

Pasco County

Stormwater Inventory Master Plan



Introductions

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Why did we need a Stormwater Inventory Master Plan?

- NPDES/ MS4 requirements
- Limited Data Available
 - Don't know what's out there
 - Don't know the condition
 - Current maintenance workflow – highly reactive
- Develop plan **Before** collecting



Purpose of the Stormwater Inventory

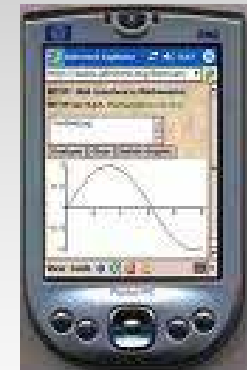
PURPOSE:

- To locate the structures
- To know how many we have (estimated: 120,000+)
- To identify the condition of the structures (clean, collapsed, clogged, etc.)
- To understand how runoff flows
- To design an inspection and maintenance program for our drainage system
- To respond more effectively to our citizens concerns
- To comply with the law (Clean Water Act – NPDES, TMDL, etc.)



Project Planning and Information Gathering

- Goals
 - Existing Hardware/Software
 - Existing Data
 - Project Objectives



Data Evaluation and Migration Plan

- Goals

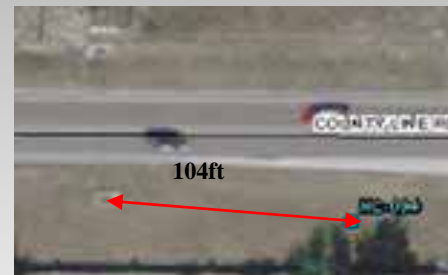
- Review Existing Data

- As-Builts
 - Digital Plan Sets
 - SWFWMD WMP
 - Ponds
 - Culverts
 - County Maintained Roads

- Recommend Strategy

- Develop Migration Plan (if necessary)

Structure ID	Address / Location	Spatial # (ft)	Attributes	Comments
Northern Section of County				
HC-130	18817 Autumn Lake Blvd	55.7	Floor	Only lists material of pipe
HC-138	18812 Baycomb Ln	34.7	Floor	Only lists material of pipe
HC-094	3008 yr of Autumn Lake Blvd	104	Floor	Only lists material of pipe
PL-614	17761 SW of US 45	13.8	Floor	Only lists material of pipe
HC-780	11048 E of Swasey St	81.3	Floor	Only lists material of pipe
HC-608	13304 Laurel Wood Ct	22.5	Floor	Only lists material of pipe
BC-478	12027 Pines Tree Dr	11.8	Floor	Only lists material of pipe
BC-040	17109 Seashore Dr	2.2	Floor	Only lists material of pipe
DHC-372	7481 Inglewood Dr	4.8	Floor	Only lists material of pipe
DHC-475	6221 Oak Moor Ln	3.8	Floor	Only lists material of pipe
Ave		34.85		



- Corrugated Metal Culverts:** Number 3 Crushed Silted Rusted Through
- End Treatment: Square-Edged Mitered Mitered with Safety Bars Flared End
- Reverse Flow Control Need Maintenance Wing Walls



Data Evaluation and Migration Plan - Results

Dataset name	Confidence	Representation	Relationship	Recommendation
Culverts	Low	N/A	N/A	Not Included
Ponds	High	Convert to GDB Feature Class		Include
Ponds Database.xls	High	Transfer hyperlinks to dLinkedInfo table in GDB	Pond Point feature Class	Include
Pond As-builts	Low	Link scanned image into dLinkedInfo table	Pond Point feature Class	Relate/Link
Digital plans	Low	Reference (if readily available)	N/A	Reference/ QAQC
As-Builts (project)	Med	Link scanned image into dLinkedInfo	Point/Line Feature classes in GDB	Relate/Link as needed
SWFWMD WMP data	High	Convert to GDB	All feature classes	Include GWIS format data, Not Included coverage format



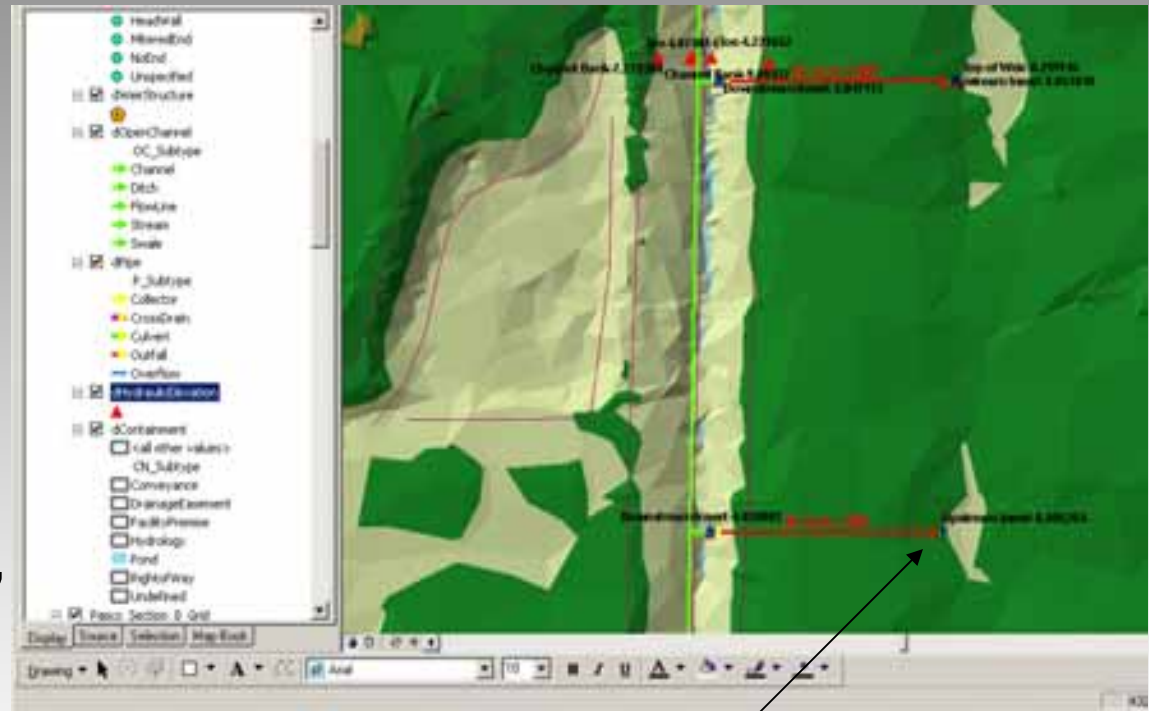
Geodatabase Design

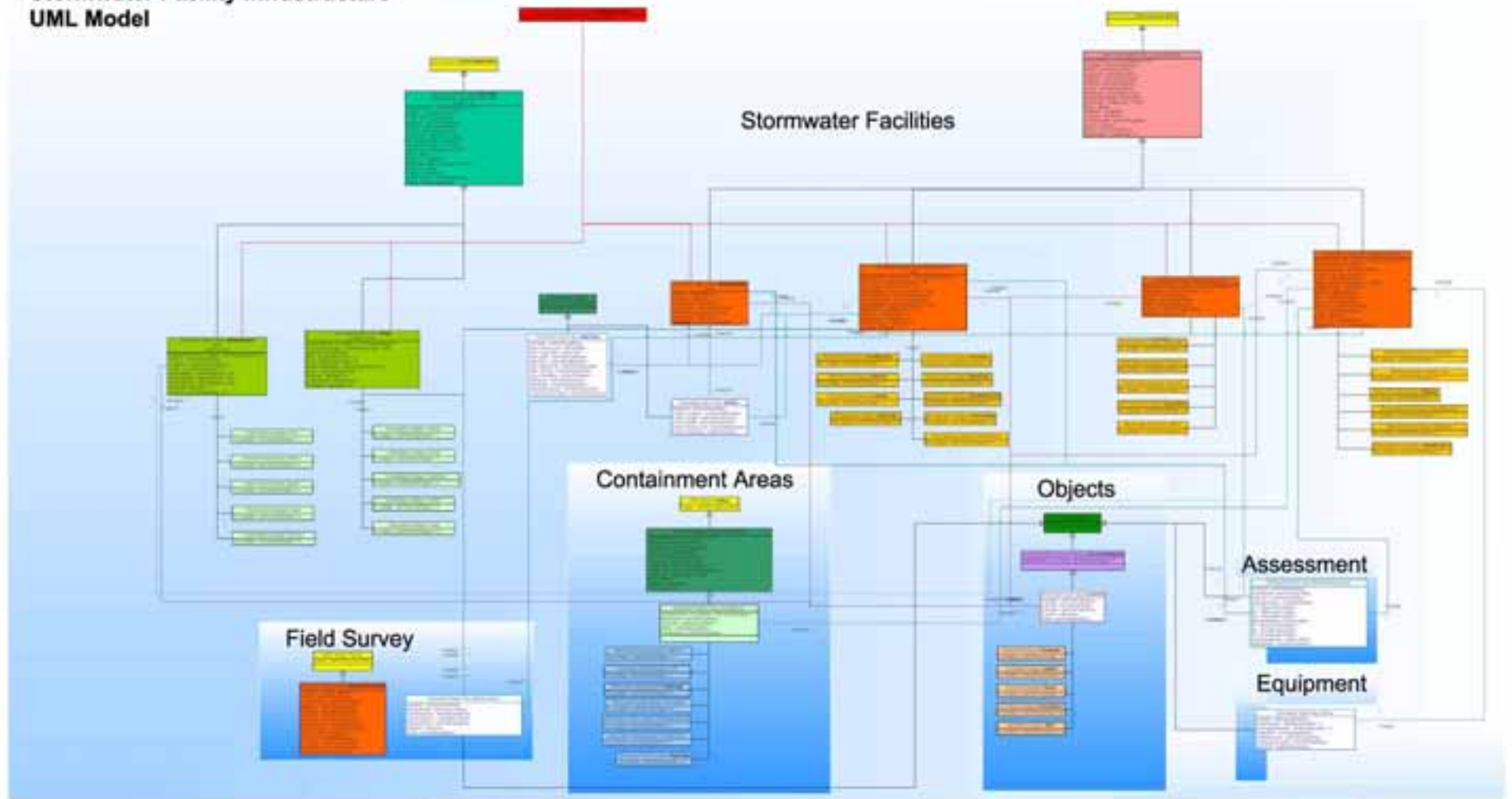
- Goals
 - Develop a Stormwater Database
 - Maintenance – CMMS
 - Water Quantity (Modeling - WMP)
 - Water Quality (NPDES, TMDL)
 - CIP Planning
 - Uphold Data Integrity
 - Relationships (link information)
 - Topology (network)
 - Domains (drop down lists)



Task 3 – Geodatabase Design - Results

- Pipes
- End Structures
- Open Channels
- Drop Structures
- Weirs
- Network Structures
- Containments
- Elevations
- Condition Assessments, Photographs, measure downs
other linked information
(as-builts)





Domains



Hardware/Software Evaluation

- Goals

- Identify Existing Configuration
- Identify Collection Goals
 - Elevations
- Evaluate Options
- Identify Future Projects
 - CMMS
 - Cad Standards/Cad Loader



- Methodology

- Set up three configurations
 - RTK, Sub-meter, Mobile Matrix
- Field Work
- Recommendations



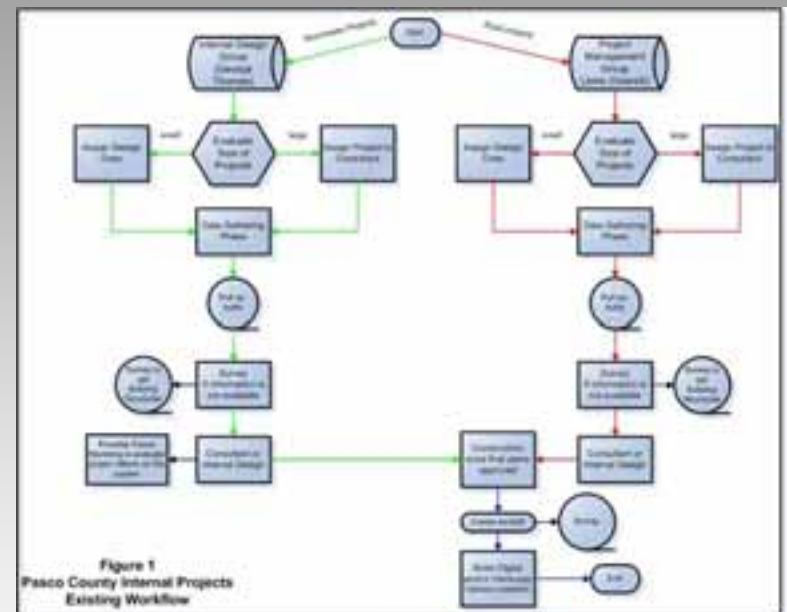
Hardware/Software Evaluation - Results

- Steps
 - Step 1 – Existing Configuration (modified)
 - PDA/ArcPAD - RTK
 - No initial cost
 - Step 2 – 2 years sub-meter collection
 - Trimble Handheld
 - Additional Resource
 - Reduce collection time by 2+ years



Workflow Analysis

- Goals
 - Identify how SW information is created and stored
 - Determine changes to procedures to ensure GDB is updated
- Methodology
 - Interviews with Staff
 - Develop Pre/Post Workflows and Recommendations



Workflow Analysis - Results

- Changes to Workflow
 - Internal/External Design
 - Developer
- Preliminary Change
 - SOPs, SW Table
- Future Change
 - Cad Standards
 - Cad Loader

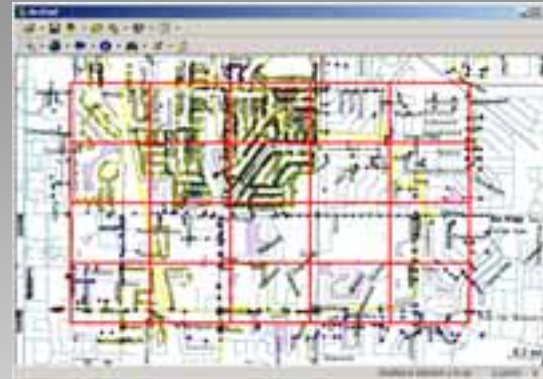
Stormwater Structure Identification Table							
General Attributes							
Line Number	Structure ID	Structure Type	Structure Sub-type	POD Type (if applicable)	Northing	Easting	Comments/Notes
1	S-3	Wet Invert	Wet Invert	Wet	1408840.00000	479806.30000	Top of grate
2	S-3	Wet Invert	Wet Invert	Wet	1408840.00000	479806.30000	Bottom of grate
3	S-4	Wet Invert	Wet Invert	Wet	1408811.30000	479806.40000	Top of grate
4	S-4	Wet Invert	Wet Invert	Wet	1408792.70000	479802.00000	Top of grate

Stormwater Structure Identification Table							
Elevations							
Structure ID	Northing	Easting	Elevation	Direction (if applicable)	Point Description	Comments/Notes	
S-3	1408840.00000	479806.30000	53.54		Wet Invert	top of grate	
S-3	1408840.00000	479806.30000	53.31		Wet Invert	top of grate	
S-4	1408811.30000	479806.40000	52.96		Wet Invert	top of grate	
S-4	1408792.70000	479802.00000	53.57		Wet Invert	top of grate	
P-1	1408840.00000	479806.30000	46.80	East	Upstream Invert		
P-2	1408840.00000	479806.30000	46.80	West	Downstream Invert		
P-3	1408840.00000	479806.30000	46.77	South	Upstream Invert		
P-3	1408811.30000	479806.40000	46.74	North	Downstream Invert		
P-4	1408811.30000	479806.40000	46.70	East	Upstream Invert		
P-4	1408792.70000	479802.00000	46.55	West	Downstream Invert		



Standard Operating Procedures

- Goals
 - Develop SOPs for Office and Field for the Stormwater Inventory
- Office SOP
 - Routing
 - GDB to field to GDB
 - QAQC
- Field SOP
 - Field Protocol
 - Collection Forms
 - Identification
 - Safety



Pilot Project

- Goals
 - Test SOPs
 - Test Hardware/Software Configuration
- Methodology
 - Phase 1 – Consultant
 - Changes Made (if necessary)
 - Phase 2 – County/Consultant
 - Changes Made (if necessary)
 - Phase 3 – County
 - QAQC by Consultant



Training

- Goals

- Office SOP Training

- Routing
 - Check-out/Check-in Data
 - QAQC

- Field SOP Training

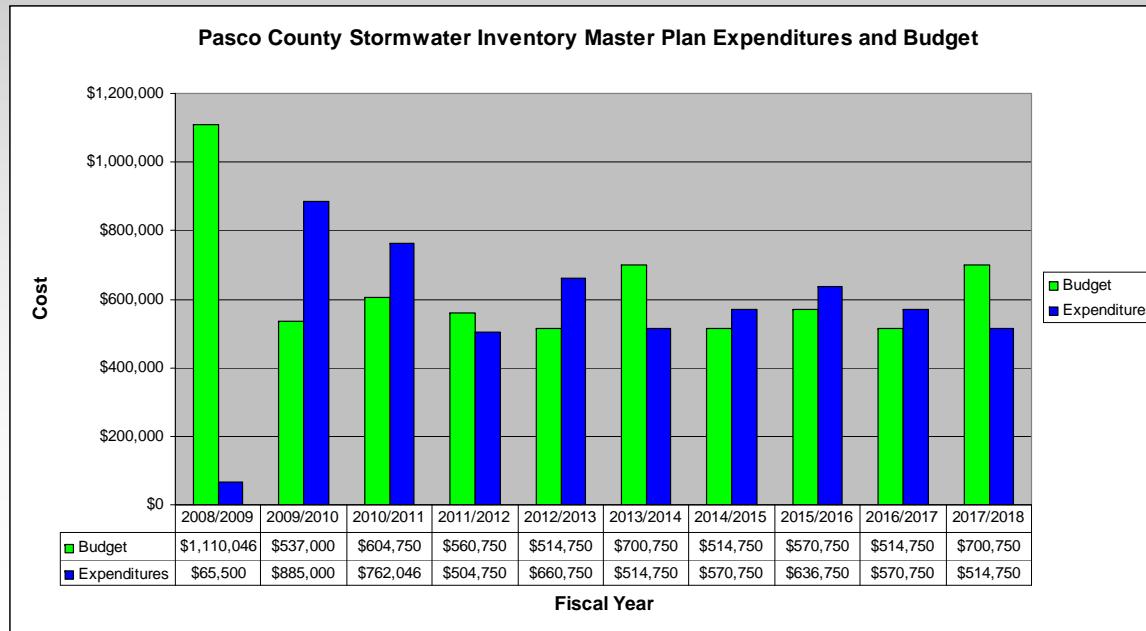
- Protocol
 - Safety
 - Custom Collection Forms
 - SW Identification



Implementation Plan

- Goals

- Determine all “Action Items” required to implement the SW Inventory master plan
- 10+ year projected budget
- Additional Resources required



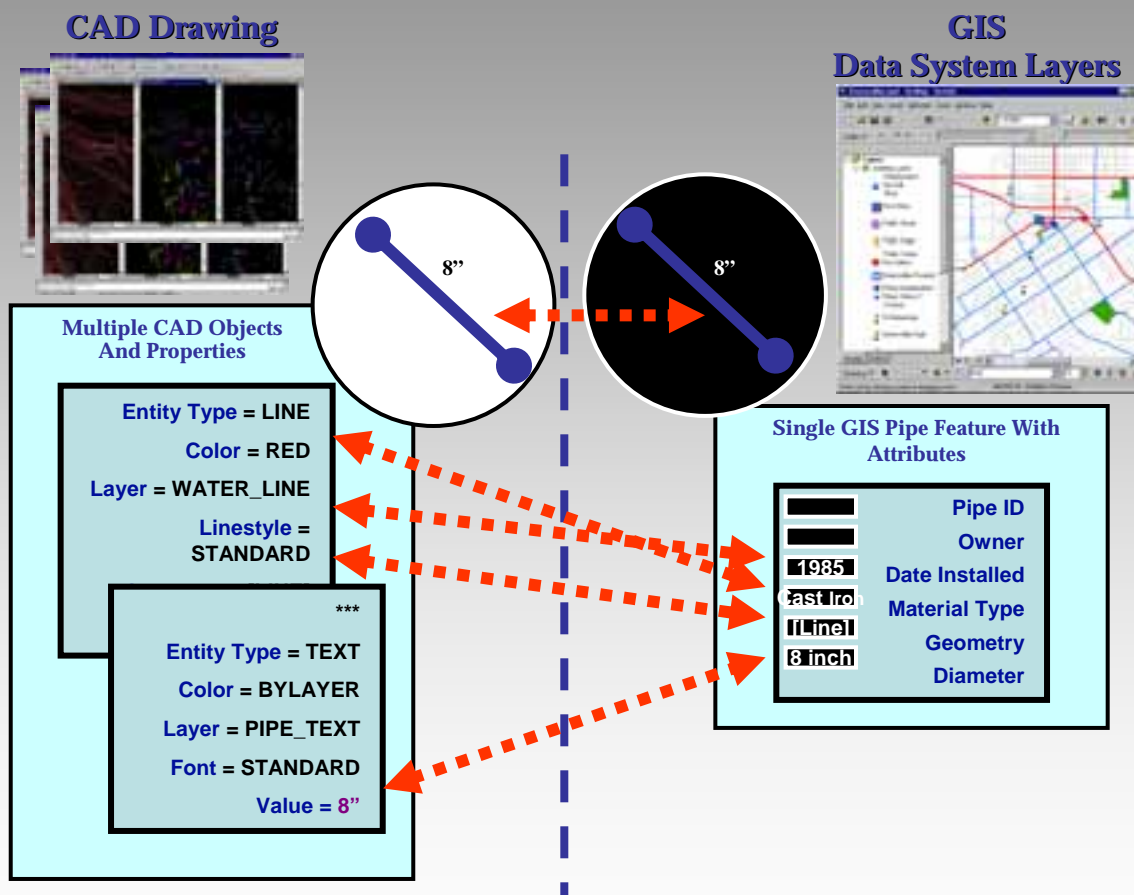
Current Status and Added Benefit of Collection

- Two Data Collectors
- Covered ~10 Sq Miles
- Rediscovery of Infrastructure
- Maintenance Awareness
- Stormwater Design vs. Real World Flow



Future Projects

- CMMS
- Accelerate Master Plan
 - Sub-Meter GPS Units
- CADD Standards/CADD Loader



Questions?

