



# WTD GIS Program Overview and Capabilities

Shaun O'Neil  
MWPAAC  
May 27, 2015



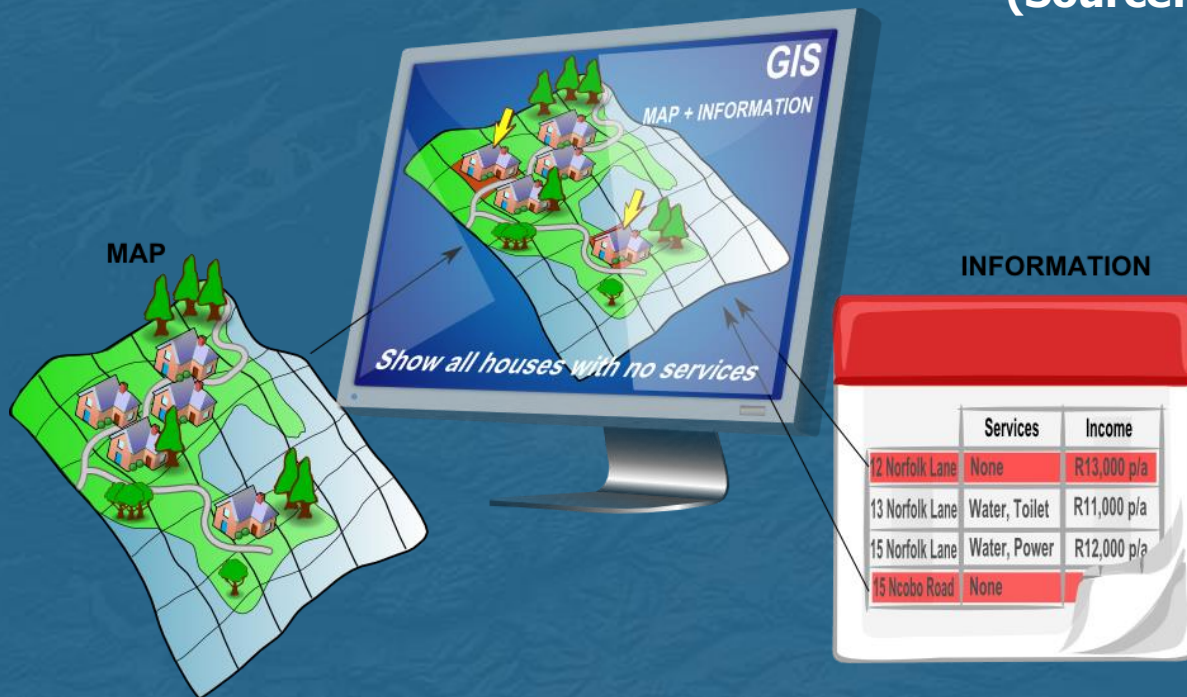
King County



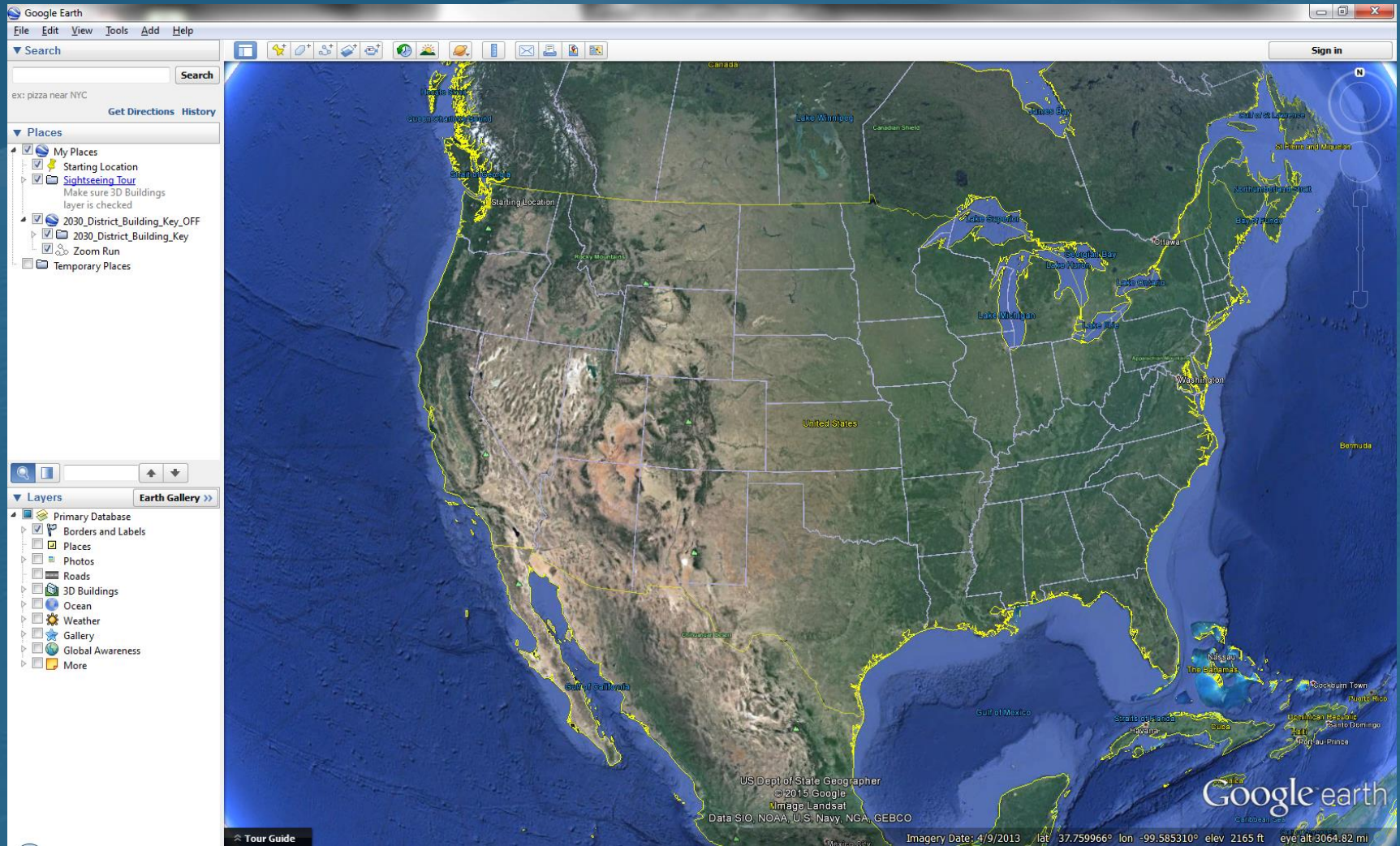
# GIS Defined

A Geographic Information System (GIS) is a computer system capable of assembling, storing, manipulating, displaying, & analyzing geographically referenced information, i.e. data identified according to their locations.

(Source: U.S. Geological Survey)

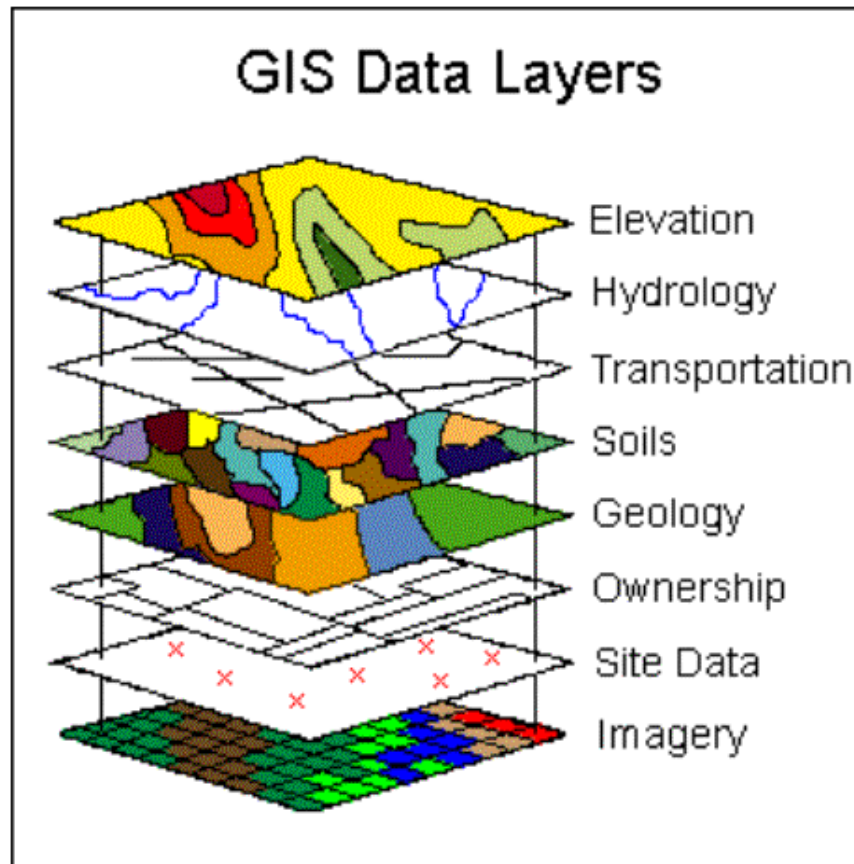


# G – Geographic





# G – Geographic



# G – Geographic

"RE\*YORK.YORK"

"X\_COORDINA": -122.15216803,

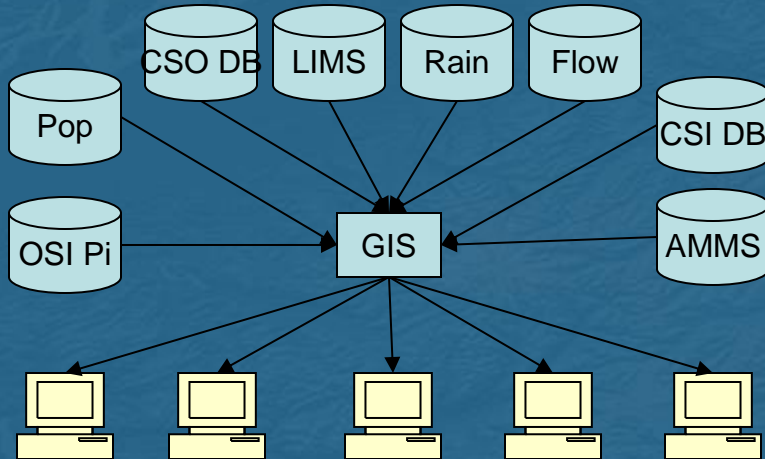
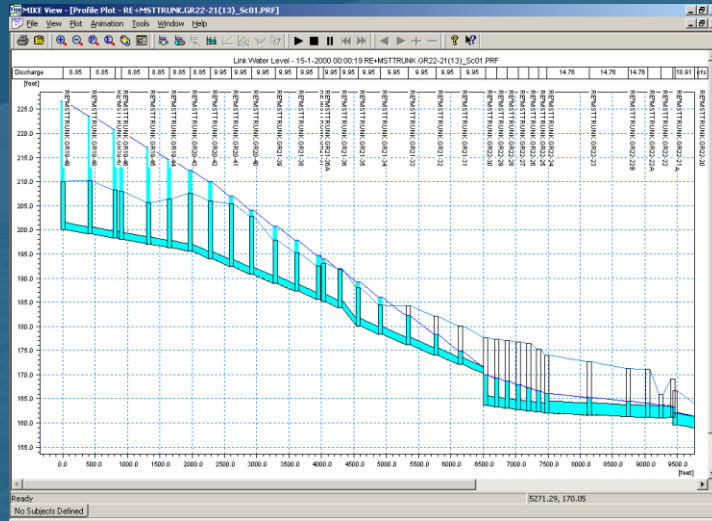
"Y\_COORDINA": 47.71172537,

"Address": "14120 NE 124th St,  
Redmond, WA 98034"





# I – Information



Identify

Identify from:

<Top-most layer>

flowmonitors

ABN024

ABN024

Location:

1,294,125.749 122,782.938 Feet

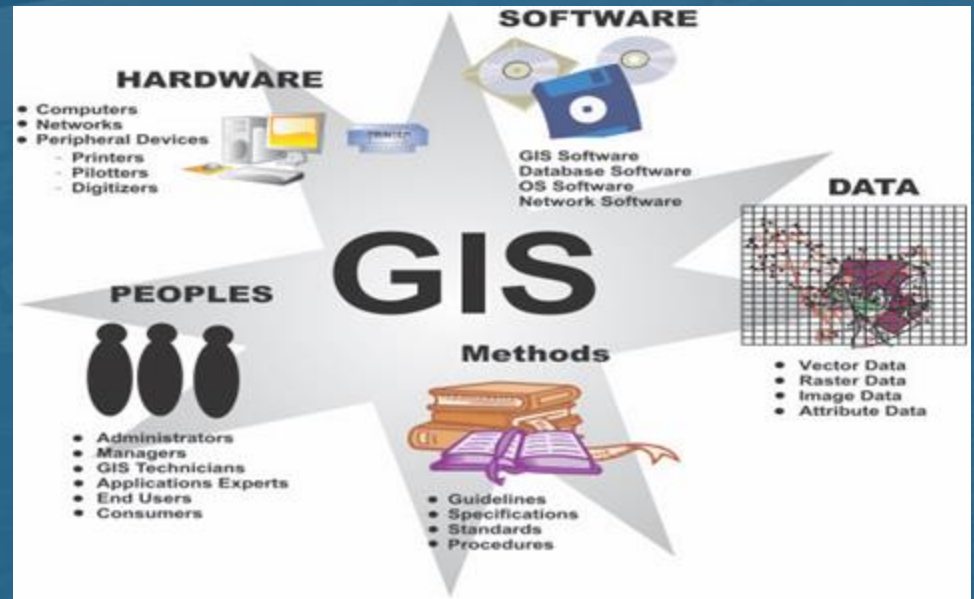
Field	Value
FID	1634
Shape	Point
ID_NUM	0
MH_REF	RE*WINTSEWR.GR27-02
ADDRESS	In KC MH, UP Local Line Pipe
CURRENT_	No
DIAMETER	12
PROJECT	DFM
TELEPHONE	
Meter_Type	SIGMA
UP_MH	508-14
Section_	south
Long_	1294125.749
Lat	122782.938
LocOwner	
SwrDistrict	KCWTD
Meter_ID	ABN024
CityName	Auburn
SWRAGEN	AUBURN UTILITY SERVICES
pCATE	<Null>
Basin	S_ABN024
E_DATE	6/14/11
S_DATE	8/3/2009
F_DEPTH	8

Identified 2 features

# S - System

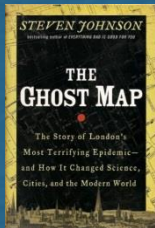
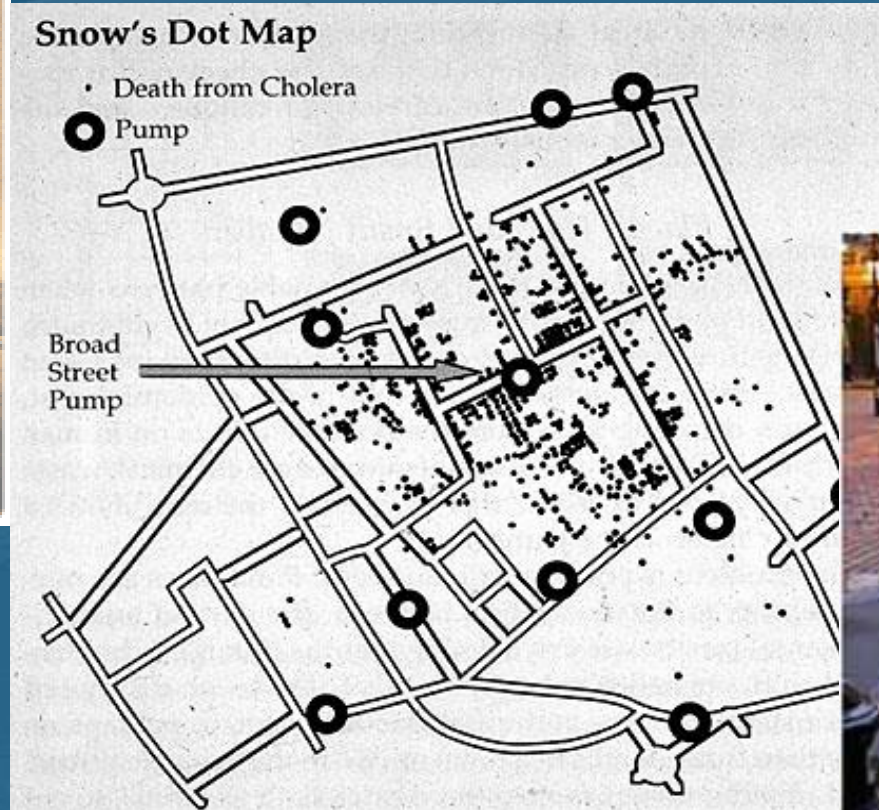
## Business Needs' Driven:

- ☐ Hardware
- ☐ Software
- ☐ Data
- ☐ Database management
- ☐ Business applications
- ☐ Network system
- ☐ Users
- ☐ GIS professionals: Analysts, Technicians, programmers
- ☐ Support staff
- ☐ Training
- ☐ Coordination



*The System brings all the components together*

# What can GIS do?



*The Ghost Map: The Story of London's Most Terrifying Epidemic – and How it Changed Science, Cities and the Modern World*, Steven Berlin



Inbox (17) - shaunneil4... About King County GIS D... Simplifying Map Product...

www.kingcounty.gov/operations/GIS/GISData/Metadata.aspx

Apps AGS Basics Bike Blogs Cartography ClimateChange Dell GDB GIS GPS King County Media Microsoft Websites News Open source Personal Programming Reference Web » Other bookmarks

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# KCGIS Center

We put geographic information systems to work for King County and beyond

You're in: KCGIS Center » Data » Metadata

KCGIS Center  
Maps  
Data  
Distribution  
Download: Data Portal  
Standards  
Data Format Primer  
**Metadata**  
Understanding Raster  
Raster Data Conventions  
Orthophotography  
Elevation  
Landcover  
Training  
Client Services  
Property Research  
News  
KCGIS User Group  
GIS Projects  
About Us / Contact Us  
Site map

King County GIS Center  
King Street Center  
201 S. Jackson St.  
Suite 706  
Seattle, WA 98104  
giscenter@kingcounty.gov  
47° 59'09" N  
122° 33'16" W  
47° 35' 56.72" N  
122° 19' 52.90" W

## About King County GIS Datasets (Metadata)

The **Spatial Data Catalog** (SDC) is the metadata resource for the King County enterprise GIS.

Not sure what you need or where to look? Check out our [Data Format Primer](#).

### KCGIS Vector and Tabular Data

Point, line, polygon and annotation data as shapefiles and geodatabase featureclasses, plus tables as dbf and geodatabase tables

Click here for a [Complete list of all available datasets](#) or browse data alphabetically, by [subject area](#), or by [stewarding agency](#)

Alpha	Subject	County Agency
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z	admin census district enviro hydro names planning political property public recreath survey topo transportation utility	KCGIS Center Assessments DIPER DES-Emergency Management DES-Facilities Management DNRP-Wastewater Treatment DNRP-Water and Land Resources DNRP-Parks and Recreation DNRP-Solid Waste Public Health DOT-Road Services DOT-Transit King County Intl Airport King County Elections King County Sheriff's Office Metropolitan King County Council OPSB

### KCGIS Raster Data

Cell-based data, including imagery, elevation data, and landcover themes.

#### General Information

- [Understanding KCGIS raster data](#)
- [How we organize and name our raster data](#) (plus links to metadata).

#### Orthophotography

- [General information](#)
- [Data products](#)

#### Elevation

- [General information](#)
- [Data products](#)

#### Landcover

- [General information](#)
- [Data products](#)

## Accessing King County GIS Data


Information for...

Do more online

Contact us

<http://www.kingcounty.gov/operations/GIS/GISData/Metadata.aspx>

# King County GIS Data – Data Portal



King County  
Always at your service

[HOME](#) | [NEWS](#) | [SERVICES](#) | [DIRECTORY](#) | [CONTACT](#) | [SEARCH TERMS:](#)

[Maps](#)  
[Data](#)  
[Distribution](#)  
[Download: Data Portal](#)  
[Standards](#)  
[Data Format Primer](#)  
[Metadata](#)  
[Training](#)  
[Client Services](#)  
[Property Research](#)  
[KCGIS Center news](#)  
[KCGIS User Group](#)  
[GIS Projects](#)  
[About Us / Contact Us](#)  
[Site map](#)

King County GIS Center  
King Street Center  
201 S. Jackson St.  
Suite 706  
Seattle, WA 98104  
[giscenter@kingcounty.gov](mailto:giscenter@kingcounty.gov)  
47.59909 N  
122.33136 W  
47° 35' 56.72" N  
122° 19' 52.90" W

## KCGIS Center

Serving the GIS Needs of the King County Community

You're in: KCGIS Center » GIS Data » GIS Data Download

[SHARE](#) [PRINT](#) [SITEMAP](#)

### King County GIS Data Portal

Welcome to the King County GIS data download page.

**PLEASE NOTE** that you will need geographic information system (GIS) or mapping software to view or use these data sets (see Other Resources and Tips below right).

**Available Data Formats** (see Tips below right for more information)

- SHP = Esri shapefile (feature layers and/or DBF tables)
- GDB = Esri file geodatabase (feature layers and/or tables; ArcGIS 10.x)
- KMZ = Compressed KML files (feature layers only, no tables)



















**Download Options**

- [Option 1:](#) Download by **thematic category** (SHP, GDB, or KMZ)
- [Option 2:](#) Download **individual feature layers** (SHP or KMZ)

**All files are compressed in the open-source 7-Zip format** (external link).  
Other utilities that can extract zipped files will work in most cases, but some of the data files might extract only with 7-Zip.

**Option 1: Download by thematic category.**

- To see which layers and tables are included within each thematic category, refer to the matrix in [Option 2](#).
- The category sets are refreshed every 2 weeks, whenever there has been a change to one of the data sets within it.
- Click on one of the icons in the File Type column to start downloading.

File Types	Category	Approx. Size (MB): shp/gdb/kmz	Summary
  	Administrative (admin)	110 / 105 / 128	Current city boundaries. Manmade landmark locations, points-of-interest, facilities, both public and non-public. Cultural (anthropic) features not specifically included in other King County data. Designations for administrative oversight and jurisdiction, not included in DISTRICT, such as zipcode postal zones. School sites.
  	Census boundaries and business tables (census)	141 / 139 / 119	Census data, by census year, conflated to other King County data. Obtained directly or indirectly from United States Census Bureau that has been conflated to King County base layers. Decennial census data is maintained for comparison analysis. Note: Census business tables, beginning with ACS_ (American Community Survey) and the 2010 Decennial Census tables: PLSF_, SF1_ and SF3_ are available by downloading Option 1 Census Shapefiles or GDB.
  	District boundaries (district)	128 / 15 / 42	Legislatively or local government-defined boundaries, primarily intra-county. Includes permanent or semi-permanent jurisdictional, legislative, congressional, council, and judicial boundaries. Minor taxation entities (not service areas) such as school districts. Voter districts. Contains historic voter and district data
  	Environmental (enviro)	7 / 6 / 11	Environmental data or that related to the state (not management) of natural resources. Natural condition of flora and fauna and their habitat. Description of earth's natural ecosystem or physical environment.
  	Hydrography (hydro)	47 / 27 / 82	Hydrologic, but not hydraulic (engineering) data. Naturally occurring waterways and waterbodies, both freshwater and ocean, including contact zones. Includes flood hazard zones independent of their management.
  	Natural Resources (natures)	7 / 5 / 10	Management and impacts of natural resources. Related to jurisdictionally-defined boundaries and the management or enforcement of environmental regulations. These regulations affect the measurement or quality of natural resources. Especially related to shoreline management, growth boundary management, and forest management. Data set includes natural environmental measurements, boundaries,

### KCGIS Resources

[Custom Data Orders](#)  
(KCGIS Client Services)  
[KCGIS metadata](#)  
[King County Assessor's data](#)

### Other Resources

[ArcGIS Explorer \(ESRI\)](#)  
[QGIS \(open source\)](#)  
[MapWindow \(open source\)](#)

### Tips

- Files are compressed using the [7Zip](#) format.
- **Geodatabase:** a database or file structure used to store, query, and manipulate spatial data. Geodatabases store geometry, a spatial reference system, attributes, and behavioral rules for data. Geodatabases can be stored in relational database management systems, or in a system of files.
- **Shapefile:** an open specification data format for storing the location, shape, and attributes of geographic features. It can be used with a variety of software programs.
- **KMZ:** compressed KML (Keyhole Markup Language) file, an open specification xml notation format for expressing geographic annotation and visualization information. Can be used with several desktop and internet-based GIS browsers.

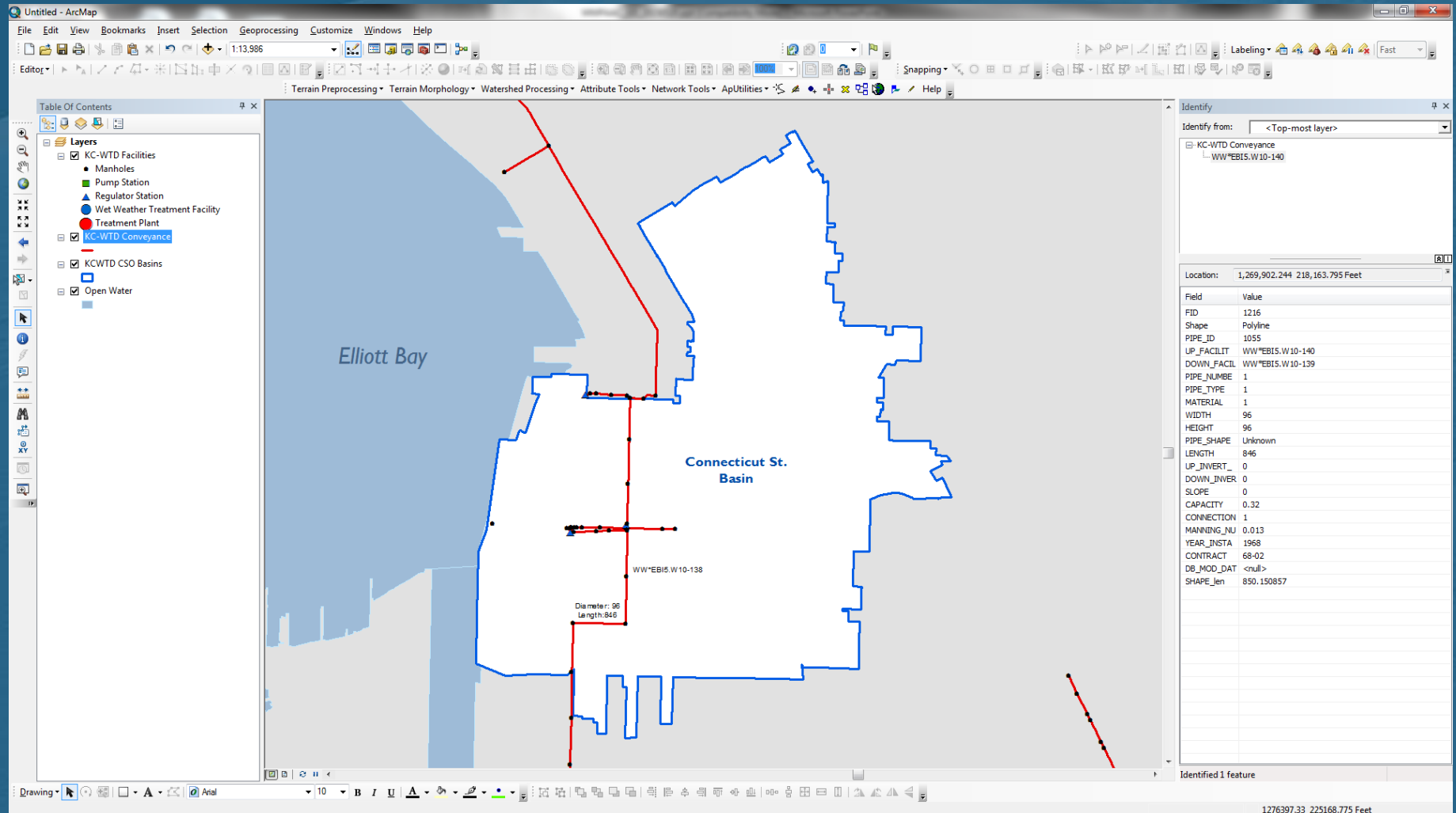
### Contact Us

Questions? Contact us at:  
[giscenter@kingcounty.gov](mailto:giscenter@kingcounty.gov)

<http://www5.kingcounty.gov/gisdataportal/Default.aspx>



# King County GIS Data - Vector



# King County GIS Data - Raster

- Orthophotography



1936



to

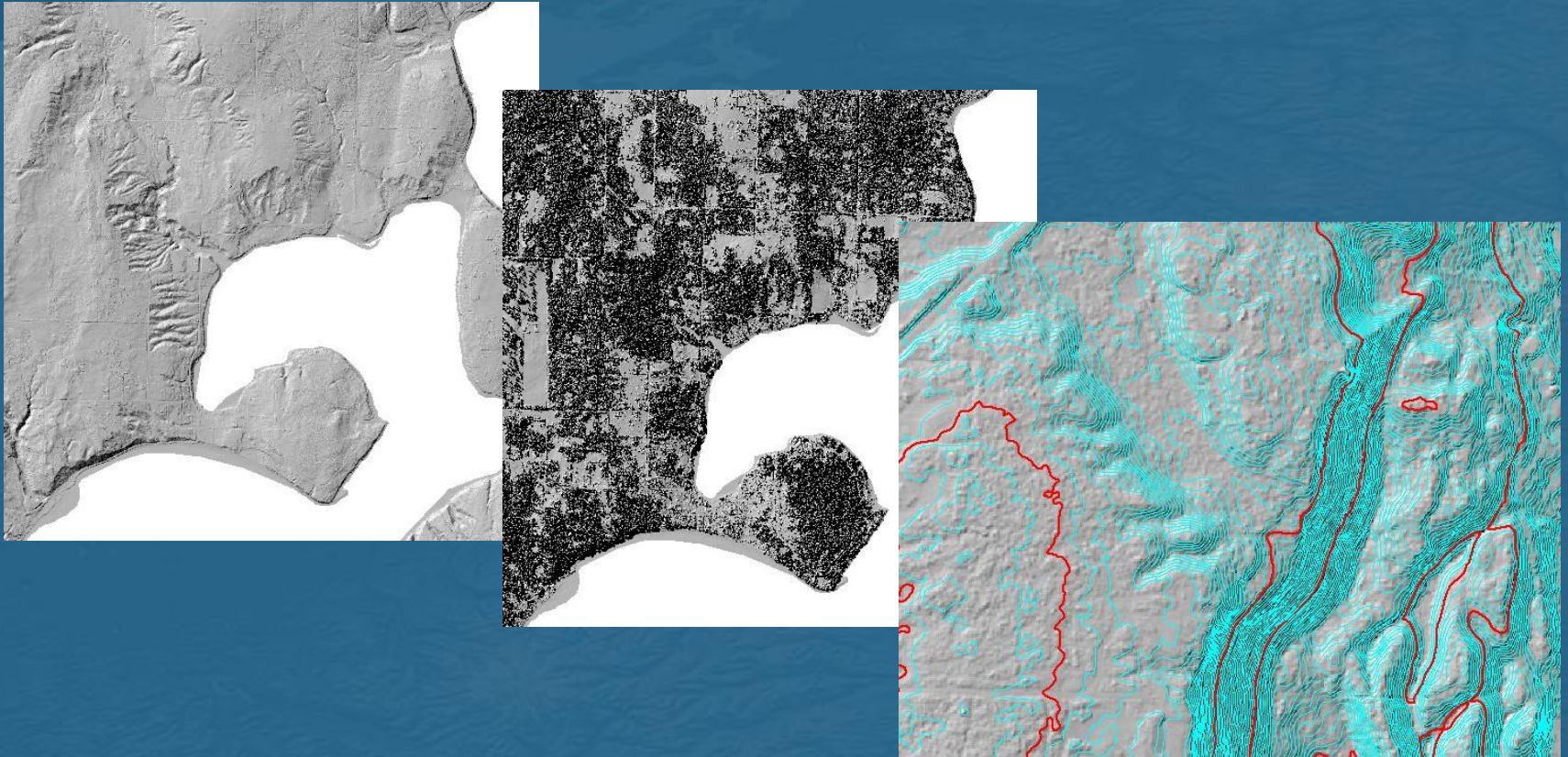
2013

\*2015 is expected this summer



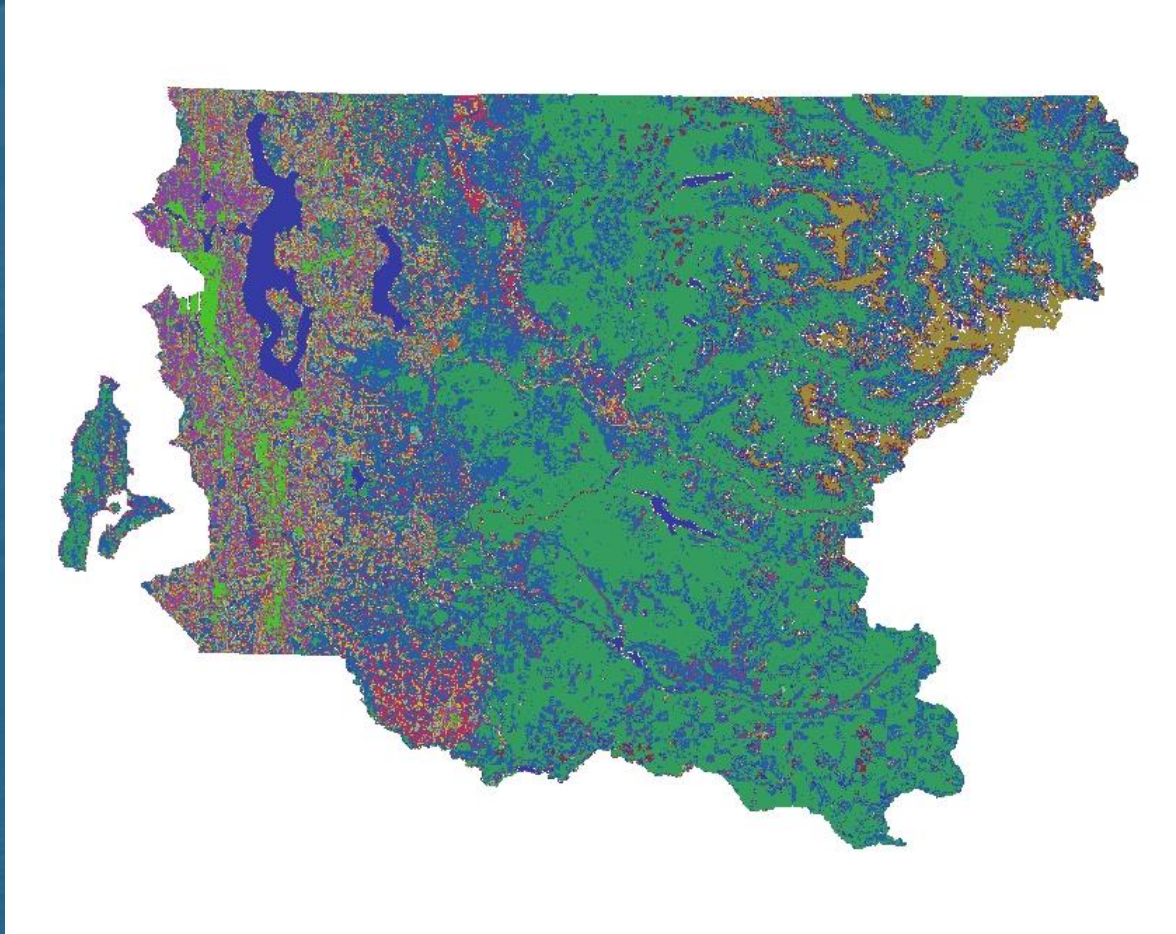
# King County GIS Data - Raster

- Elevation – from LiDAR



# King County GIS Data - Raster

- Landcover



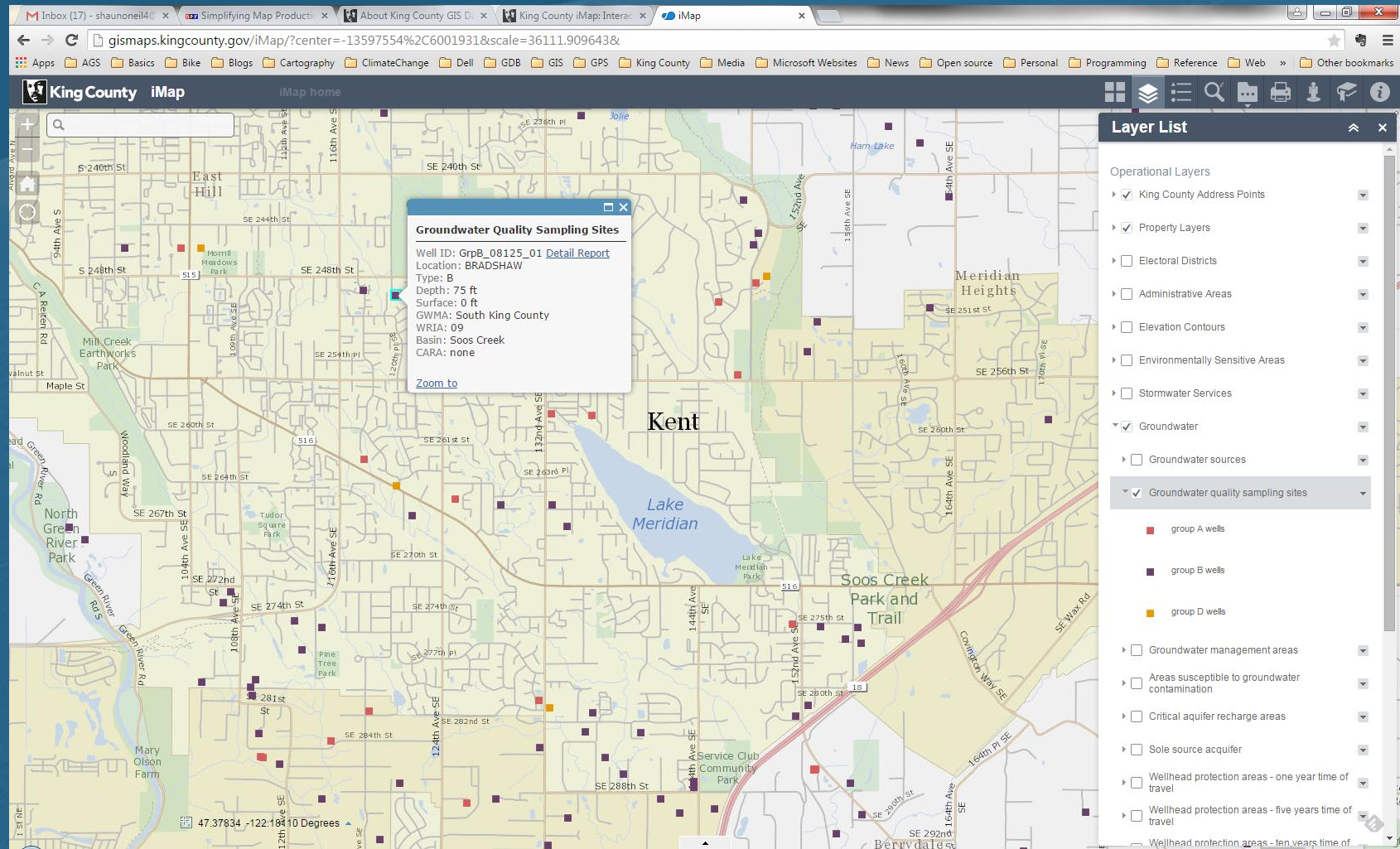
Percent Impervious



# King County GIS Data - External

- City – Kirkland, etc.
- County - Snohomish, etc.
- Federal - Census , etc.
- Regional - PSRC , etc.
- School District - Federal Way SD , etc.
- Service District - Olympic Pipeline Co. , etc.
- State - WADFW , etc.
- University - UW
- Private - Anchor Environmental , etc.

# King County GIS Applications - iMap



iMap

<http://gismaps.kingcounty.gov/iMap/>



# King County GIS Applications – Parcel Viewer

King County

Parcel Viewer 2.0  
KCGIS Center

You're in: KCGIS Center » Property Research » Parcel Viewer 2.0

Search results

Selected parcel(s)

☒ New selection ☐ Add to selection

Selected parcels: 1

Parcel number	Address
3526059046	15631 NE 116TH ST 98052

Parcel 3526059046

Present use: Single Family(Res Use/Zone)  
Jurisdiction: REDMOND  
Taxpayer name: TOLL WA LP  
Address: 15631 NE 116TH ST 98052  
Appraised value: \$0  
Lot area: 37,026  
Levy code: 2019  
[Property Report](#) [Districts Report](#)  
Source: King County Assessor

Map layers

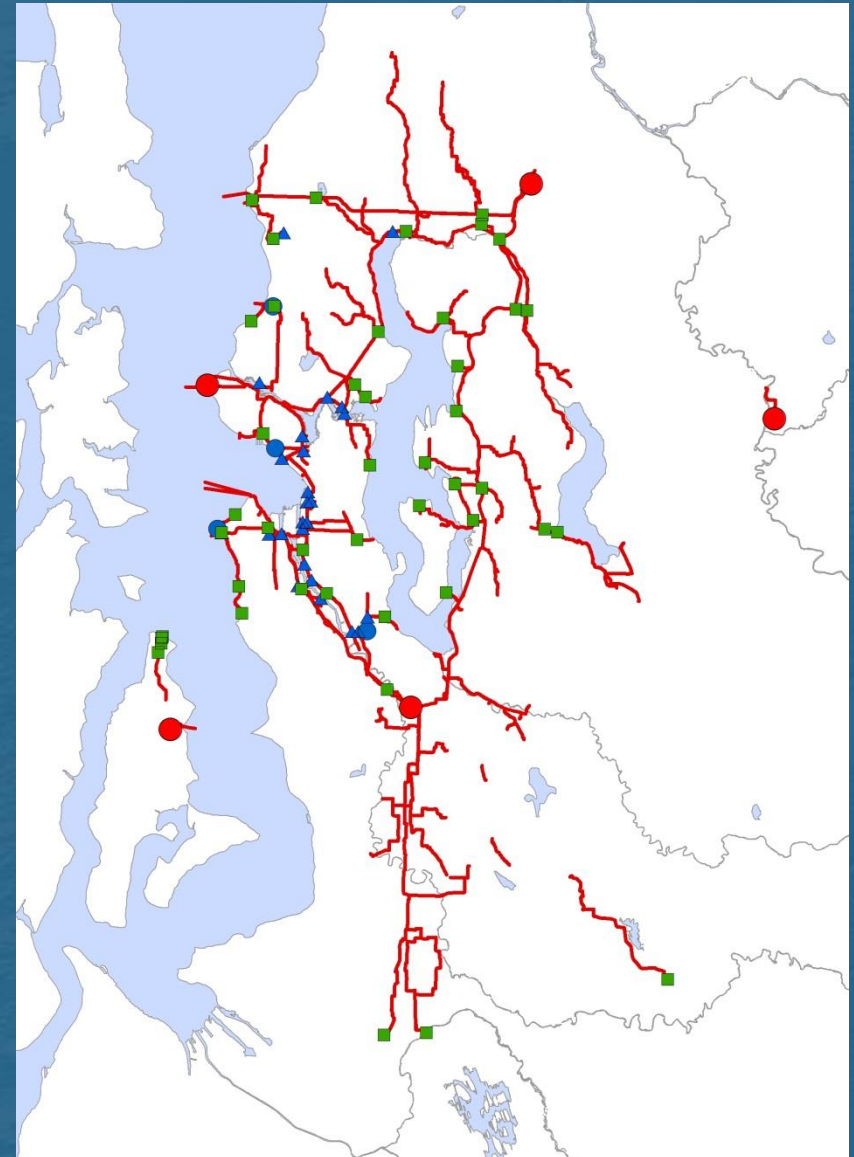
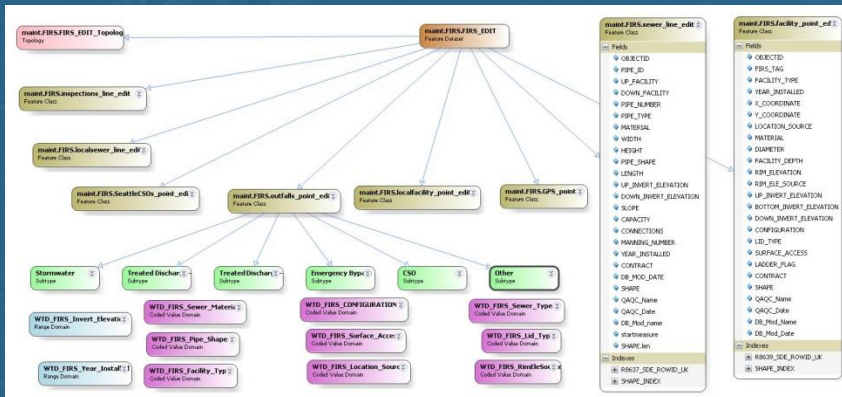
Updated: Dec 5, 2013

## Parcel Viewer

<http://gismaps.kingcounty.gov/parcelviewer2/>

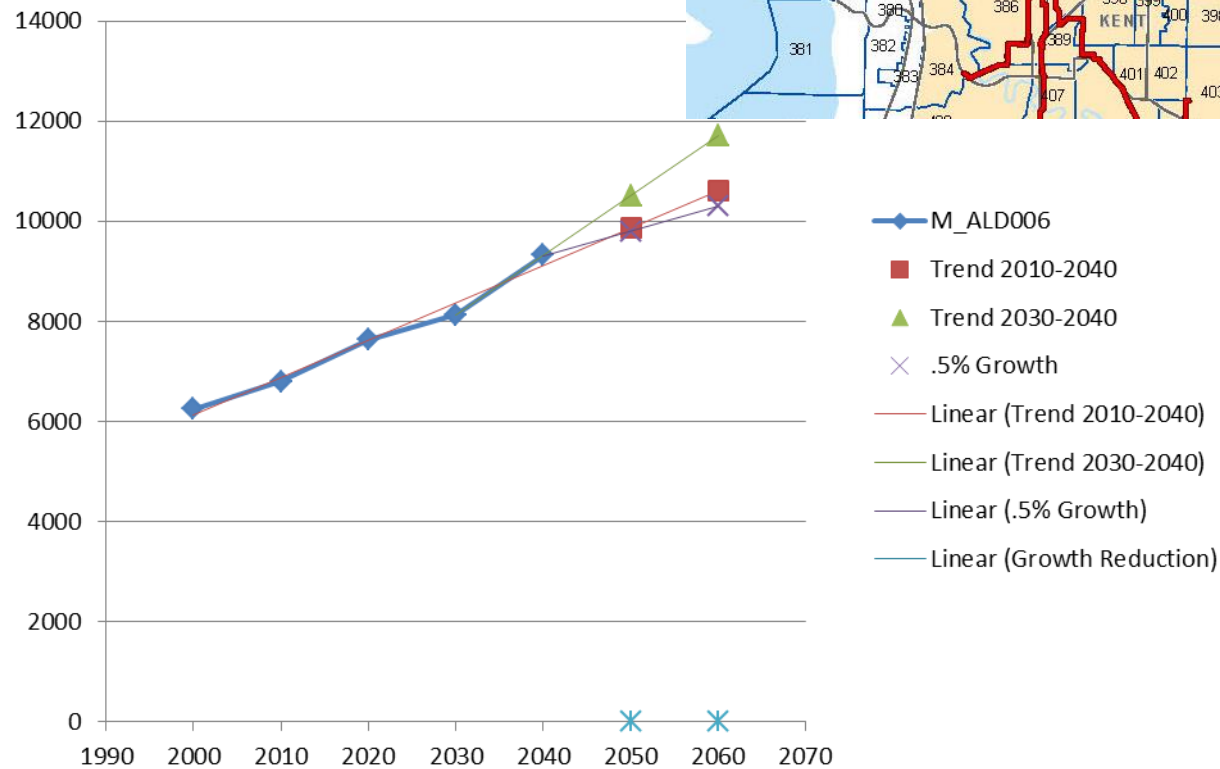
# WTD GIS - Data - FIRS

- Manholes
- Pipes
- Pump Stations
- Regulator Stations
- Treatment Plants
- Outfalls
- Local Sewers & Manholes
- Flow Monitors
- GPS points
- Connection Points
- Inspections
- CP Stations
- USTs


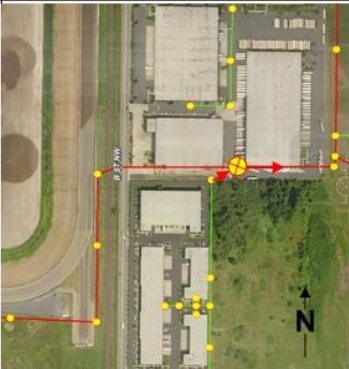
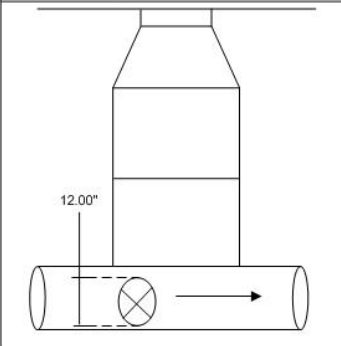
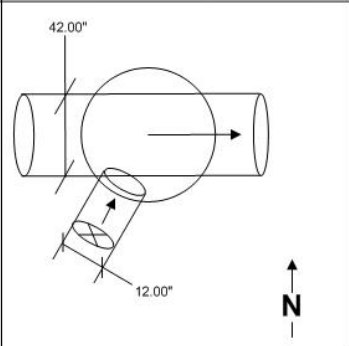




# WTD GIS - Data - CSI



# WTD GIS - Data – Flow Monitors

Site Report				Site	Manhole#	Map Book																																			
				ABN024	RE*WINTSE WR.GR27-02	745-J3																																			
Project/Phase: Decennial Flow Monitoring		Date: 8/3/09		Level Off.	Sensor Off.	Diameter: 12"																																			
Address/Location: 2306 B St NW																																									
Pacific Coast Steel Parking lot				Installation: HACH Sigma 930T																																					
Access: Drive																																									
				<b>Safety:</b> Rungs <b>Manhole Depth:</b> 8' <b>Traffic:</b> Light <b>Gas Investigation:</b> None <b>Manhole &amp; Pipe Condition:</b> Poor <b>Pipe Material:</b> RCP <b>Pipe Shape:</b> Round																																					
				<b>Telemetry</b> Pole # Phone # Trench Length Saw Length Telco Address																																					
<b>Hydraulics:</b> Good hydraulics.				<table border="1"> <thead> <tr> <th>BACKUP</th> <th>Y</th> <th>N</th> <th>?</th> <th>DISTANCE</th> </tr> </thead> <tbody> <tr> <td>Trunk</td> <td>X</td> <td></td> <td></td> <td></td> </tr> <tr> <td>UR Sta</td> <td></td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>STP</td> <td></td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>Other Input</td> <td>X</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Int. US</td> <td></td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>US US</td> <td></td> <td>X</td> <td></td> <td></td> </tr> </tbody> </table>			BACKUP	Y	N	?	DISTANCE	Trunk	X				UR Sta		X			STP		X			Other Input	X				Int. US		X			US US		X		
BACKUP	Y	N	?	DISTANCE																																					
Trunk	X																																								
UR Sta		X																																							
STP		X																																							
Other Input	X																																								
Int. US		X																																							
US US		X																																							
<b>Surcharge:</b> No				<b>Height:</b>																																					
<b>Time:</b> 10:55		<b>DOF:</b> 2.75" +/-		<b>Velocity:</b> 0.41 fps																																					
<b>Upstream Manhole:</b> Did not investigate		<b>Silt:</b> No +/-																																							
<b>Downstream Manhole:</b> Did not investigate																																									

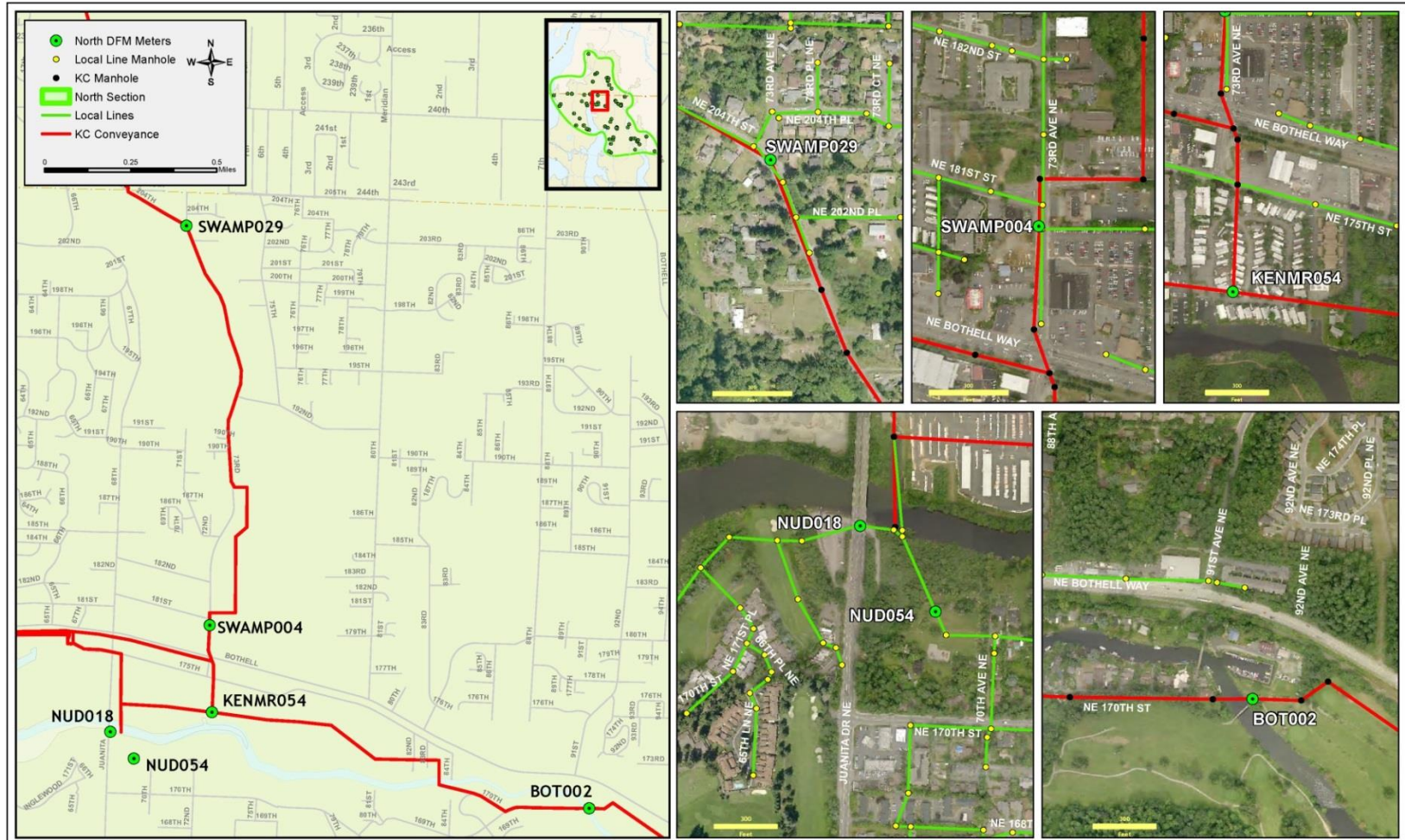
Identify	
Identify from:	<Top-most layer>
<input checked="" type="checkbox"/> flowmonitors <input checked="" type="checkbox"/> ABN024 <input type="checkbox"/> ABN024	
Location:	1,294,125.749 122,782.938 Feet
Field	Value
FID	1634
Shape	Point
ID_NUM	0
MH_REF	RE*WINTSEWR.GR.27-02
ADDRESS	In KC MH, UP Local Line Pipe
CURRENT_	No
DIAMETER	12
PROJECT	DFM
TELEPHONE	
Meter_Type	SIGMA
UP_MH	508-14
Section_	south
Long_	1294125.749
Lat	122782.938
LocOwner	
SwrDistrct	KCWTD
Meter_ID	ABN024
CityName	Auburn
SWRAGEN	AUBURN UTILITY SERVICES
pCATE	<Null>
Basin	S_ABN024
E_DATE	6/14/11
S_DATE	8/3/2009
F_DEPTH	8
Identified 2 features	



# WTD GIS – Cartography – Onelines



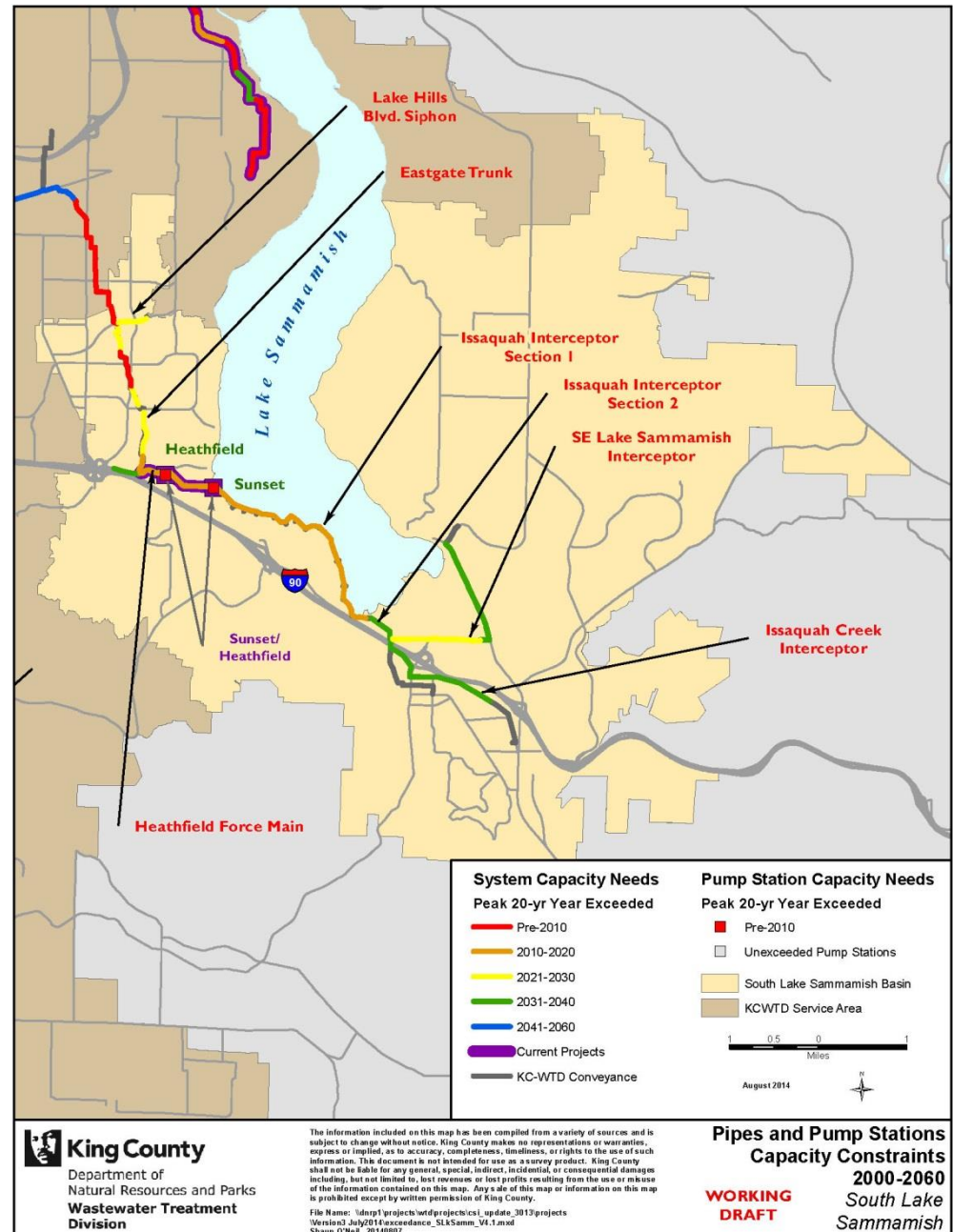
# WTD GIS - Cartography — DFM Field Mapbook



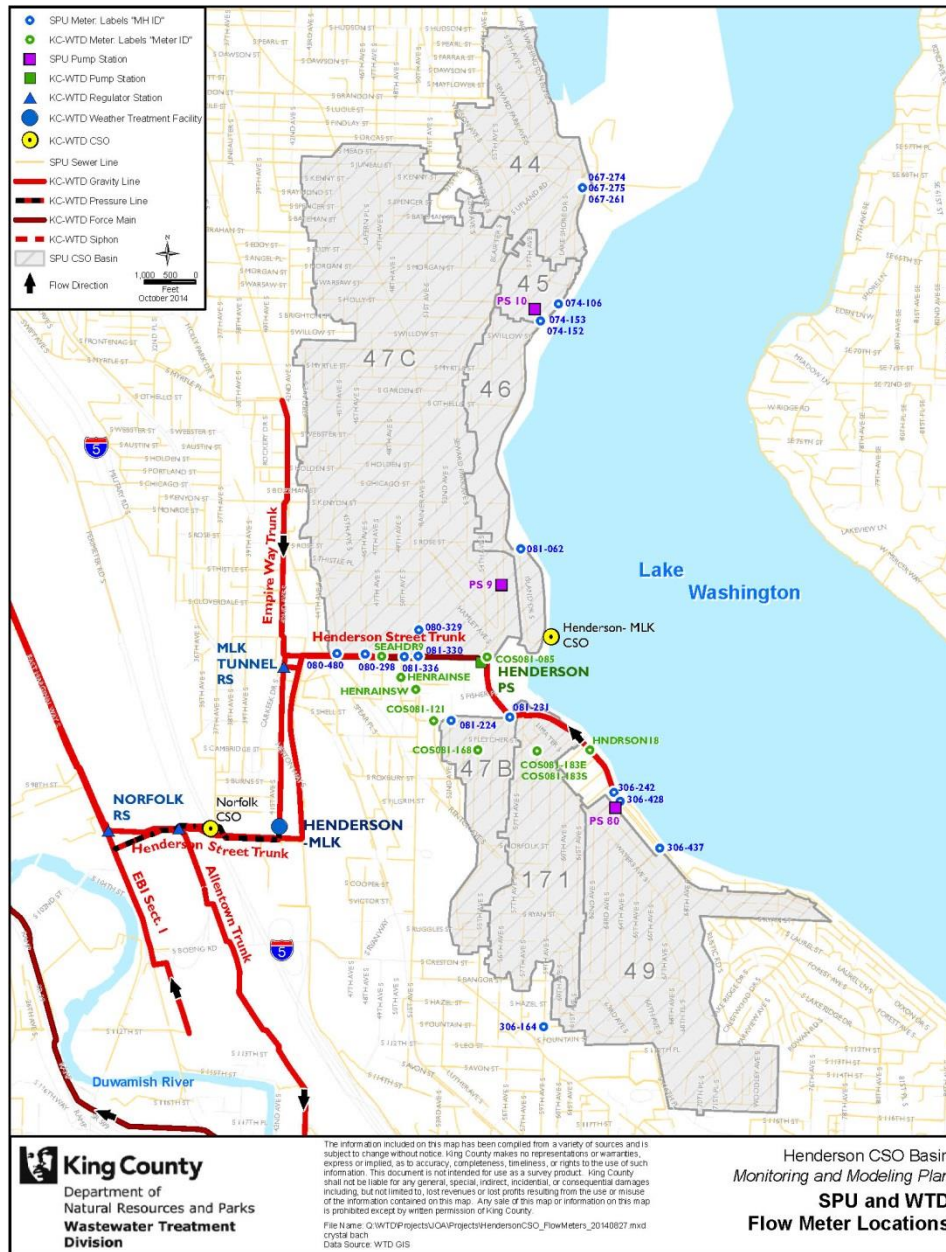
North Meters: SWAMP029, SWAMP004, KENMR054, NUD018, NUD054, BOT002



# WTD GIS – Cartography – CSI

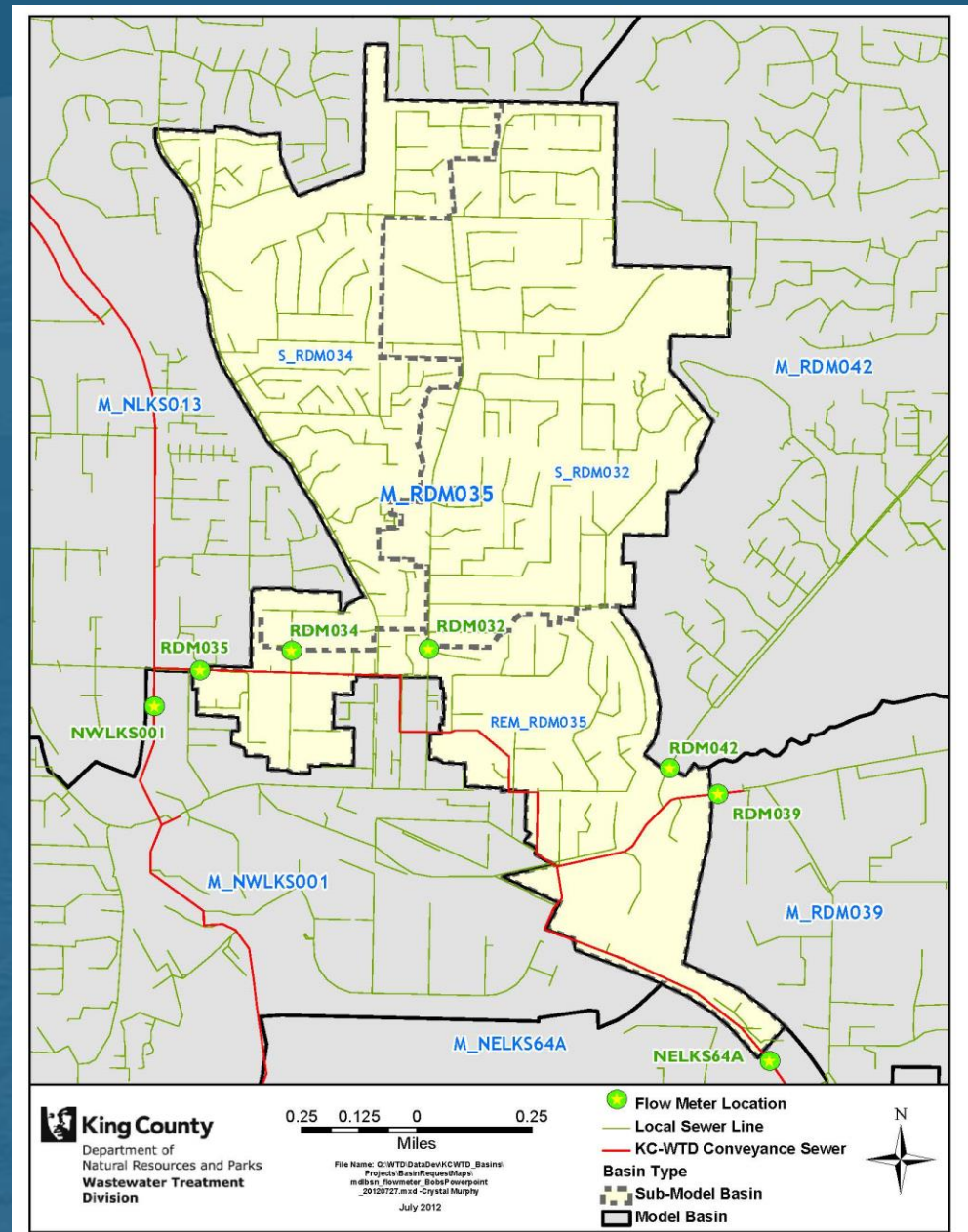


# WTD GIS - Cartography – Joint Operations





# WTD GIS – Analysis – Basins for CSI/ Flow Monitoring

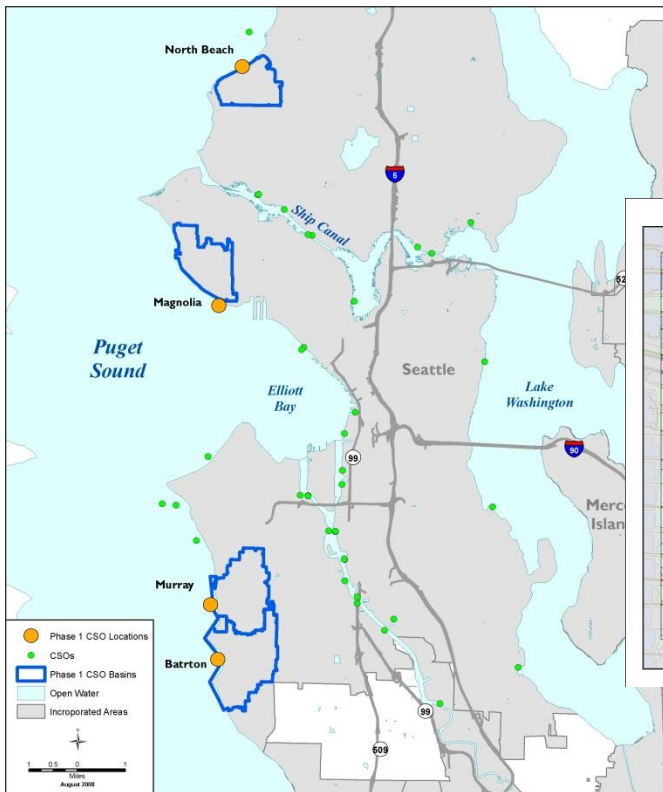


# WTD GIS - Analysis – Joint Operations

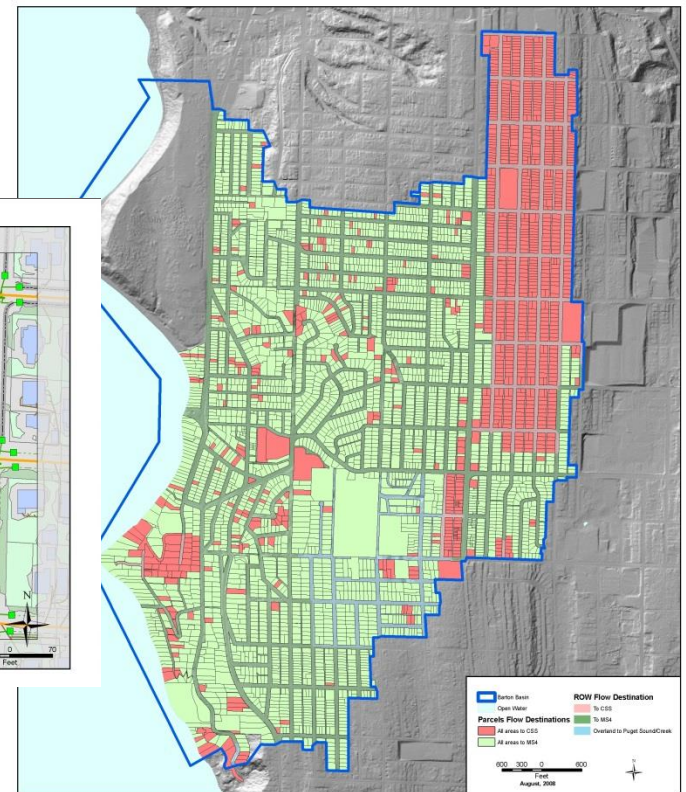




# WTD GIS - Analysis – GSI



### Phase 1 CSO Locations and Contributing Basins



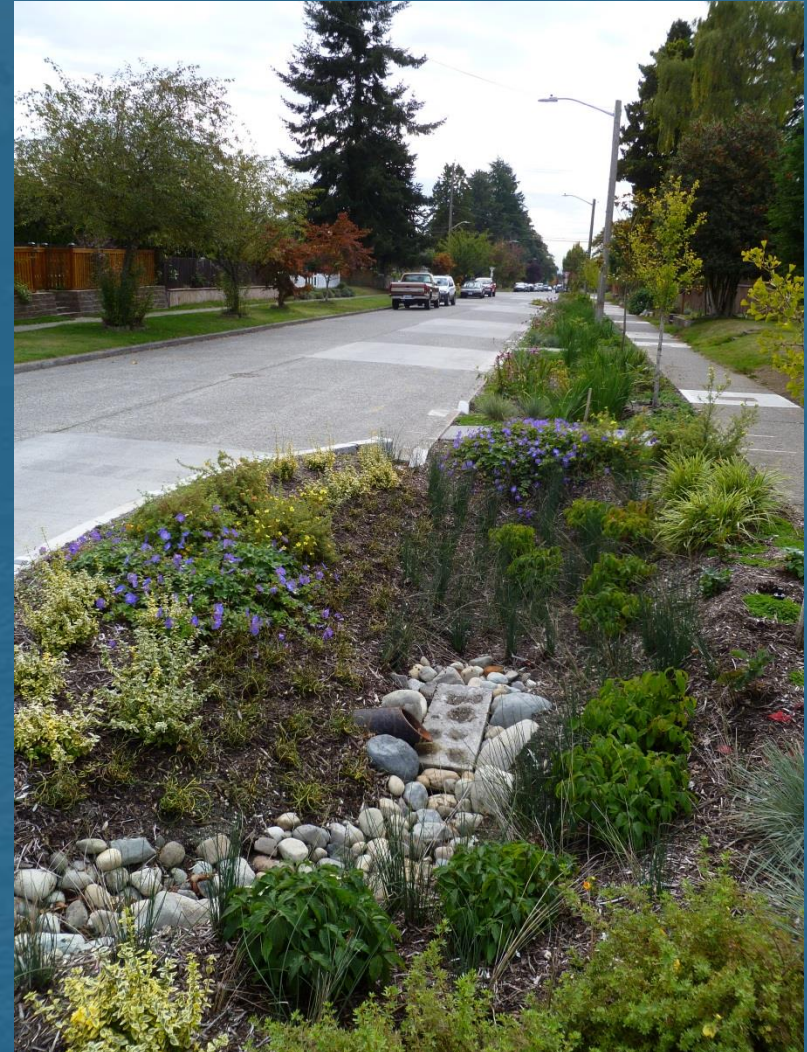
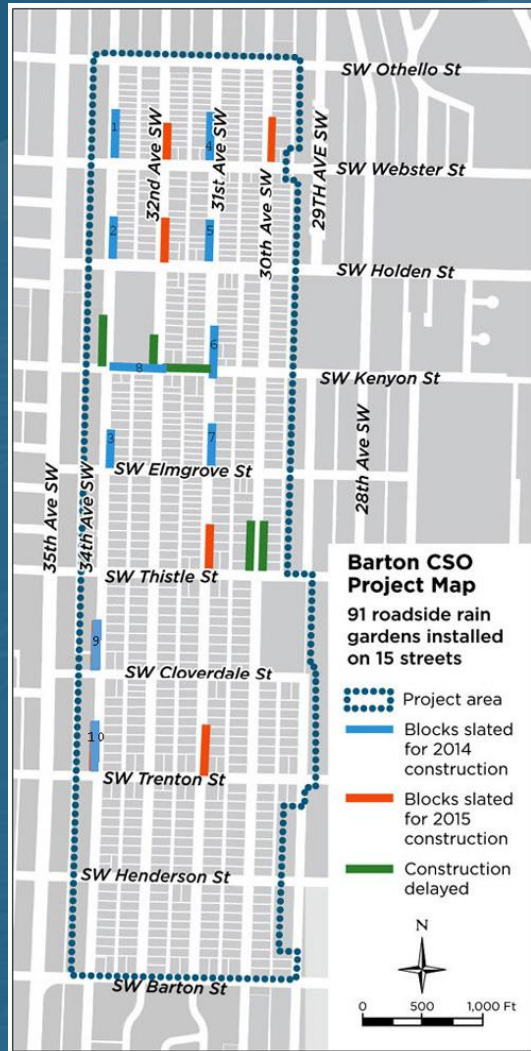
Flow Destination  
by Parcel  
Barton CSO Basin

**Table D8. Barton 416 - Total Acreage and Percentage for Each Destination by Source and Assumption**

		A Assumptions		B Assumptions		A Assumptions		B Assumptions	
		CSS	MS4	CSS	MS4	CSS	MS4	CSS	MS4
ROW	Impervious	46.3	33.6	46.3	33.6	58%	42%	58%	42%
	Pervious	10.9	6.8	10.9	6.8	62%	38%	62%	38%
	Roof	37.8	21.8	48.6	11.0	63%	37%	82%	18%
Parcels	Impervious	49.5	28.0	48.8	28.6	64%	36%	63%	37%
	Pervious	49.0	30.6	48.2	31.4	62%	38%	61%	39%
<b>Total</b>		<b>193.5</b>	<b>120.7</b>	<b>202.8</b>	<b>111.4</b>	<b>62%</b>	<b>38%</b>	<b>65%</b>	<b>35%</b>
		<b>314.2</b>		<b>314.2</b>					



# WTD GIS - Analysis – GSI





# WTD GIS - Aps/Websites — Flow Data Portal

Flow Monitoring Data Portal | Decennial Flow Monitoring | www.kingcounty.gov/environment/wastewater/CSI/FlowMonitoring/DataPortal.aspx

**King County**

Conveyance System Improvement  
Partnering with our local sewer agencies

You're in: Conveyance System Improvement » Flow monitoring » Flow Monitoring Data Portal

Home How do I... Services About King County Departments

## Decennial Flow Monitoring Data Portal - KC Wastewater Treatment Division

Switch Basemap

Flow Meter | Flow Data | Site Reports | Site Verifications

Total Meters Found: 2

Meter	Project	Monitoring Start Date	Monitoring End Date
BEL103	DPM	8/19/2009	5/16/11
MEDNT001	DPM	8/19/2009	5/16/11

Updated: Sept. 25, 2014

Share Tweet Email Print

**Help**

- Search Decennial Flow Meter by ID
- Map Legend

**King County Data**

- Decennial Flow Meter Location
- WTD Facility Point
- WTD Sewer Conveyance

**Map Navigation Tips**

Map navigation tips

Mouse scroll forward to zoom in  
Mouse scroll backward to zoom out  
SHIFT + drag the mouse to zoom in  
SHIFT + CTRL + drag the mouse to zoom out

Use arrow keys to pan  
Use + key to zoom in a level  
Use - key to zoom out a level

**Information for...**

- Healthcare enrollment
- Residents
- Businesses

**Do more online**

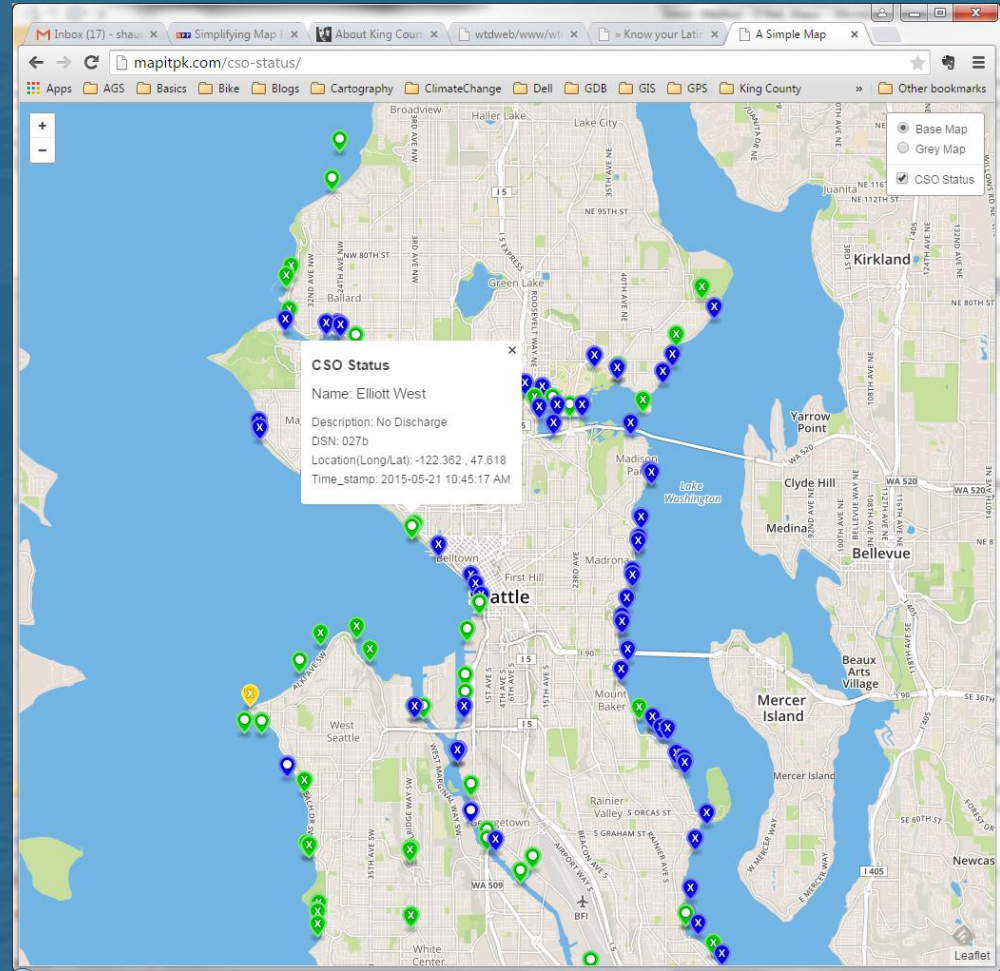
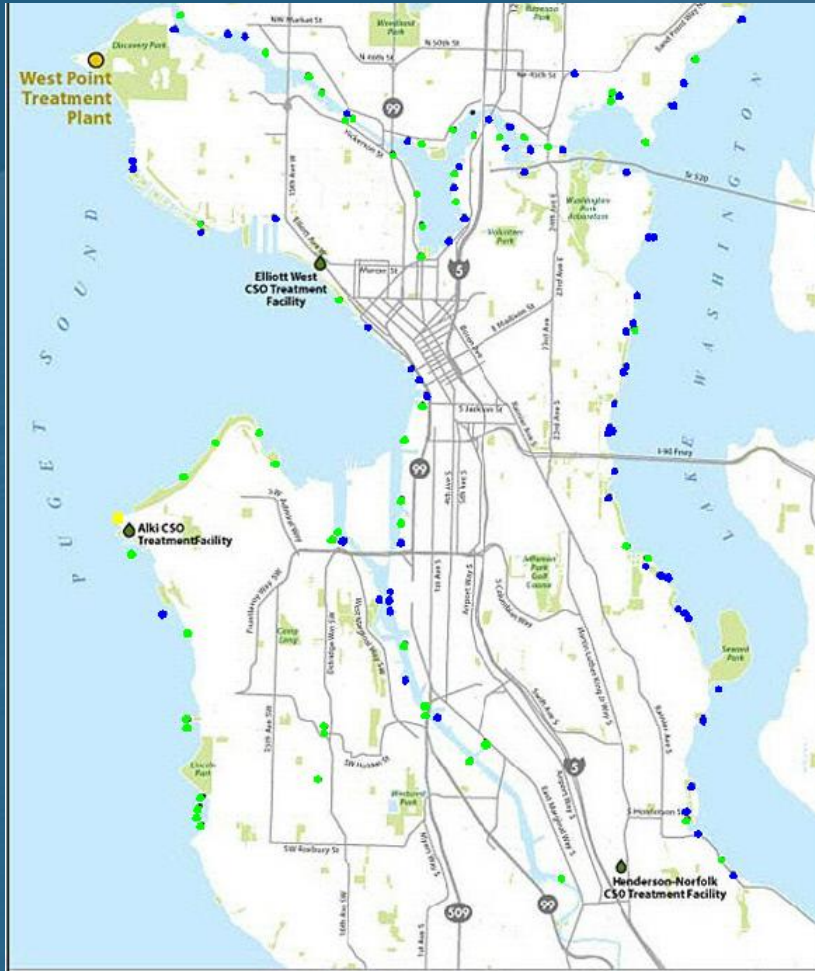
- Trip Planner
- Property tax information & payment
- Jail inmate look up

**Contact us**

- 206-296-0100
- Email us
- Staff directory

<http://kingcounty.gov/environment/wastewater/CSI/FlowMonitoring/DataPortal.aspx#>

# WTD GIS - Aps/Websites – CSO Status



**Update of CSO Status Page  
In Development**



# WTD GIS – Ongoing Functions

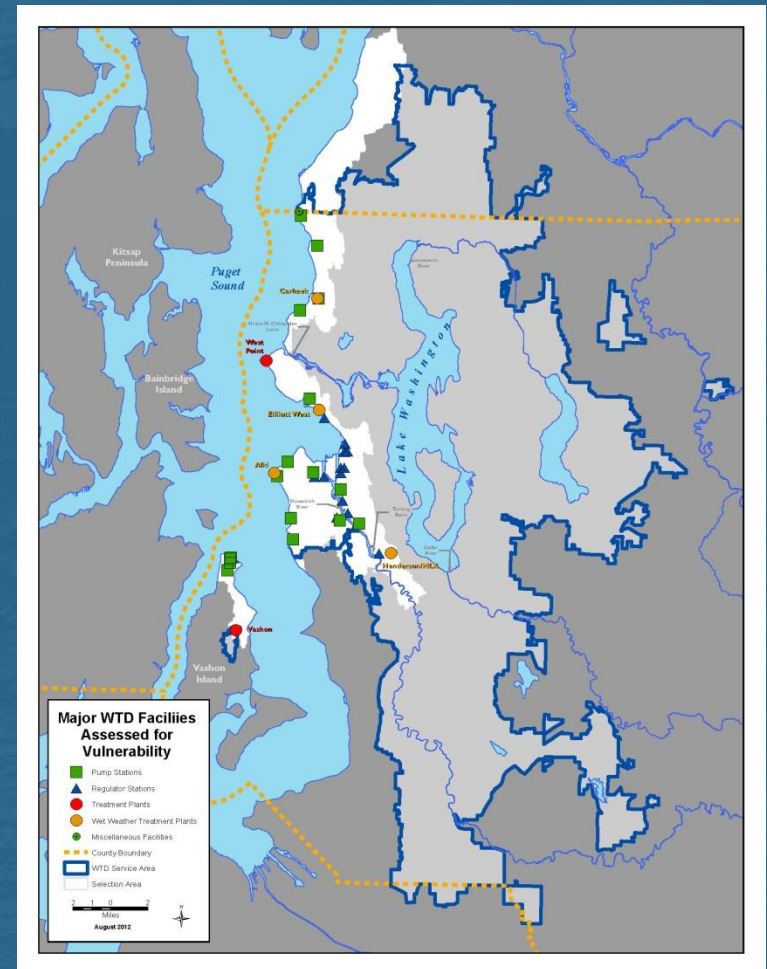
- Data Maintenance and Development
  - FIRS
  - Basins
  - Plants
  - Site Plans
  - Sewer Agencies
  - Sewer Land
  - IW Permits
  - Water Sampling Locations
  - CSO Event Based DB



# WTD GIS - Ongoing Functions

## ■ Project Support

- CSI Program
- CSO Program
- Conveyance Inspections
- Flow Monitoring
- Asset Management
- Industrial Waste Program
- Resource Recovery Program
- Lower Duwamish Cleanup
- Capital Projects
- Operations and Maintenance







# Thank you

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...for questions, data, etc.