WILLAMALANE PARK AND RECREATION DISTRICT

Springfield, Oregon

GIS ASSET MANAGEMENT IN A PARK AND RECREATION DISTRICT

ESRI USER CONFERENCE – JULY 2014

Session Goals

Share our process of implementing and developing a cloud based GIS-centric asset management system for a park and recreation district:

- ***Amazon Cloud Server***
- ***Cityworks asset management software***
- ***Google + site***
- ***ArcGIS Online Organizational Account***
  - ***Local Government Web App Templates***
  - ***ArcGIS Collector maps***
  - ***Story maps***

Lucinda Dykes
Web GIS

The GIS Lab, Willamalane

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Who are We?

- Located in Springfield, Oregon
- Park and Recreation Special District (serve over 60,000 people)
- 40 parks and open spaces – 1,500 acres, hiking & biking trails
- 23 playgrounds
- 5 recreation facilities (sports & activity centers, swim centers)
- 15 sports fields
- 12 waterfront areas

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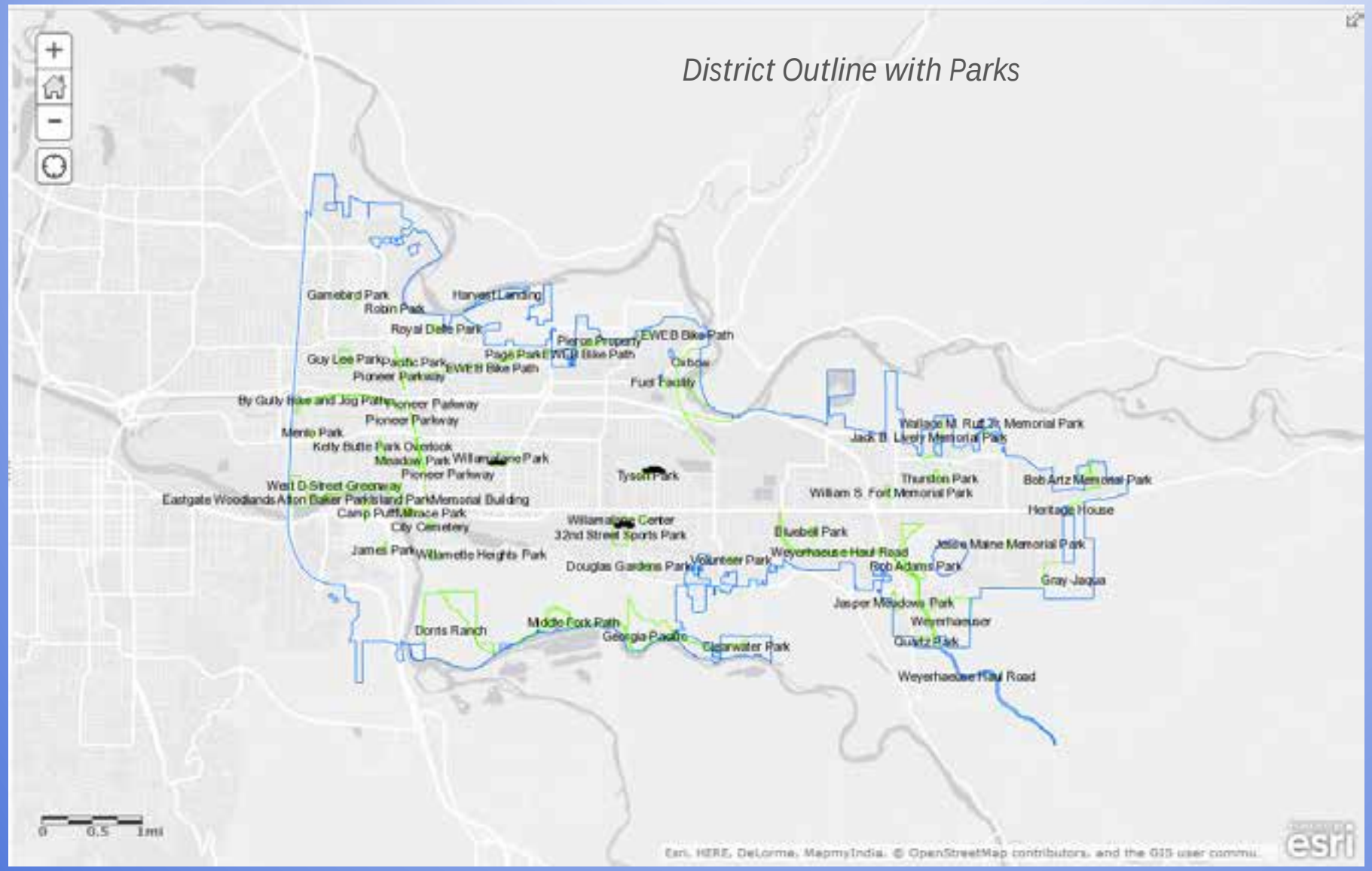
Who are We?



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Who are We?

Park Services Center

- Parks & facilities maintenance center, and home to the GIS Lab

- Joel Miller – Park Services Director
- Ben Grieger – GIS Analyst/Developer
- Lucinda Dykes – GIS Developer
- Randi Zimmer – Administrative Analyst/Cityworks

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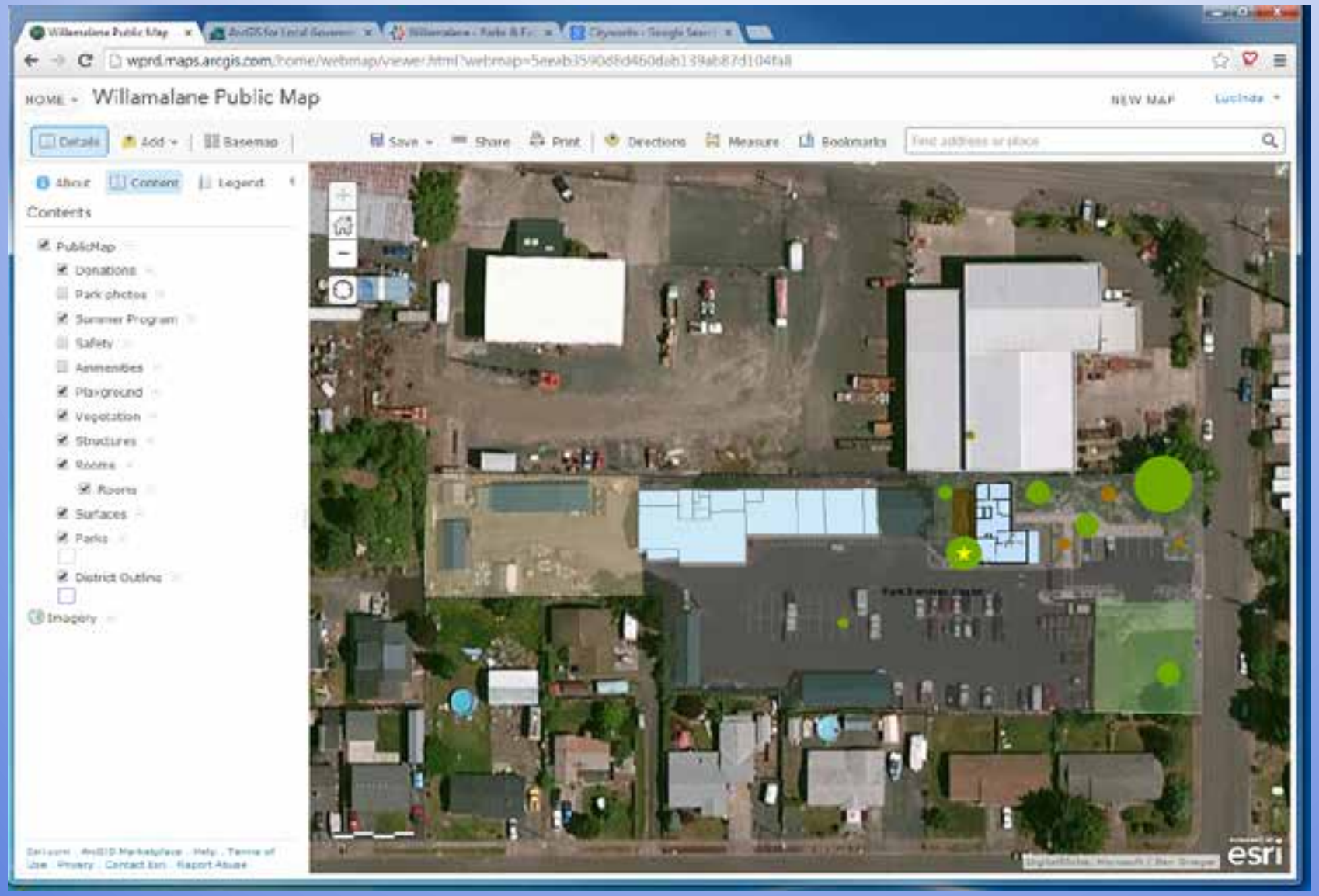
Who are We?



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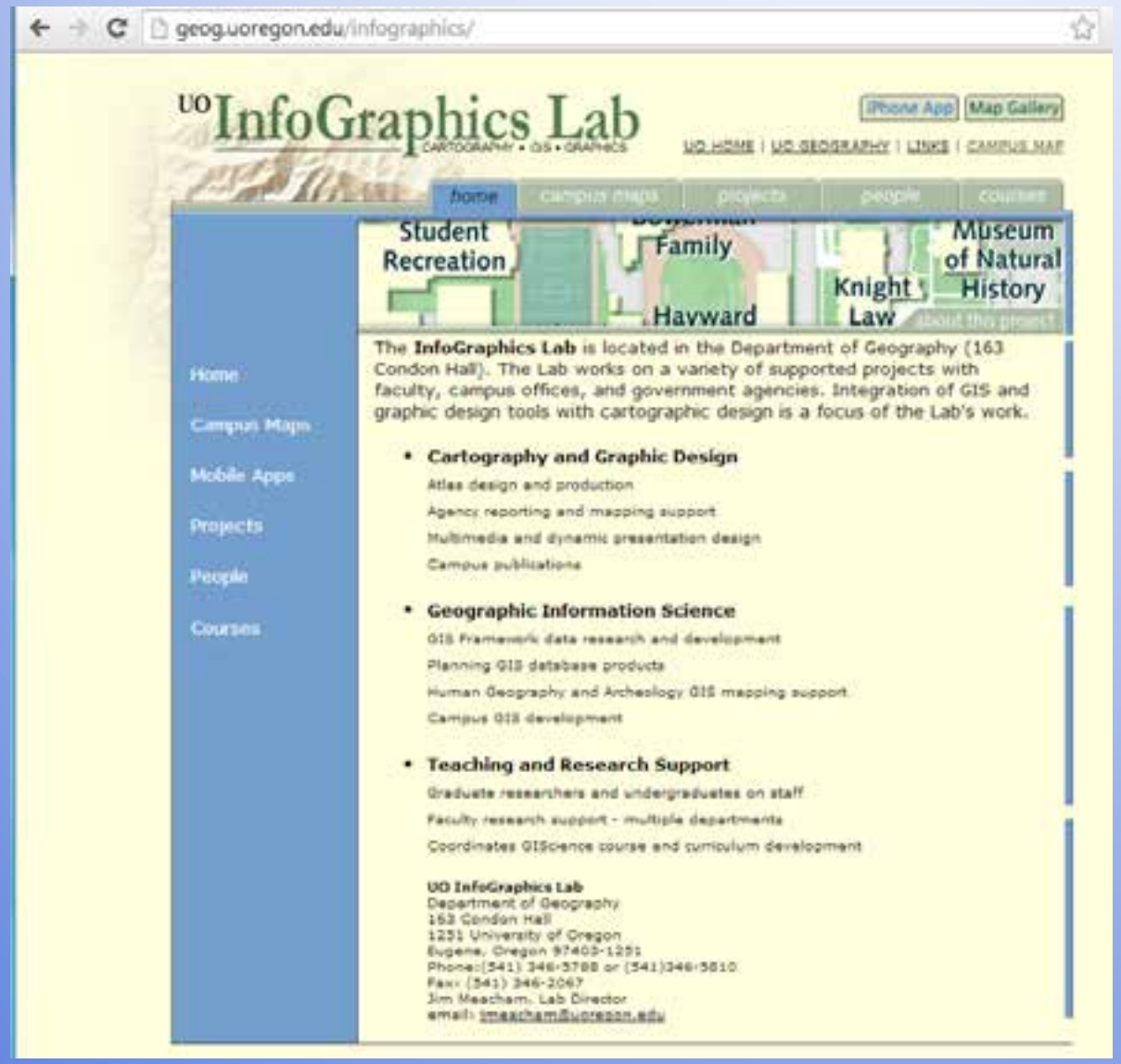
GIS for Asset Management



With special thanks to Ken Kato, U of Oregon InfoGraphics Lab for the inspiration

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Why Implement GIS?

I need an efficient, centralized maintenance management system.

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Maintenance Management Goals

We can do some awesome stuff, to make our maintenance better while saving money on resources and vehicle use!

- Manage all assets
- Track maintenance history for assets
- Automate repetitive or routine jobs such as generating and tracking work orders
- Plan jobs and resources

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Our GIS Timeline : Overview

2007 - 2009
- Desktop ArcGIS with file geodatabase and no ArcGIS Server
- Custom Web app development

2010
- ArcGIS server added on local server

2011
- replicated geodatabase server on Amazon Cloud, but live editing continued locally
- Cityworks server added
- Google + site for GIS lab infrastructure (email, calendar, task list, updates)

2012
- full move to Amazon Cloud - stopped using local IT infrastructure
- switch to REST services for distributing geodata

2013
- ArcGIS online with eventual addition of Organizational account
- Web app development with Local Government web app templates

2014
- volunteers updating database with Collector maps
- ESRI story maps to highlights parks and events

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Our GIS Timeline : Details

TODAY

2007

- No GIS Staff
- Shapefile-based GIS
- Experimenting with Cityworks desktop

2008

- GIS staff:
  One .25 FTE GIS Tech
- Desktop ArcGIS 9.2
- File geodatabase
- Population of district assets began

2009

- GIS staff:
  Added one temp:
  .25 FTE Web GIS
  .5 FTE GIS Tech
- File geodatabase
- Completed surface maps of all properties
- 3D modeling of facilities
- Added custom Web app for public access

2010

- Enterprise SQL geodatabase on locally installed ArcGIS server
- ArcGIS 9.3
- Added python scripting for spatial analysis
- Direct geodatabase connections for editing

2011

- Upgrade to ArcGIS 10.0
- Replication of geodatabase on Amazon Cloud server, but no live editing on the cloud
- Cityworks Server running live on Amazon Cloud
- ArcGIS web applications for interface/public access

2012

- Local IT infrastructure abandoned, founding of 'The GIS Lab'
- Completed full move of GIS system to Amazon Cloud
- ArcGIS 10.1
- REST services for distributing geodata
- CW Server 2012
- Internet browser apps & maps

2013/14

- GIS Staff:
  1.0 FTE Admin Analyst
  .75 FTE GIS Analyst
  .25 FTE Web GIS
- ArcGIS 10.2
- Completed 3D models of all major facilities
- CW upgrades: 2013 R1, R2
- ArcGIS Online Organizational Account
- Web maps and apps : Internet, iPhone, iPad

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I WANT TO BE ON THE CLOUD

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WHY THE CLOUD?

- Separate our operations from a central IT department
- Data previously stored in scattered locations goes to one central location
- Data in consistent, usable formats
- Data access is improved since it is available on a server rather than in a file cabinet in someone's office
- Data is better protected – can be backed up, user-controlled

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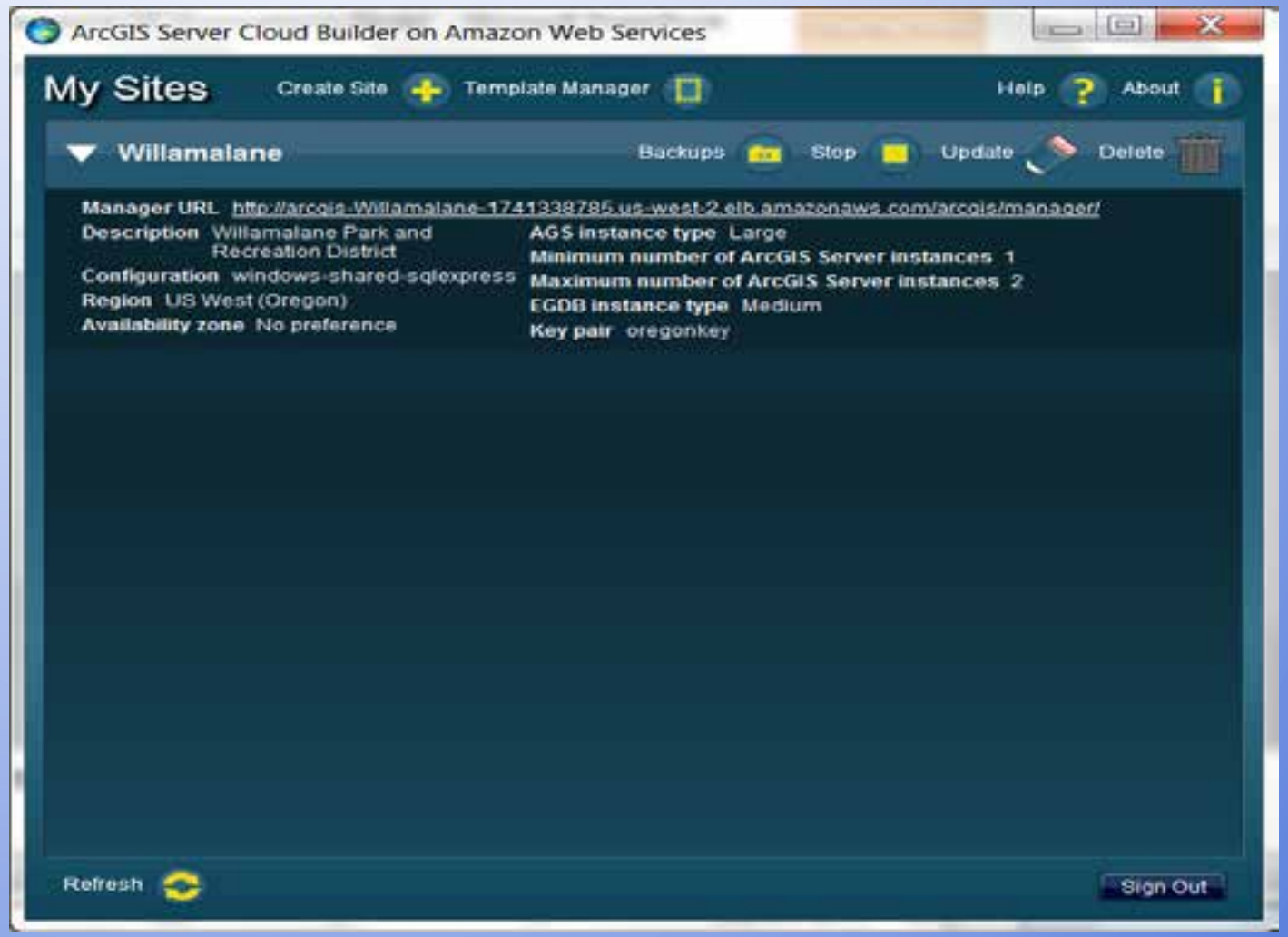
How do we get to the Cloud?

- By consulting with Lincoln County Nebraska's GIS department, we found that we could realistically move the major components of our system to the cloud to gain advantages in reliability, speed, accessibility, scalability, and redundancy.

- To do so, we needed to learn how Amazon Web Services worked, upgrade our software to ESRI 10.1 and then migrate our system from local servers to the cloud server and create a synchronization process.



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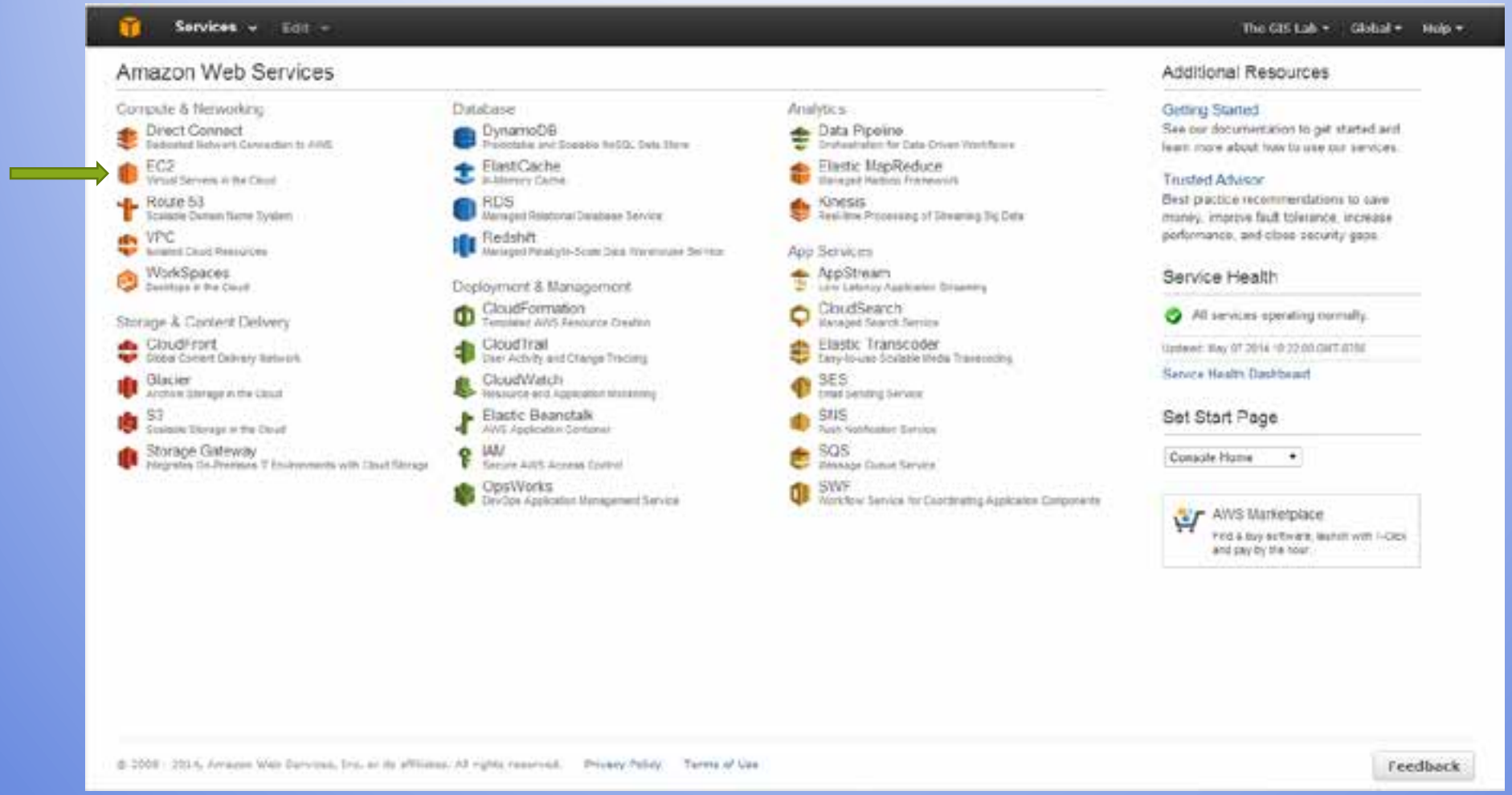
Amazon Web Services Console



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EC2 Dashboard

Services Edit

The GIS Lab Oregon Help

EC2 Dashboard
Events
Tags
Reports

INSTANCES
Instances
Spot Requests
Reserved Instances

IMAGES
AMIs
Bundle Tasks

ELASTIC BLOCK STORE
Volumes
Snapshots

NETWORK & SECURITY
Security Groups
Elastic IPs
Placement Groups
Load Balancers
Key Pairs
Network Interfaces

AUTO SCALING
Launch Configurations
Auto Scaling Groups

Resources

You are using the following Amazon EC2 resources in the US West (Oregon) region:

2 Running Instances
17 Volumes
2 Key Pairs
0 Placement Groups
3 Elastic IPs
65 Snapshots
1 Load Balancer
12 Security Groups

Focus on application development and offload database management to AWS - Try Amazon RDS Now! Hide

Create Instance

To start using Amazon EC2 you will want to launch a virtual server, known as an Amazon EC2 instance.

Launch Instance

Note: Your instances will launch in the US West (Oregon) region

Service Health

Service Status:

US West (Oregon)
This service is operating normally

Availability Zone Status:

us-west-2a
Availability zone is operating normally

us-west-2b
Availability zone is operating normally

us-west-2c
Availability zone is operating normally

Service Health Dashboard

Scheduled Events

US West (Oregon):
No events

Account Attributes

Supported Platforms
EC2
VPC

Additional Information

Getting Started Guide
Documentation
All EC2 Resources
Forums
Pricing
Contact Us

AWS Marketplace

Find **free software trial** products in the AWS Marketplace from the EC2 Launch Wizard.
Or try these popular AMIs:

Brocade Vyatta 5400 vRouter
Provided by Vyatta, Inc.
Rating ★★★★★
Pay by the hour for software and AWS usage
View all Networking Software

Alert Logic Threat Manager for AWS (EC2)
Provided by Alert Logic
Rating ★★★★★
Pay by the hour for software and AWS usage
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Adobe ColdFusion
Provided by Orbitera
Rating ★★★★★
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Feedback

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How much does it cost to be on the cloud?

Dashboard
Bills
Cost Explorer
Payment Methods
Payment History
Consolidated Billing
Account Settings
Reports
Preferences
Credits

Bills

Date: April 2014

Download CSV | Print

Summary	Amount
AWS Service Charges	$312.91
Usage Charges and Recurring Fees View Invoices	$312.91
Other Details	
Payment Summary	$312.91

Expand All

Details	Total
AWS Service Charges	$312.91
Data Transfer	$1.48
Elastic Compute Cloud	$282.39
Simple Storage Service	$4.54
WorkSpaces	$24.50
CT to be collected	$0.00
GST to be collected	$0.00
US Sales Tax to be collected	$0.00
VAT to be collected	$0.00

Usage and recurring charges for this statement period will be charged on your next billing date. Estimated charges shown on this page, or shown in any notifications that we send to you, may differ from your actual charges for this statement period. This is because estimated charges presented on this page do not include usage charges accrued during the statement period after the date you view this page. Similarly, information about estimated charges sent to you in a notification do not include usage charges accrued during the statement period after the date we sent you the notification. One-time fees and subscription charges are assessed separately from usage and recurring charges, on the date that they occur.

Choose language: English

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What is our Cloud Configuration?

- Windows Server 2012
- ArcGIS Server 10.2
- SQL Server 2012
- Cityworks 2013 r2

- We have these all on 1 server (AMI – Amazon Machine Image), but could have on separate servers
- We use Elastic IP, which associates an IP with a server instance
- Can have multiple server instances at same time, e.g. to test software upgrades and see if compatible with current overall configuration

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We Love the Cloud

- More cost effective than having server locally
- Cloud is faster than our local network
- Local Control
- Available everywhere there's a connection, including iPhone (AWS console app)
- Security rules are easy to set up --- can allow Remote desktop access, etc.

Examples

- Took us ~ 3 months to get a public IP address that worked from IT

  vs

- Took us ~ 5 minutes to get an elastic IP from cloud

- On the average, we had a couple outages per month prior to the cloud

  vs

- We have had ZERO downtime since moving to the cloud two years ago

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Why Cityworks?

- Efficient, centralized maintenance management system
- GIS-centric capabilities
- One central repository of all asset data
- Tracking of regular maintenance tasks and long-term CIPs
- Analytic features

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Online Maintenance System

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How do we use ArcGIS with Cityworks?

On the Cloud Server → Use ArcGIS Server to create a REST Web service from our Geodatabase

↓

REST
Web Service

REST is an acronym for **RE**presentational **ST**ate transfer

- the acronym has to do with how client and server manage the state of server-side objects: by sending "representations" of the objects back and forth.

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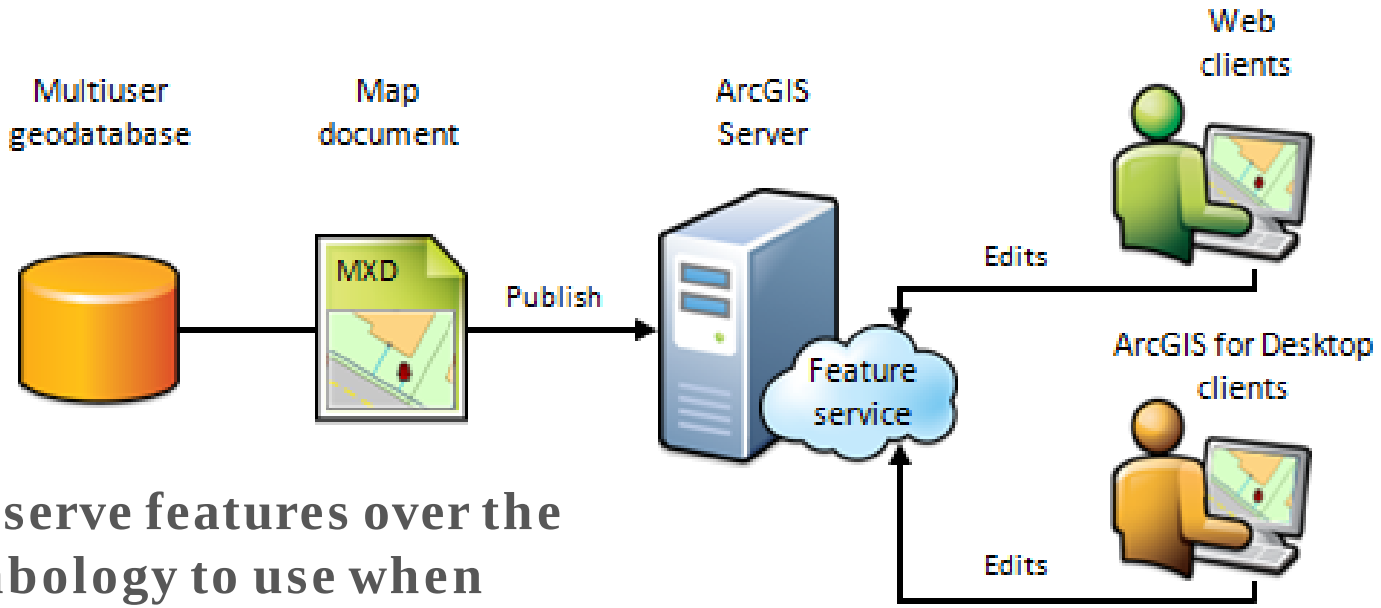
How do we use ArcGIS with Cityworks?

A Feature Service is one type of Web Service



Feature services allow you to serve features over the Internet and provide the symbology to use when displaying the features.

Clients can execute queries to get features and perform edits that can be applied to the server.

Feature services provide templates that can be used for an enhanced editing experience on the client.

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How do we use ArcGIS with Cityworks?

Feature Service

Citizen Service Request Web app

Cityworks SOE
(Server Object Extension)

Editing of GIS Data
in Cityworks

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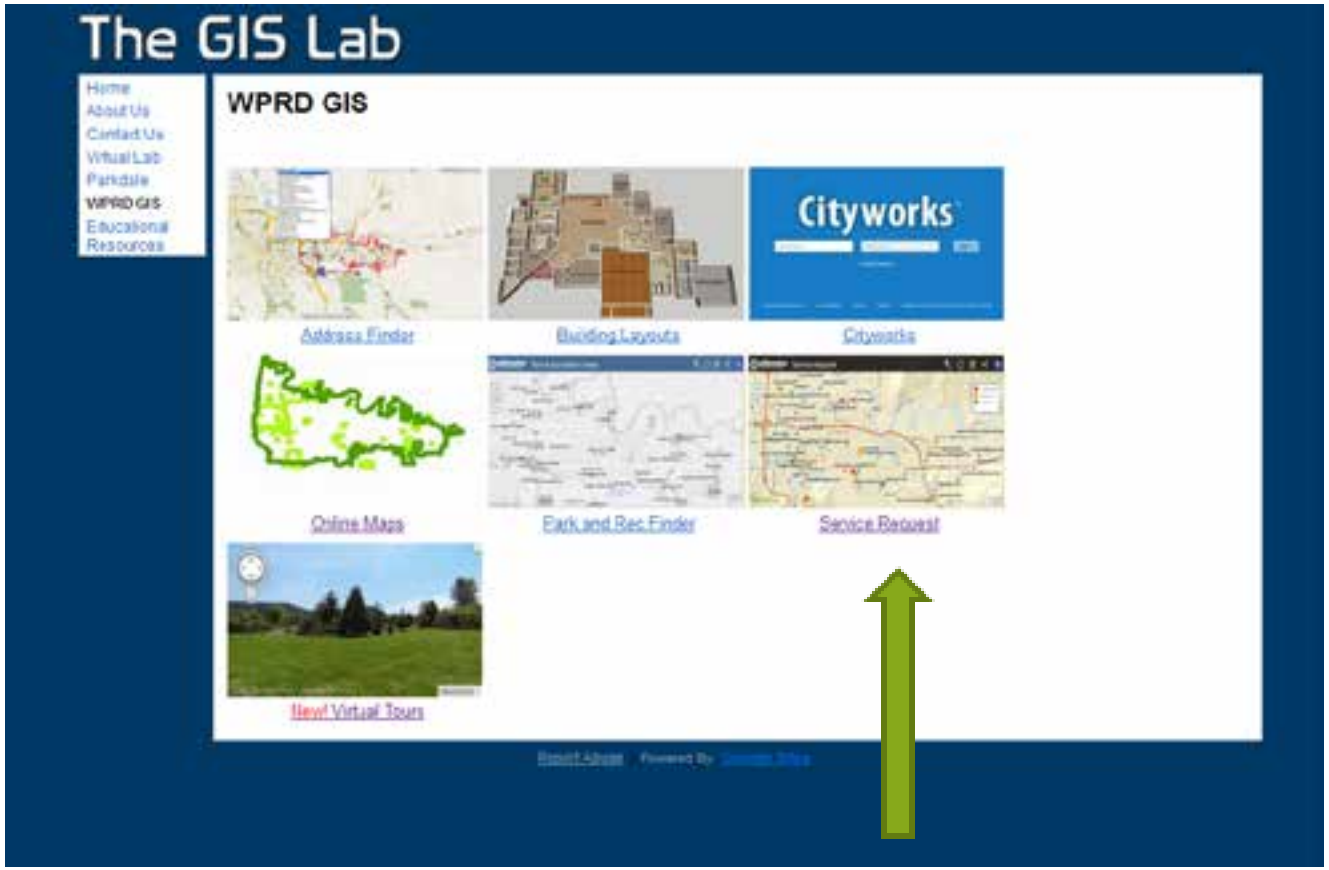
How do we use Cityworks?

Where do Work Orders come from?

- The public can request work by using the Citizen Service Request



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How do we use Cityworks?

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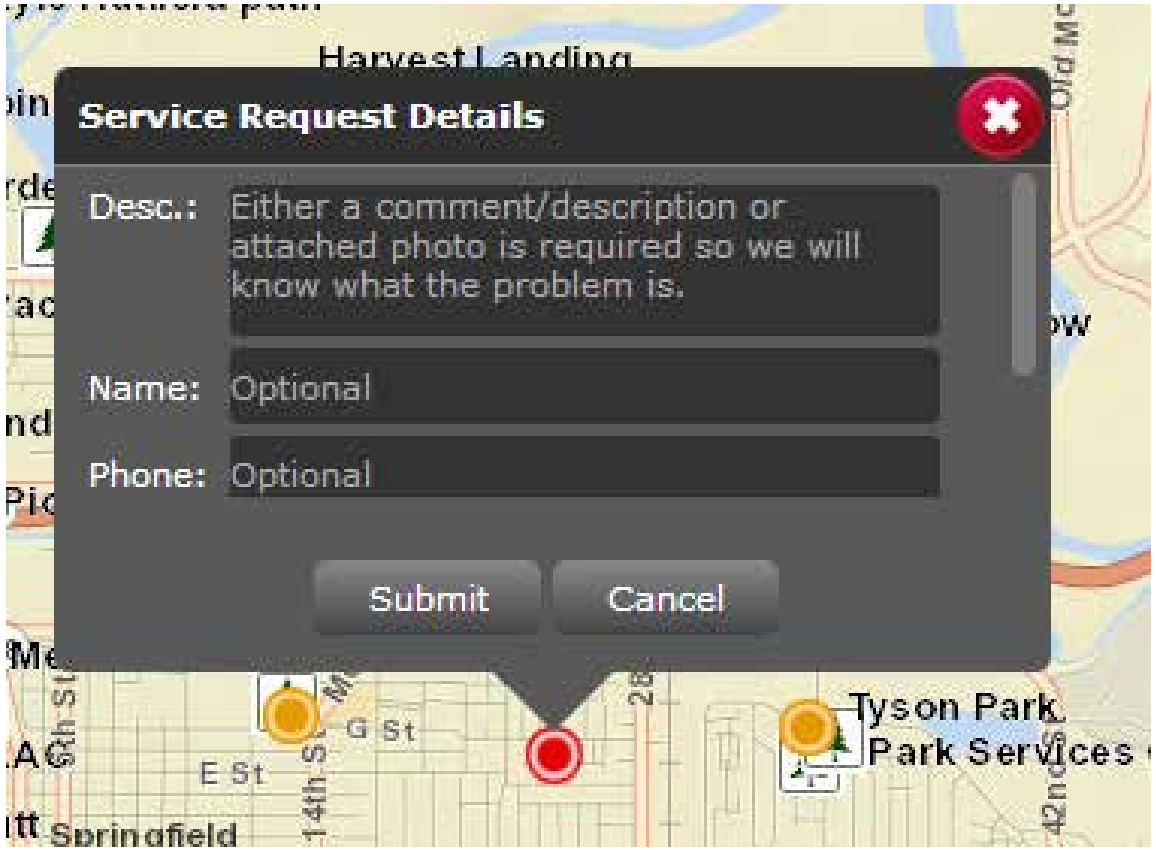

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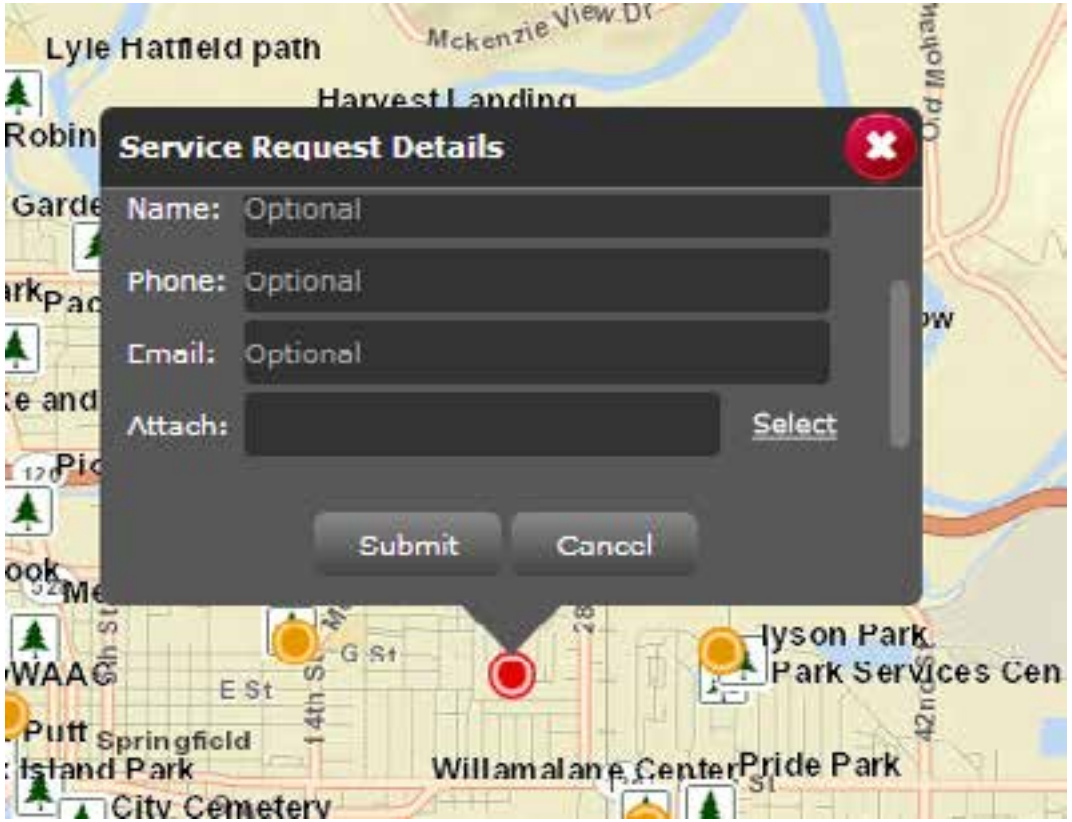

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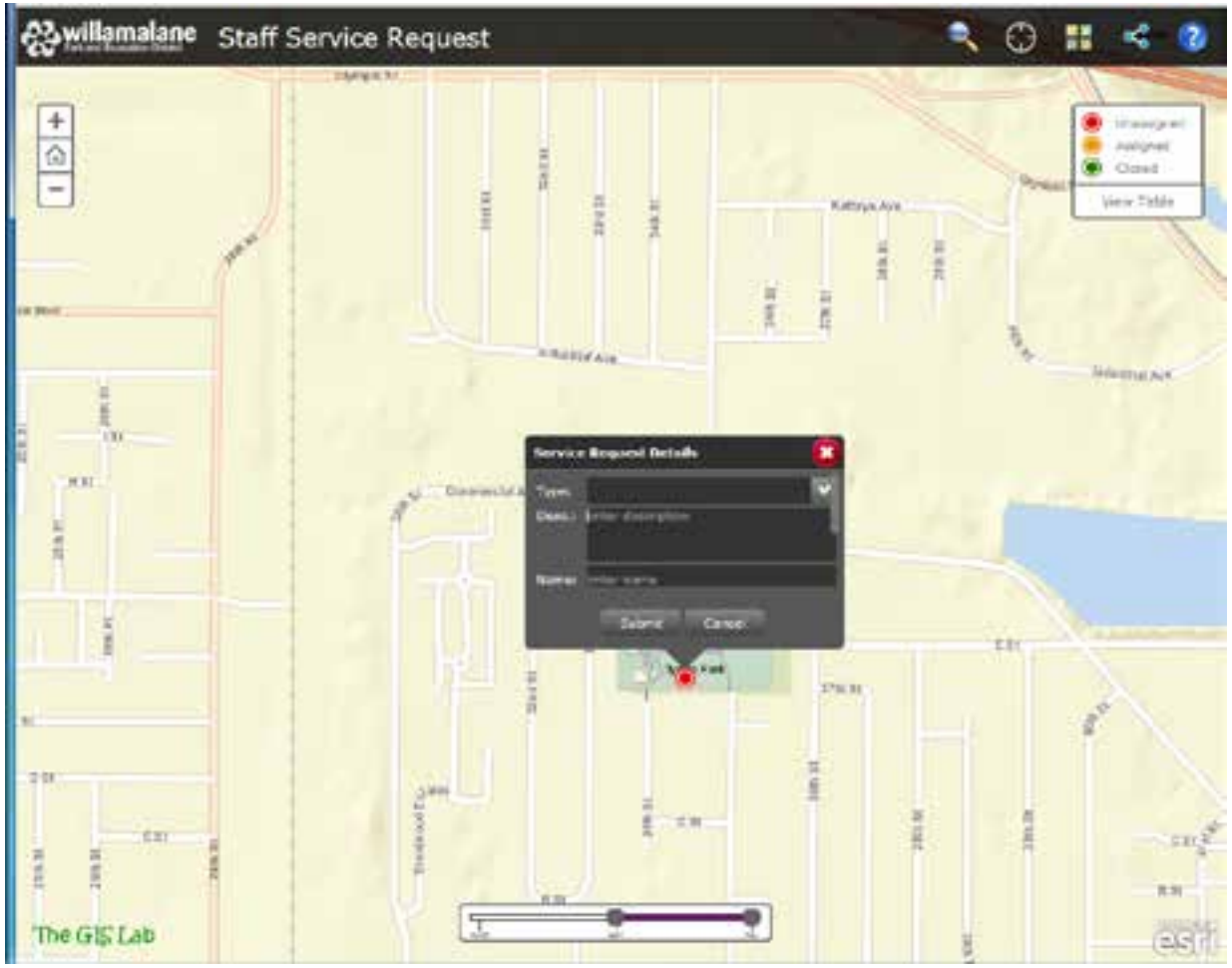
How do we use Cityworks?

Where do Work Orders come from?

- Staff can request work by using the Staff Service Request web app



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How do we use Cityworks?

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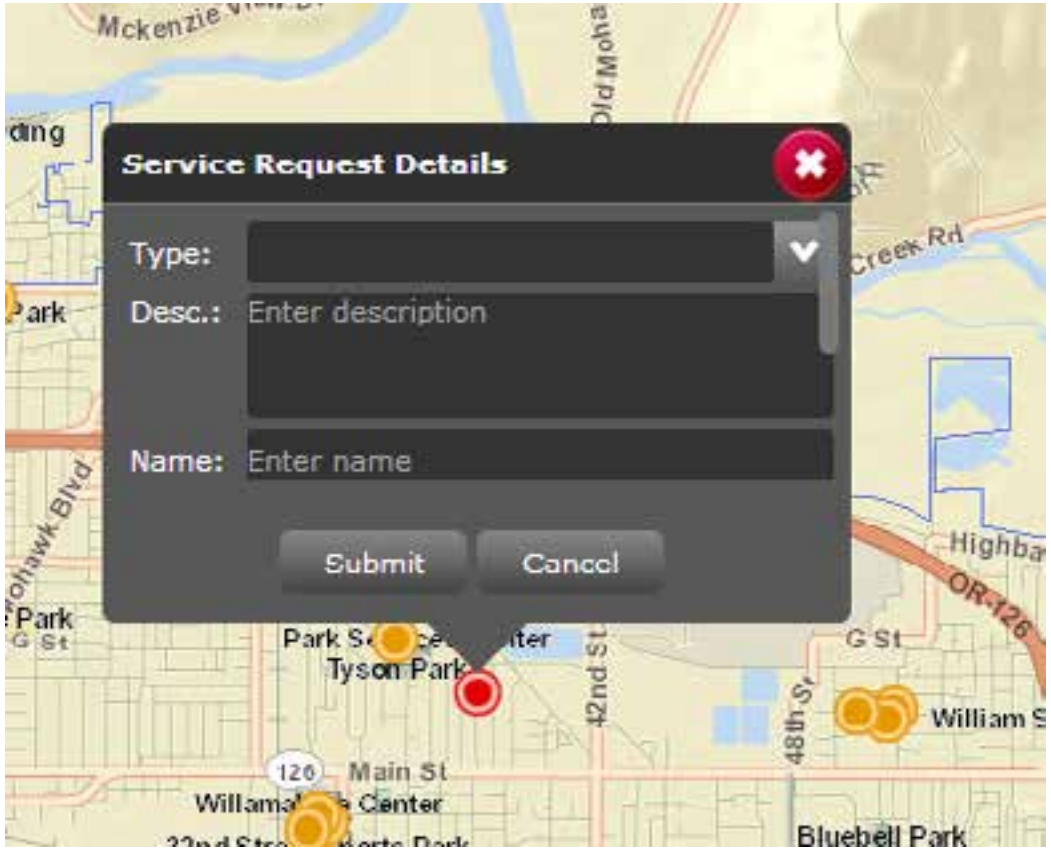

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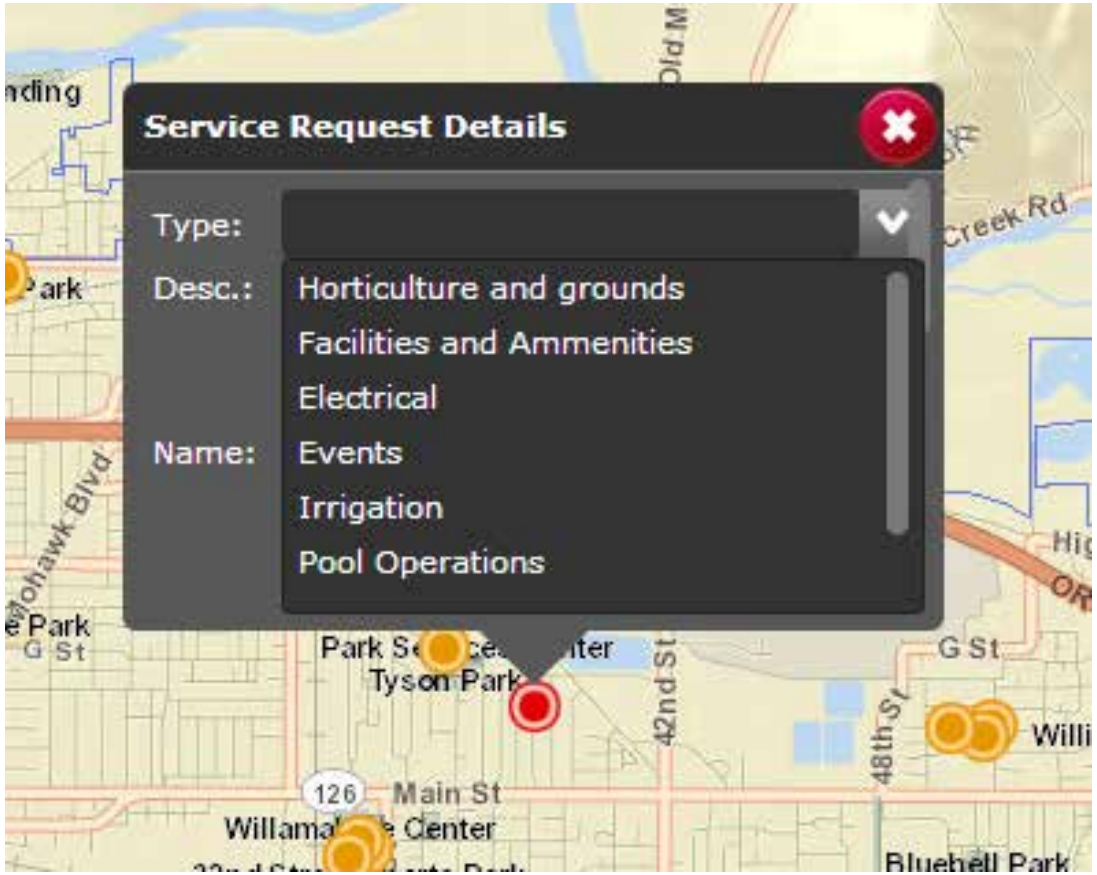

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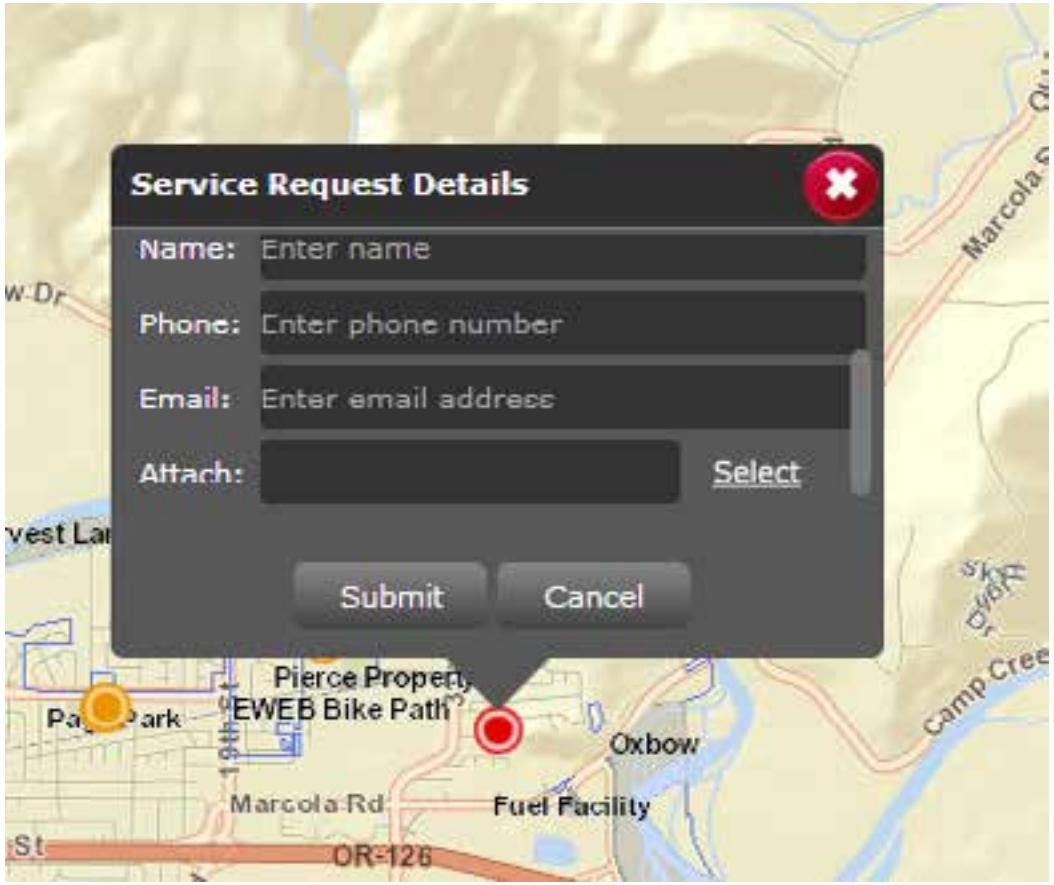

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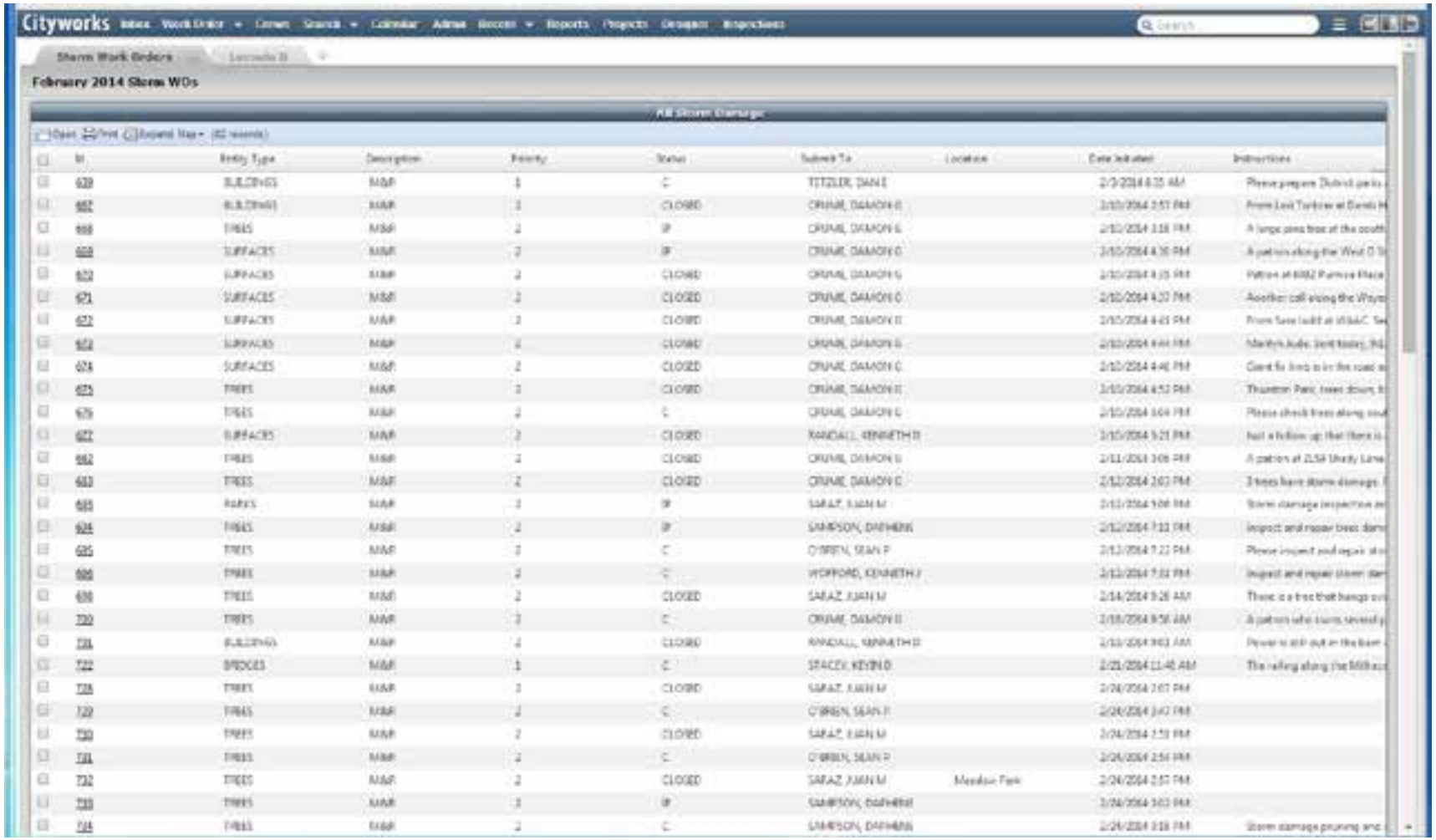
How do we use Cityworks?

Work Orders



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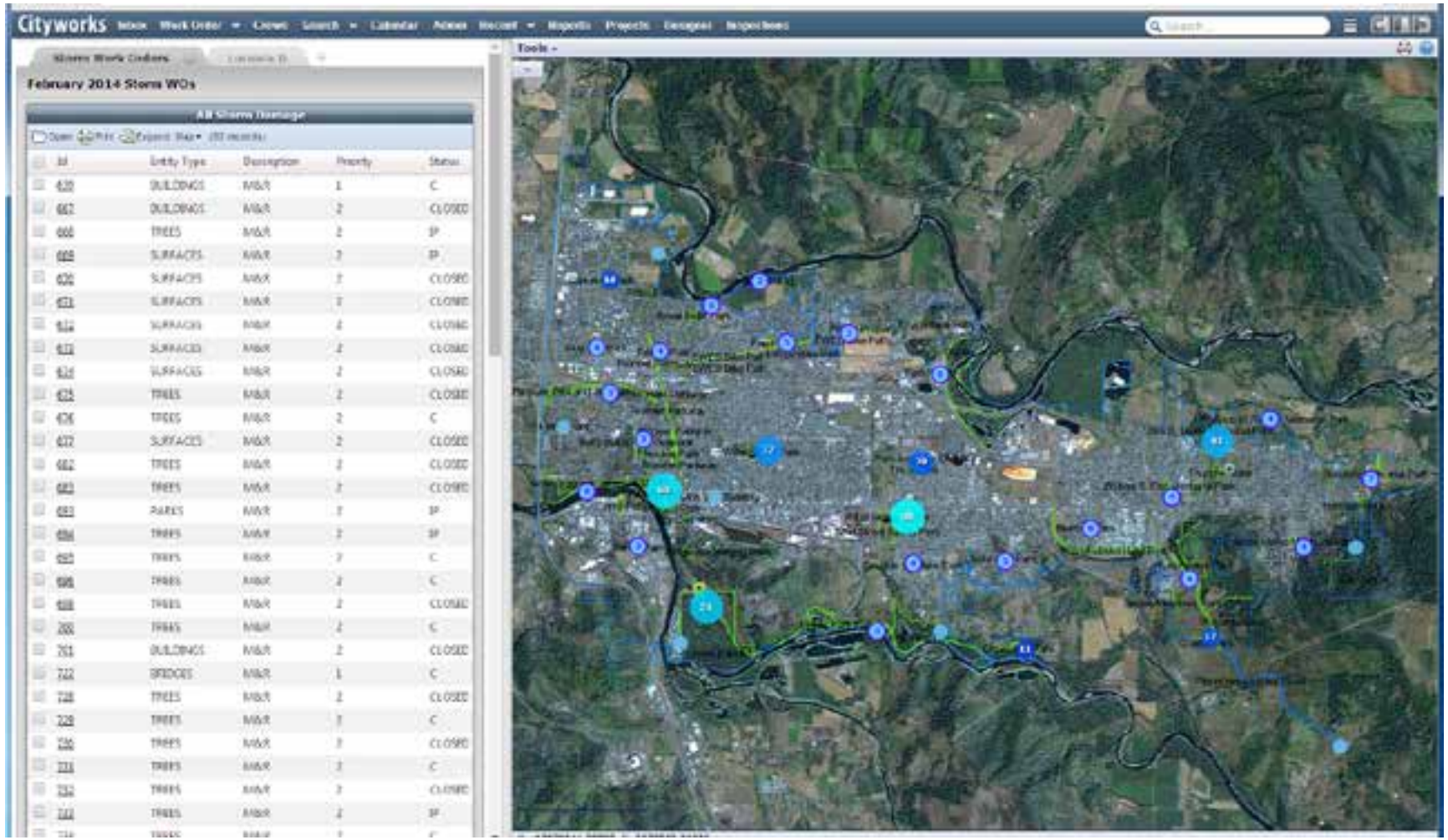
How do we use Cityworks?

Work Orders with map



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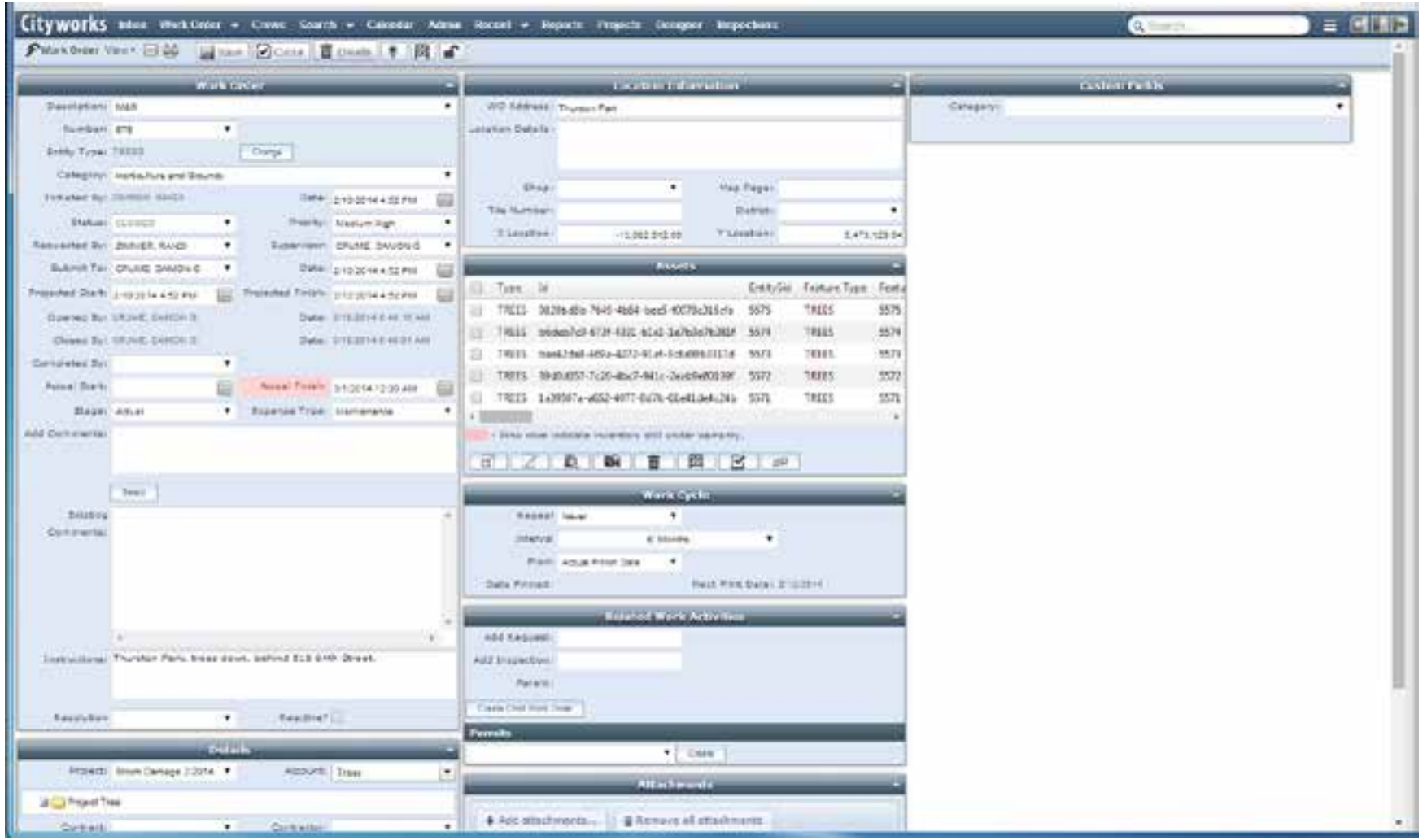
How do we use Cityworks?

Work Order detail



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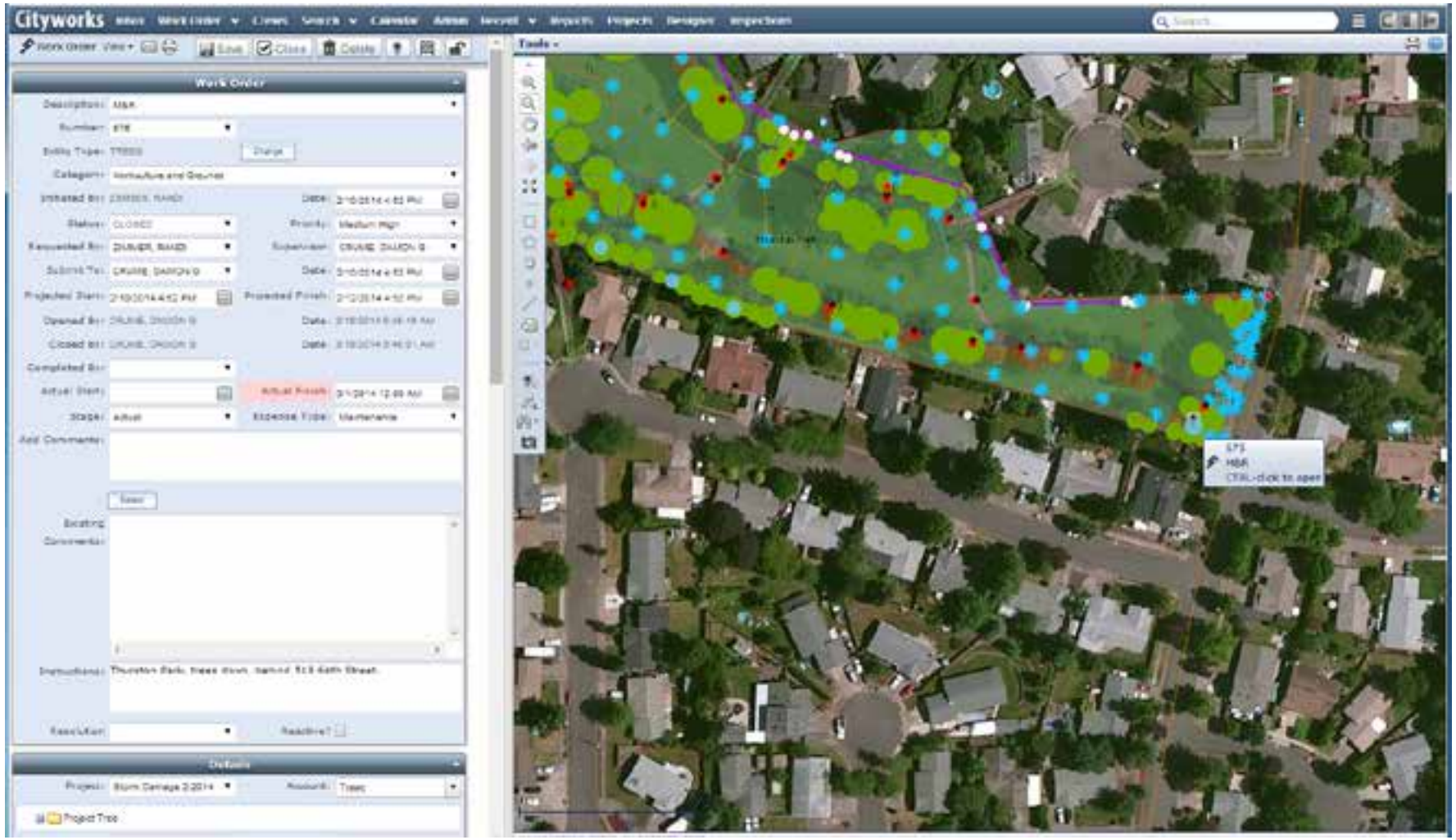
How do we use Cityworks?

Work Order detail with map



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How do we use Cityworks?

Citizen Service Request is a Javascript web app from an ESRI Local Government template

How do we use Cityworks?

Citizen Service Request is a Javascript web app from an ESRI Local Government template

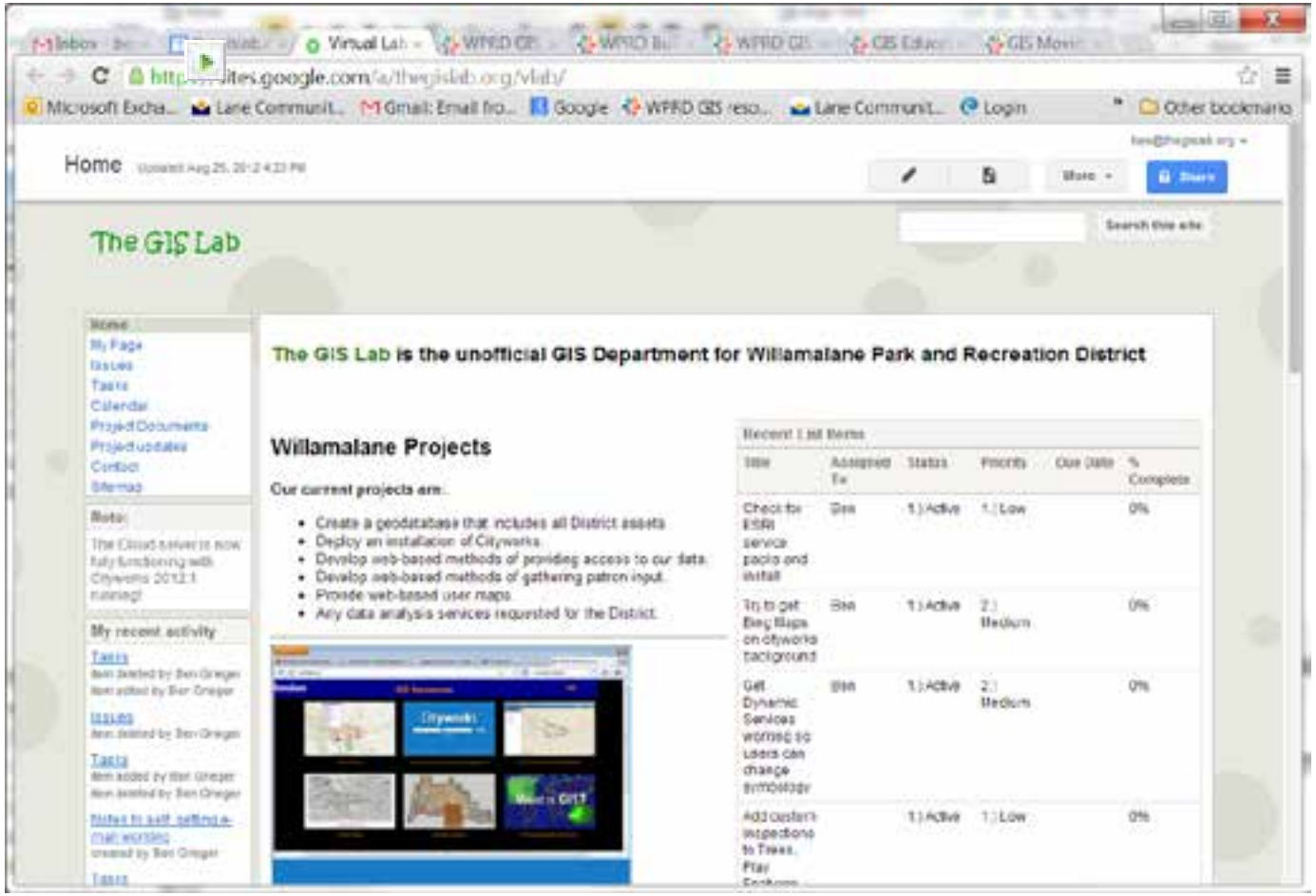
ArcGIS for Local Government

Main | Features | Case Studies | Videos | Modules | Podcasts

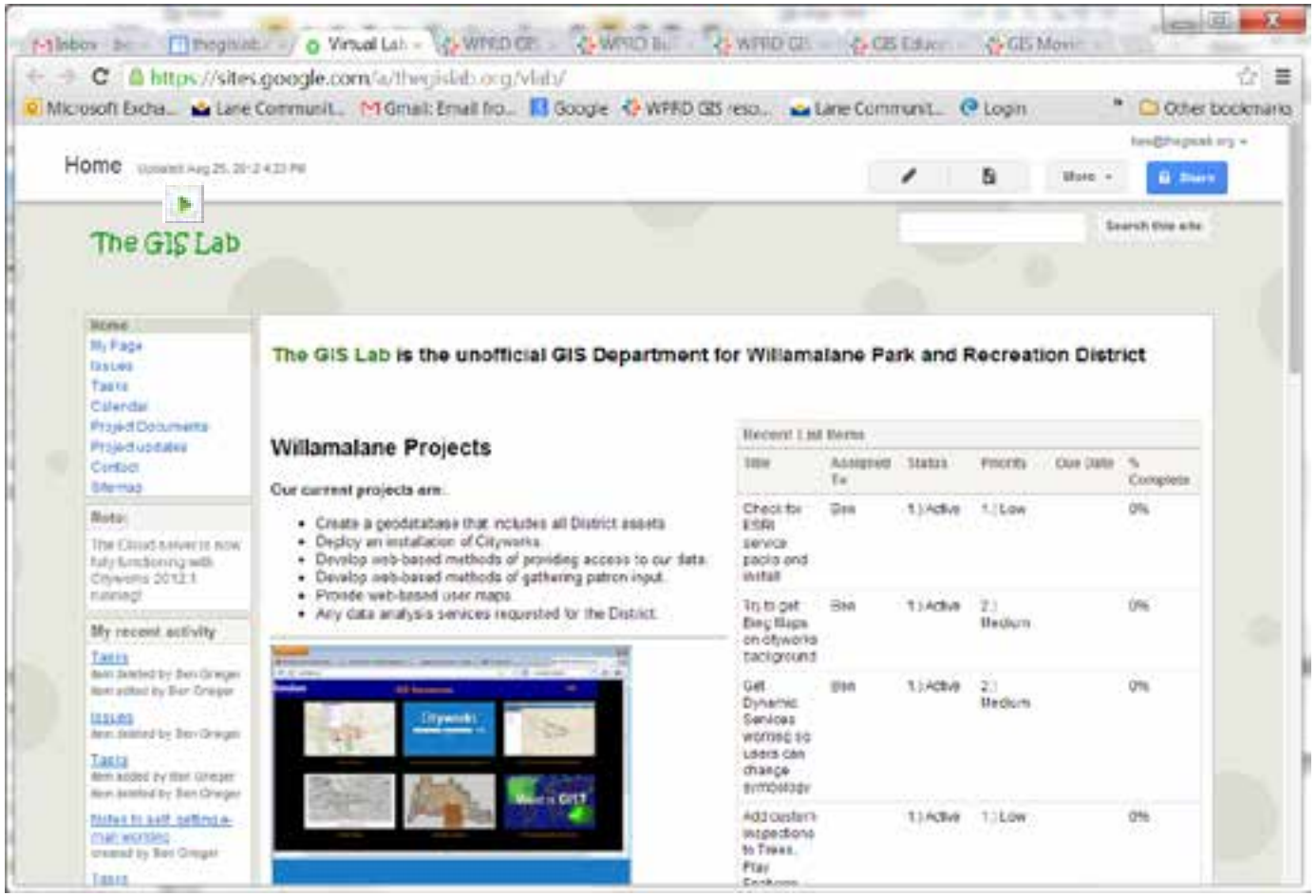
	Modules by Function					Platform		
	Infrastructure	Land Records	Elections	Planning & Development	Public Safety	Desktop Templates	Mobile	Web Mapping
Citizen Service Request	✓			✓	✓			✓
Code Violation for iPad				✓	✓		✓	
Data Reviewer for Infrastructure	✓					✓		
Districting			✓			✓		
Election Poling Places			✓					✓
Election Results Viewer			✓					✓
Emergency Maps					✓	✓		
Fire Hydrant Map Atlas					✓	✓		
Infrastructure CIP	✓					✓		
Infrastructure Editing	✓					✓		
Infrastructure Mobile Map	✓						✓	
Infrastructure Operations Dashboard	✓							✓
Land Use Public Comment				✓				✓
Land Use Public Notification		✓		✓				✓

How do we use Cityworks?

During an on site Cityworks training 3 years ago,
we discovered Google+ and Google sites ... and the GIS Lab was born!

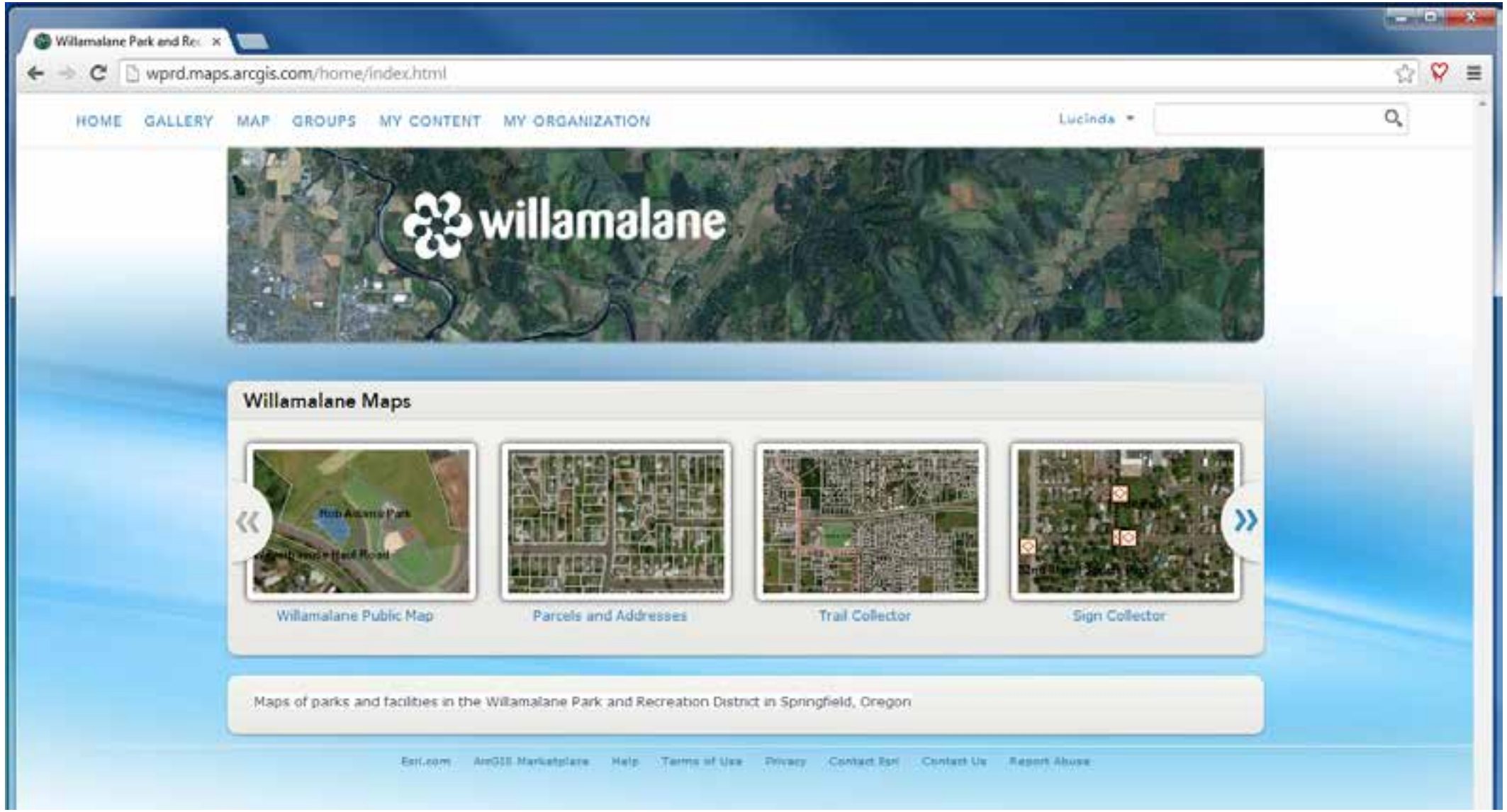


THE GIS LAB



The GIS Lab has a private intranet on the cloud with its own storage, project tracking, backup, e-mail. Accessible anywhere. Mobile device friendly.

ArcGIS Online



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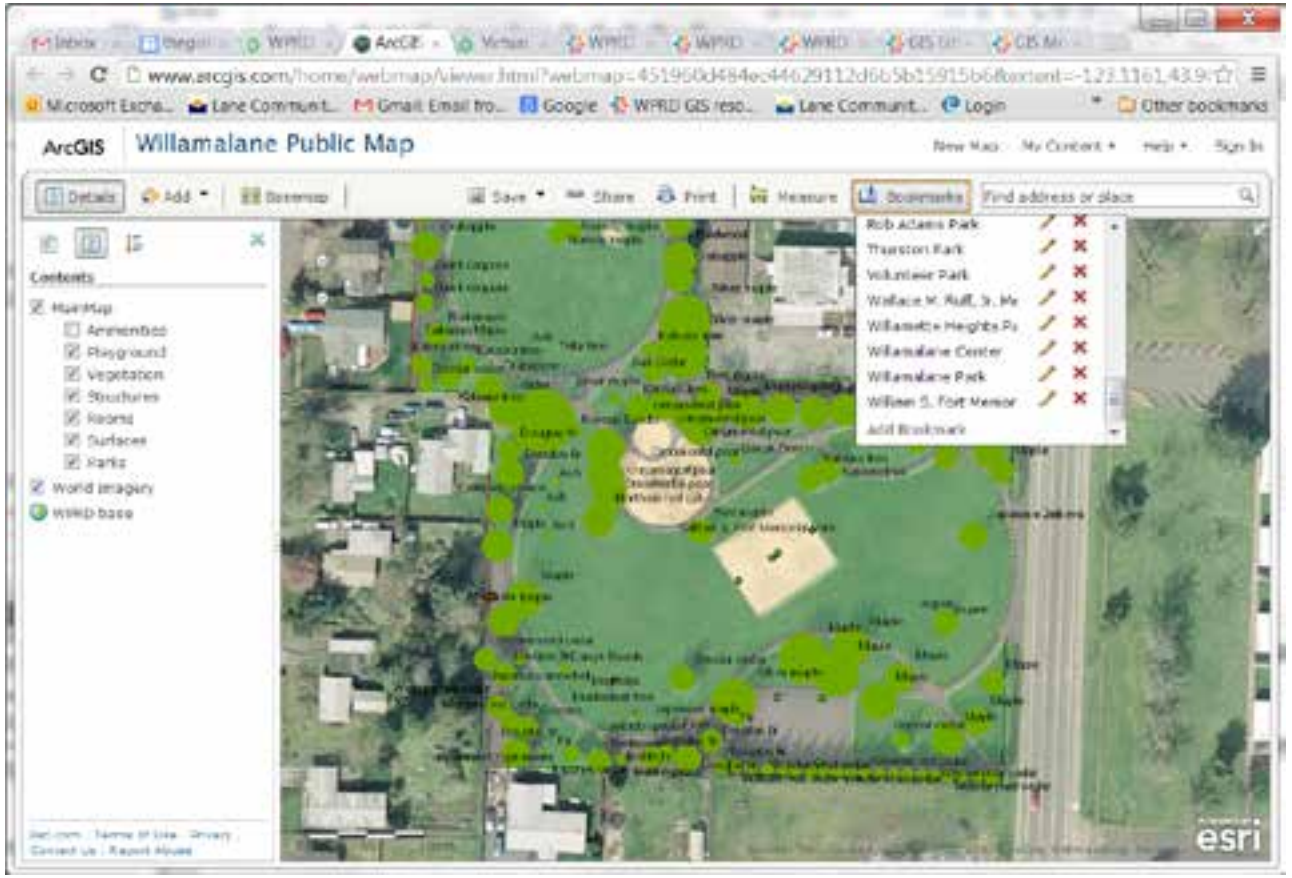
ARCGIS ONLINE

Online Interactive Maps



Available anywhere. Mobile device friendly.

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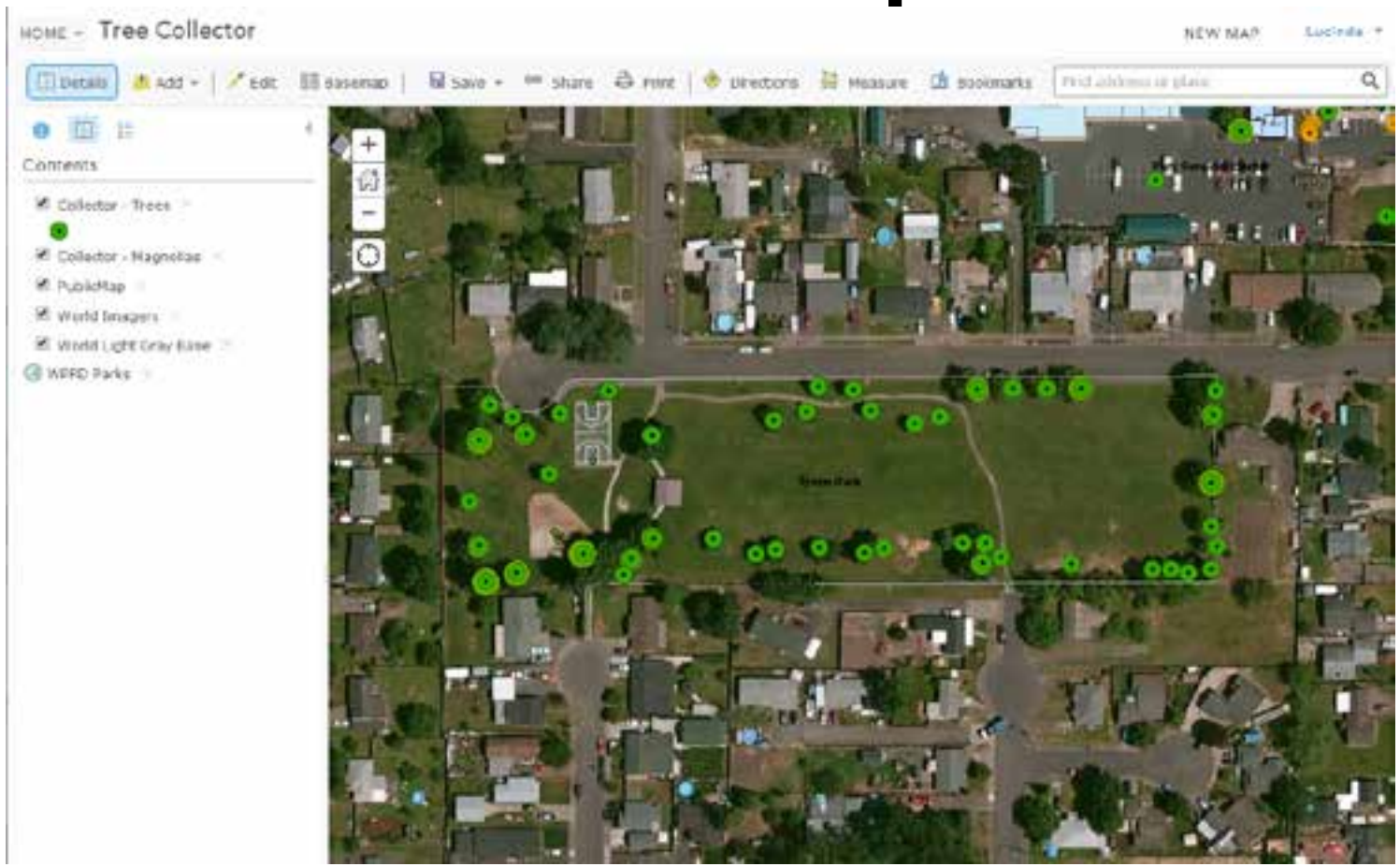
ArcGIS Online

Collector Maps



Volunteers help us obtain & update GIS data using Collector maps in the field.

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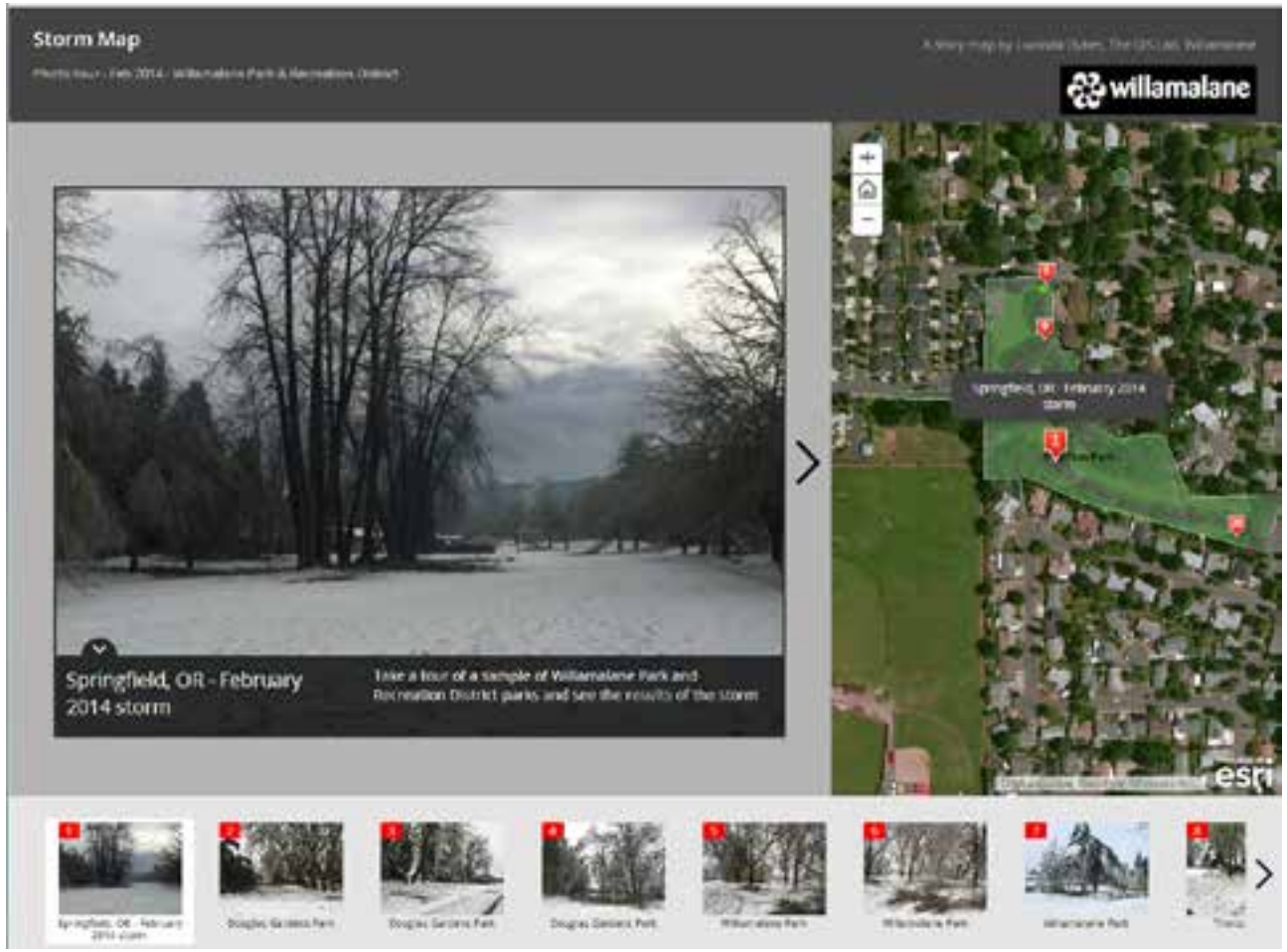
ArcGIS Online
Story Maps



Story maps give us another way to interact with our community.

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QUESTIONS?

Cityworks questions: Randi Zimmer
randiz@willamalane.org

Cloud server questions: Ben Grieger
ben@thegislab.org

ArcGIS online questions: Lucinda Dykes
lucinda@thegislab.org

Or call us at the GIS Lab: (541) 736-4110

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