Supervisors to stay in the field
 - Large Screen, Protected Environment, Mobile Office
 - Still viewable on phone
 - No complicated IT VPN or remote software





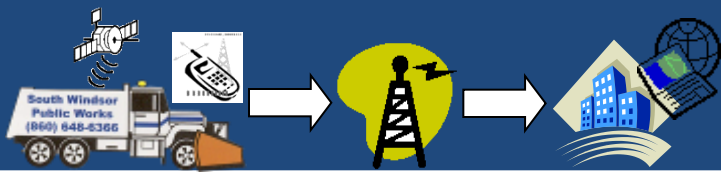
What you see on the BlackBerry

Current Screen



Supervisor Setup





Summary

Savings/Benefits GPS/GIS

- **Examples of Savings/Benefits:**

- Redirect Plow trucks for Emergencies –Ambulance Call –Life Saving
- Redirect Deployment of Equipment as Conditions Change
- Respond to Resident Complaints about Truck Speed and when Street Plowed
- Savings in Staff Time to Update Program Schedules for Public
- Savings and Accuracy of Drawing Maps for Dog Tracking
- Deduct Pay (\$\$) from Contractor for out of Town Plowing
- Safety of Knowing where Resources Are Real-Time
- Improved Ability to Respond to Public Issues
- Allows Mobility of the Devices from Vehicle/Equipment/Program to other Vehicle/Equipment/Program Depending on the Need and/or Program.
- Allows for Historical Collection of Data for Future Trending and Management of Programs.
- **If You Can't Measure It -- You Can't Manage It !**



Thank You, Questions?

Scott E. Roberts, GISP
Director of Information Technology
scott.roberts@southwindsor.org