

GIS Asset Mapping

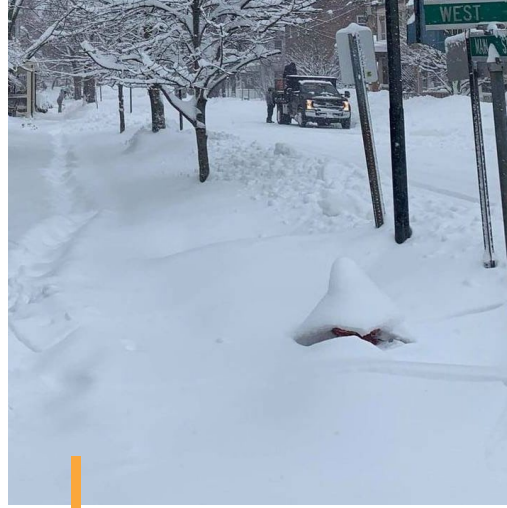
2021 NDPRA State Conference

September 15, 2021

Presenter: Gordon Lemmel, PLA, ASLA



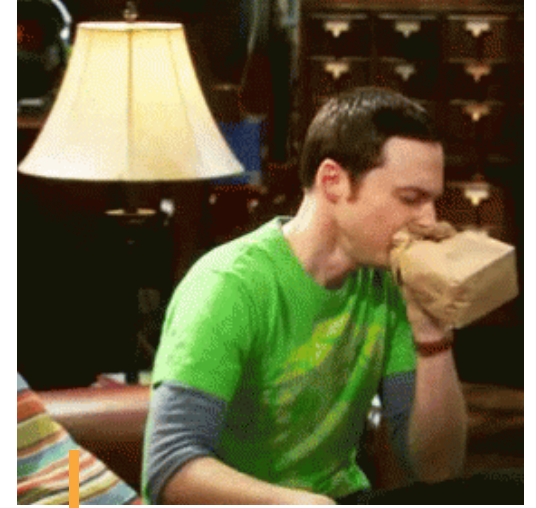
Do you have the
information you
need?



When you need
it?



Has your long-
time maintenance
person left and
taken their
knowledge with
them?



Are you left in
panic mode?

Keeping Track of it All: How Does it Look Today?

- Hard-copy plans?
- Paper files?
- Spreadsheets?
- CAD drawings?
- John's Head? (He retired a month ago)





Learning Objectives

- Gain exposure to the **tools used to develop and manage** an inventory.
- Understanding the **high-level process** with real-life examples.
- Explore the **cross-disciplinary benefits** of the tool and how it informs design, planning, management and maintenance decisions.
 - *Scenarios & Case Studies for how this information might be used.*



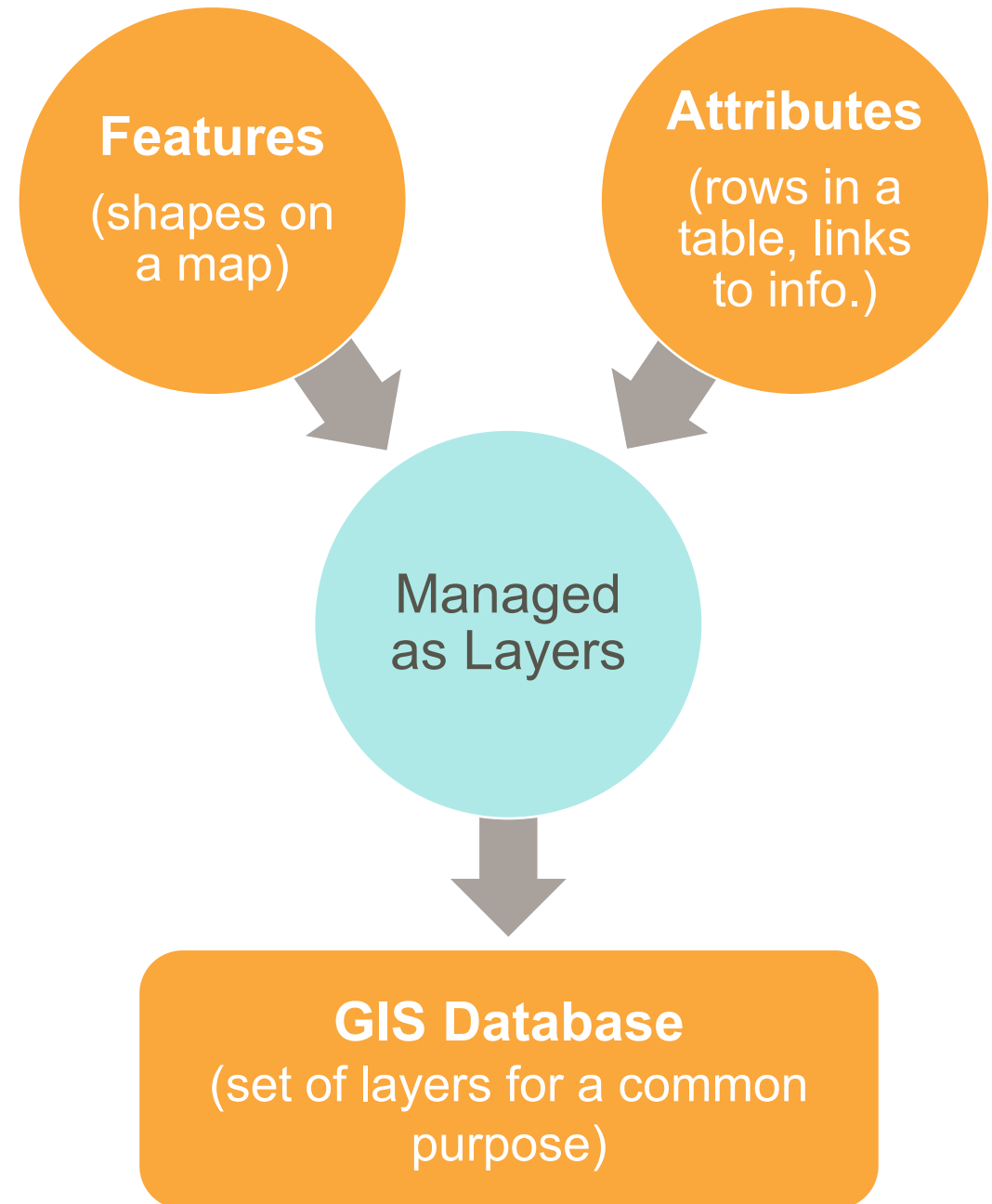
GIS: The Software

A Quick Crash Course

GIS – What Is It?

- **Computer-based Information System**
 - Hardware, software & data
 - Relates data to geographic location
- **Information Gathering & Analysis Tool**
 - Make Connections
 - Visualize & Analyze

“A framework to organize, communicate & understand the science of our world” - ESRI



GIS – Functions

- **One-Stop-Shop** for park information, including maps, data and the analysis of both
 - Tool for Infrastructure & Asset Management (Equipment Info or images)
 - Information Tracking
 - Planning
 - Layering of complex information
 - Geography Linked to Data
- **Endless Possibilities**



GIS – Why Use it?

- **Institutional Knowledge Retention**
 - *Provide easy access to the information required for informed decision making*
- **Regulatory Compliance**
- **Product Information**
- **Realize True Asset Responsibilities**
 - *Insured assets versus all assets*
- **Optimize Field Operations**
- **Eliminate dependency on paper maps & drawings**
- **“Crowdsourced” data collection**
 - *Employees or the public*

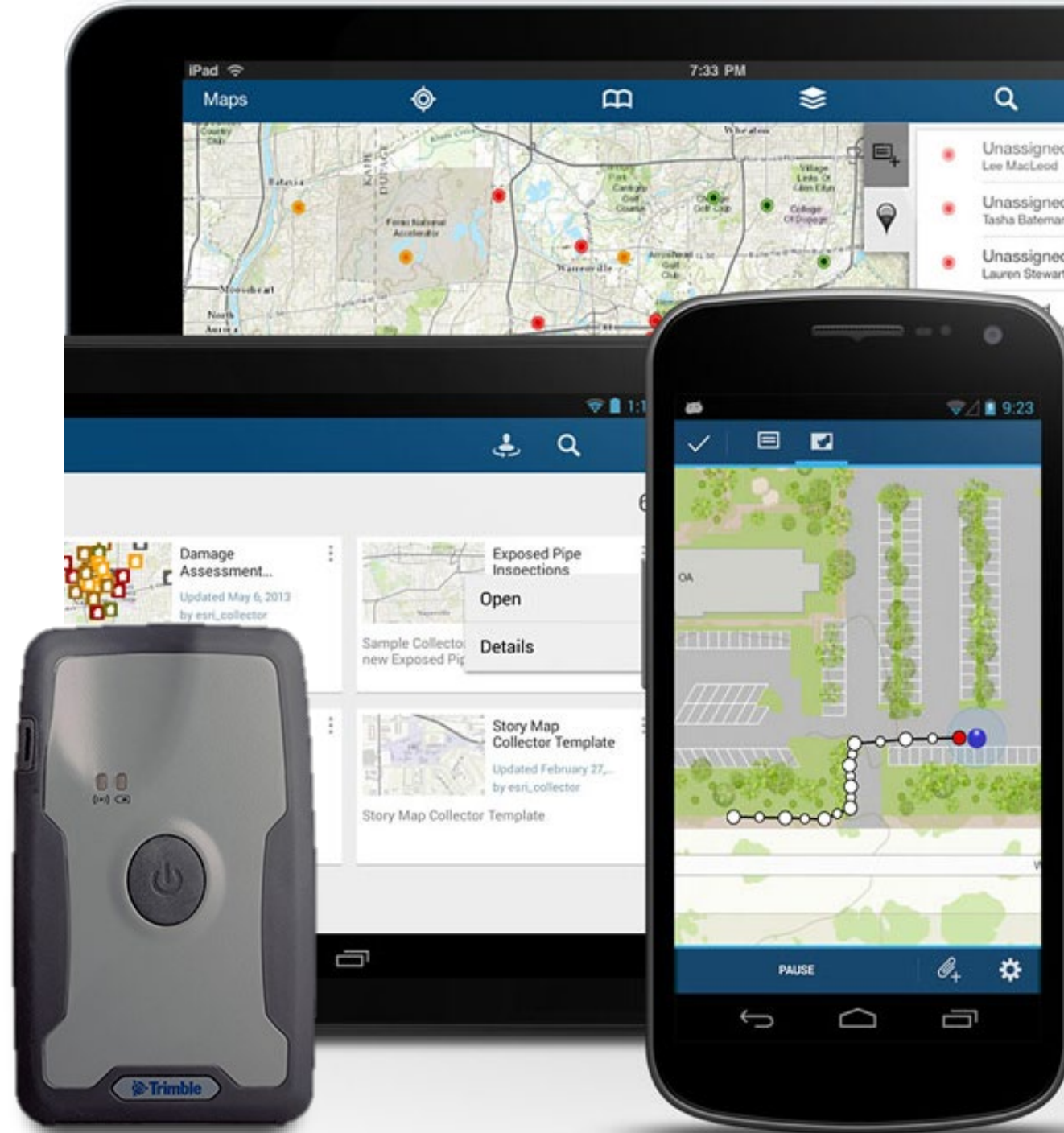


The Hardware



The Hardware: Technology

- **Using Tools You Have**
 - ESRI Collector / Field Maps
 - Phone or tablet
 - Edit or create new assets
 - No custom programming
- **Higher Accuracy Tools**
 - Higher accuracy than internal antennas
 - External Antenna can be extended
 - Corrections for 3-foot accuracy
 - Bluetooth connection





Building The Inventory

Case Study #1

Park Information Management System

Arkansas State Parks

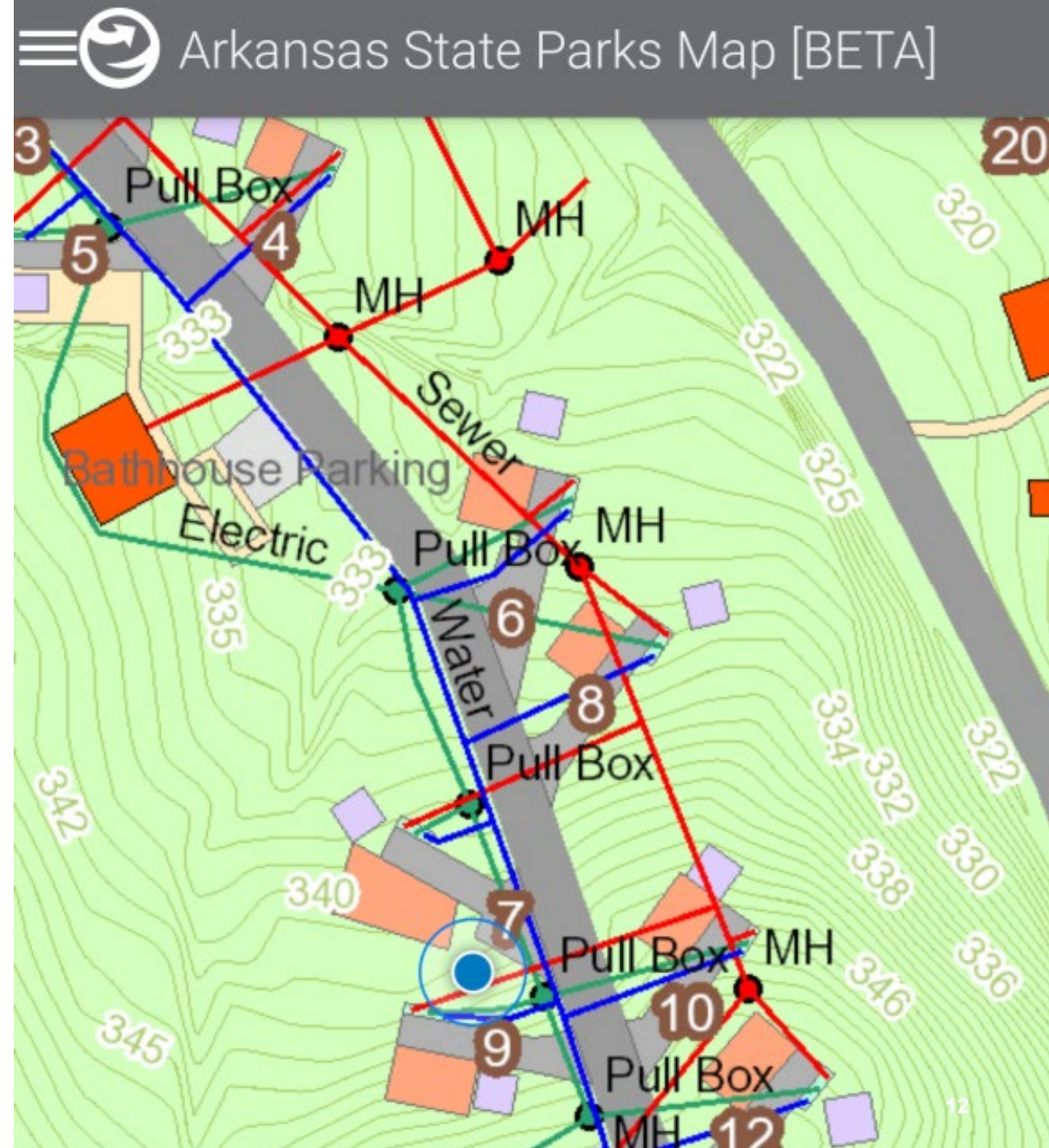
Project Manager: Darin Mitchell, Sr. GIS Analyst

- A 15-year process (and continuing) by 1 individual
- “Gold Standard” inventory
- 2017 ESRI Special Achievement Award Winner

Check it out!

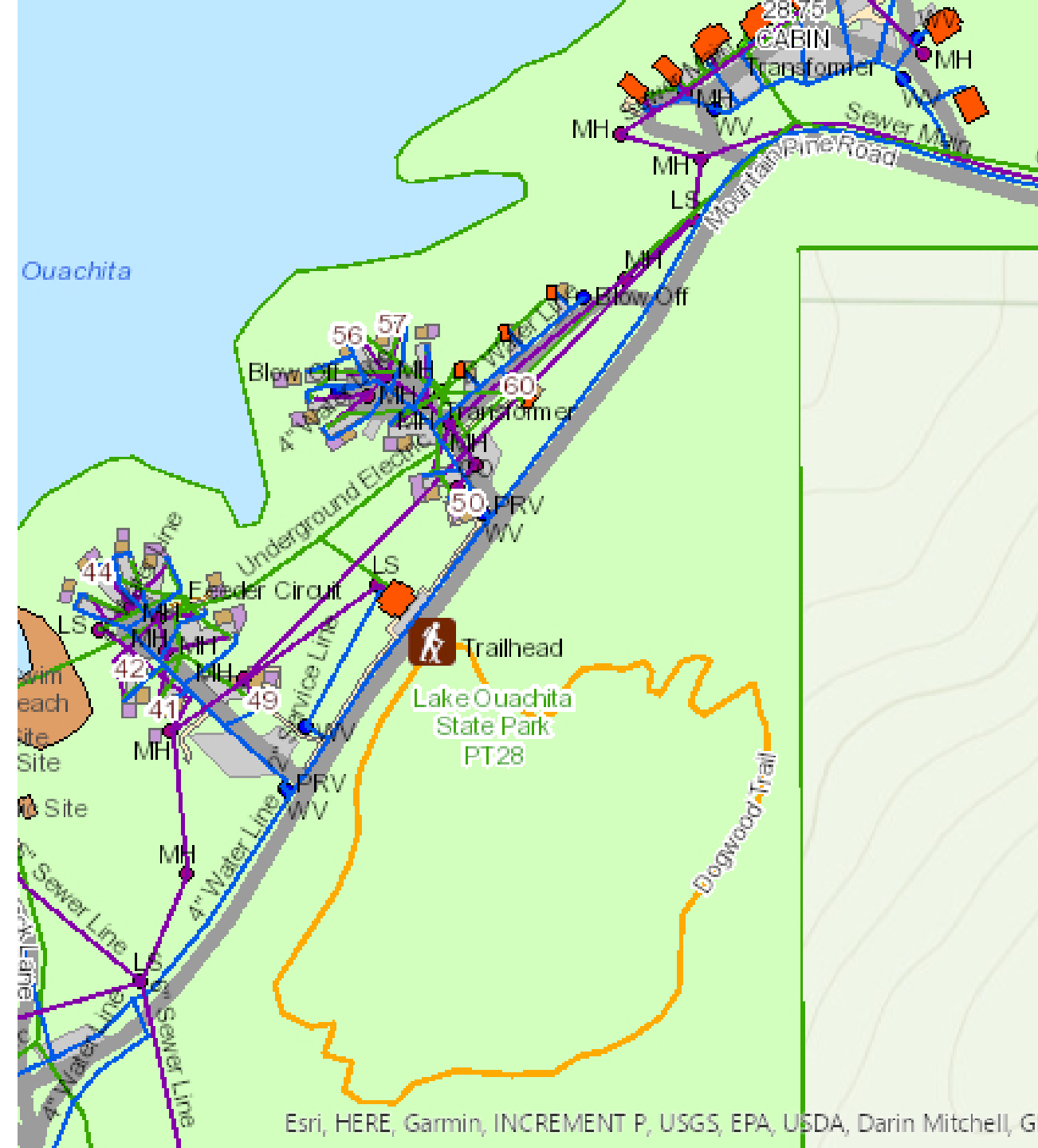


https://bit.ly/ASP_PIMS



Building the Inventory: How'd they Do It?

- **Baby Steps**
- **Software, hardware & GIS infrastructure challenges**
 - Field Collection
 - Digitizing
- **“Institutional” Challenges & Capabilities**
- **Web Applications for Mobile Devices**
 - Viewing, editing, inspecting assets
 - Work Order Management Integration
- **Web Application Dashboards**
 - Monitor progress on tasks & data trends



Case Study #2

Recreation Asset Inventory

North Dakota State Parks & Recreation Department

Project Manager: Gordon Lemmel, PLA, ASLA

- Identified in 2018-22 Strategic Plan
- Funded through Legislative Special Request
- Houston Engineering hired by NDPRD in 2020
- Arkansas PIMS as the target

Check it out!



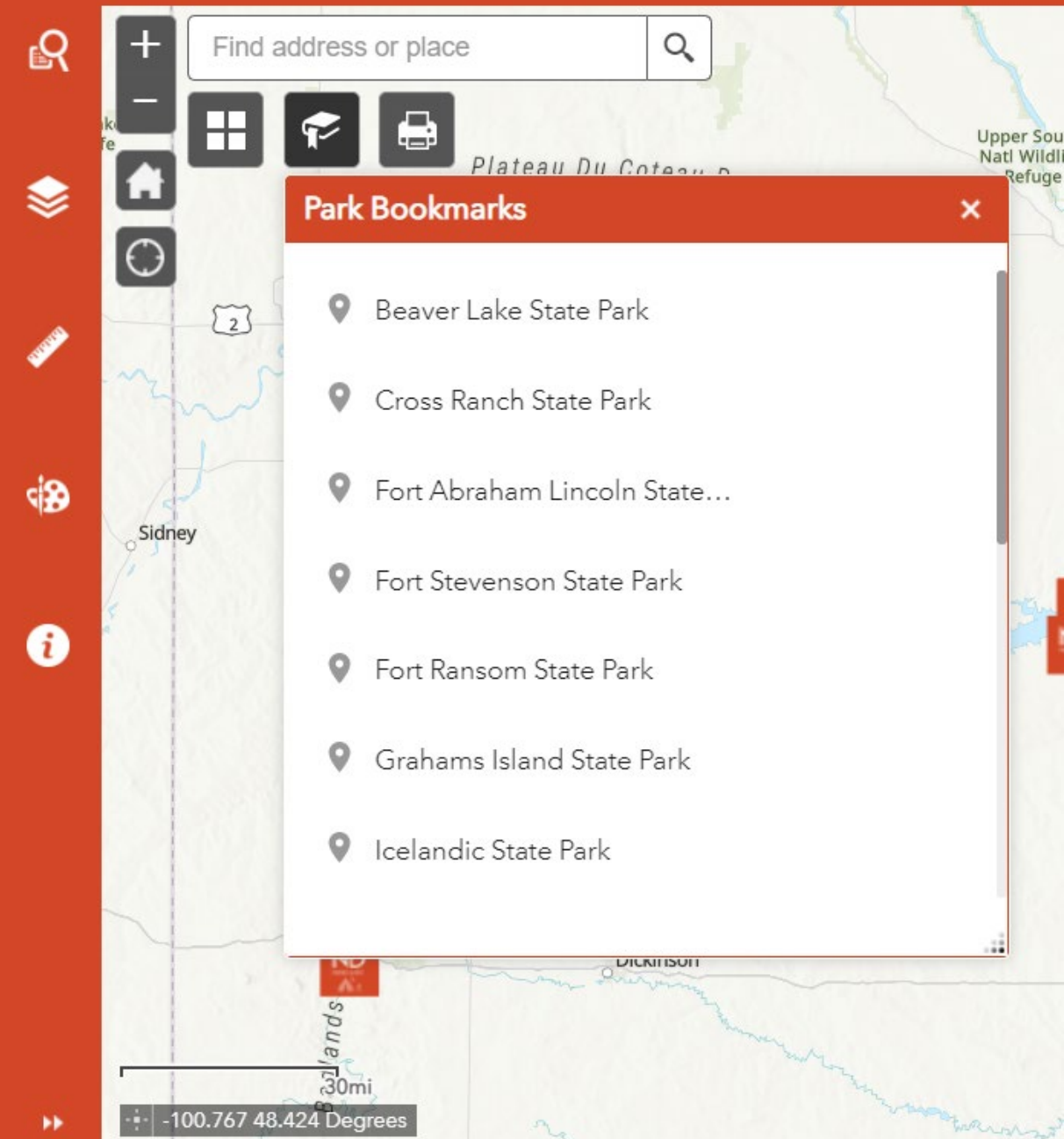
<https://bit.ly/NDPRD>



Building the Inventory: How'd they Do It?

- **Took Arkansas's Advice: Baby Steps**
 - What information **MUST** be collected first.
 - Start with the basics. Don't need everything right away.
 - Digitizing what could be.
- **Consultant Assistance**
 - Collection Schema
 - Pilot Project
 - Field Collection & Digitizing
 - Splitting Tasks & Group Coordination
- **Web Applications for Mobile Devices**

ND Parks & Recreation



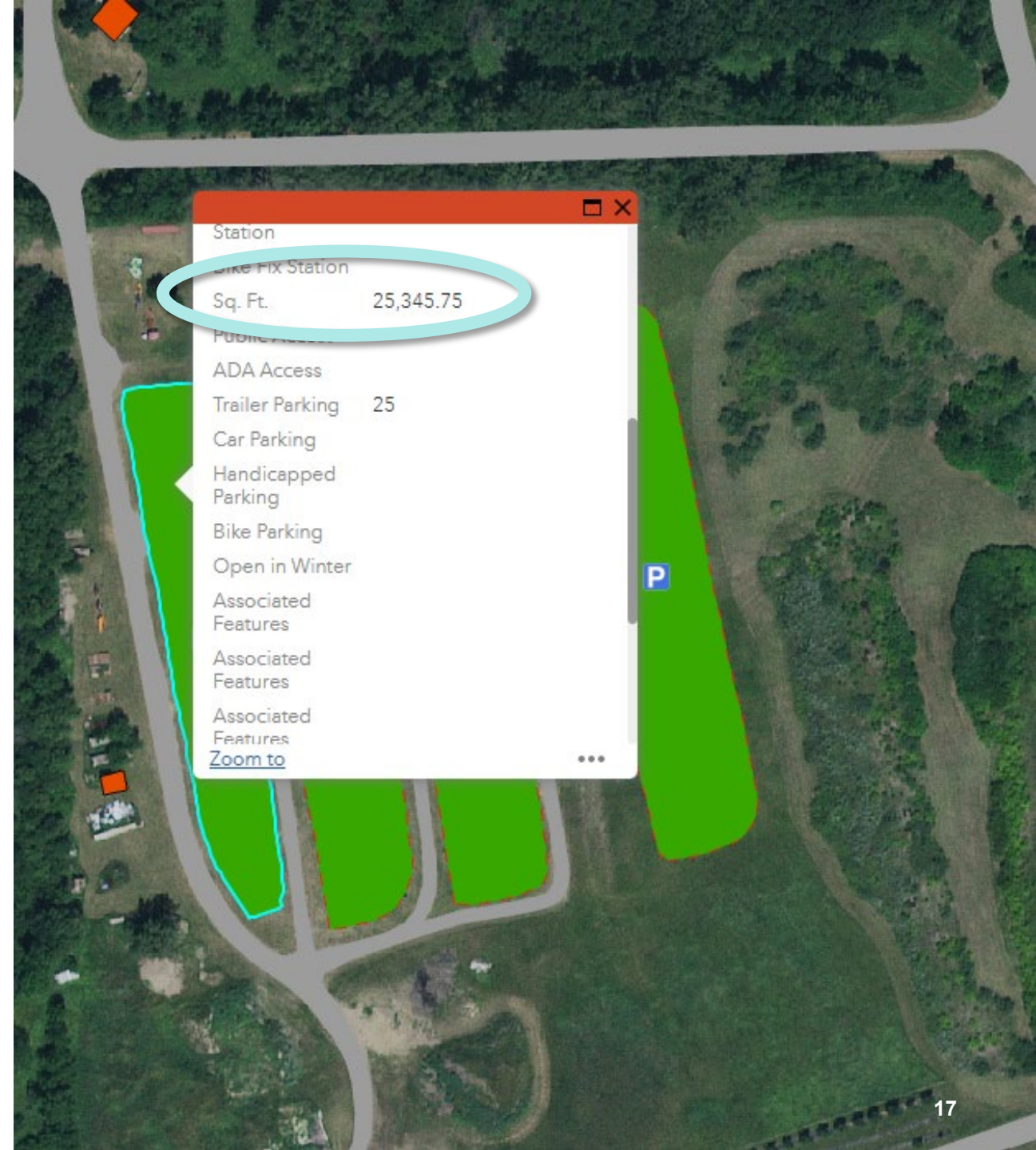


Collision of Passion, Maps, Information & Technology

Example Uses

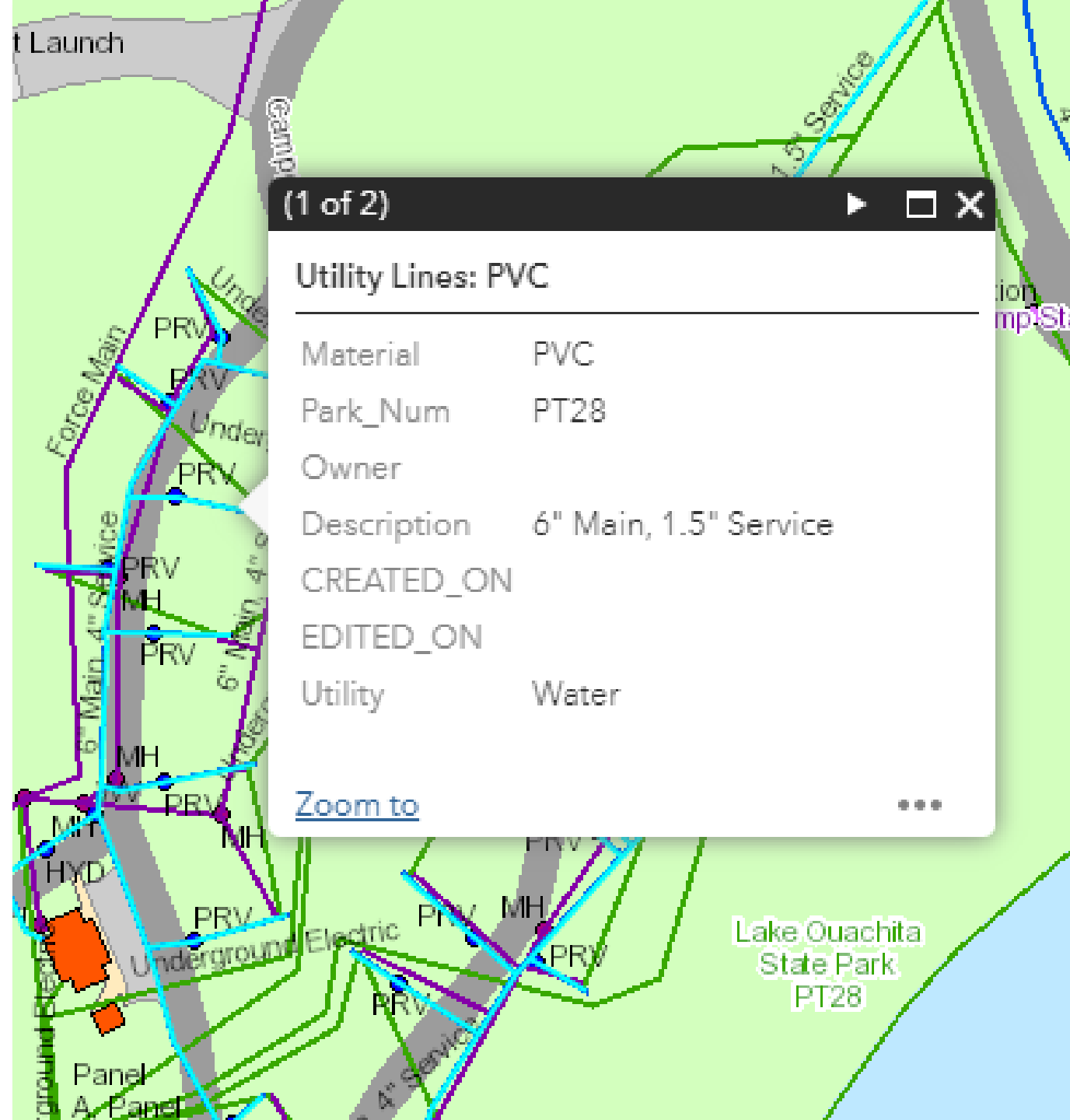
GIS for Maintenance

- Quantity Take-Offs & Estimation
- Access Information Anytime, Anywhere, Online, Offline, Computer or Phone
- Create & Print Maps (with Notes)
- Custom Queries
 - *Display all roofs older than 2000*
 - *Display all gravel parking lots*
 - *Calculate SF of gravel parking lots*
 - *Display all assets manufactured by ACME*



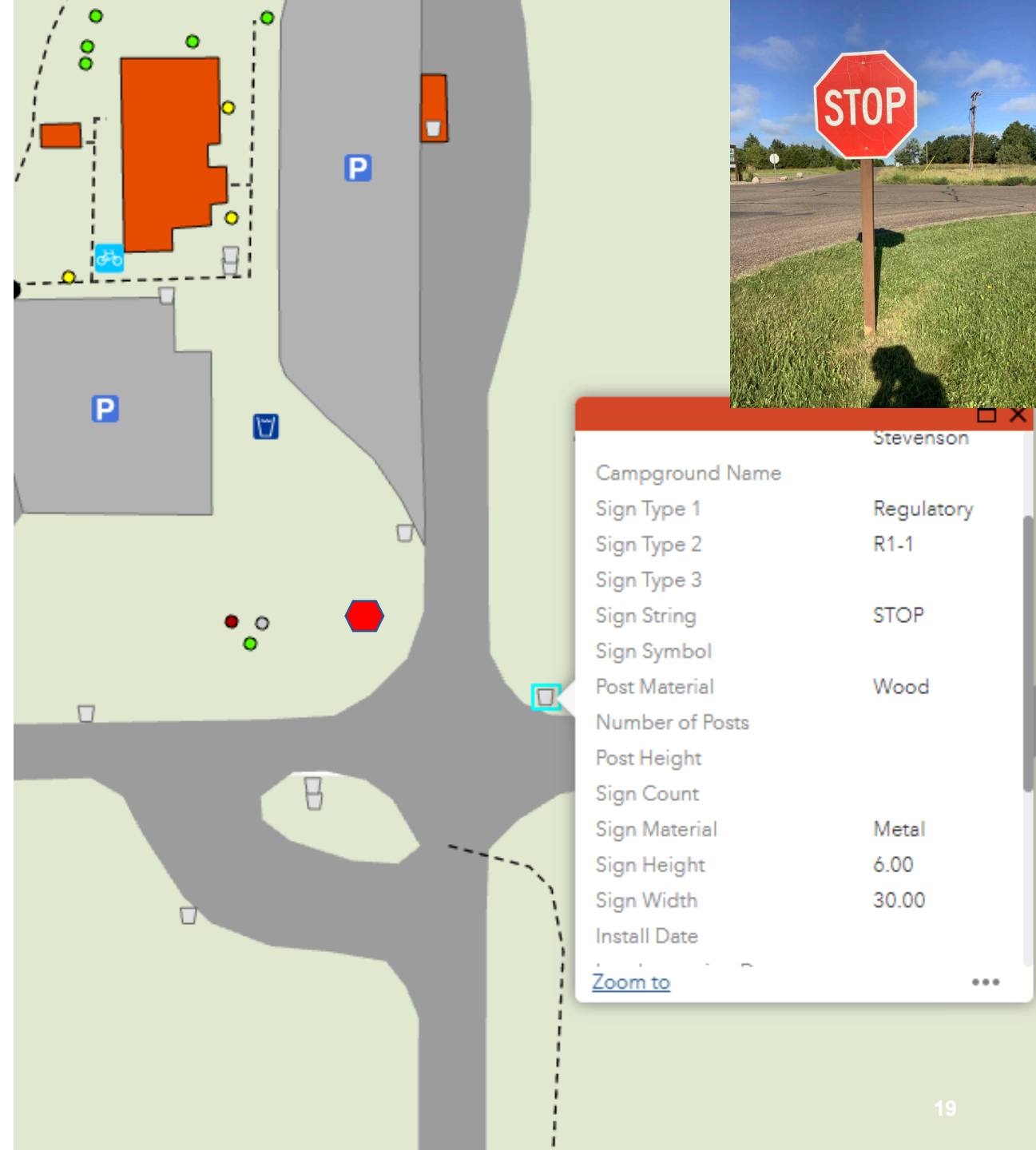
GIS for Planning

- New Projects
- CIP / Special Projects Planning
- Data sharing with consultants
- Level of Service
- Equity Mapping / Planning
- Events & Programs Planning
 - Provide availability information



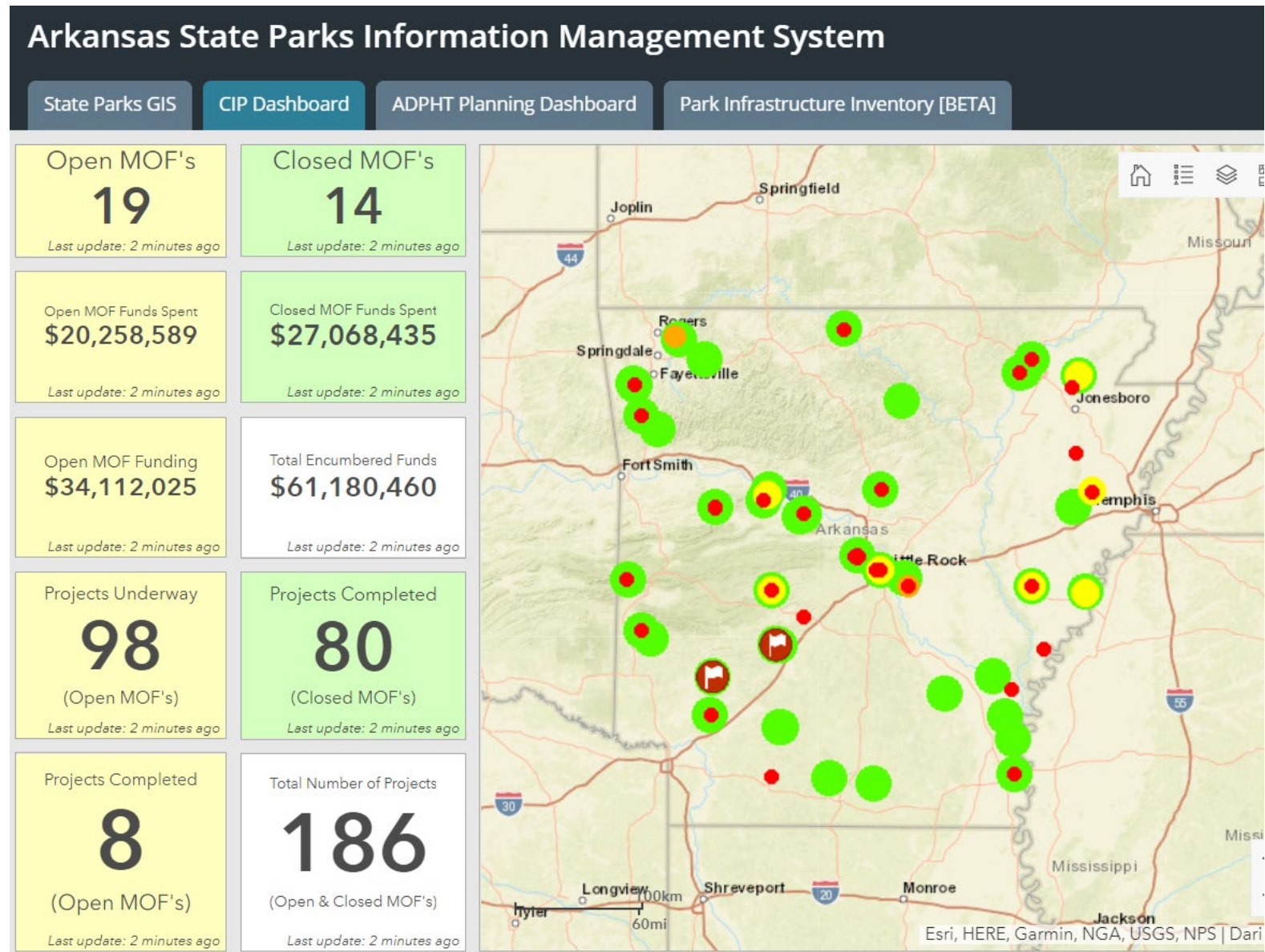
GIS for Lifecycle Replacement

- Replacing Assets & Infrastructure
- Data with Information
 - *Manufacturer, Model #, Cost, Lifecycle Year, Type, Material, Size, Notes, etc.*
- Images of Assets
- Real-time Editing & Changes
 - *Add or remove*
 - *Enrich*
- Tied to Asset Management Systems



GIS for Public Information

- Capital Improvements Dashboard
- Learn about Projects & Status
- Property Information
- Custom Queries
 - *Display all full-service campsites*
- Crowdsourcing?
 - *Report issues*



GIS for Total Cost of Park Ownership

- Parks are as much infrastructure as any water main or road...
- Know where **everything** is located
- Information yields reports & informs decisions

Inflation Cost Factors					debt	Facility	Model Yr		
Cost	Unit	5,042,710	Unit	Base Yr.	cap	or Unit	or, Year	Item	
Base Year	Cost	(sq ft, etc.)	Type	Value	maint	Number	Acquired	Description	
						STORY MILL COMMUNITY PARK			
2017	\$ 15,000.00	1	EA	\$15,000.00		Story Mill Park	2006	Bridge	
2017	\$ 3.50	16,375	SF	\$57,312.50		Story Mill Park	2006	Trail: Class IIA Gravel	
2023	\$ 180,250.00	1	EA	\$180,250.00	CIP	Story Mill Park	2008	Interactive Water Feature	
2023	\$ 170,000.00	1	EA	\$170,000.00	CIP	Story Mill Park	2003	Road Improvement	
2023	\$ 260,000.00	1	EA	\$260,000.00	CIP	Story Mill Park	2003	Road Improvement	
2017	\$ 75.00	2	EA	\$150.00		Story Mill Park	2006	Trail Marker	
2017	\$ 75.00	2	EA	\$150.00		Story Mill Park	2006	Trail Totem	
2017	\$ 40,000.00	2	EA	\$80,000.00	Bond	Story Mill Park	2019	Small Pavilion	
2017	\$ 50,000.00	1	EA	\$50,000.00	Bond	Story Mill Park	2019	Medium Pavilion	
2017	\$ 60,000.00	1	EA	\$60,000.00	Bond	Story Mill Park	2019	Large Pavilion	
2017	\$ 85,000.00	1	EA	\$85,000.00	Bond	Story Mill Park	2019	Homestead Pavilion	
2017	\$ 7,500.00	6	EA	\$45,000.00	Bond	Story Mill Park	2019	Bird Blind	
2017	\$ 150,000.00	1	EA	\$150,000.00	Bond	Story Mill Park	2019	Facility: Restroom	incl. Conc. Found.
2017	\$ 4.50	7,635	EA	\$34,357.50	Bond	Story Mill Park	2019	Concrete: Furnishing Slab	
2017	\$ 4.50	19,052	EA	\$85,734.00	Bond	Story Mill Park	2019	Plazas: Concrete	
2017	\$ 20.00	92	EA	\$1,840.00	Bond	Story Mill Park	2019	Fishing Platform	Stone on Grade
2017	\$ 35.00	144	LF	\$5,040.00	Bond	Story Mill Park	2019	Stairs	Stone on Grade
2017	\$ 6,000.00	1	LS	\$6,000.00	Bond	Story Mill Park	2019	Ground Mosaic	
2017	\$ 3.50	51,200	SF	\$179,200.00	Bond	Story Mill Park	2019	Gravel Trails	varying widths
2017	\$ 3.50	29,550	SF	\$103,425.00	Bond	Story Mill Park	2019	Gravel Surfacing Areas	
2017	\$ 80.00	480	SF	\$38,400.00	Bond	Story Mill Park	2019	Boardwalk	Metal Grating
2017	\$ 300.00	65	SF	\$19,500.00	Bond	Story Mill Park	2019	Boardwalk	Wood
2017	\$ 5.00	16,442	SF	\$82,210.00	Bond	Story Mill Park	2019	Multi-Use Path	Asphalt
2017	\$ 7.50	22,846	SF	\$171,345.00	Bond	Story Mill Park	2019	Multi-Use Path	Concrete
2017	\$ 11,138.00	1	LS	\$11,138.00	Bond	Story Mill Park	2019	Gravel Access Pads	Emergency & Utility Uses
2017	\$ 1,800.00	160	LF	\$288,000.00	Bond	Story Mill Park	2019	Pedestrian Bridge	Wood/Steel
2017	\$ 12,000.00	1	LS	\$12,000.00	Bond	Story Mill Park	2019	Pedestrian Deck	
2017	\$ 6.00	13,113	SF	\$78,678.00	Bond	Story Mill Park	2019	Landscape Bed	
2017	\$ 18,000.00	4	EA	\$72,000.00	Bond	Story Mill Park	2019	Irrigation Well	
2017	\$ 6,000.00	4	EA	\$24,000.00	Bond	Story Mill Park	2019	Irrigation Pump	
2017	\$ 65,340.00	13	AC	\$862,488.00	Bond	Story Mill Park	2019	Irrigation Installation	
2017	\$ 5,000.00	2	EA	\$10,000.00	Bond	Story Mill Park	2019	Play Structure	Ping Pong
2017	\$ 1,780.00	2	EA	\$3,560.00	Bond	Story Mill Park	2019	Play Structure	Exercise Crank
2017	\$ 1,300.00	1	EA	\$1,300.00	Bond	Story Mill Park	2019	Play Structure	Flex Wheel
2017	\$ 1,670.00	1	EA	\$1,670.00	Bond	Story Mill Park	2019	Play Structure	Pull-Up Bar
2017	\$ 2,990.00	1	EA	\$2,990.00	Bond	Story Mill Park	2019	Play Structure	Hand Bike
2017	\$ 3,452.00	1	EA	\$3,452.00	Bond	Story Mill Park	2019	Play Structure	Pagoda Bells
2017	\$ 2,988.00	1	EA	\$2,988.00	Bond	Story Mill Park	2019	Play Structure	Tuned Drums
2017	\$ 7,152.00	1	EA	\$7,152.00	Bond	Story Mill Park	2019	Play Structure	Music Notes
2017	\$ 10.00	365	LF	\$3,650.00	Bond	Story Mill Park	2019	Play Area	Trike Track
2017	\$ 63,384.00	1	EA	\$63,384.00	Bond	Story Mill Park	2019	Play Structure	Grain Elevator w/ Slide



THANK YOU / QUESTIONS?

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Forge ahead.

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