AVISTA UTILITIES' DISTRIBUTION INTEGRITY MANAGEMENT PROGRAM (DIMP)

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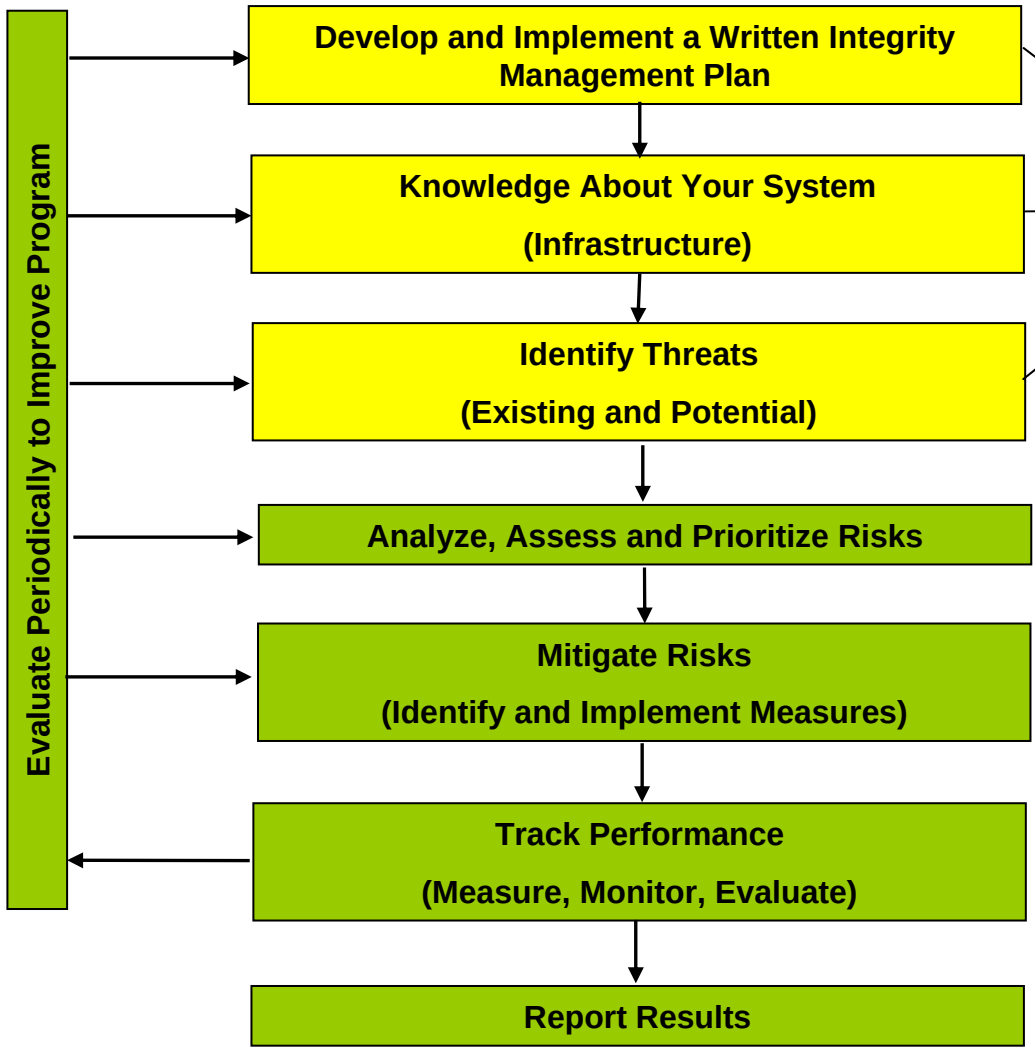
7 ELEMENTS OF DIMP



ELEMENTS THAT AVISTA IS CURRENTLY FOCUSING ON

KNOW YOUR INFRASTRUCTURE/DATA COLLECTION

Avista continuing initiative to convert paper to electronic via GIS and mobile application.

- Half data in paper forms and half data collected in a database.

  Example - Leaks:
  - trouble order type leaks - mobile dispatch to GIS
  - leak survey leak repairs - paper format and filed

- Other key data in paper format
  - Exposed condition reports
    - capture for steel pipeline
    - currently do not capture for plastic pipeline
  - Bridge crossing inspections and other similar piping
  - Patrolling inspections
  - Installation data – method of installation, location of key components

KNOW YOUR INFRASTRUCTURE/DATA COLLECTION

- Analyzying the current data being collected and envisioning how the data will be used from an analytical root cause standpoint. Is it in a usable format that can be queried. This includes mitigative measures.
  - Paper format is not easy to query, especially when looking at data in various ways and for different threats.

DATA COLLECTION - ENHANCEMENTS

Example of data being collected but not in a useful format:

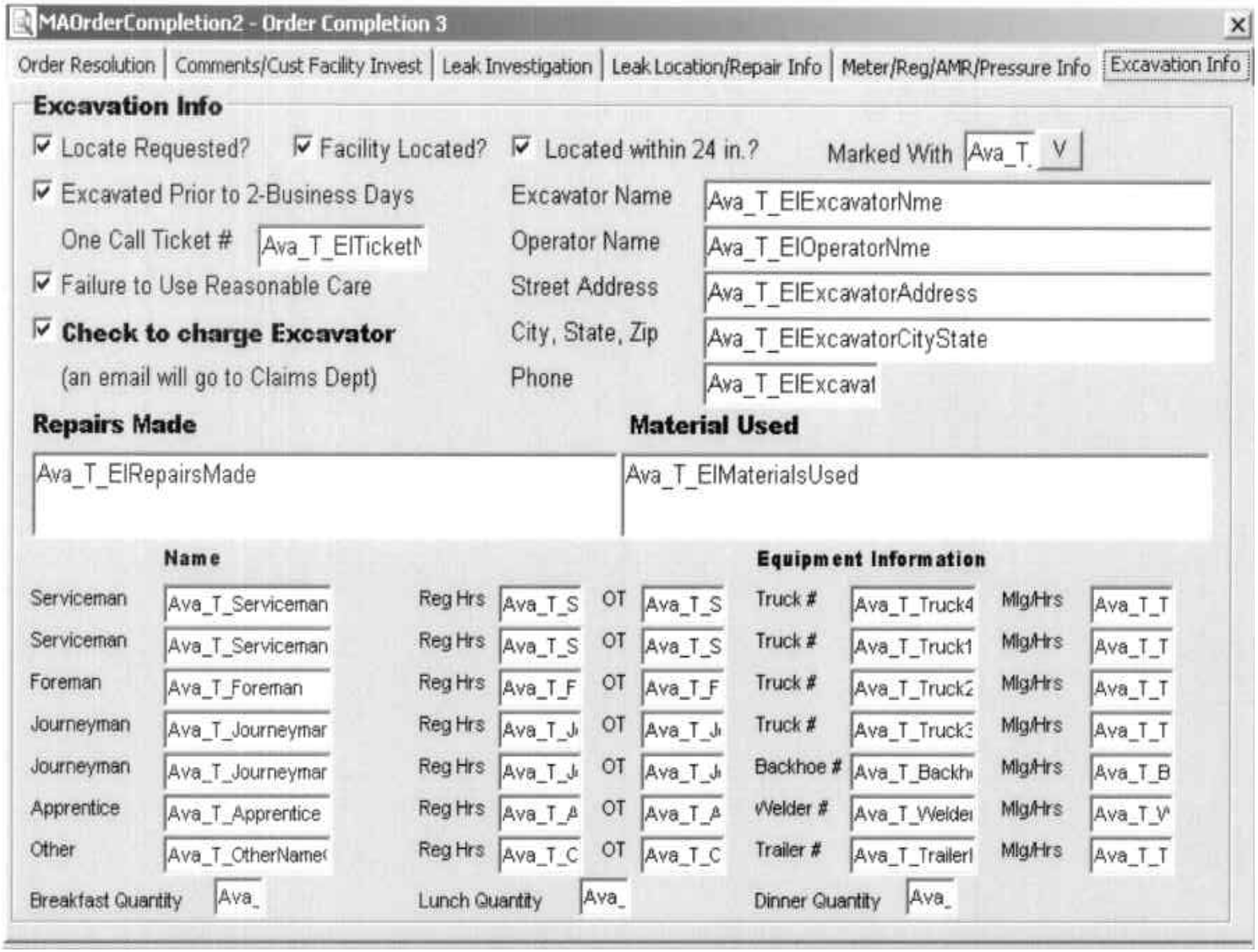
Damage Prevention Data

- In our electronic form, the root causes for damage are a series of check boxes. Because there is the ability to check any or all of these boxes it is difficult to determine what the actual root cause was.
- Not collecting enough information to be able to identify many trends
- Difficult to query on information that does not have a specific field or specific choices such as comment fields or free text options.

  Setting ourselves up for future expandability by creating drop down boxes which also means we can gather more data in a limited amount of space.

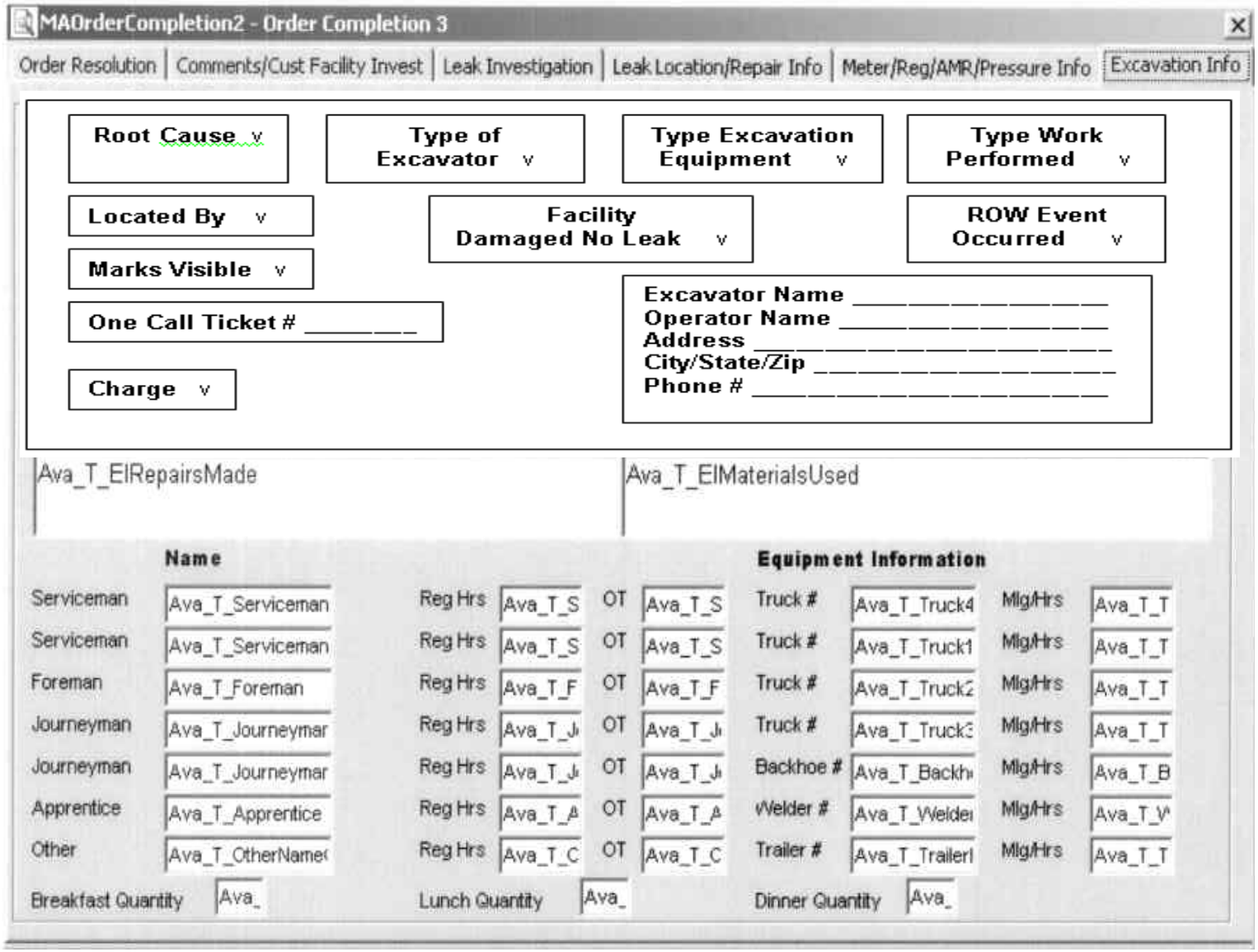
DATA COLLECTION

EXISTING DATA COLLECTION FORMAT



DATA COLLECTION

ENHANCED DATA COLLECTION FORMAT



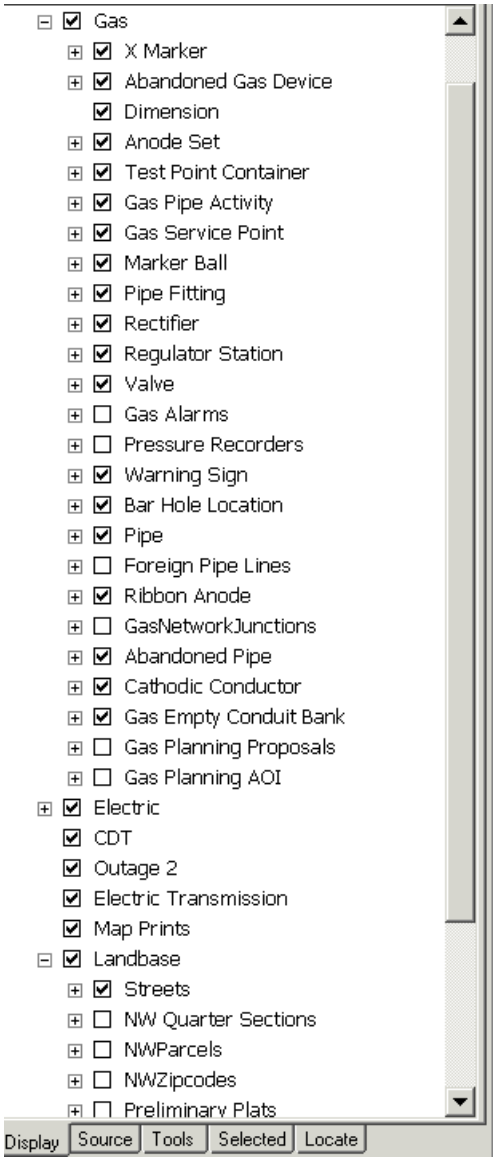
SYSTEM INFRASTRUCTURE

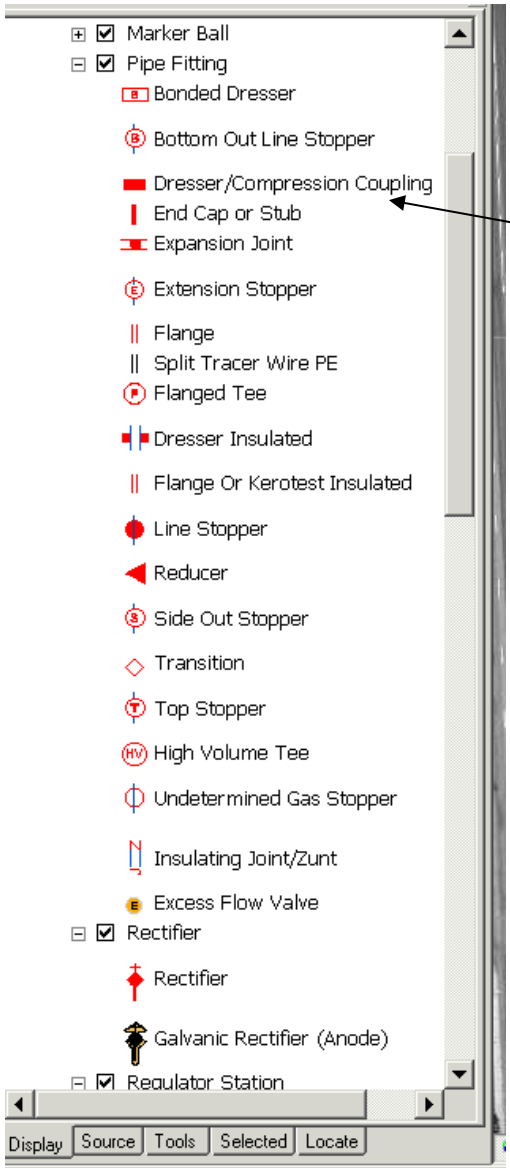
Performed an infrastructure review and gap analysis on component data and installation data

Missing:

- most types of couplings, service tees, etc
- a way to tie manufacturer or part numbers to the components
- information on all types of service regulators (residential)
- installation information such as method of installation, warning tape, soil types

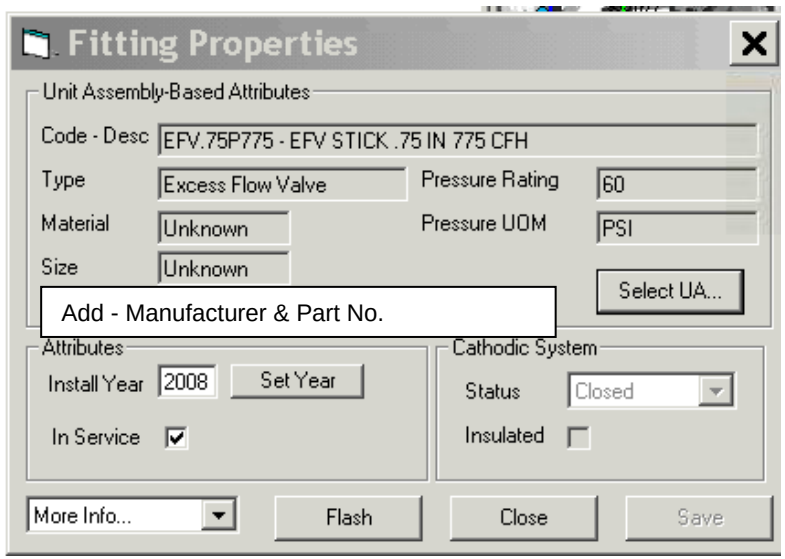
SYSTEM INFRASTRUCTURE



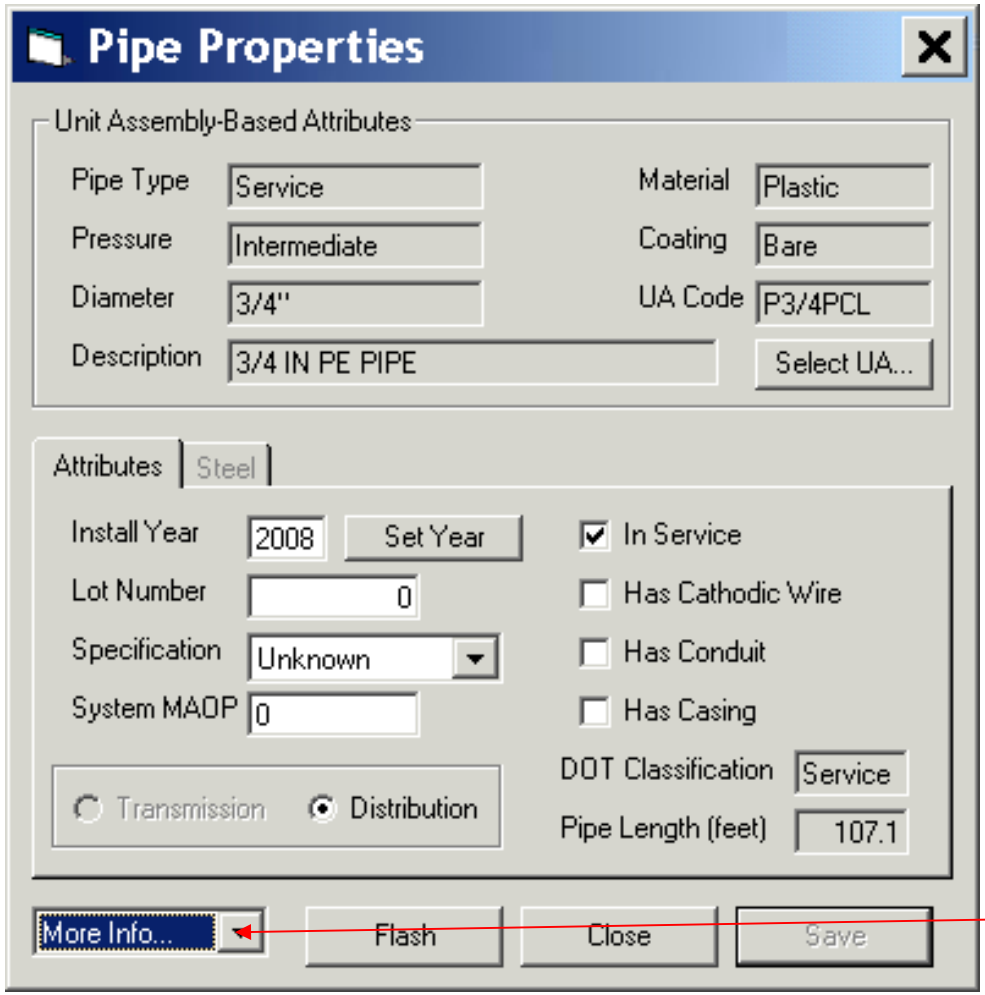


GIS MAPPED LAYERS AND FEATURES

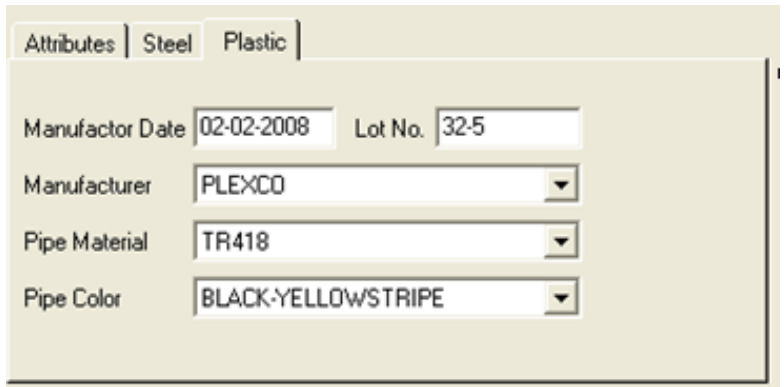
- Dresser/Compression Coupling will be expanded to include all types of couplings using existing symbology. Currently only mapping dresser couplings



SYSTEM INFRASTRUCTURE



Adding a tab for “Plastic” with specific information about plastic pipe. The color attribute is for existing piping where the printline is not legible



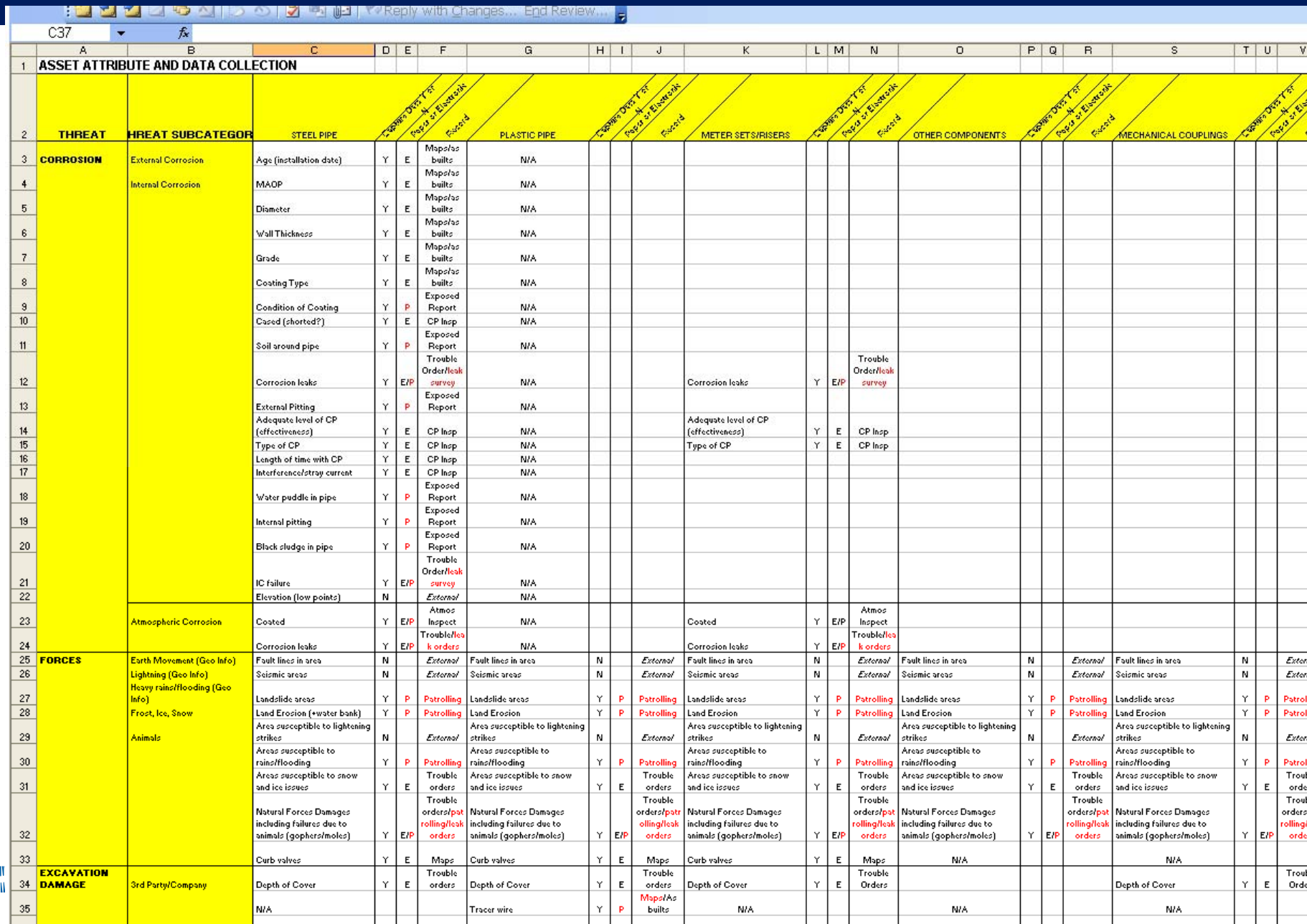
More Info… is a drop down link to additional information such as Joint Ditch and Casing/Conduit.

We will be including Installation Method, Soil Type,

IDENTIFY THREATS

- Created a matrix with identified threats by assets, includes information collected, paper or electronic, and document or process collected in.
- This process has been instrumental in determining existing and potential threats to our system.

IDENTIFY THREATS AND KNOWLEDGE OF SYSTEM



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
1	ASSET ATTRIBUTE AND DATA COLLECTION																					
2	THREAT	THREAT SUBCATEGOR	STEEL PIPE	Leaks, Dirt, Y or N	Paper or Electronic	Found	PLASTIC PIPE	Leaks, Dirt, Y or N	Paper or Electronic	Found	METER SETS/RISERS	Leaks, Dirt, Y or N	Paper or Electronic	Found	OTHER COMPONENTS	Leaks, Dirt, Y or N	Paper or Electronic	Found	MECHANICAL COUPLINGS	Leaks, Dirt, Y or N	Paper or Electronic	Found
3	CORROSION	External Corrosion	Age (installation date)	Y	E	Maps/as builts	N/A															
4		Internal Corrosion	MAOP	Y	E	Maps/as builts	N/A															
5			Diameter	Y	E	Maps/as builts	N/A															
6			Wall Thickness	Y	E	Maps/as builts	N/A															
7			Grade	Y	E	Maps/as builts	N/A															
8			Coating Type	Y	E	Maps/as builts	N/A															
9			Condition of Coating	Y	P	Exposed Report	N/A															
10			Cased (shorted?)	Y	E	CP Insp	N/A															
11			Soil around pipe	Y	P	Exposed Report	N/A															
12			Corrosion leaks	Y	E/P	Trouble Order/leak survey	N/A				Corrosion leaks	Y	E/P	Trouble Order/leak survey								
13			External Pitting	Y	P	Exposed Report	N/A															
14			Adequate level of CP (effectiveness)	Y	E	CP Insp	N/A				Adequate level of CP (effectiveness)	Y	E	CP Insp								
15			Type of CP	Y	E	CP Insp	N/A				Type of CP	Y	E	CP Insp								
16			Length of time with CP	Y	E	CP Insp	N/A															
17			Interference/stray current	Y	E	CP Insp	N/A															
18			Water puddle in pipe	Y	P	Exposed Report	N/A															
19			Internal pitting	Y	P	Exposed Report	N/A															
20			Black sludge in pipe	Y	P	Exposed Report	N/A															
21			IC failure	Y	E/P	Trouble Order/leak survey	N/A															
22			Elevation (low points)	N		*External*	N/A															
23		Atmospheric Corrosion	Coated	Y	E/P	Atmos Inspect	N/A				Coated	Y	E/P	Atmos Inspect								
24			Corrosion leaks	Y	E/P	Trouble/leak orders	N/A				Corrosion leaks	Y	E/P	Trouble/leak orders								
25	FORCES	Earth Movement (Geo Info)	Fault lines in area	N		*External*	Fault lines in area	N		*External*	Fault lines in area	N		*External*	Fault lines in area	N		*External*	Fault lines in area	N		*Exter*
26		Lightning (Geo Info)	Seismic areas	N		*External*	Seismic areas	N		*External*	Seismic areas	N		*External*	Seismic areas	N		*External*	Seismic areas	N		*Exter*
27		Heavy rains/flooding (Geo Info)	Landslide areas	Y	P	Patrolling	Landslide areas	Y	P	Patrolling	Landslide areas	Y	P	Patrolling	Landslide areas	Y	P	Patrolling	Landslide areas	Y	P	Patrol
28		Frost, Ice, Snow	Land Erosion (+water bank)	Y	P	Patrolling	Land Erosion	Y	P	Patrolling	Land Erosion	Y	P	Patrolling	Land Erosion	Y	P	Patrolling	Land Erosion	Y	P	Patrol
29		Animals	Area susceptible to lightening strikes	N		*External*	Area susceptible to lightening strikes	N		*External*	Area susceptible to lightening strikes	N		*External*	Area susceptible to lightening strikes	N		*External*	Area susceptible to lightening strikes	N		*Exter*
30			Areas susceptible to rains/flooding	Y	P	Patrolling	Areas susceptible to rains/flooding	Y	P	Patrolling	Areas susceptible to rains/flooding	Y	P	Patrolling	Areas susceptible to rains/flooding	Y	P	Patrolling	Areas susceptible to rains/flooding	Y	P	Patrol
31			Areas susceptible to snow and ice issues	Y	E	Trouble orders	Areas susceptible to snow and ice issues	Y	E	Trouble orders	Areas susceptible to snow and ice issues	Y	E	Trouble orders	Areas susceptible to snow and ice issues	Y	E	Trouble orders	Areas susceptible to snow and ice issues	Y	E	Troul orde
32			Natural Forces Damages including failures due to animals (gophers/moles)	Y	E/P	Trouble orders/patrolling/leak orders	Natural Forces Damages including failures due to animals (gophers/moles)	Y	E/P	Trouble orders/patrolling/leak orders	Natural Forces Damages including failures due to animals (gophers/moles)	Y	E/P	Trouble orders/patrolling/leak orders	Natural Forces Damages including failures due to animals (gophers/moles)	Y	E/P	Trouble orders/patrolling/leak orders	Natural Forces Damages including failures due to animals (gophers/moles)	Y	E/P	Troul orders rolling/ orde
33			Curb valves	Y	E	Maps	Curb valves	Y	E	Maps	Curb valves	Y	E	Maps	N/A				N/A			
34	EXCAVATION DAMAGE	3rd Party/Company	Depth of Cover	Y	E	Trouble orders	Depth of Cover	Y	E	Trouble orders	Depth of Cover	Y	E	Trouble Orders					Depth of Cover	Y	E	Troul Orde
35			N/A				Tracer wire	Y	P	Maps/As builts	N/A				N/A				N/A			

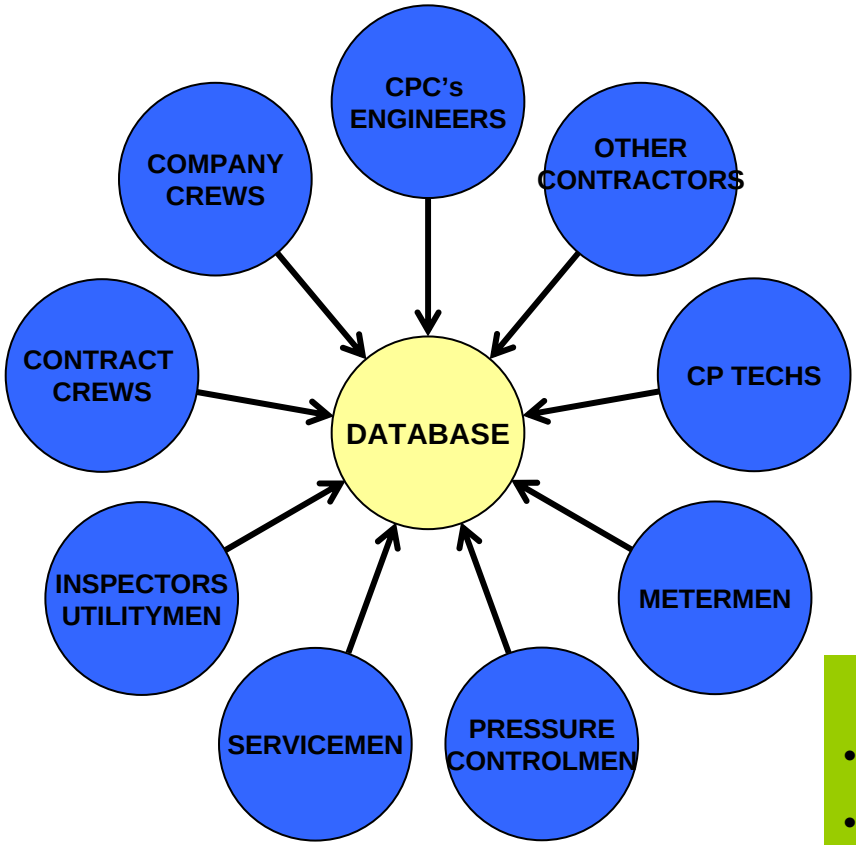
Options

Data Collection Process Options:

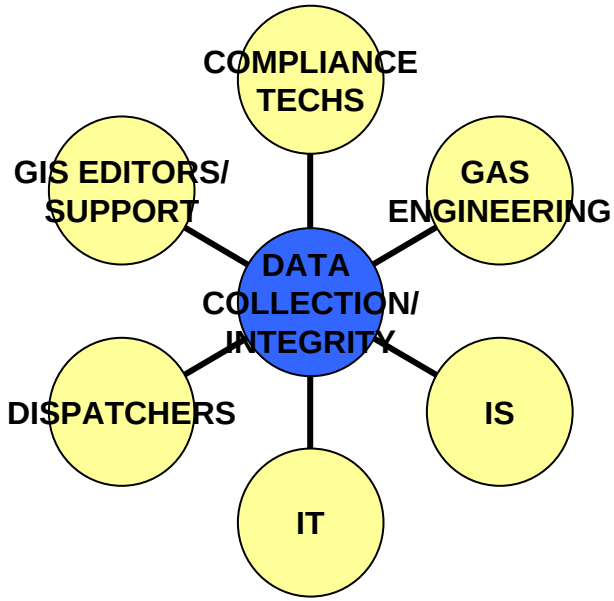
1. Full automation - deploy to pressure control men, inspectors/utility men, company crews, contract crews, other contractors
    a) ruggedized field computers
    b) semi ruggedized field computers
    c) handheld units depending on functionality required
2. Partial automation
    a) Paper – crew processes (repairs, construction related data) with office data entry
    b) Automate – leak survey, regulator stations, damage prevention, patrolling, bridge crossings
    c) Automate all company employee processes and paper for contractors with data entry

IMPACT

WHO COLLECTS THE DATA



WHO SUPPORTS DATA COLLECTION



SOFTWARE IMPACTED

- AFM-GIS
- Mapbook/Tadpole
- Advantex Mobile Dispatch
- Work Management System
- Stock Inventory System
- Risk Analysis Models
- COGNOS

DIMP TAKES A TEAM EFFORT!!

Questions

QUESTIONS?