

You Want to Stick What in My Vactor?

....Implementation of CMMS/GIS in the Field

Edward H. Oyama, P.E.
Teejay Deleon, GIS Analyst

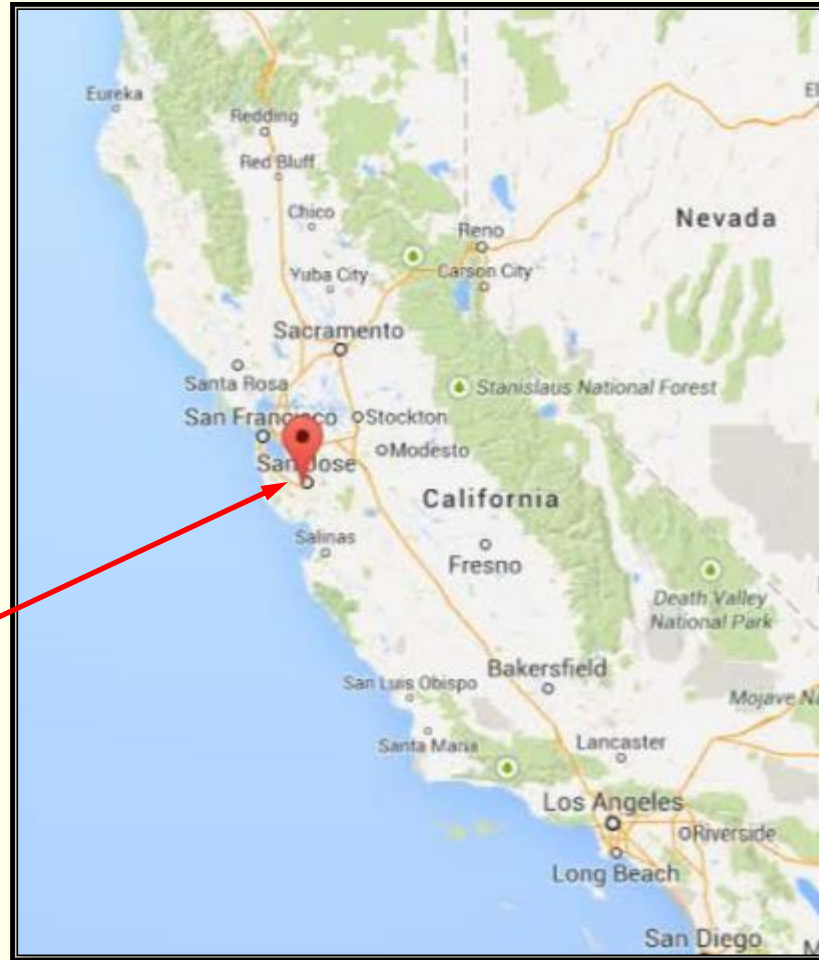
Presentation Outline

1. District Overview
2. CMMS/GIS Office Applications
3. Field Implementation
4. Keys to Success
5. Questions

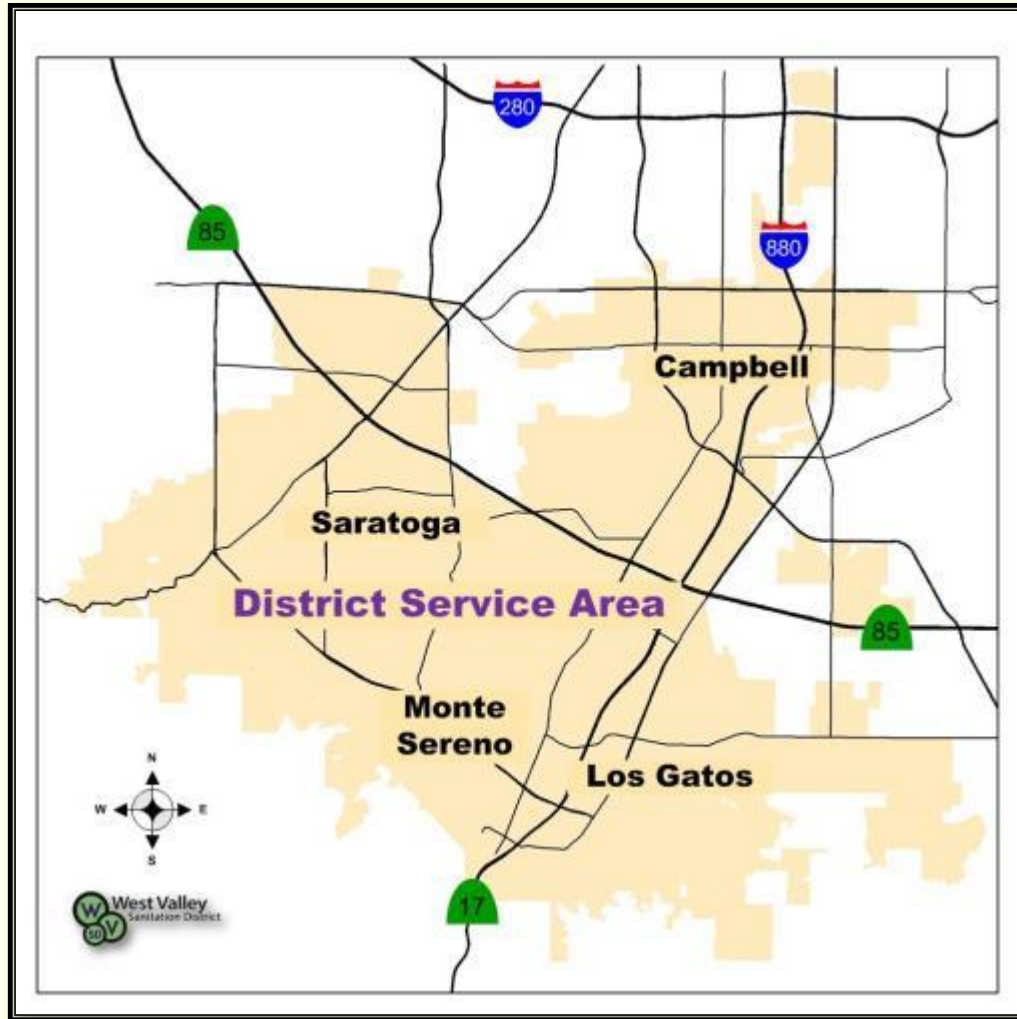
1. District Overview

District Location

WVSD
Campbell, CA



Map of WVSD



System Info

- ❖ Sewer Mains: 415 mi. (oldest 1916)
- ❖ Laterals: 210 mi. (32,000 laterals)
- ❖ Manholes: 9,000
- ❖ Flow: 9.9 mgd

2. CMMS/GIS Office Applications

CMMS/GIS Applications (Permits)

- ❖ Underground Service Alerts (USA)
- ❖ Sewer Permits
- ❖ Connection Records
- ❖ Correspondence to Property Owners

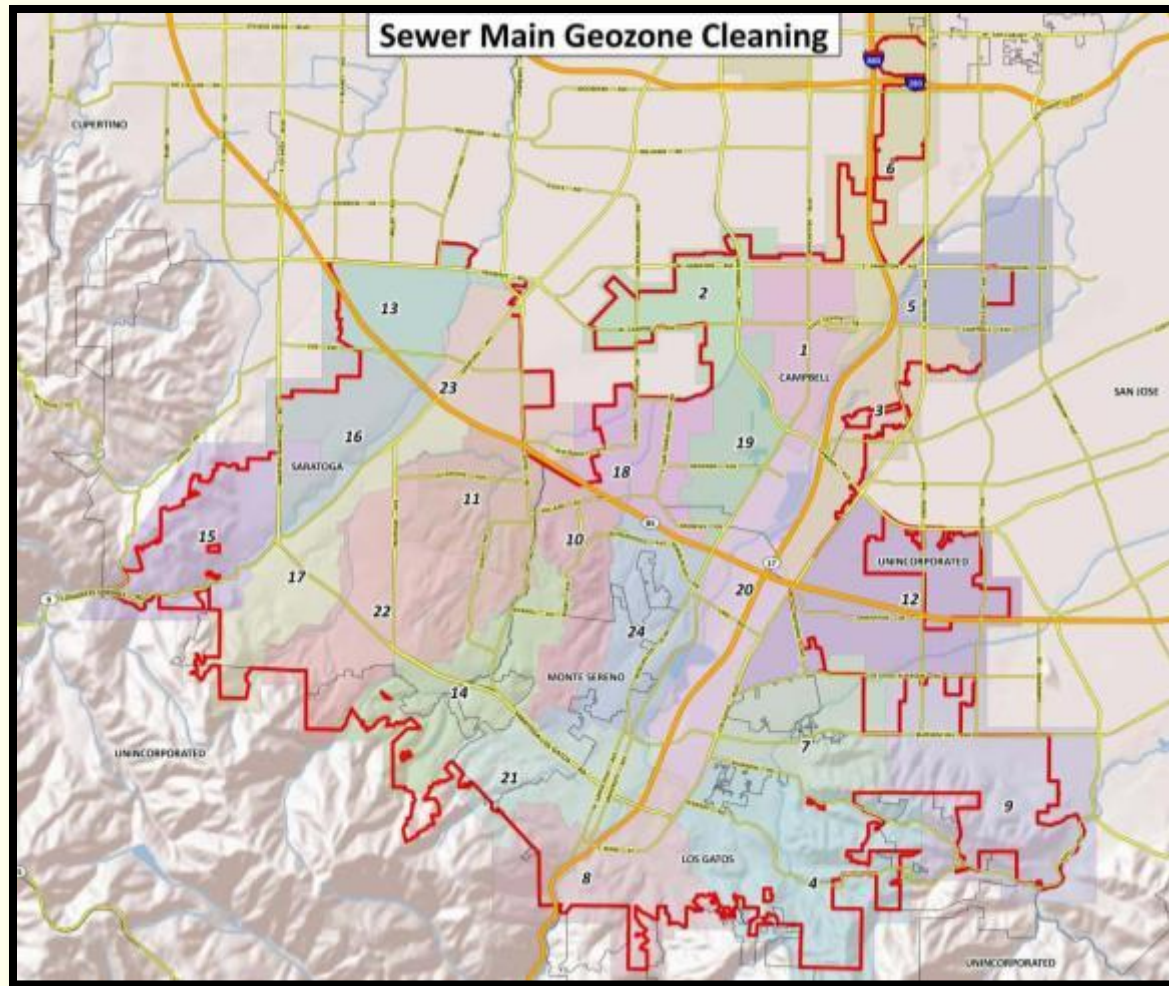
CMMS/GIS Applications (Engineering)

- ❖ Hydraulic Modeling
- ❖ Risk Modeling and CIP Project Prioritization
- ❖ Inflow and Infiltration Analysis
- ❖ FOG Program
- ❖ Links to Reference Data

CMMS/GIS Applications (Operations)

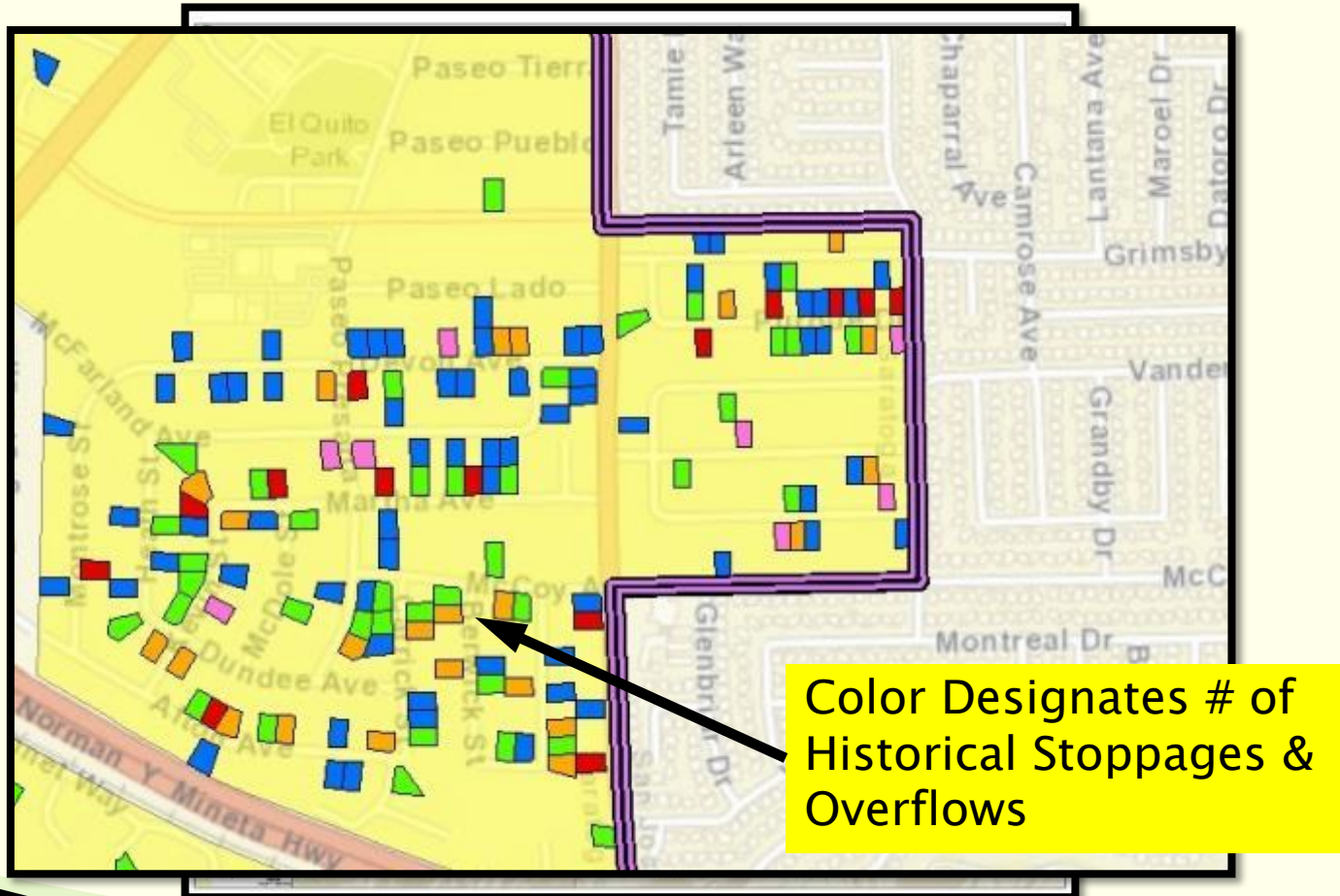
- ❖ Sewer Mainline Cleaning (Geozones)
- ❖ CCTV Inspections (Sub-basin)
- ❖ Storm System Cleaning
- ❖ Lateral Maintenance Program
- ❖ Equipment PMs (pumps, Fleet, CCTV)

Geozone Cleaning



Lateral Maintenance Program

Lateral Cleaning & Mapping



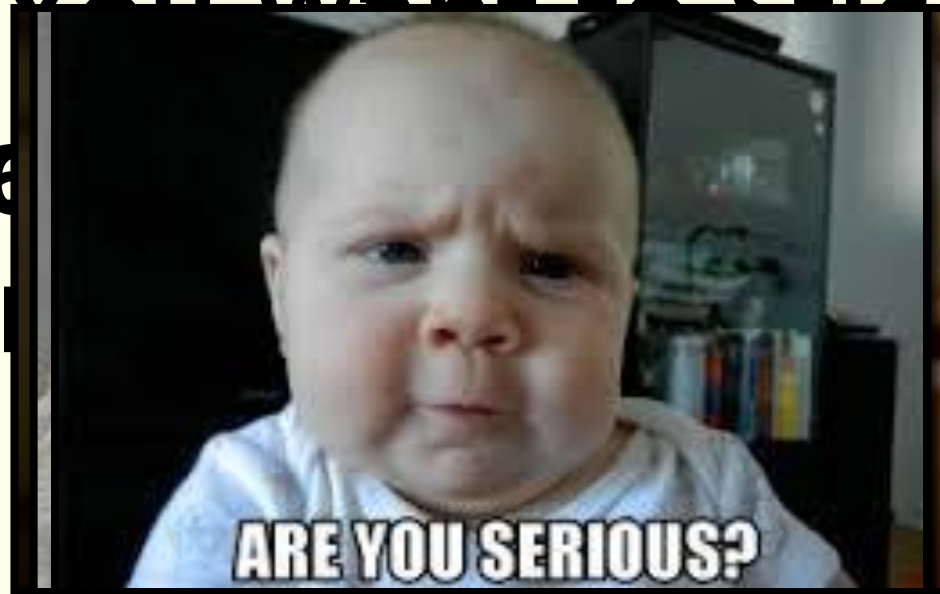
3. Field Implementation

Field Implementation Challenges

- ❖ General resistance to change – FEAR
- ❖ Disturbing an established comfort level after 15–25 years of experience
- ❖ Generational Gap – No computer knowledge
- ❖ Selecting right software & hardware
- ❖ Providing adequate training

Field Implementation Challenges

When we said we were going to eliminate paper maps and paper WOs and install laptops in maintenance



**In case you weren't sure
what a Vactor is.....**



Field Implementation Objectives

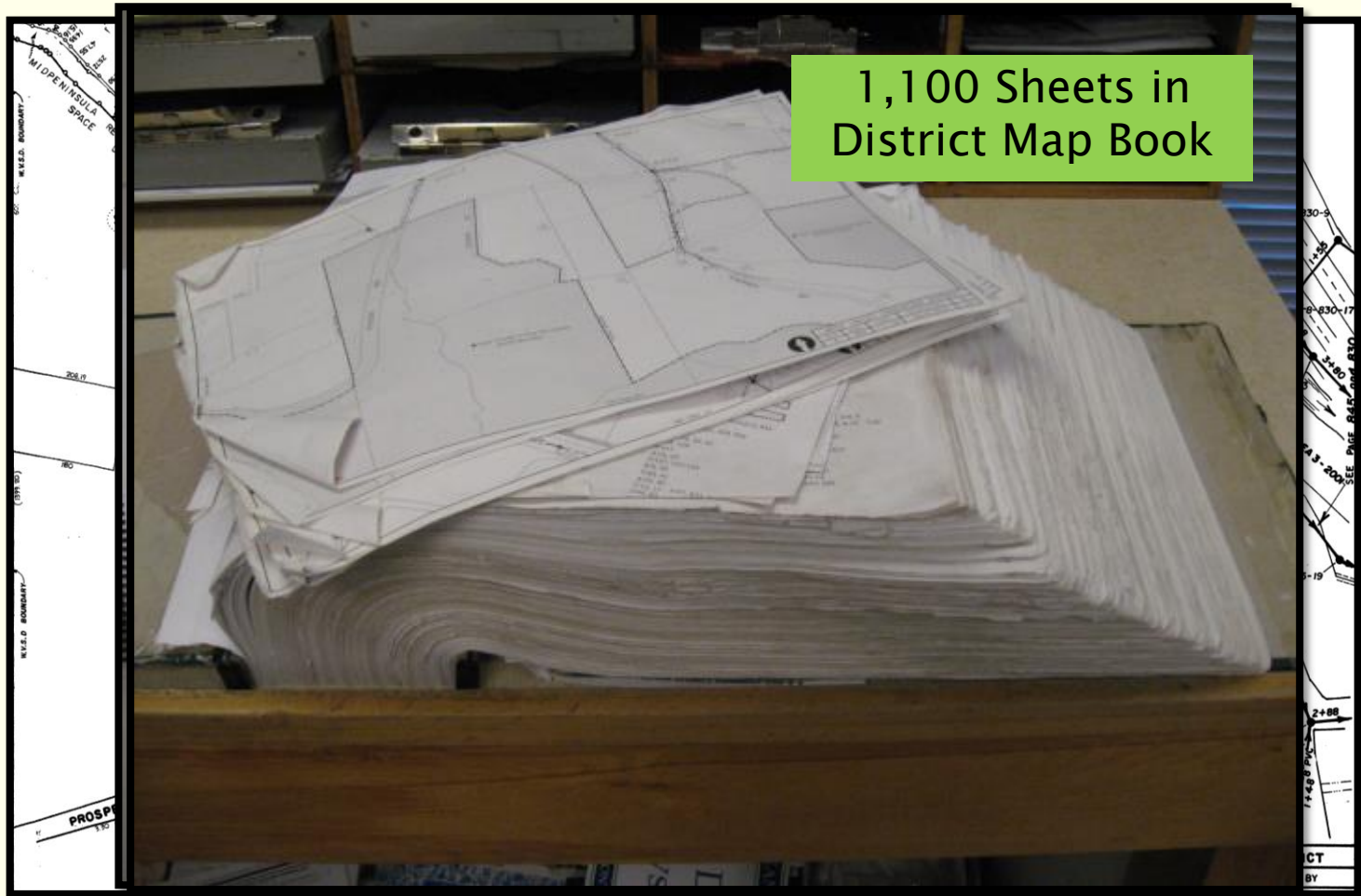
- ❖ Understand the User
- ❖ Explain How this Benefits the User
- ❖ Ensure Software & Hardware “Works”
- ❖ Empowering Staff with Training
- ❖ Establish an implementation “Champion”

Primary Changes

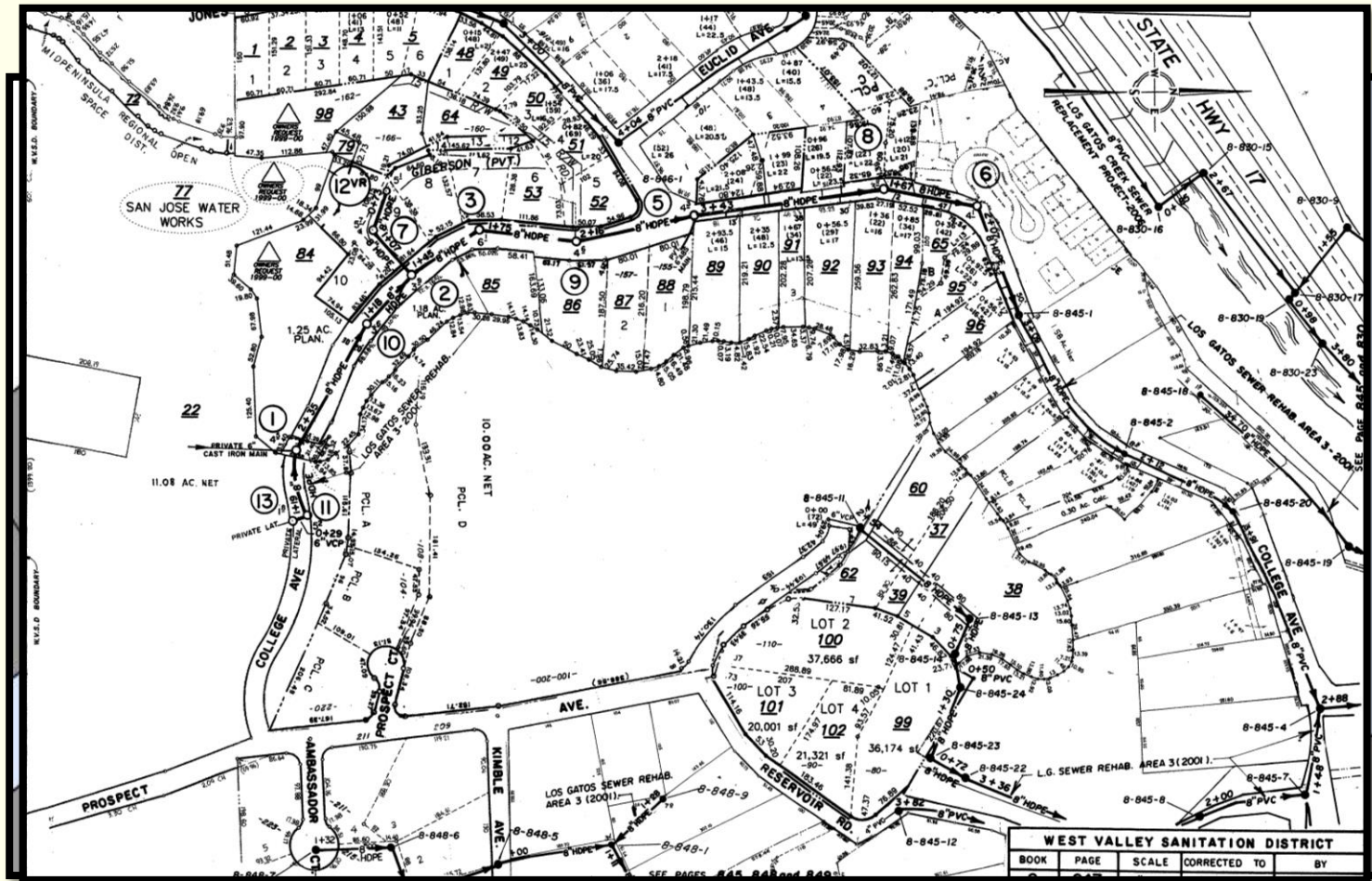
- ❖ GIS Mapping
 - Replaces existing paper maps, most current information, can make edits
- ❖ Sewer Overflows
 - Provides immediate system information during response, easier to locate structures, spill volume calculations
- ❖ Work Order Processing
 - Replaces paper WO, increases efficiency in routing work, facilitates data collection

GIS Mapping

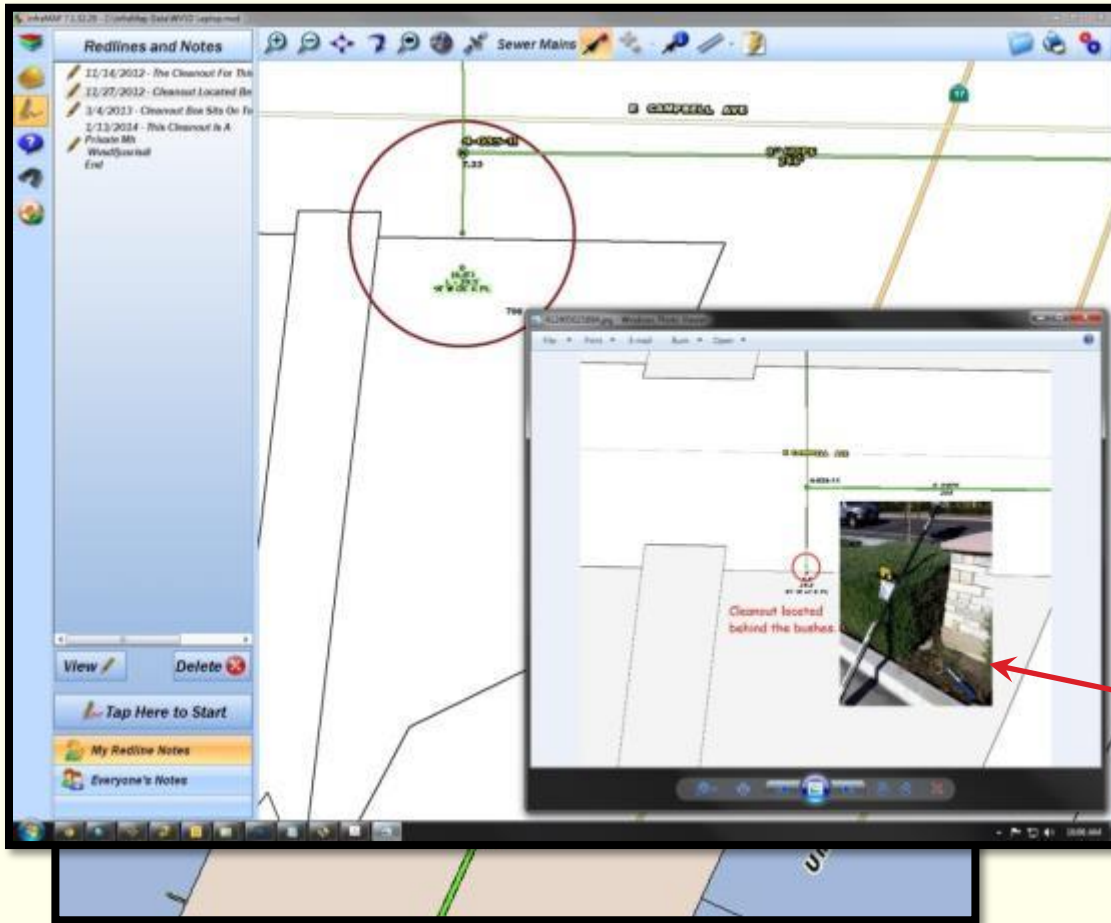
Elimination of Paper Maps



System Details



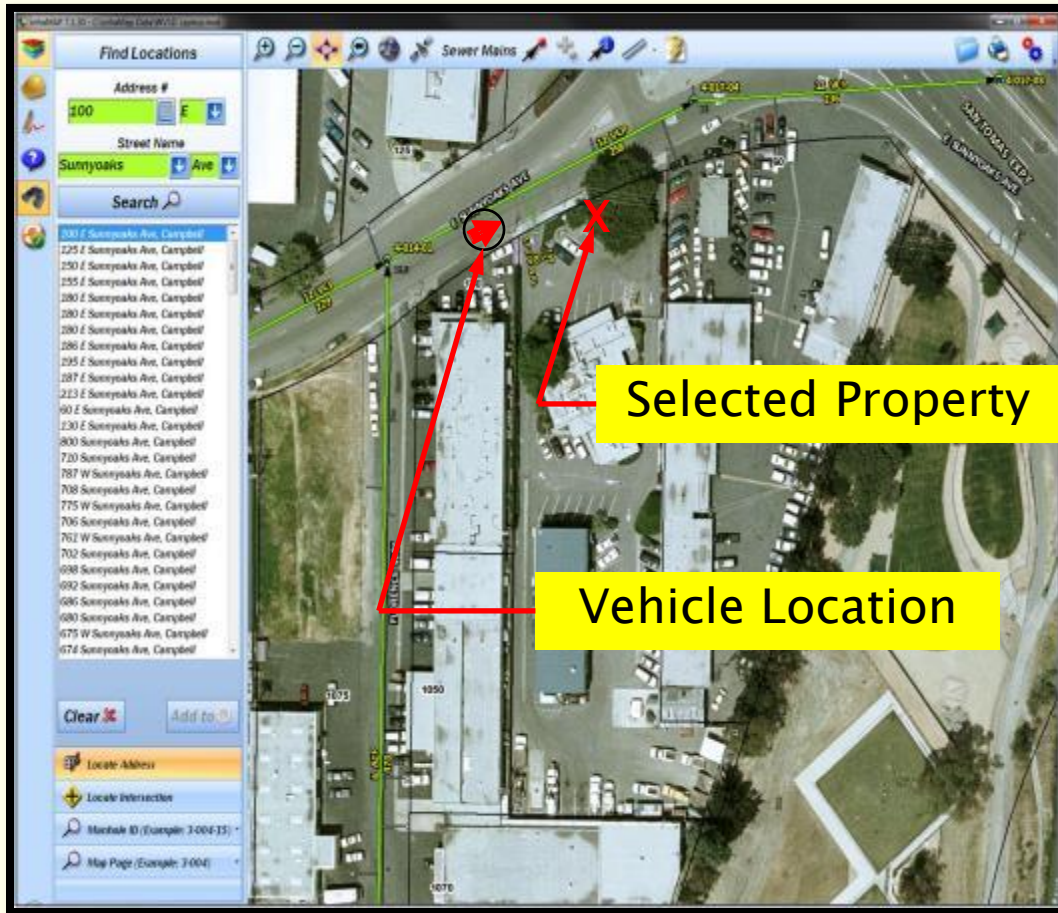
Redline Edits



Field crews can provide edits and comments as they encounter them which are incorporated in mapping within a matter of days

Comment and photo added to show location of hard to find structure

Ortho Map View



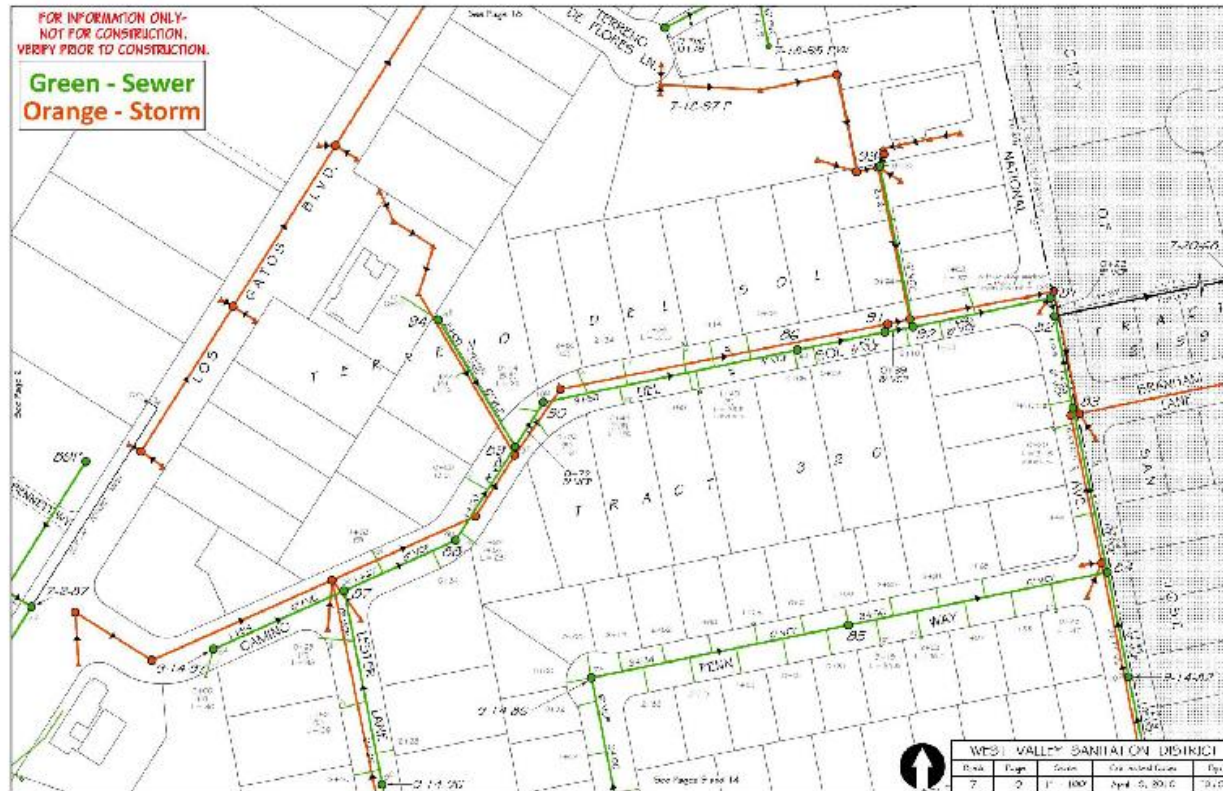
Address locate puts
“X” on property of
interest

Laptop is located on
map to help orient
driver

Especially helpful on
late night service calls
or on foot locating
manholes in
overgrown easements

Sewer Overflow Response

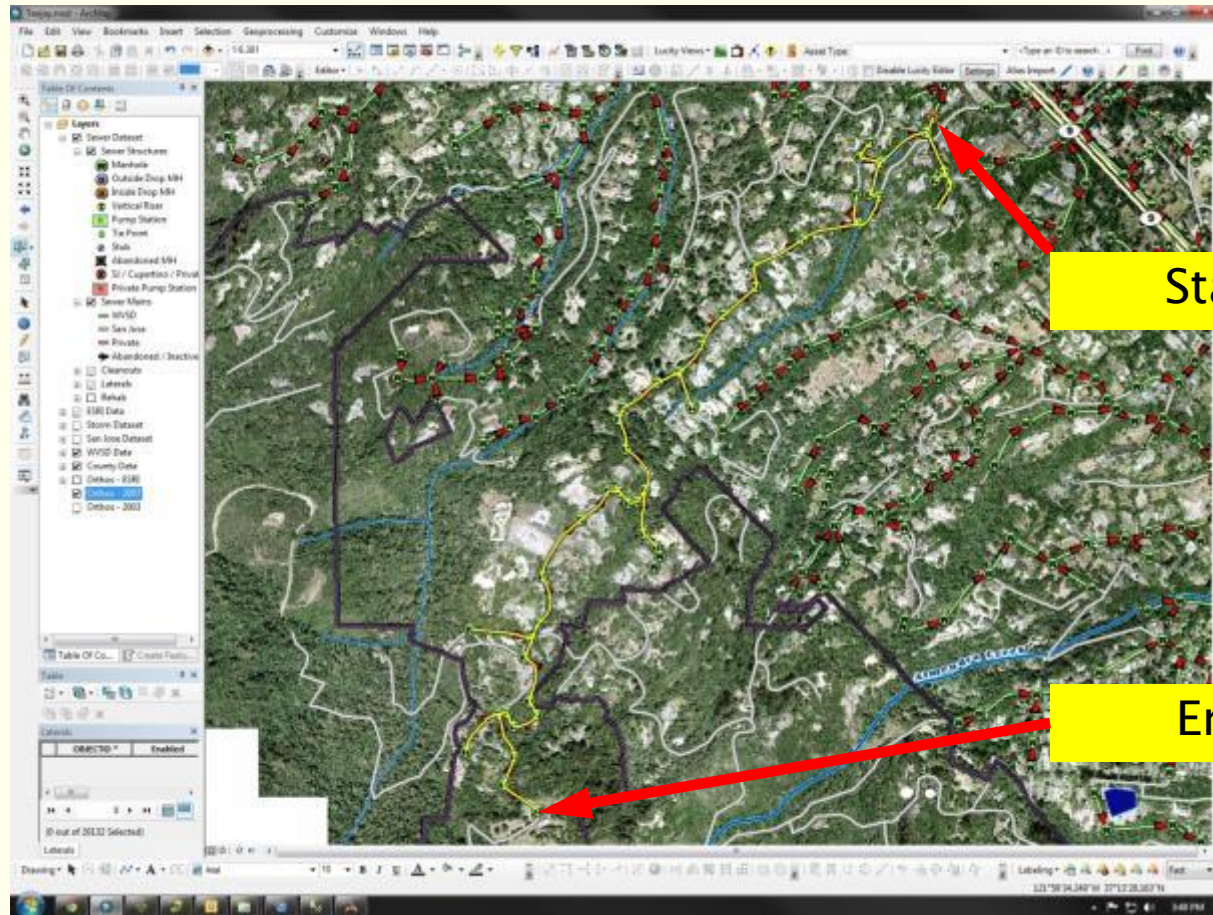
Spill Response



GIS Mapping – Sewer and Storm Systems

Spill Volume Estimation

Sewer Main Tracing Tool



Start Trace

End Trace

Work Order Processing

User Interface

HVC

Date	Description
2/5/2013	HVC
10/2/2012	HVC

Sewer Main

US Manhole: 8-046-03 Diameter: 6 Length: 333

DS Manhole: 8-046-82 Material: ACP

Specialty Cleaning: 3 Mo Main - HVC Street/Address: VINELAND AVE

Nozzle: Warthog Install Date: 1/1/1952

GeoZone: 24

Debris

Type	Severity	Lbs
Grease or Soap	Mild	10

Comments

Map

Upper section is auto-filled with sewer main asset information

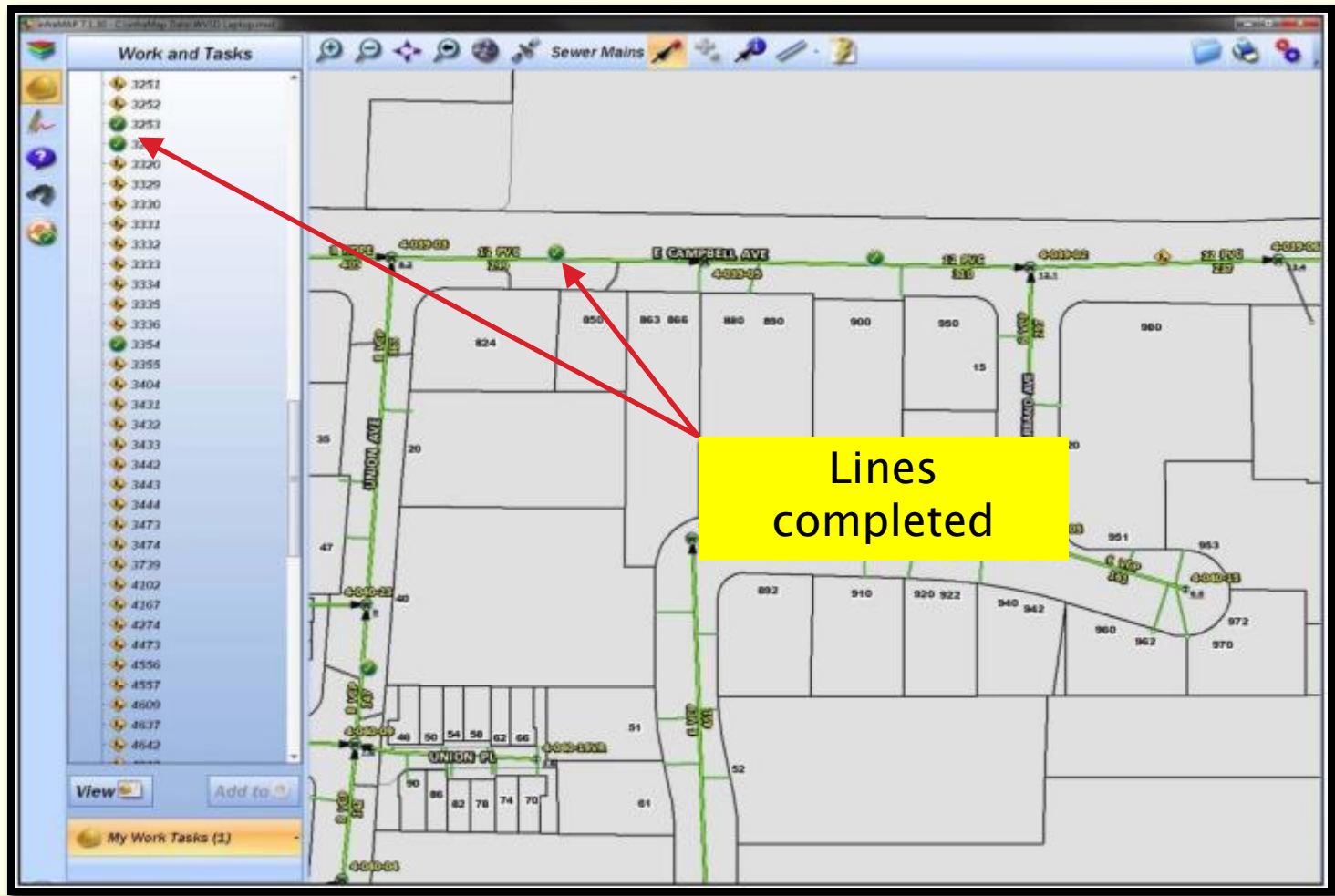
Green highlights indicates fields that have been filled

Yellow highlights indicate fields that still need to be filled

Generous use of pulldown responses

Thumbnail view of line being cleaned

Work Order Map



Software & Hardware

Software Selection

- ❖ Assembled Cross-sectional Team
- ❖ Invited several vendors to present product
- ❖ Evaluated capability, user interface, CMMS integration
- ❖ Compared track record of vendor/software
- ❖ Visited agencies who used selected software

Software Selected

- ❖ InfraMap by iWater
- ❖ Software has 15+ years of use in field
- ❖ Excellent product/support rating by users interviewed
- ❖ Used by 50+ utilities in CA
- ❖ Integrates w/ Lucity, Maximo, Cityworks, Mainstar, & Maintenance Connection

Hardware Selection

- ❖ Panasonic Toughbooks (CF-H2, CF-31) chosen to withstand accidental drops (6 ft drop rated)
- ❖ Standard computer keyboard
- ❖ Office docking station to charge and upload/download data at end of shift
- ❖ Vehicle docking station to charge and hold securely in place

Hardware



**Office Docking Stations
for Tablet**

Training

Training

- ❖ Gear training to needs of employee
- ❖ Allow adequate time
- ❖ Incorporate hands-on use
- ❖ Individualize training/refresher
- ❖ Provide written guidelines

Training

Work Order Sync

1. Click on the Hard Hat icon on the left panel.
2. Click on Completed Work Orders.
3. Click on Synchronize Work Orders.
4. Click OK on the Work Order Sync prompt.
5. Type in User Name and Password.
6. Click OK on Synchronization Complete.

User Name: OPS

Password: OPS

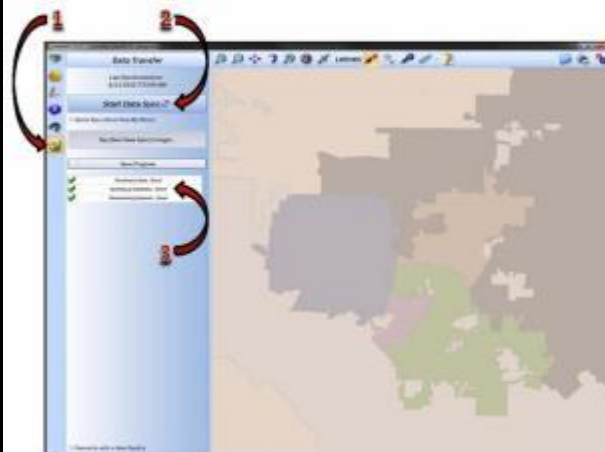
* User Name and Password is all CAPS



* Work Order Sync should be done DAILY, once in the morning and once in the afternoon.

GIS Data Sync

1. Click on the Data Transfer button icon on the left panel.
2. Click on Start Data Sync.
3. infraMap will go through the Data Sync Process.
4. Once the Sync Process is complete, infraMap will restart.



* GIS Data Sync should be done every other day to load the latest GIS data on each machine and to turn in any REDLINES to Teejay.

4. Keys to Success

Before Implementation

- ❖ Establish team (representative maintenance staff)
- ❖ Have staff CMMS/GIS expert on team (“Champion”)
- ❖ Know the primary users and their needs
 - wide generational gap/technical aptitudes
 - effect of significant changes
 - empathy (be in their shoes)
- ❖ Clearly understand purpose, scope
 - drivers for doing this
 - technology /procedural changes needed
 - allow adequate time for entire process

During and After Implementation

- ❖ Explain drivers/benefits of change for user
- ❖ Instill confidence through individualized training, move at their pace
- ❖ Maximize hands-on training
- ❖ Provide visual guides
- ❖ Provide ongoing support from “Champion”

5. Questions?

Contact Information

Edward Oyama

(408)385-3011

eoyama@westvalleysan.org

Teejay Deleon

(408) 385-3017

tdeleon@westvalleysan.org