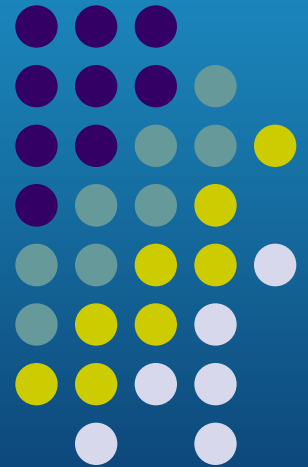
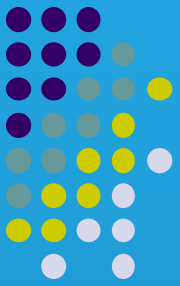


Field Collection of Critical Public Works Information

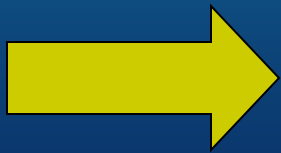
Michael McDaniel, City of El Segundo
Peter King, iWater Inc.



What is a Mobile Application in Public Works

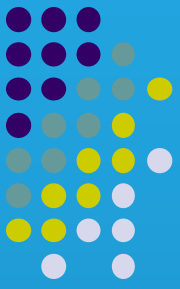


It's an electronic approach to documenting and tracking field operations and infrastructure assets



Water, Sewer & Streets, Storm Drains

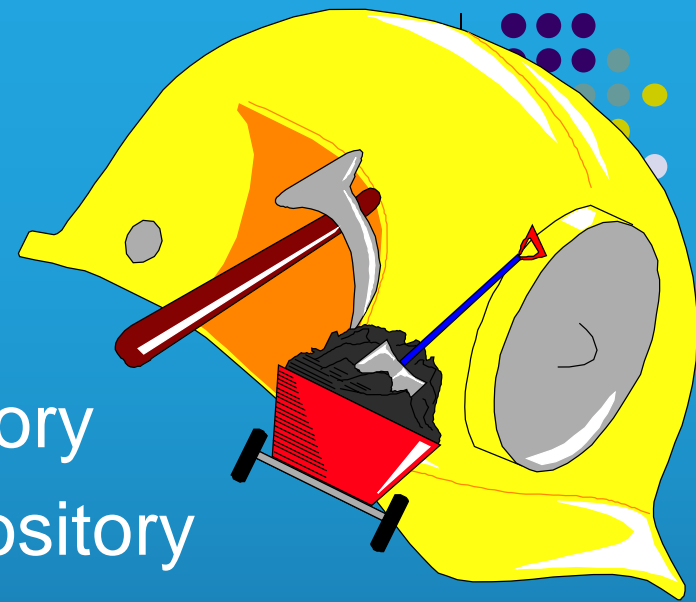
The Concept's Origin



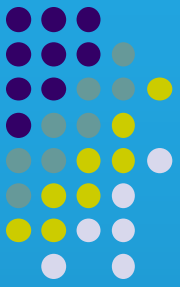
- | Our Public Works Director visited an “asset management” booth at an APWA conference
- | She considered the potential benefits to staff and management in El Segundo
- | Realized it could provide “METRICS” for Public Works

Its Potential Uses

- Elimination of institutional memory
- Document and photograph repository
- Historical records repository
- Instant field access to infrastructure maps
- Documenting daily/weekly workload
- Work effort accountability
- Evaluating resource needs – is staffing “right sized?”
- Planning tool for working with difficult residents

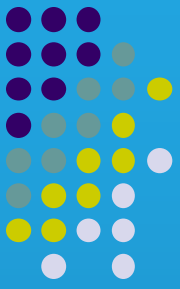


More Potential Uses (cont'd)



- | Documenting rate at which field assets degrade (painting, signage, pot holes)
- | Updating undocumented mis-documented field assets (water/sewer line, signs)
- | Documenting hot spots for backups, graffiti, main failures
- | Improved ability to convey deficiencies to City Council with pictures (~1000 words)
- | Reminders and scheduling activities – a planning tool for working with difficult residents

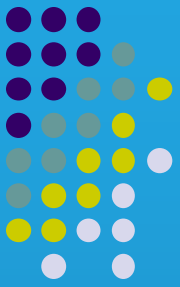
Operations Staff Reaction to the Concept



LUKEWARM!!!

With a chance of cool....

Selecting the Right Application



- | Assigned the project to a key staff member
- | Researched companies
- | Set up interviews for three firms
- | Evaluated the suite of options available

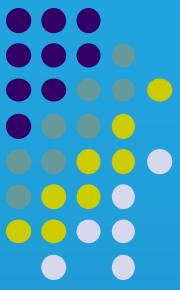
**How
complicated is
it to use???**

**Ease of use was
CRITICAL to its success**

Interview Process – Key Staff Involved in Every Presentation

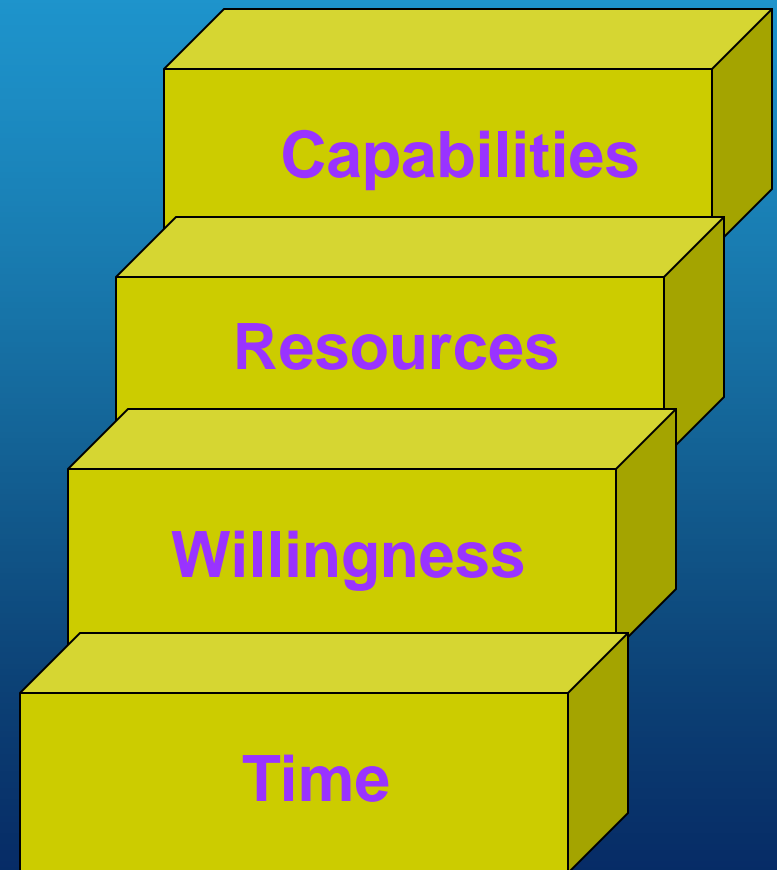


- | Sewer, Water, Streets
- | GIS, IS, Supervisors



GIS and IS Involvement

- | Having GIS and IS staff be part of the evaluation and selection process is VITAL for buy-in, set up, migration and long term support

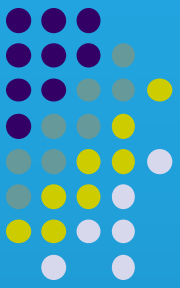


Key Considerations in Selection



- | Was the software intuitive (simple to use)?
- | Robustness to meet multiple Divisions needs
- | Cost of software, migration and support
- | Extent of software support
- | Hardware options
 - | Cost
 - | Durability
 - | Storage
 - | Compatibility





Key GIS Considerations

- Get GIS data in the field
- Needed to be Esri based
- Efficient collection of assets from the field
- Simplicity! Simplified management of inspection forms
- Simplified reporting



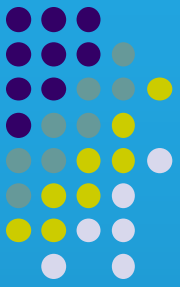
What Are the Costs?

- | No. of tablets (hardware) needed
 - | Training for all staff- lump sum
 - | Software cost - per tablet
 - | Migration – lump sum
 - | Annual fees for software and support
 - | Staff time of those involved - priceless
-
- | 6 tablets, 8 software packages, training and migration = \$70,000



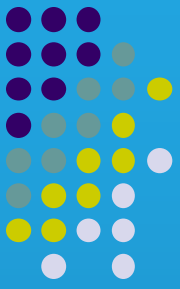


Selling it to Decision-Makers



- | Using the right **Buzz Words** to achieve buy-in and support from City Manager and City Council
 - | Disaster Preparedness
 - | Improved field efficiencies (time savers)
 - | Work product accountability
 - | Permanent records retention
 - | Elimination of institutional memory

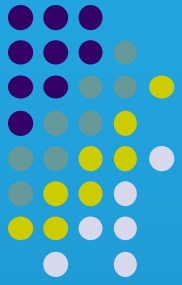
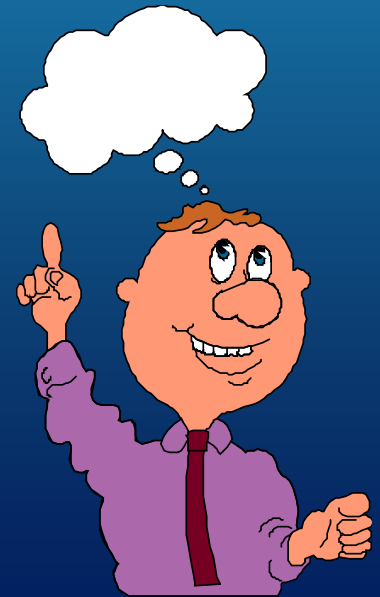
Field Solution



- infraMAP was selected as field data collection solution
- Eliminated paperwork in the field
- GIS maps and functions in the field
- Fully disconnected – no need for Wi-Fi or VPN in the field
- Reporting in the field
- Supervisory reporting for critical assets

Rolling it Out

- | Meetings with Divisions on forms and fields to be included – semi-customized
- | A few weeks to add fields, migrate data to SDE format to allow versioning, and build base map
- | Staff training – plan on more than once
- | Start using it right away



Tablet Uses By Division



Water

- | Exercising Valves
- | Hydrant Testing
- | Hydrant Painting
- | Meter/Box Replacements
- | Main Replacements
- | Main Breaks
- | USA Marking

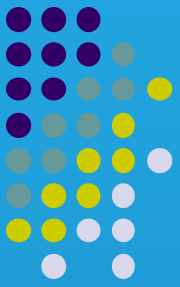
Sewer

- | Hot Spots
- | Jetting
- | Main Replacements
- | Main Breaks
- | Customer Notifications
- | Customer Cleanouts
- | Lift Station Maintenance
- | Storm Drain Cleaning/Stenciling

Streets

- | Street Signage
- | Sidewalks/Curbs
- ∅ Repairs
- ∅ Hazards
- ∅ Replacements
- | Pot Holes
- | Resurfacing
- | Striping/Painting
- | Graffiti

Infrastructure Base Map of El Segundo



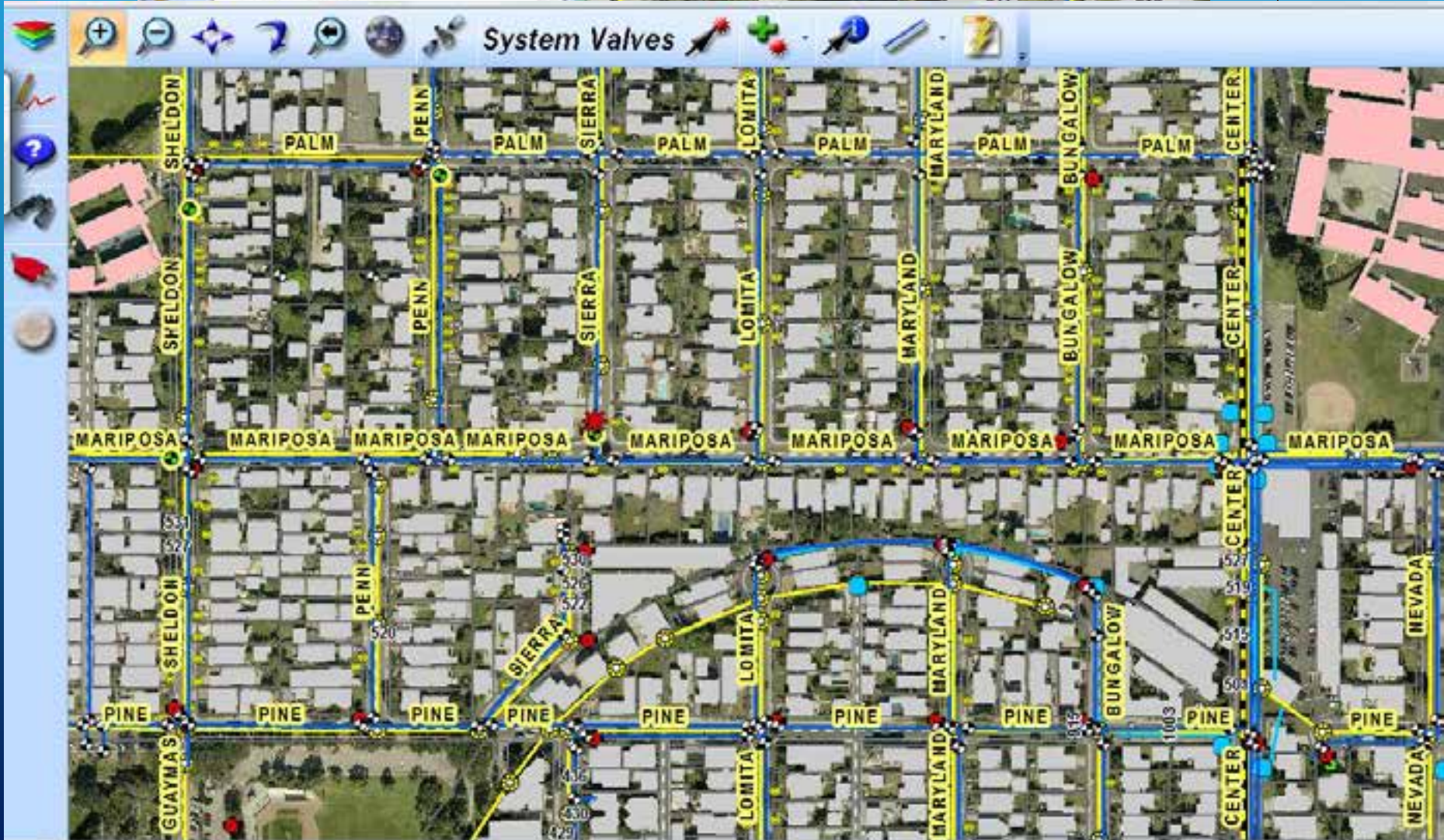
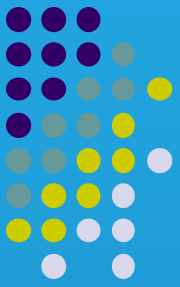
Map Layers

- Layers
- FieldNotes
- Leaks
- Streets
- StreetDefects
- Signs
- Sidewalk Defects
- Water Distribution System
- Waste Water
- Land Base
- Substructure Maps
- imagery.tif

Manholes

The map displays a detailed street grid with several layers overlaid. A prominent red network of lines, likely representing manholes or a specific utility system, is visible. A red dashed circle highlights a specific location on the map. The interface includes standard GIS navigation tools such as zoom in, zoom out, and pan.

Examples - Tablet Views



Redline Corrections



infraMAP 7.1.E32 - V161 Segundo, City of Inhamap Data\laptop.mxd

Redlines and Notes

Redline Type
Map Correction - New

Redline Description
Move 50' East

Copy from Redline Text Tool

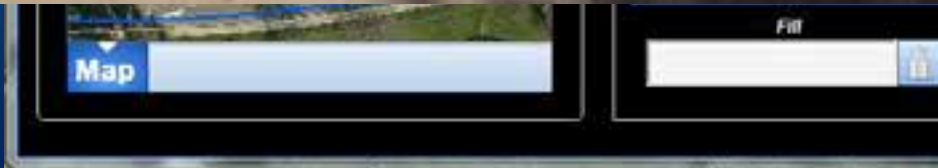
Save Cancel

My Redline Notes
Everyone's Notes

Redline Tools

The screenshot displays the infraMAP software interface. The main window shows an aerial map of an urban area with several redlines overlaid. A red circle highlights a specific intersection. A red arrow points from the text 'Move 50' East' to this intersection. The left sidebar contains a 'Redlines and Notes' panel with a 'Map Correction - New' type and a 'Move 50' East' description. The top toolbar includes various redline tools like lines, polygons, and text.

Document Hazards

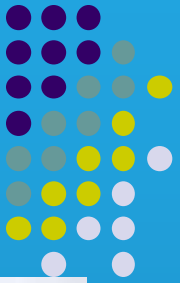


Logging Work Effort

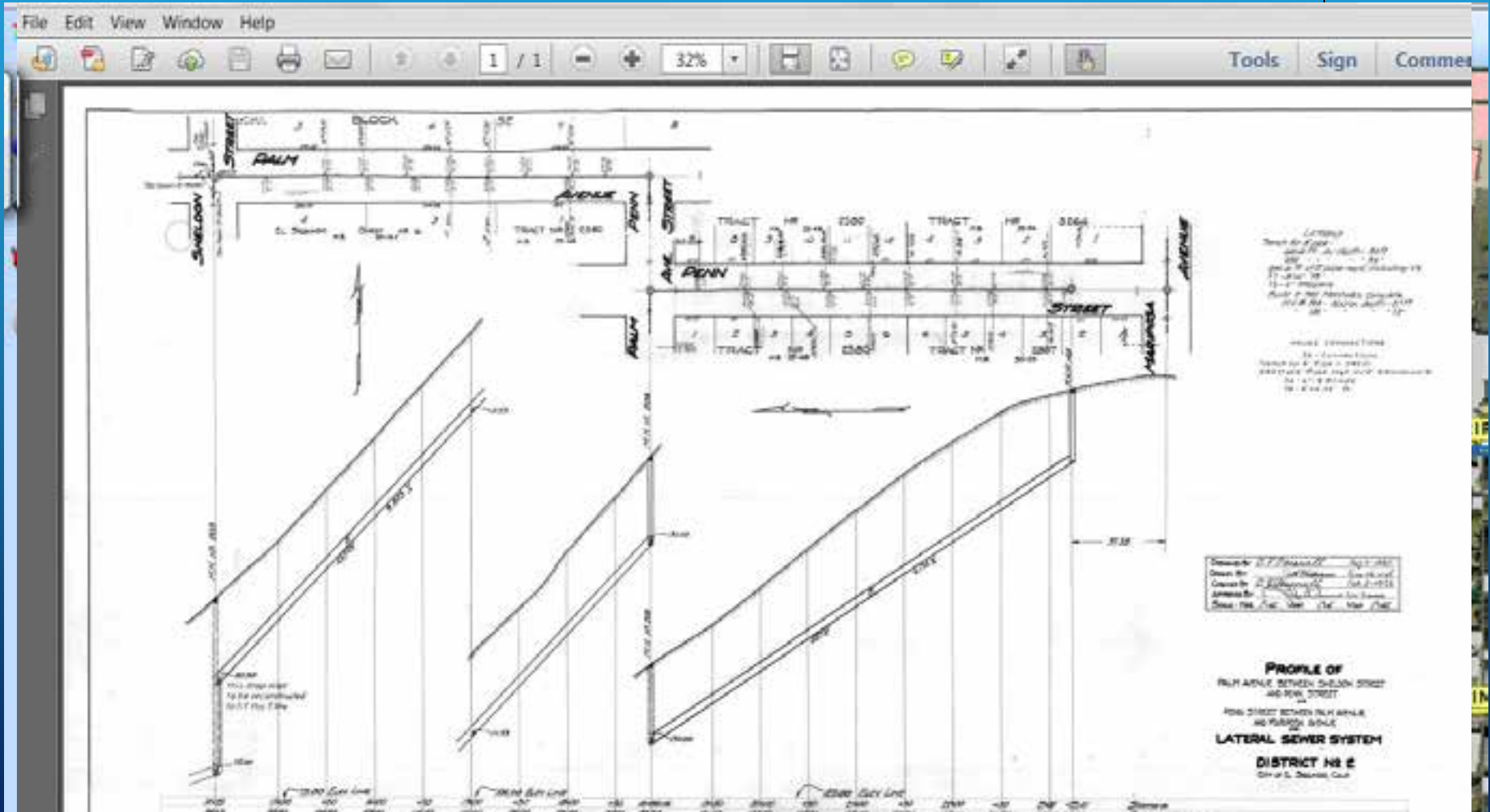
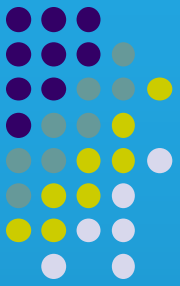


- | Graffiti removal
- | Curb painting
- | Sign Repair and replacement

Infrastructure Maintenance



Asset Detail and Maps/Videos



Field Measuring – P/L



The image shows a screenshot of Adobe Reader displaying a technical drawing of a street layout. The drawing includes the following elements:

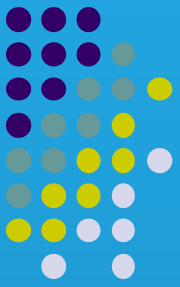
- Streets:** CALIFORNIA STREET, HOLLY AVENUE, and KANSAS (indicated by vertical dashed lines).
- Utility Lines:** 8" Sewer, 8" Water Line, and 6" Steel Pressure Line.
- Manhole:** A manhole is shown with a note: "REMOVE AND CONSIDER MANHOLE DWG. S-8".
- Dimensions:** A red horizontal line indicates a distance of 50 Feet. A vertical dimension of 7.9 Feet is also shown.
- Software Interface:** The Adobe Reader window title is "D-77.pdf - Adobe Reader". The menu bar includes File, Edit, View, Window, and Help. The toolbar shows page 1 of 1, a 60% zoom level, and buttons for Tools, Sign, and Comment.
- Layers Panel:** On the left, a "Layers" panel is visible with the following checked items: FieldNote, Leaks, Streets, Street, Signs, and Sidewalk. Other unchecked items include Water Dis, Waste W, Land Bas, Substruct, and imagery.t.



Lessons Learned

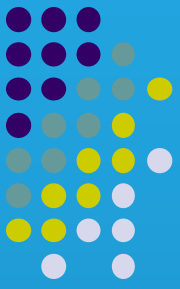
- | Champion to get Council/City Manager buy-in essential
- | Get supervisors to truly focus on setting up forms and required fields at the beginning
- | Don't presume staff attitude/willingness to embrace this tool
- | Learning curve for field crews is steep
- | Roll out by divisions – not all at once

Unexpected and/or Surprising



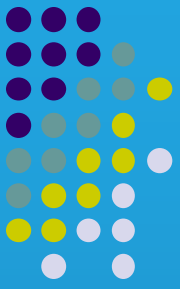
- | Who embraced this idea and who didn't; buy-in varied at all levels
- | It was not as intimidating as feared
- | The flexibility of the program
- | Instant access to maps was a big hit
- | Increased spatial accuracy in GIS

Is it Working?

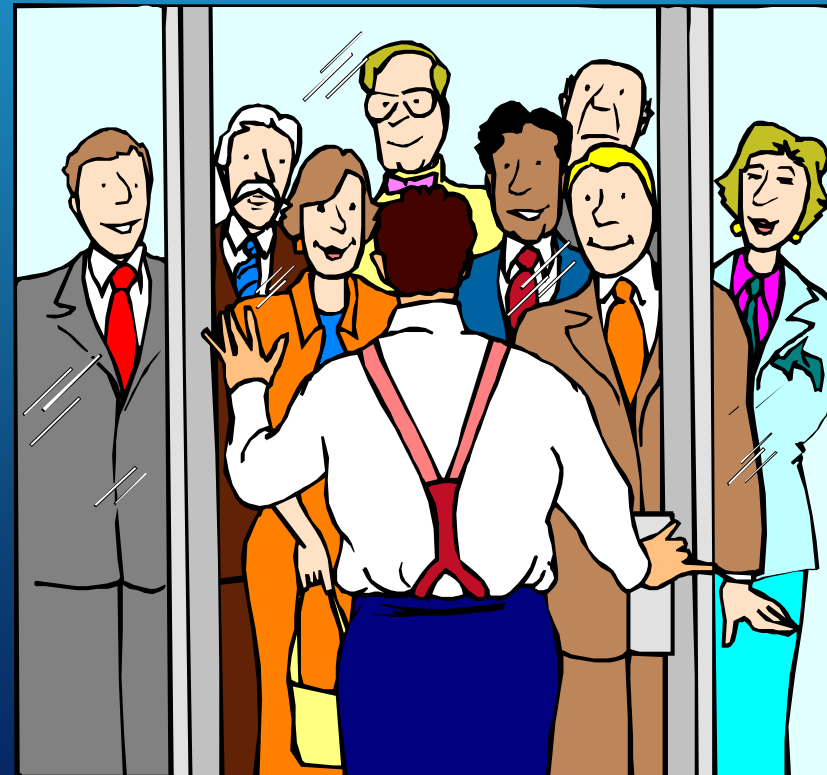


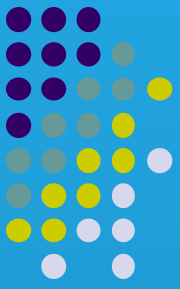
- | Yes, but slowly.
 - | Some benefits are instantaneous (access to info),
 - | Some benefits will take time to realize (documenting work effort and activities)

Importance of Leadership



- | The ability to see the tool as valuable to those who will be using it and set expectations for being positive to lower level staff
- | It won't grow in value over time if it's not embraced from the beginning





Questions?

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