



# MAPPING FOR WATER LOSS AND ASSET MANAGEMENT

PRESENTED BY JAMES MARKHAM, LUKE ANDREWS & HAYLEY HAJIC

July 23, 2019

# MAPPING IS ABOUT PROCESS

## PLAN

Decide what you want to collect, what tools and software you need, and what time frame you're working in.

1

## COLLECT

Go out and get your data: location info, office info, other info

2



## MAKE MAPS, USE & IMPROVE THEM

5

Use your maps, improve them and keep them current.

## PROOF DATA

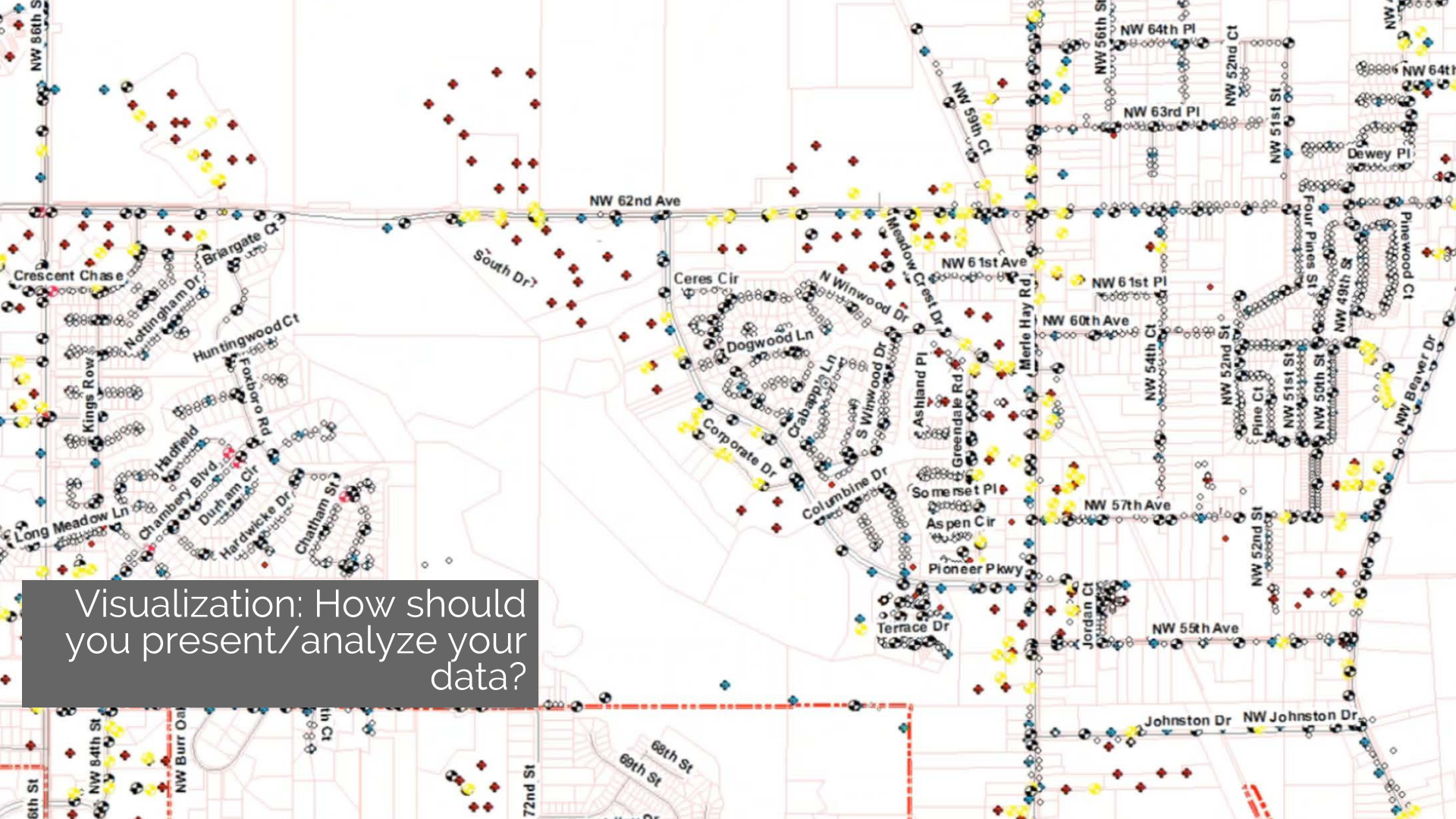
4

Review your data. Does it make sense? Are there conflicts?

## COMBINE SOURCES

3

Pull together useful data from other available sources.



# Visualization: How should you present/analyze your data?



Not free, and not open source.



Free, open source project.





Free for now, and not open source.



Inexpensive, but not open source.

and many others ...



# What We Use At The SW EFC



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**fulcrum**  
mobile location leverage





# MAPPING FOR WATER LOSS AND ASSET MANAGEMENT

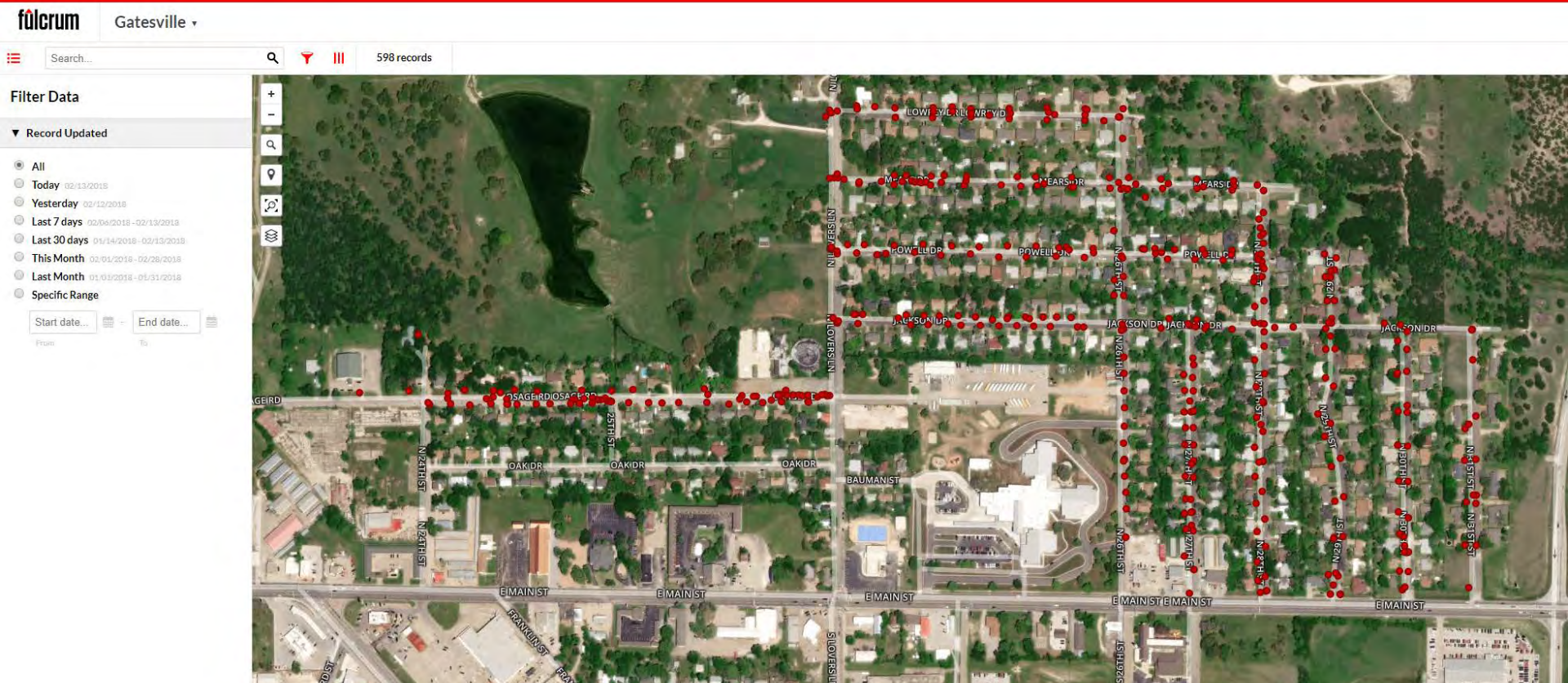
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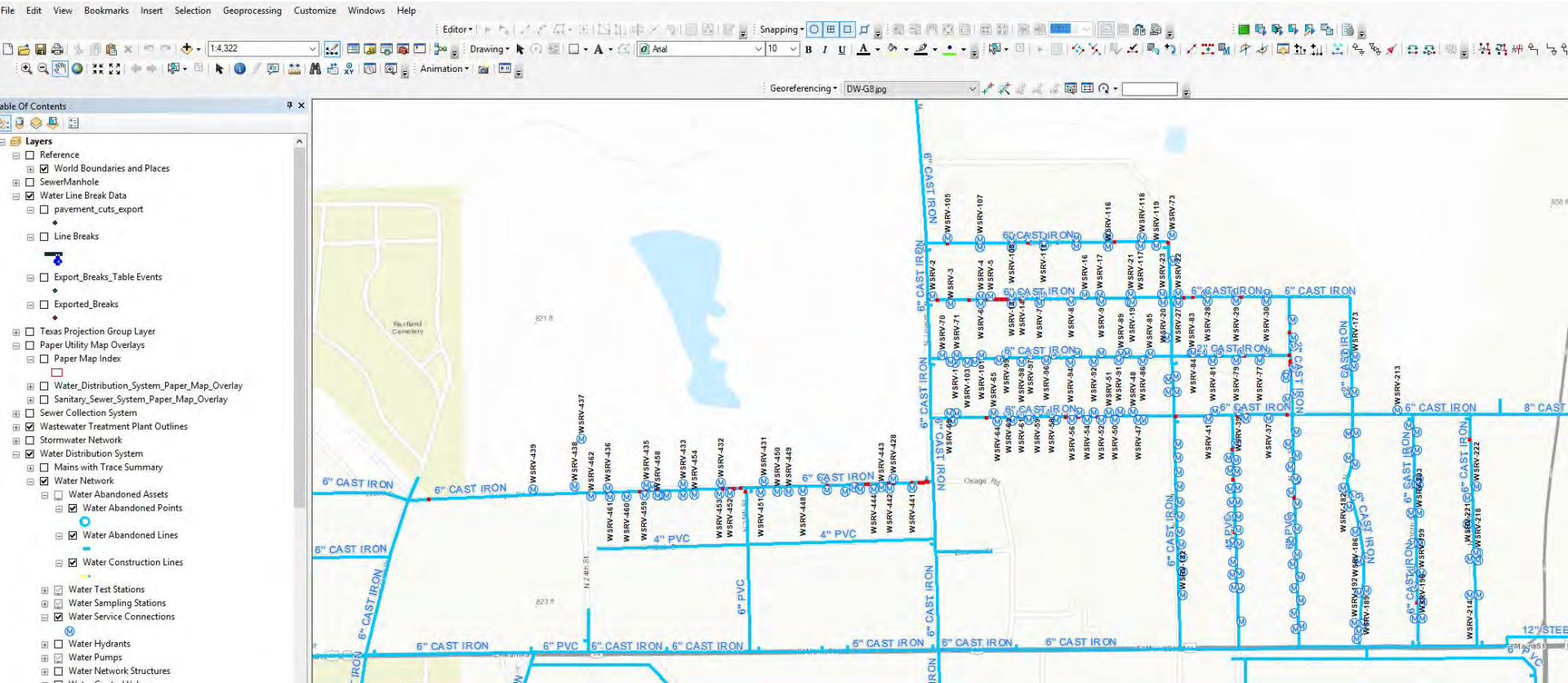
There are many ways to  
visualize the same data...



# Somewhere, TX: Fulcrum

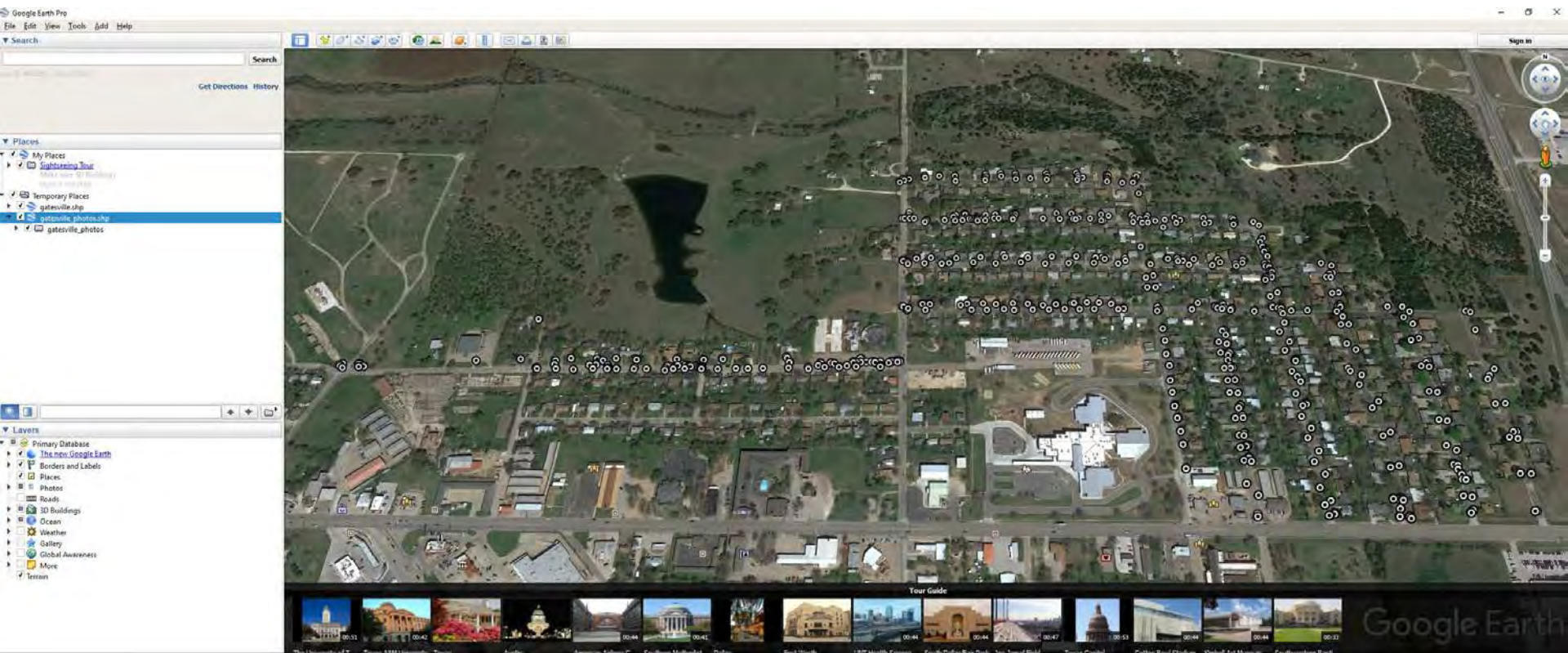


# Somewhere, TX: ESRI ArcGIS





# Somewhere, TX: GOOGLE Earth



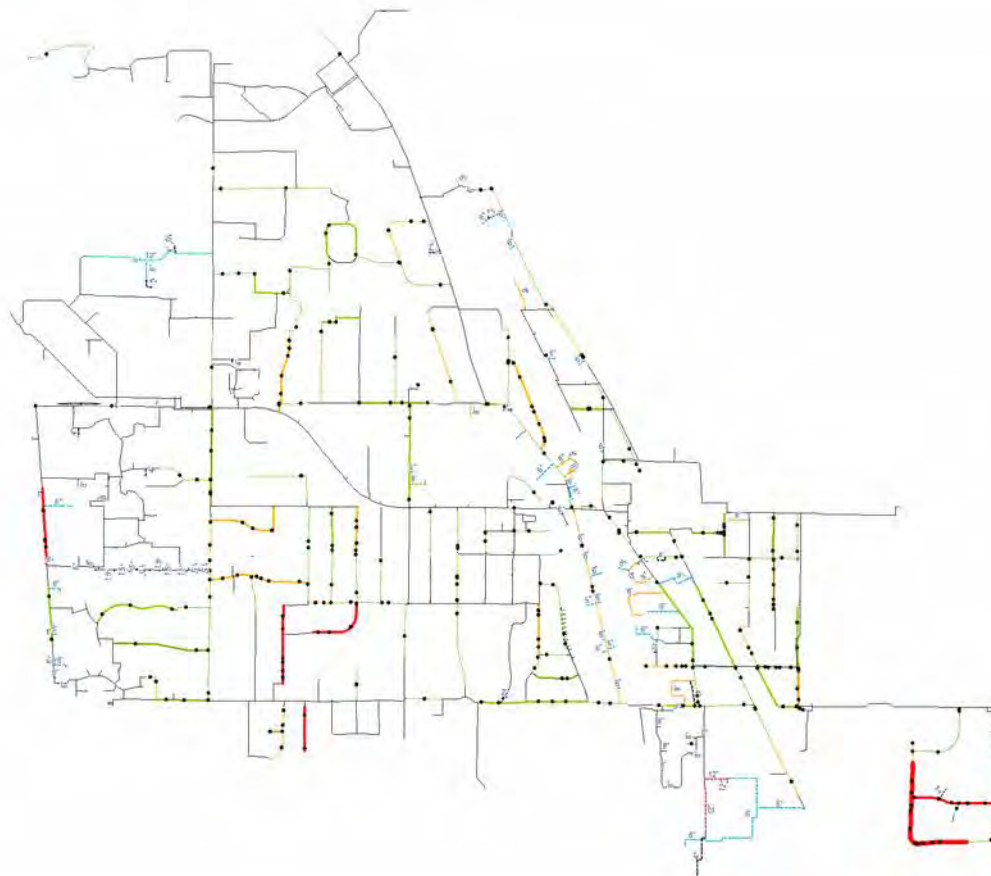


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MovedMainBreaksExport Events

	OBJECTID *	Loc_name	DATE	LOCATION	TYPE OF WORK	Ductie	Cast	Replaced	USER_field	X	Y	Breaks at Location	SegmentID	NEAR_FID	NEAR_DIST	NEAR_X	NEAR_Y	Shape *		
	289	World	2/15/2012	10 Winfield	Watermain Break		X	No		1141769.696923	1976105.939548		1	WINFIELD DR61/1/1970	61	4.914688	1141769.696923	1976110.854236	Point	
	450	World	12/21/2018	10 Winfield	Watermain break		X	No	Crack	-87.753002	42.090515	<Null>			61	4.914688	1141769.696923	1976110.854236	Point	
	458	World	12/21/2018	10 Winfield	Watermain break		X	No	Crack	-87.753002	42.090515	<Null>			61	4.914688	1141769.696923	1976110.854236	Point	
	134	World	4/23/2002	107 Happ	Watermain Break		X	No		1138187.886501	1977424.556989		1	HAPP RD101/1/1937	308	14.790576	1138186.877461	1977409.800873	Point	
	88	World	1/3/2000	109 Happ	Watermain Break		X	No		1138178.502333	1977467.132892		1	HAPP RD101/1/1937	308	17.290048	1138181.403835	1977464.53602	Point	
	256	World	12/1/2009	109 Sunset Ridge	HR Hydrant		X	No		1131804.270403	1977584.480554		1	SUNSET RIDGE RD106/1/1995	437	1.361843	1131805.632164	1977584.485626	Point	
	378	World	10/4/2016	110 Lagoon	Rear Valve		X	No		1139497.800876	1977498.223181		1	LAGOON DR81/1/1937	68	5.335425	1139503.136299	1977498.227395	Point	
	161		12/12/2003	110 Sinsert Ridge on wntka	Watermain Break	X		No		1131604.801242	1977486.739936		1	WINNETKA RD101/1/1985	134	0.693397	1131604.805175	1977487.433321	Point	
	282	World	3/1/2011	119 Happ	Service leak		X	No		1138171.097821	1977554.092163		1	HAPP RD101/1/1937	308	23.02935	1138148.329665	1977550.633547	Point	
	290	World	5/18/2012	12 Landmark	Watermain Break		X	No		1137863.783147	1977710.913372		1	<Null>	315	231.787161	1137865.5174	1977942.694045	Point	
	255	World	9/4/2009	12 Old Hunt	Watermain Break		X	No		1129434.789178	1966125.244841		1	OLD HUNT RD86/1/1995	224	2.414983	1129436.820592	1966123.938692	Point	
	413	World	1/11/2018	125 Eddy Lane	Watermain Break	X			Service	1133580.193289	1977695.278561		1	EDDY LN86/1/2001	346	8.544003	1133588.737282	1977695.290988	Point	
	422	World	1/11/2018	125 Eddy Lane	Watermain Break	X		No	Service	-87.783134	42.095024	<Null>			346	10.136948	1133588.733117	1977698.155502	Point	
	185	World	3/13/2006	125 Enid	Watermain Break		X	No		1132607.764131	1977791.069052		1	END LN66/1/1966	143	4.215799	1132603.548375	1977791.088247	Point	
	100	World	6/24/2000	128 Lagoon	Watermain Break		X	No		1139496.272992	1977645.806547		1	LAGOON DR81/1/1937	87	5.730609	1139490.542524	1977645.766269	Point	
	62	World	3/2/1997	13 Meadowview	Watermain Break		X	No		1142105.138837	1975603.500592		1	MEADOWVIEW RD61/1/1955	555	21.798623	1142087.965851	1975616.927002	Point	
	144	World	1/28/2003	141 Enid	Watermain Break		X	No		1132609.874691	1977886.197798		3	END LN66/1/1966	143	5.893197	1132603.981555	1977886.224631	Point	
	221	World	1/21/2008	141 Enid	Watermain Break		X	No		1132609.874691	1977886.197798		3	END LN66/1/1966	143	5.893197	1132603.981555	1977886.224631	Point	
	225	World	2/21/2008	141 Enid	Watermain Break		X	No		1132609.874691	1977886.197798		3	END LN66/1/1966	143	5.893197	1132603.981555	1977886.224631	Point	
	31	World	2/21/1994	142 W. Frontage	Watermain Break		X	No		1138750.445743	1977796.239973		1	W FRONTAGE RD81/1/1937	496	22.574755	1138730.152536	1977786.350316	Point	
	337	World	1/3/2015	144 Avon	Watermain Break	X		No		1135994.415494	1977900.622966		1	GROVE DR66/1/1959	26	24.35578	1135975.417932	1977915.864247	Point	
	170	World	8/17/2005	15 Country Lane	Watermain Break		X	No		1132612.0968	1962881.644829		1	COUNTRY LN65/1/1963	249	39.871313	1132612.972315	1962892.506528	Point	
	420	World	1/7/2019	15 Country Lane	Watermain Break		X	No		<Null>	<Null>	<Null>			COUNTRY LN65/1/1963	249	39.871313	1132612.972315	1962892.506528	Point
	115	World	2/27/2001	150 Thackery	Watermain Break		X	No		1133071.848538	1978376.825098		2	THACKERAY LN61/1/1952	97	20.142516	1133071.909028	1978396.967517	Point	
	127	World	10/9/2001	150 Thackery	Watermain Break		X	No		1133071.848538	1978376.825098		2	THACKERAY LN61/1/1952	97	20.142516	1133071.909028	1978396.967517	Point	
	141	World	1/10/2003	1520 Winnetka	Watermain Break		X	No		1139565.377512	1977373.144691		1	LAGOON LN66/1/1992	9	17.493401	1139564.973141	1977355.855964	Point	
	376	World	9/30/2016	1544 Winnetka Road	Watermain Break		X	No		1139478.567975	1977370.720155		3	WINNETKA RD81/1/1937	85	32.540344	1139478.530839	1977403.260478	Point	
	377	World	10/1/2016	1544 Winnetka Road	Watermain Break		X	No		1139478.567975	1977370.720155		3	WINNETKA RD81/1/1937	85	32.540344	1139478.530839	1977403.260478	Point	
	379	World	10/8/2016	1544 Winnetka Road	Watermain Break		X	No		1139478.567975	1977370.720155		3	WINNETKA RD81/1/1937	85	32.540344	1139478.530839	1977403.260478	Point	
	178	World	12/22/2005	155 Enid	Watermain Break		X	No		1132609.261175	1978043.626289		1	END LN66/1/1966	143	4.582884	1132604.698339	1978043.647065	Point	
	118	World	3/4/2001	155 Lagoon	Watermain Break		X	No		1139514.891721	1977885.360202		1	LAGOON DR81/1/1937	68	12.061195	1139502.83053	1977885.350675	Point	
	105	World	2/5/2001	1556 Harding	Watermain Break		X	No		1139401.462486	1977898.985174		2	HARDING RD61/1/1937	71	30.241213	1139401.459696	1977929.226387	Point	
	241	World	1/27/2009	1556 Harding	Watermain Break		X	No		1139401.462486	1977898.985174		2	HARDING RD61/1/1937	71	30.241213	1139401.459696	1977929.226387	Point	
	311	World	9/13/2013	1561 Winnetka	Watermain Break		X	No		1139296.061122	1977389.18731		1	WINNETKA RD81/1/1937	553	14.012931	1139296.057357	1977403.20024	Point	
	448	World	12/7/2018	1561 Winnetka	Watermain Break		X	No	Hole	-87.762083	42.094082	<Null>			<Null>	553	14.012931	1139296.057357	1977403.20024	Point
	457	World	12/7/2018	1561 Winnetka	Watermain Break		X	No	Hole	-87.762083	42.094082	<Null>			<Null>	553	14.012931	1139296.057357	1977403.20024	Point
	359	World	2/20/2018	1563 Harding	Watermain Break		X	No		1139257.24952	1977919.161315		1	HARDING RD61/1/1937	71	10.051719	1139257.248589	1977929.213034	Point	
	411	World	1/9/2018	1563 Mt. Pleasant	Watermain Break		X	No		<Null>	<Null>	<Null>			MT PLEASANT ST81/1/1937	13	15.393499	1139280.658821	1979392.424036	Point
	464	World	2/7/2019	1565 Harding Road	Watermain Break		X	No	5" hole	-87.762402	42.095546	<Null>			<Null>	71	6.755307	1139205.928787	1977929.208282	Point
	437	World	8/7/2018	1570 Oak	Water main break	X		No	Hole	-87.771569	42.105002	<Null>			<Null>	261	28.133195	1136695.413813	1961379.63246	Point
	441	World	8/29/2018	1570 Oak	Watermain Break	X		No		-87.771569	42.105002	<Null>			<Null>	261	28.133195	1136695.413813	1961379.63246	Point
	231	World	8/8/2008	1571 Harding	Watermain Break		X	No		1139105.780006	1977921.784341		1	HARDING RD61/1/1937	71	7.414688	1139105.779932	1977929.199009	Point	

0 (0 out of 464 Selected)

MovedMainBreaksExport Events



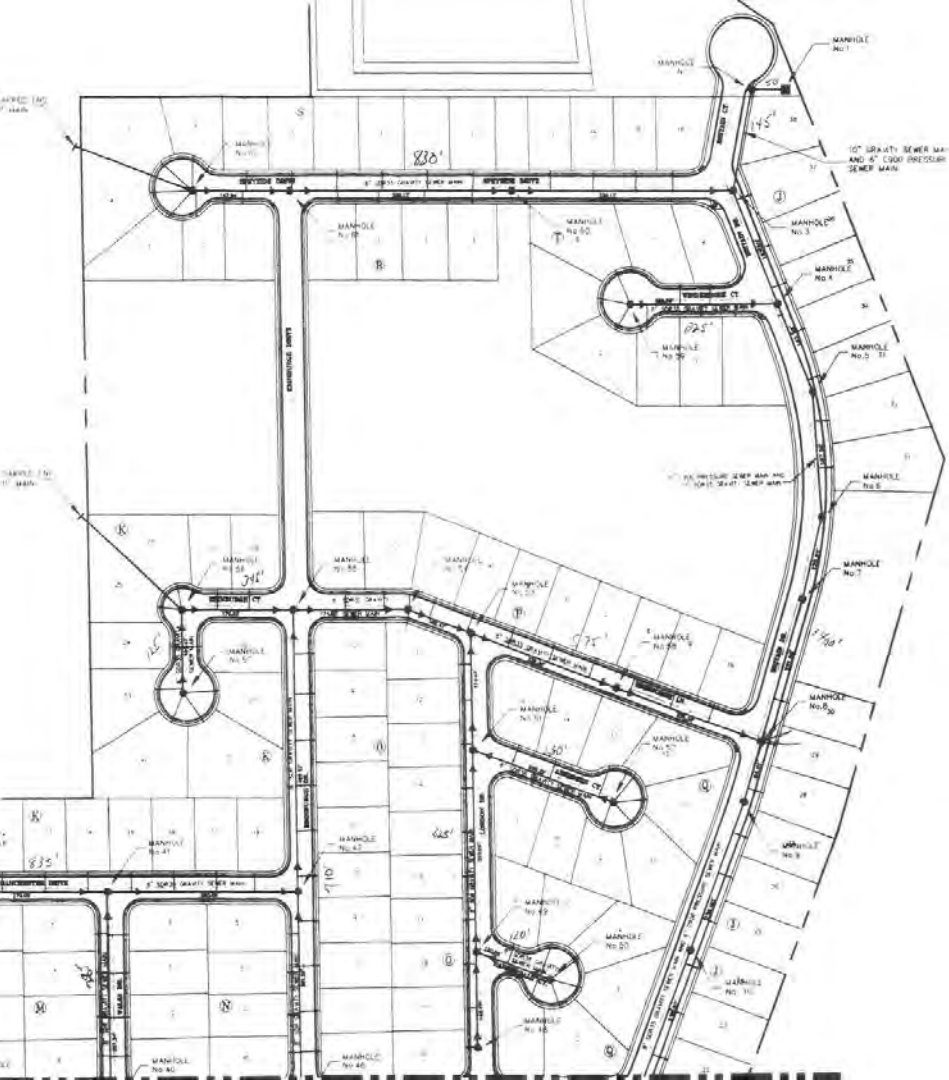


MovedMainBreaksExport Events

	OBJECTID	Loc_name	DATE	LOCATION	TYPE OF WORK	Ductile	Cast	Replaced	USER_field	X	Y	Breaks at Location	SegmentID	NEAR_FID	NEAR_DIST	NEAR_X	NEAR_Y	Shape *		
	30	World	2/13/1994	1776 Ash	Watermain Break		X	No		1137165.218599	1980670.556731		1	ASH ST61/1/1988	599	18.823629	1137165.350822	1980689.379897	Point	
	110	World	2/20/2001	1785 Orchard	Watermain Break		X	No		1137051.803471	1979669.822284		2	HAPP RD 106/1/1988	483	77.192348	1137104.700675	1979726.04156	Point	
	227	World	6/30/2008	1785 Orchard	Watermain Break		X	No		1137051.803471	1979669.822284		2	HAPP RD 106/1/1988	483	77.192348	1137104.700675	1979726.04156	Point	
	22	World	10/22/1992	18 Meadowview	Watermain Break		X	No		<Null>	<Null>	<Null>			MEADOWVIEW RD61/1/1955	301	0.590262	1141294.503855	1975585.462005	Point
	106	World	2/7/2001	18 Meadowview	Watermain Break		X	No		1141294.446889	1975586.049512		4	MEADOWVIEW RD61/1/1955	301	0.590262	1141294.503855	1975585.462005	Point	
	258	World	1/2/2010	18 Meadowview	Watermain Break		X	No		1141294.446889	1975586.049512		4	MEADOWVIEW RD61/1/1955	301	0.590262	1141294.503855	1975585.462005	Point	
	298	World	12/26/2012	18 Meadowview	Watermain Break		X	No		1141294.446889	1975586.049512		4	MEADOWVIEW RD61/1/1955	301	0.590262	1141294.503855	1975585.462005	Point	
	408	World	12/12/2017	18 Meadowview	Watermain Break		X	No		1141294.446889	1975586.049512		4	MEADOWVIEW RD61/1/1955	301	0.590262	1141294.503855	1975585.462005	Point	
	53	World	1/28/1996	18 Winfield	Watermain Break		X	No		1141381.924732	1976173.382326		4	WINFIELD DR61/1/1970	61	2.81788	1141381.192184	1976170.66133	Point	
	192	World	2/19/2007	18 Winfield	Watermain Break		X	No		1141381.924732	1976173.382326		4	WINFIELD DR61/1/1970	61	2.81788	1141381.192184	1976170.66133	Point	
	304	World	3/17/2013	18 Winfield	Watermain Break		X	No		1141381.924732	1976173.382326		4	WINFIELD DR61/1/1970	61	2.81788	1141381.192184	1976170.66133	Point	
	340	World	2/10/2015	1809 Winnetka	Watermain Break		X	No		1136824.00209	1977406.67612		1	WINNETKA RD81/1/1970	88	47.166988	1136828.728693	1977453.605683	Point	
	284	World	12/27/2011	1822 Willow (northfield rd side)	Watermain Break		X	No		1136576.820367	1979544.568497		3	NORTHFIELD RD81/1/1968	490	34.761922	1136610.411389	1979552.726804	Point	
	313	World	10/8/2013	1822 Willow (northfield rd side)	WATERMAIN BREAK		X	No		1136576.820367	1979544.568497		3	NORTHFIELD RD81/1/1968	490	34.761922	1136610.411389	1979552.726804	Point	
	395	World	6/21/2017	1822 Willow Northfield Rd side	Watermain Break		X	No		1136576.820367	1979544.568497		3	NORTHFIELD RD81/1/1968	490	34.761922	1136610.411389	1979552.726804	Point	
	299	World	1/29/2013	1825 Willow (Old Willow side)	Watermain Break		X	No		1136729.127936	1980117.027654		1	Replaced	876	34.216861	1136727.493462	1980082.849653	Point	
	366	World	4/15/2016	1847 Oak	Repair	X		No		1136706.995762	1981379.553673		1	OAK ST81/1/1937	281	0.074851	1136706.995787	1981379.628523	Point	
	155	World	9/11/2003	1849 Stockton	Watermain Break		X	No		1136409.26998	1977749.786654		1	STOCKTON DR66/1/1959	23	32.061967	1136409.461955	1977781.848046	Point	
	296	World	12/17/2012	1849 Winnetka	Bad bolts		X	No		1136394.86056	1977418.065689		1	WINNETKA RD81/1/1970	1018	50.252224	1136395.143021	1977469.057119	Point	
	35	World	11/16/1994	185 Avon	Watermain Break		X	No		1136053.899955	1978301.424658		2	AVON AV66/1/1959	31	30.855064	1136023.045413	1978301.604029	Point	
	189	World	1/21/2007	185 Avon	Watermain Break		X	No		1136053.899955	1978301.424658		2	AVON AV66/1/1959	31	30.855064	1136023.045413	1978301.604029	Point	
	135	World	8/24/2002	1857 Stockton	Watermain Break		X	No		1136340.593936	1977751.906072		2	STOCKTON DR66/1/1959	23	30.353793	1136340.775683	1977782.259321	Point	
	233	World	10/30/2008	1857 Stockton	Watermain Break		X	No		1136340.593936	1977751.906072		2	STOCKTON DR66/1/1959	23	30.353793	1136340.775683	1977782.259321	Point	
	439	World	7/12/2018	1857 Stockton	Watermain Break	X		No		-87.772963	42.095131	<Null>		<Null>	23	30.353793	1136340.775683	1977782.259321	Point	
	433	World	7/10/2018	186 Riverside	Watermain Break	X		No	Replace 16"	-87.77286	42.096851	<Null>		<Null>	1074	2.581657	1136366.859936	1978379.364027	Point	
	430	World	6/20/2018	186 Riverside Drive	Watermain Break		X	No	Pinhole	-87.77286	42.096851	<Null>		<Null>	1074	2.581657	1136366.859936	1978379.364027	Point	
	400	World	8/22/2017	1863 Harding	Watermain Break		X	No	2 Breaks	1137467.971602	1977952.08415		1	HARDING RD61/1/1937	315	6.415367	1137467.923602	1977945.668962	Point	
	143	World	1/22/2003	1869 Winnetka	Watermain Break		X	No		1136210.367503	1977424.897212		1	WINNETKA RD81/1/1970	1018	45.197695	1136210.641553	1977470.094193	Point	
	392	World	3/9/2017	1873 Bosworth	Watermain Break	X		No		1136322.421728	1979482.236273		1	BOSWORTH LN86/1/2013	749	1.271924	1136323.034731	1979481.121814	Point	
	10	World	11/12/1991	1875 Willow	Watermain Break		X	No		1136243.692883	1980114.210731		4	Replaced	936	30.621916	1136215.758556	1980126.755653	Point	
	34	World	11/14/1994	1875 Willow	Watermain Break		X	No		1136243.692883	1980114.210731		4	Replaced	936	30.621916	1136215.758556	1980126.755653	Point	
	240	World	1/26/2009	1875 Willow	Watermain Break		X	No		1136243.692883	1980114.210731		4	Replaced	936	30.621916	1136215.758556	1980126.755653	Point	
	4	World	10/9/1991	1879 Grove	Watermain Break		X	No		1136135.604516	1978069.426107		1	GROVE DR66/1/1959	28	30.754634	1136135.558164	1978100.180705	Point	
	396	World	8/9/2017	1885 Old Willow (Edens in side)	Watermain Break		X	No		1136087.596738	1980770.350495		1	EDENS LN61/1/1955	215	23.116516	1136104.996178	1980785.569681	Point	
	6	World	11/4/1991	1887 Winnetka	Watermain Break		X	No		1136026.179866	1977430.961176		1	WINNETKA RD81/1/1970	1018	40.169233	1136026.405652	1977471.129775	Point	
	354	World	12/19/2015	190 Thackeray	Water main break		X	No		1133524.357442	1978480.499799		7	THACKERAY LN61/1/1952	97	12.263849	1133515.464386	1978468.944652	Point	
	462	World	1/27/2019	190 Thackeray	Watermain Break		X	No	Crack	-87.783322	42.097125	<Null>		<Null>	97	12.263849	1133515.464386	1978468.944652	Point	
	463	World	2/1/2019	190 Thackeray	Watermain Break		X	No	Crack	-87.783322	42.097125	<Null>		<Null>	97	12.263849	1133515.464386	1978468.944652	Point	
	19	World	8/13/1992	190 Thackeray	Watermain Break		X	No		1133524.357442	1978480.499799		7	THACKERAY LN61/1/1952	97	12.263849	1133515.464386	1978468.944652	Point	
	89	World	8/17/1998	190 Thackeray	Watermain Break		X	No		1133524.357442	1978480.499799		7	THACKERAY LN61/1/1952	97	12.263849	1133515.464386	1978468.944652	Point	
	203	World	7/30/2007	190 Thackeray	Watermain Break		X	No		1133524.357442	1978480.499799		7	THACKERAY LN61/1/1952	97	12.263849	1133515.464386	1978468.944652	Point	
	272	World	8/12/2010	190 Thackeray	Watermain Break		X	No		1133524.357442	1978480.499799		7	THACKERAY LN61/1/1952	97	12.263849	1133515.464386	1978468.944652	Point	

27 (1 out of 464 Selected)

MovedMainBreaksExport Events



## AS BUILTS

Often available – at least as paper document

## Important sources of attribute data

Often the reference point on which the rest of a digital map can be built

May not accurately reflect what's in the ground

Should be ground-proofed

Source and accuracy should be noted



## GEOREFERENCING

Associating map points with locations in physical space

We start with a scanned image laid over a digital map





## GEOREFERENCING

As-builts may cover large or small areas

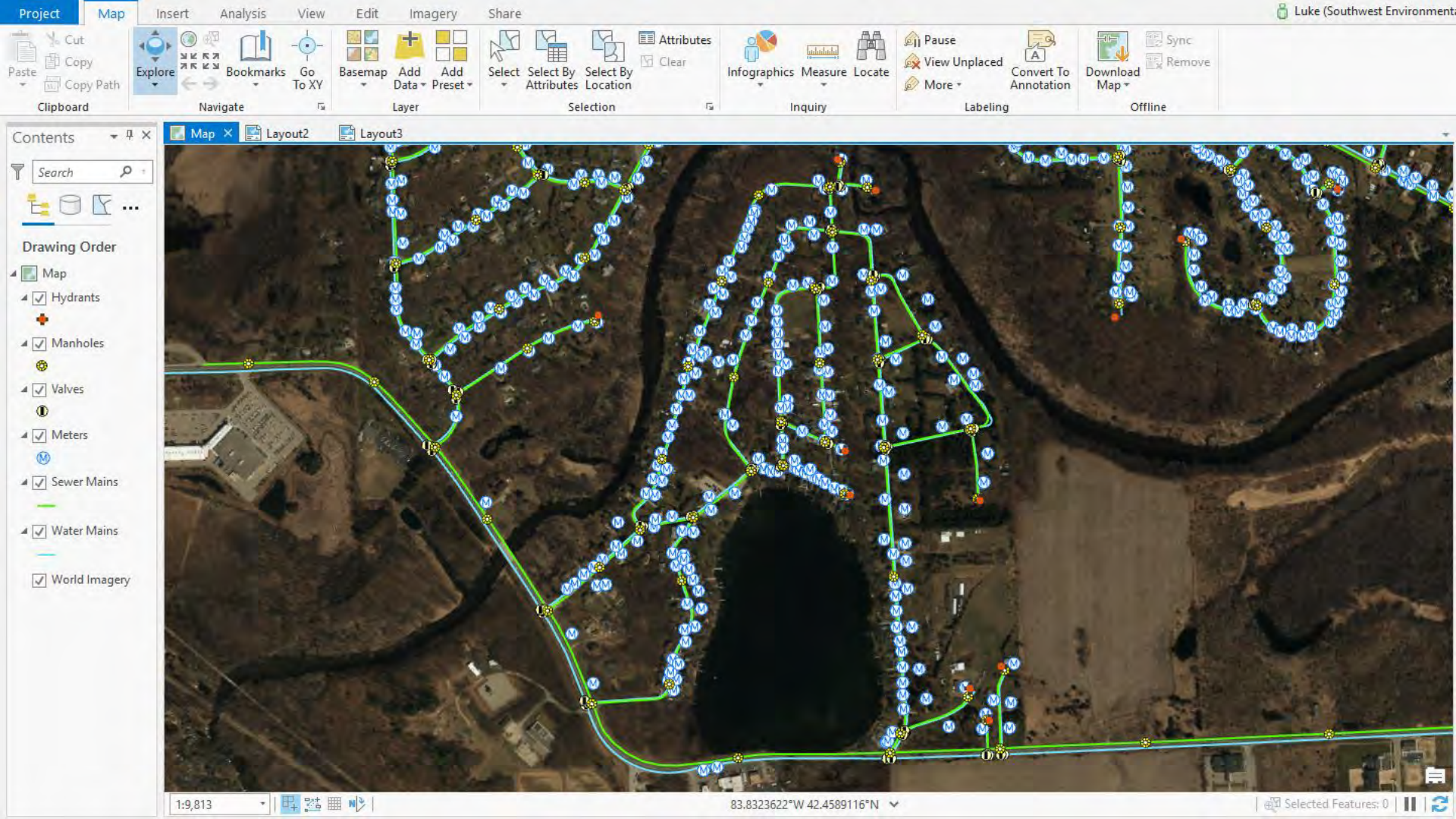
As-builts may have different levels of detail

This is not a perfect process, but it is a good start and is generally "good enough" to get you close to any asset you are looking for

BUT ...

Maps developed this way will only be as good as the data they used.







# Example Map of Theoretical Water Utility



## Example Map of Theoretical Water Utility



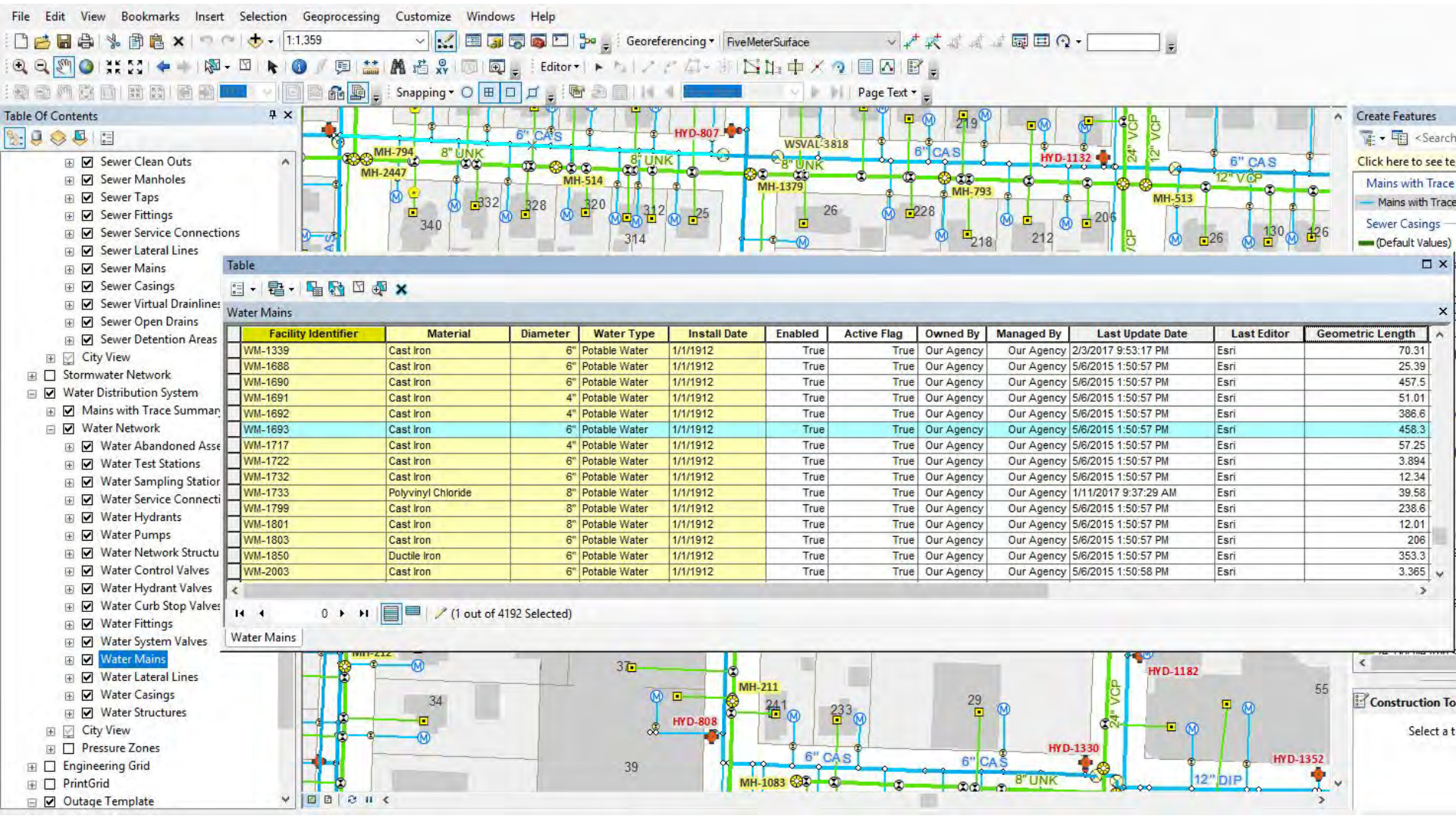
















## Layers

- ☐ Sewer Collection System
  - ☒ Sewer Network
  - ☒ City View
- ☐ Stormwater Network
- ☒ Water Distribution System
  - ☒ Mains with Trace Summary
  - ☒ Water Network
    - ☒ Water Abandoned Assets
    - ☒ Water Test Stations
    - ☒ Water Sampling Stations
    - ☒ Water Service Connections
    - ☒ Water Hydrants
    - ☒ Water Pumps
    - ☒ Water Network Structures
    - ☒ Water Control Valves
    - ☒ Water Hydrant Valves
    - ☒ Water Curb Stop Valves
    - ☒ Water Fittings
    - ☒ Water System Valves
    - ☒ Water Mains
    - ☒ Water Lateral Lines
    - ☒ Water Casings
    - ☒ Water Structures
- ☒ City View
- ☐ Pressure Zones
- ☐ Engineering Grid
- ☐ PrintGrid
- ☒ Outage Template
- ☐ FiveMeterSurface
- ☒ Editing Basemap

## Layer Properties

Hatches Joins & Relates Time HTML Popup  
General Source Selection Display Symbology Fields Definition Query Labels Routes

Definition Query:

Query Builder...

## Query Builder

FACILITYID  
MATERIAL  
DIAMETER  
WATERTYPE  
Shape\_Length

= <> Like  
> >= And  
< <= Or  
\_ % ( ) Not

CAS - Cast Iron  
COP - Copper  
DIP - Ductile Iron  
PVC - Polyvinyl Chloride  
UNK - Unknown

Is In Null Get Unique Values Go To:

SELECT \* FROM wMain WHERE:

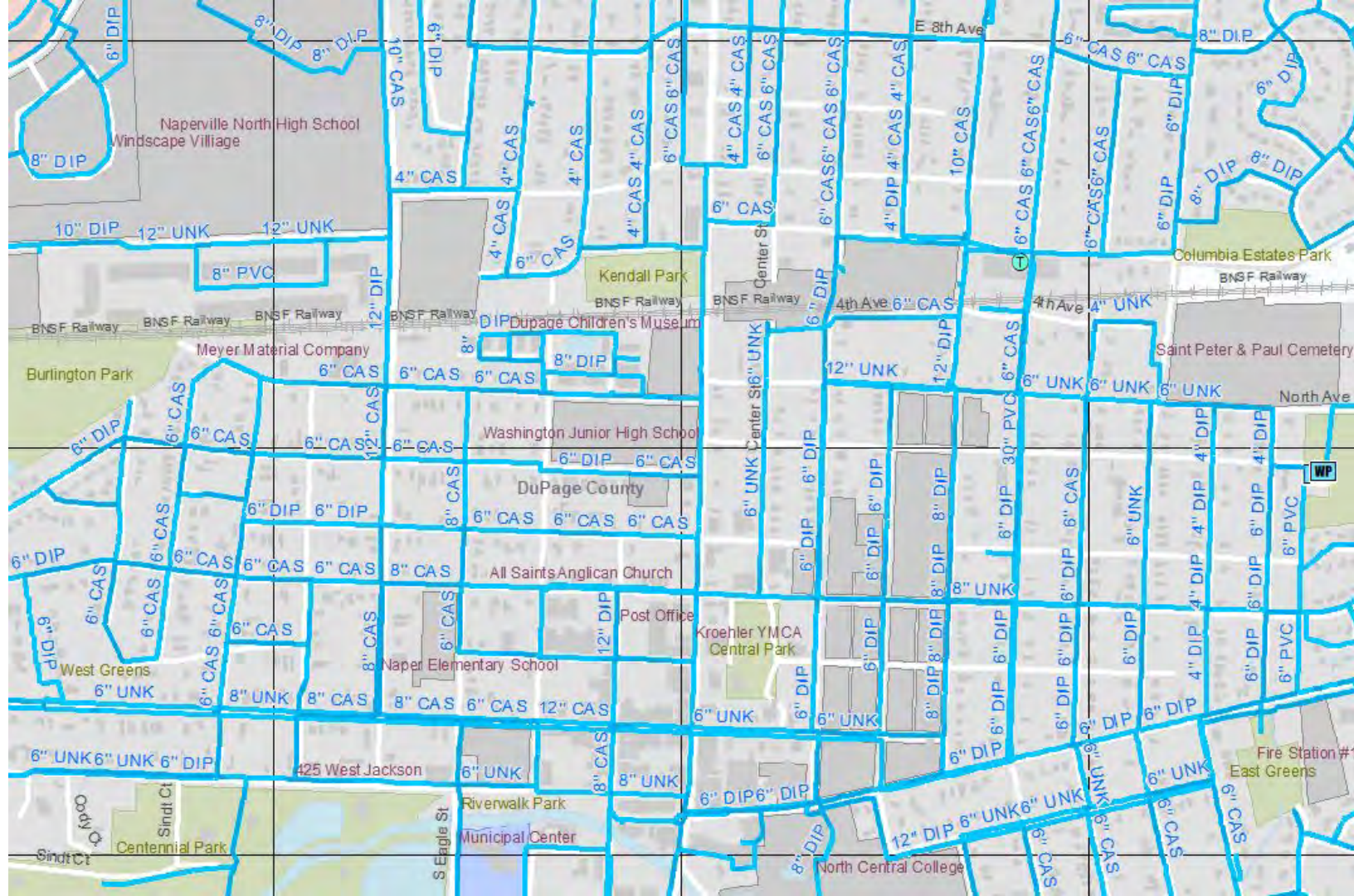
DIAMETER = 4 AND MATERIAL = 'PVC'

Clear Verify Help Load... Save...

OK

Cancel







# MAPPING FOR WATER LOSS AND ASSET MANAGEMENT

PRESENTED BY JAMES MARKHAM, LUKE ANDREWS & HAYLEY HAJIC

July 23, 2019

# Water Audit Tools:

## AWWA Water Audit Software

- Free
- Excel based
- Download here:  
<https://www.awwa.org/Resources-Tools/Resource-Topics/Water-Loss-Control>

## Water Research Foundation Project 4372 Component Analysis Tools

- Free
- Excel based
- Download here (click “Web Tools” link at page bottom):  
<http://www.waterrf.org/Pages/Projects.aspx?PID=4372>

# US/Canada Pipe Break Study

Water Main Break Rates in the USA and Canada: A Comprehensive Study, Steven Folkman (2018)

- Download here:

[https://digitalcommons.usu.edu/mae\\_facpub/174/](https://digitalcommons.usu.edu/mae_facpub/174/)

# WRF Project 4695

Guidance on Implementing and Effective Water Loss Control Plan  
(2019)

- Download here:

<http://www.waterrf.org/Pages/Projects.aspx?PID=4695>

# Assess Your Baseline or Starting Point

AM IQ

<https://southwestefc.unm.edu/AssetManagementIQ>



<http://southwestefc.unm.edu/>



Center for Water  
and the Environment

HOME

SERVICES

EVENTS

BLOG

CONTACT US



SOUTHWEST  
ENVIRONMENTAL  
FINANCE CENTER

WHO WE ARE

SERVICES

WHAT WE DO

ASSET MANAGEMENT

SMALL SYSTEMS PROJECTS

SOURCE WATER PROTECTION

TRIBAL DRINKING WATER

WATERCARE COMMUNITIES

WATER LOSS CONTROL

WATER SYSTEM FINANCE

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Home > Services > Asset Management



Overview

**AM IQ**

AM Manual

State Contacts

Resources

## Asset Management IQ

The Asset Management IQ tool will help you establish a baseline for your current asset management practice and over time will help you measure progress. You can use the Interactive Asset Management IQ test online by [clicking here](#).



## Appendix F

### ASSET MANAGEMENT IQ

An Asset Management IQ Test is presented here in order to help you review the concepts of the various core components of Asset Management. Both the test and a scoring table are also available as a [printable pdf](#), which may be copied for use by multiple personnel within your utility.

In the web version of the test, clicking on a choice will automatically enter the number of points for that option and keep track of the score for each section of the Asset Management IQ as well as the total cumulative score. If a new answer is selected, the new choice and the new points will appear and the old points will be removed.

If the user completes the entire Asset Management IQ tool (all 30 questions) before starting Asset Management, it will provide a baseline evaluation at the beginning of Asset Management. Comparing the scores of each of the six sections will show which areas have the biggest gaps in terms of Asset Management activities. These scores may provide information about where efforts should be focused. You may wish to start with areas that are the weakest, offering a large improvement with a little effort, or with areas that are strong, which would offer a chance to get started in a familiar area.

As the utility progresses, the Asset Management IQ can be repeated and the scores compared to previous scores. At a minimum, you may wish to repeat the Asset Management IQ every year.

It should be noted that a total score of 150 would represent best practice in all areas of Asset Management. Not all utilities will be interested in achieving this goal. The utility should set its own target levels. The tool is meant to help utilities gauge their progress over time.

DEVELOPMENT

Front

Section 1

Section 2

Section 3

Section 4

Section 5

Section 6

Results

### Asset Management IQ Section I

A. Is Asset Management terminology understood throughout the organization?

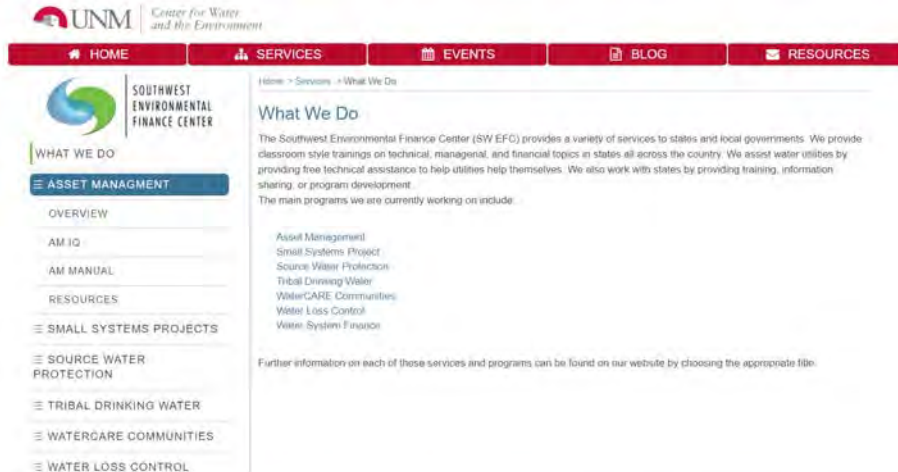
(Click on the answer that most accurately describes your situation.)

0	No one within the organization understands terminology nor has any knowledge of Asset Management concepts. (0 points)
	One person within organization understands Asset Management concepts and terminology. (1 point)
	Less than 50% of the organization's personnel (a few key people within the organization) understand Asset Management concepts and terminology. (2 points)
	More than 50% of the organization's personnel understand Asset Management concepts and terminology. (3 points)
	All <sup>1</sup> of the organization's personnel understand Asset Management concepts and terminology. (4 points)
	Throughout the entire organization personnel would be able to state what Asset Management is and understand Asset Management concepts and terminology. (5 points)

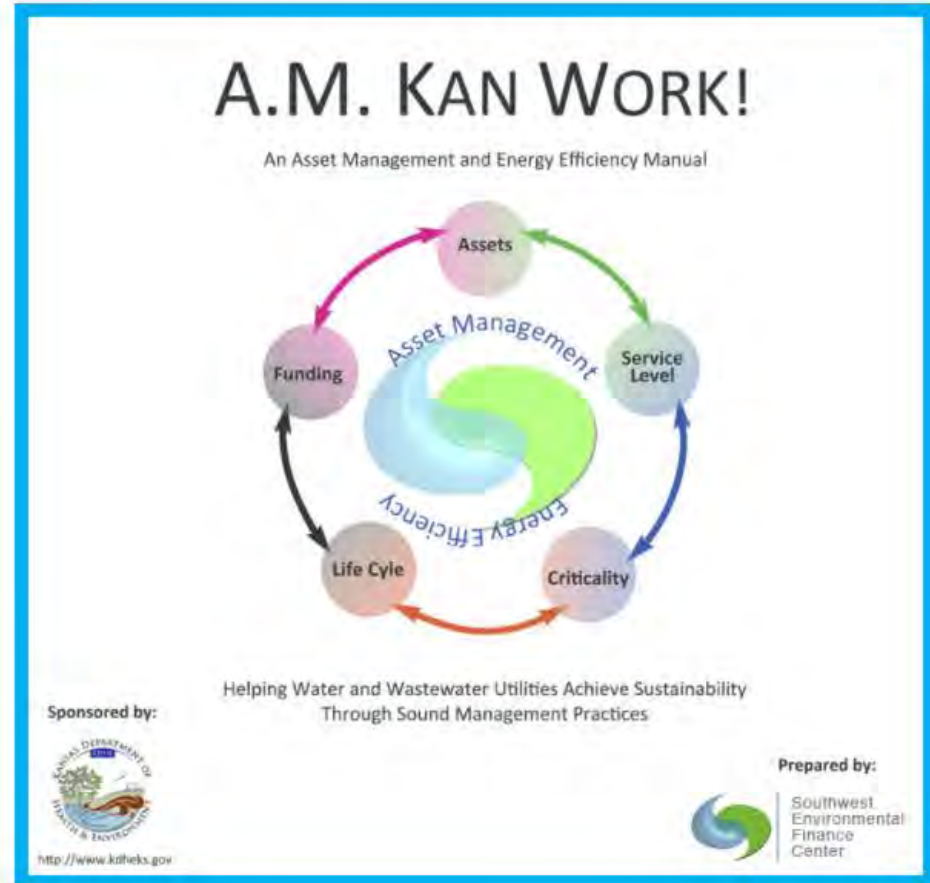
<sup>1</sup> All refers to greater than 90% of the organization's personnel.

<http://southwestefc.unm.edu/asset-management-manual/>

# Resources to Help!!



The screenshot shows the homepage of the Southwest Environmental Finance Center (SW EFC). The header includes the UNM logo and the text "Center for Water and the Environment". A navigation bar contains links for HOME, SERVICES, EVENTS, BLOG, and RESOURCES. The main content area is titled "What We Do" and describes the SW EFC's services to states and local governments, including classroom-style trainings and technical assistance. A sidebar on the left lists various resources and projects, with "ASSET MANAGEMENT" highlighted. The "ASSET MANAGEMENT" section includes links to OVERVIEW, AM IQ, AM MANUAL, RESOURCES, and SMALL SYSTEMS PROJECTS. The "SMALL SYSTEMS PROJECTS" section includes links to SOURCE WATER PROTECTION, TRIBAL DRINKING WATER, WATERCARE COMMUNITIES, and WATER LOSS CONTROL.




**A.M. KAN WORK!**  
An Asset Management and Energy Efficiency Manual

The diagram illustrates a circular process for Asset Management and Energy Efficiency. At the center is a large green and blue swirl labeled "Asset Management" and "Energy Efficiency". Surrounding this central swirl are five colored circles connected by arrows in a clockwise cycle: "Assets" (pink), "Service Level" (blue), "Criticality" (purple), "Life Cycle" (orange), and "Funding" (pink). The arrows indicate a continuous flow between these components.


Helping Water and Wastewater Utilities Achieve Sustainability Through Sound Management Practices

Sponsored by:



http://www.kdheks.gov

Prepared by:



Southwest Environmental Finance Center

Don't let what you  
can't do stop you  
from doing what  
you can.



[illegible]