

# **Every Trail Tells a Story**

### April 7, 2016

Track trails with GPS, map in GIS, share using ArcGIS Online for mapping on the web.

California Trails and Greenways Conference

Debra Gonzalez, GISP, State of California Emmett Cartier, Outdoor Recreation Planner, U.S. Bureau of Reclamation



### What is GPS?

Global Positioning System (GPS) is a satellite-based navigation system made up of a network of 24 satellites placed into orbit by the U.S. Department of Defense.



### What is GIS?

Geographic Information Systems (GIS) gives us the ability to analyze, and interpret data from features on the earth, to inform decisions.

Features are digitally constructed of points, lines or polygons.

### Trails (and Roads)

- 'Pioneer Express Trail' 1 of 7 alignments
- 'Western States Trail' per sticker on post
- 'American Discovery Trail' per sticker on post
- 'Shirland Canal Trail' per web page, book
- Maidu Drive (open, no crosswalks or signs)
- Pleasant Avenue (gated at each end)

(...and a cast of thousands...)



### Trails

U.S. Bureau of Reclamation-acquired lands are managed under agreements with:

- Auburn Area Recreation and Park District (ARD)
- Calif. Dept. Parks and Recreation, Auburn State Recreation Area (ASRA)
- Placer County Water Agency (PCWA), Shirland Canal easement

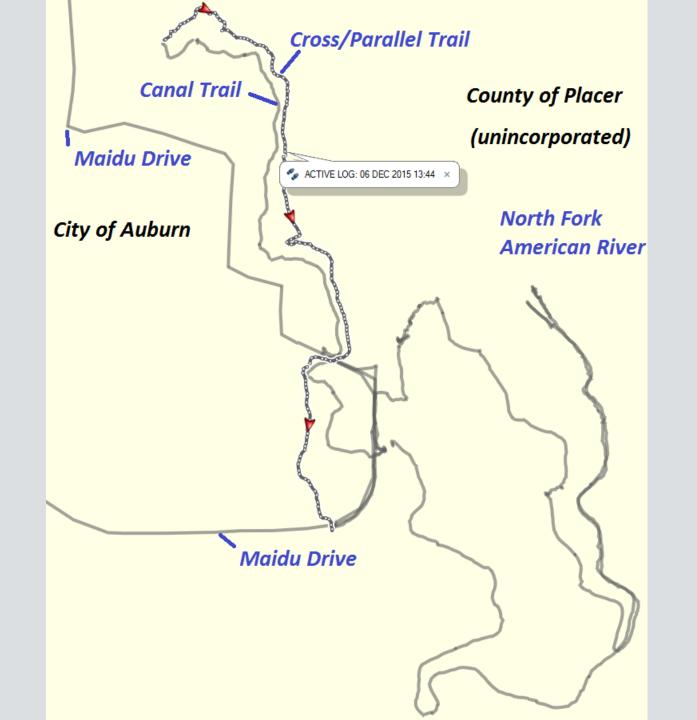


### Trails

	<u>Miles</u>	Min.	<u>Grade</u>
Canal Trail	1.2	28	0.8%
Cross Trail	1.4	40	-0.3%
Maidu Drive link	<u>0.2</u>	_7	<u>-4.6%</u>
Totals	2.8	75	

Connect to: Western States NRT, Auburn-Cool Trail, Pacific Ave., Pleasant Ave., Pump Station Rd., Contour Rd., China Bar Rd.







### GPS

- Garmin Foretrex 401 with wrist strap
- 10-second tracklog interval setting
- Geotag JPEG photos by Garmin BaseCamp
- Precision of 4 to 12 yards is typical
- Various cameras used: Nikon D7100, Canon SX230HS, Canon D10

### GPS

0	ACTIVE LOG: 06 DEC 2015 13:44								
Γ	Properties Graph Notes References								
			EC 2015 13:44						
	ACTIVE	: LOG. 00 D	EC 2010 13.44						
	_ Summ	ary	Time —		Speed		Elevation		
	Poir	nts: 28	1 Elapsed	Time: 0:46:4	43	Avg: 1.9 mph	Min: 942 ft As	cent: 419 ft	
	Distan	ce: 1.4 n		Time: 0:40:2		oving: 2.1 mph		cent: 442 ft	
	An	ea: 0.1 sq n	ni Stopped	Time: 0:06:2	20	Min: 0.0 mph			
						Max: 5 mph	1		
	Ind	Elevation	Leg Distance	Leg Time	Leg Speed	Leg Course	Time	Position	
	1	1341 ft	13 ft	0:00:10	0.9 mph	263.7° true	12/6/2015 1:44:12 PM	N38 53.182 W121 04.372	
	2	942 ft	7ft	0:00:10	0.5 mph	180.0° true	12/6/2015 1:44:22 PM	N38 53.182 W121 04.375	
	3	942 ft	3 ft	0:00:10	0.2 mph	302.5° true	12/6/2015 1:44:32 PM	N38 53.181 W121 04.375	
	4	943 ft	76 ft	0:00:10	5 mph	55.7° true	12/6/2015 1:44:42 PM	N38 53.181 W121 04.376	

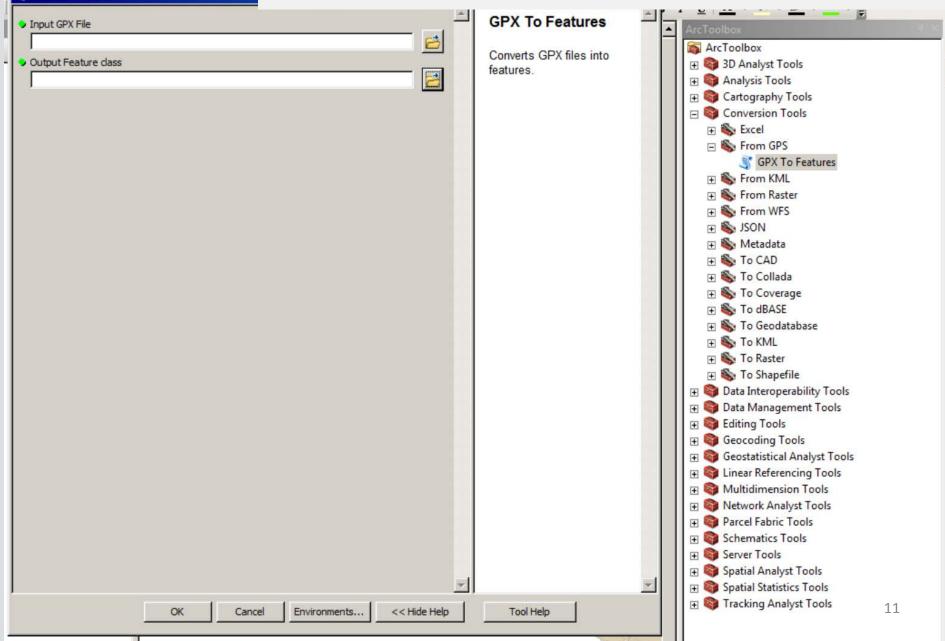
1	1341 ft	13 ft	0:00:10	0.9 mph	263.7° true	12/6/2015 1:44:12 PM	N38 53.182 W121 04.372
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3	942 ft	3ft	0:00:10	0.2 mph	302.5° true	12/6/2015 1:44:32 PM	N38 53.181 W121 04.375
4	943 ft	76 ft	0:00:10	5 mph	55.7° true	12/6/2015 1:44:42 PM	N38 53.181 W121 04.376
5	948 ft	46 ft	0:00:10	3.1 mph	4.3° true	12/6/2015 1:44:52 PM	N38 53.188 W121 04.362
6	951 ft	41 ft	0:00:10	2.8 mph	81.2° true	12/6/2015 1:45:02 PM	N38 53.196 W121 04.362
7	953 ft	45 ft	0:00:10	3.1 mph	45.6° true	12/6/2015 1:45:12 PM	N38 53.197 W121 04.353
8	955 ft	40 ft	0:00:10	2.7 mph	30.1° true	12/6/2015 1:45:22 PM	N38 53.202 W121 04.346
9	956 ft	41 ft	0:00:10	2.8 mph	67.8° true	12/6/2015 1:45:32 PM	N38 53.208 W121 04.342
10	959 ft	42 ft	0:00:10	2.9 mph	56.7° true	12/6/2015 1:45:42 PM	N38 53.210 W121 04.334
11	961 ft	33 ft	0:00:10	2.2 mph	58.1° true	12/6/2015 1:45:52 PM	N38 53.214 W121 04.327
12	962 ft	35 ft	0:00:10	2.4 mph	59.5° true	12/6/2015 1:46:02 PM	N38 53.217 W121 04.321
13	964 ft	39 ft	0:00:10	2.6 mph	22.1° true	12/6/2015 1:46:12 PM	N38 53.220 W121 04.315
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### ArcGIS Toolbox

### ArcToolbo B ArcToolbo

- 🗄 😂 Analysis Tools
- 🗄 📦 Cartography Tools
- 🖃 😂 Conversion Tools
  - 🗄 🗞 Excel
  - 🖃 🗞 From GPS
    - 💐 GPX To Features 4
  - 🗄 🗞 From KML
  - 🗄 🗞 From PDF
  - 🗄 🗞 From Raster
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  - 🗄 🗞 To Collada
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  - 🗄 🗞 To dBASE
  - 🗄 🗞 To Geodatabase
  - 🗄 🗞 To KML
  - 🗄 🗞 To Raster
  - 🖽 🍋 To Shapefile

### Map Points from GPS



GPX To Features

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₩ <b>\$</b>	Edit Features Convert Labels to Annotation Convert Features to Graphics Convert Symbology to Representa	► ation	X
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### Map Points in Google Earth

🔨 Layer To KML			
Layer Points_All2 Output File H:\/arcGIS\/Points_All2_LayerToKML.kmz Layer Output Scale (optional)  Clamped features to ground (optional)		Output File The KML file to write. This file is compressed and has a .kmz extension. It can be read by any KML client including ArcGIS Explorer, ArcGlobe, and Google Earth.	I U A → A → A → A → A → A → A → A → A → A
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	<u>_</u>		🖃 🕀 🧐 Server Tools
OK Cancel Environ	nments << Hide Help	Tool Help	⊕ Spatial Analyst Tools     ⊕ Spatial Statistics Tools     ⊕

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### Map Points from Photographs

### Input Folder

H: \GIS \GPS \TrailsConference \Photos

### **Output Feature Class**

\\GVPWGDB\EGIS\_Users\2.User\_Projects\HWDD\Data\TrailsConference\GPSpoints.gdb\PhotoPts2

Invalid Photos Table (optional)

💐 GeoTagged Photos To Points

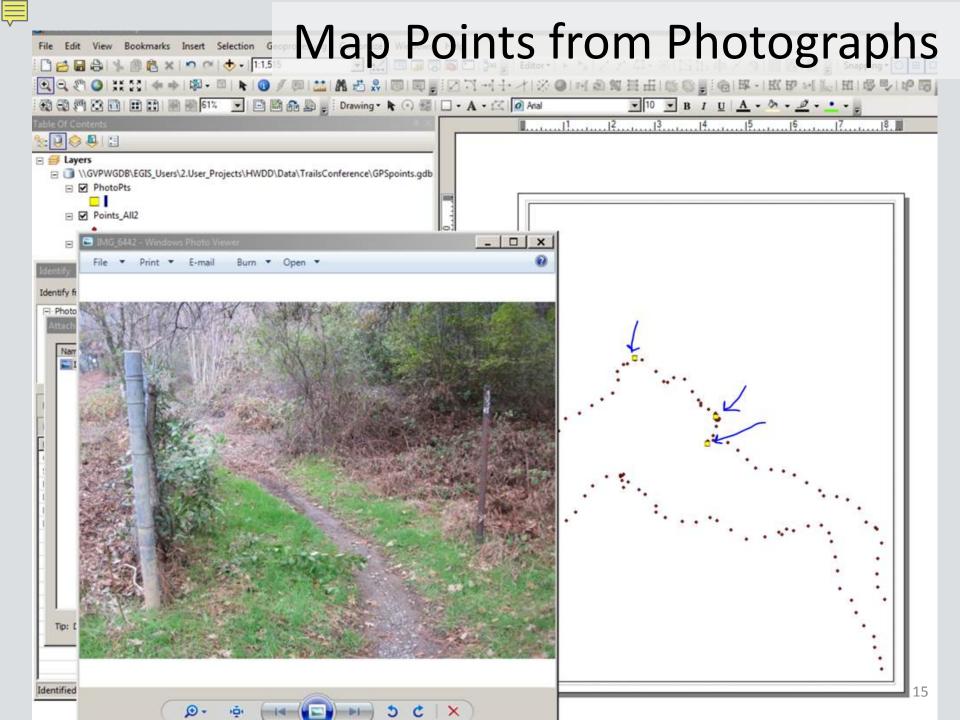
\\GVPWGDB\EGIS\_Users\2.User\_Projects\HWDD\Data\TrailsConference\GPSpoints.gdb\InvalidPhotoList2

- Include Non-GeoTagged Photos (optional)
- Add Photos As Attachments (optional)

	Invalid Photos Table (optional)	*
	The optional output table that will list any photo files in the input folder with invalid Exif metadata or empty GPS coordinates.	
	If no path is specified, this table will not be created.	
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Cancel

<< Hide Help

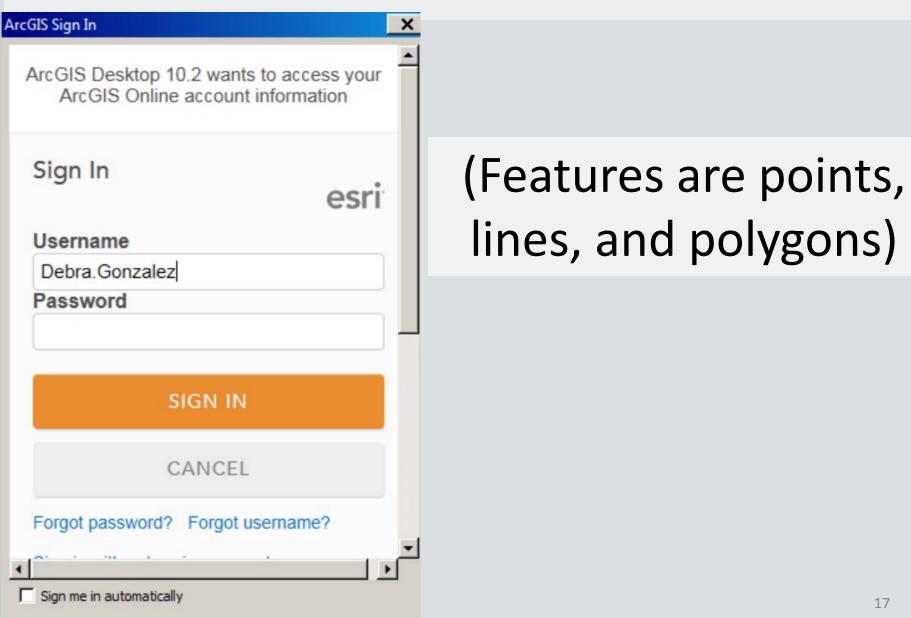




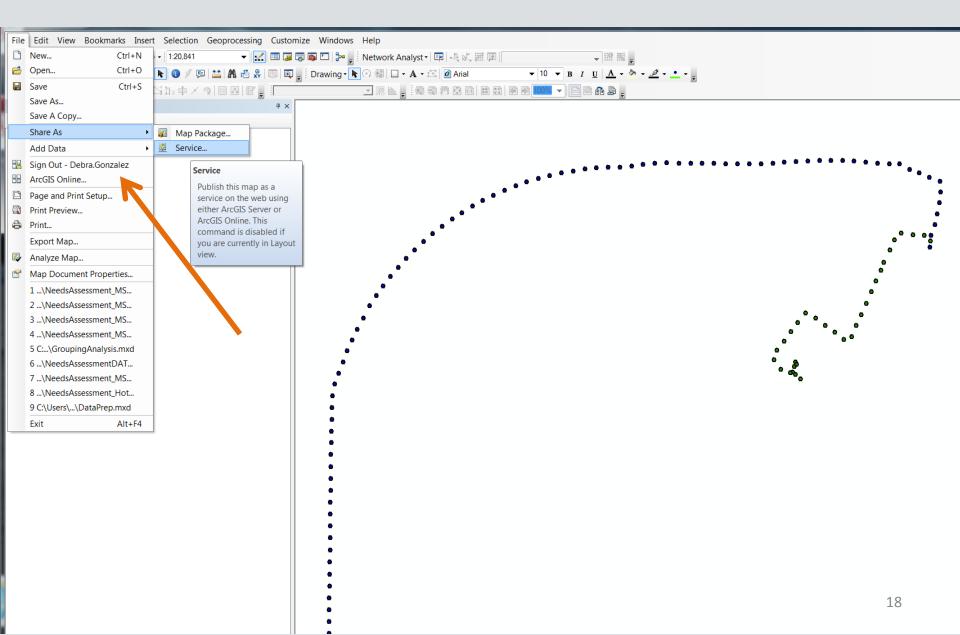
## Why ArcGIS Online?

- ArcMap layer-to-feature service
  - -Interactive (each feature has attribute data)
  - -Inventory of amenities on a trail
  - -Signage
  - -Management or user concerns
  - -Specific point of interest
- Archive
- History
- Feature Service to Story Map

### Map Features on the Web



### Share a Service (Feature)





# Share a Service (Feature)

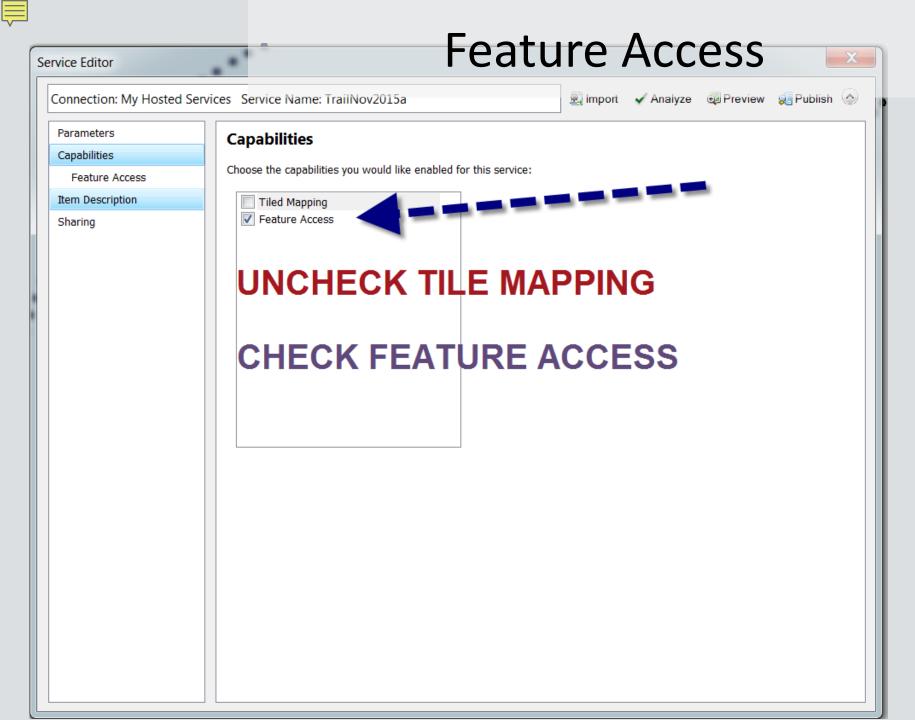
Share as Service	
	Publish a service
	<ul> <li>Save a service definition file</li> <li>Overwrite an existing service</li> </ul>
	<u>About sharing a service</u>
	Next > Cancel



# Publish a Service (Feature)

Publish a Service	×
Choose a connection My Hosted Services (California OSHPD)	
Service name TrailNov2015a	
< Back	Continue Cancel

20

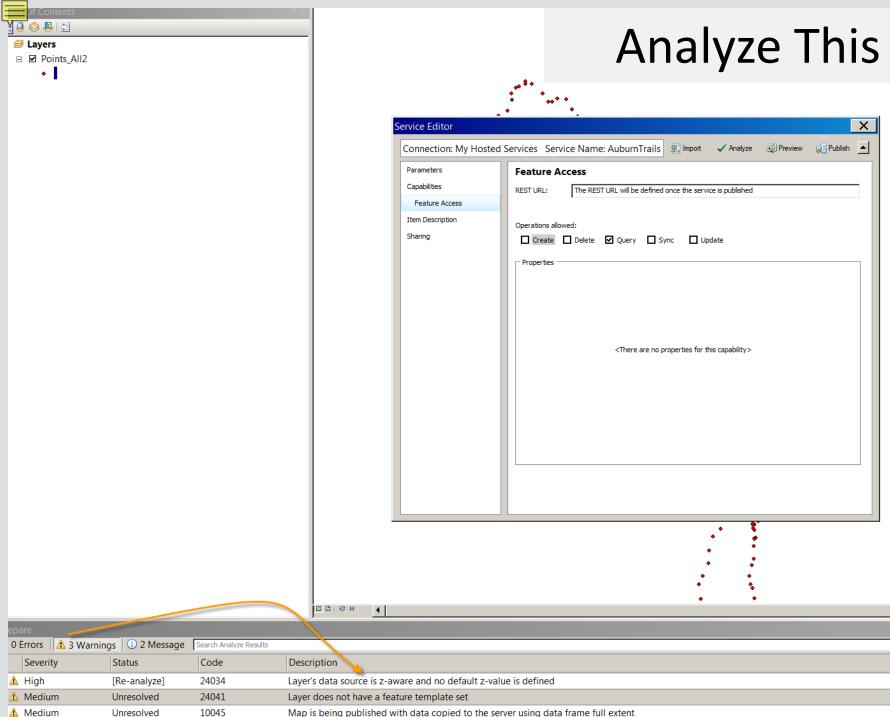


## Which Trails Are They?

Connection: My Hosted S	ervices Service Name: TrailNov2015a	🖳 Import	🗸 Analyze	🐺 Preview	🕼 Publish	6
Parameters Capabilities	Item Description					
Tiled Mapping	Summary (required):					
Feature Access Caching	This represents Global Positioning System (GPS) points for the 2015	trail in Auburn. N	ov.			
Advanced Settings	Tags (required):					
Item Description Sharing	Trail, Auburn         Choose Your Tags         Description:         This represents Global Positioning System (GPS) points for a statuburn. Nov. 2015         Access and Use Constraints:	egment of the trail	in 🔹			
	Credits:	ption				

## Who Sees What Trails?

s	ervice Editor					X
	Connection: My Hosted Servi	ces Service Name: TrailNov2015a	🖳 Import	🗸 Analyze	🤁 Preview	۲
	Parameters Capabilities	Sharing Share your service with:		2	]	
	Tiled Mapping Feature Access Caching Advanced Settings	<ul> <li>✓ My Content</li> <li>✓ California OSHPD</li> <li>✓ Everyone (public)</li> </ul>				
	Item Description Sharing	Members of these groups:				



Unresolved 10045 Map is being published with data copied to the server using data frame full extent

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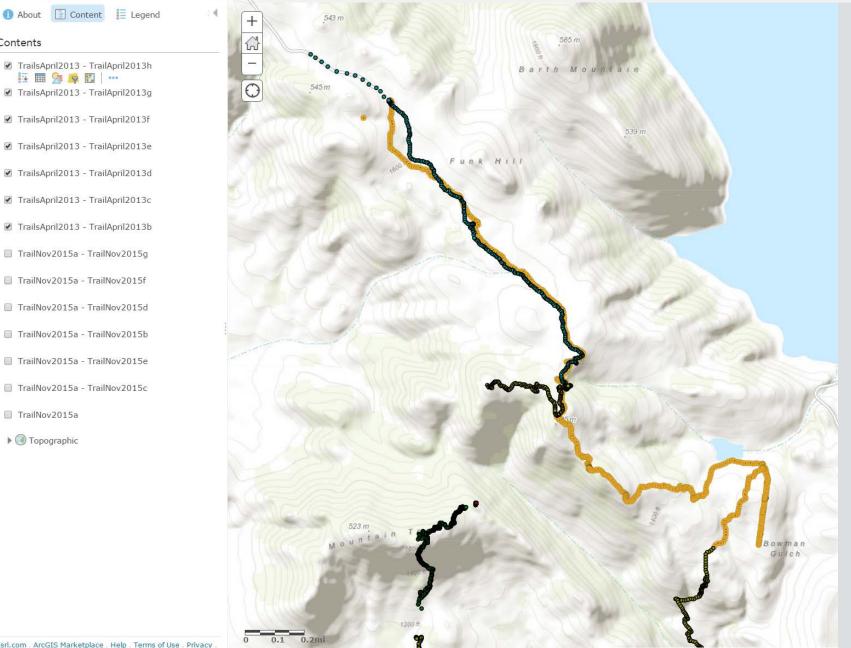
Service Editor

### That's a Wrap

25

Connection: My Hosted Services Service Name: TrailNov2015a	🖳 Import	🗸 Analyze	🔁 Preview	된 Publish	۲	
Parameters Capabilities Feature Access Item Description Sharing Share your service with: My Content California OSHPD Everyone (public) Members of these groups: Members of these groups: Service Publishing Result The service has been published successor						

## **Examples of Mapped Points**



### Contents

Details

Home 
My Map

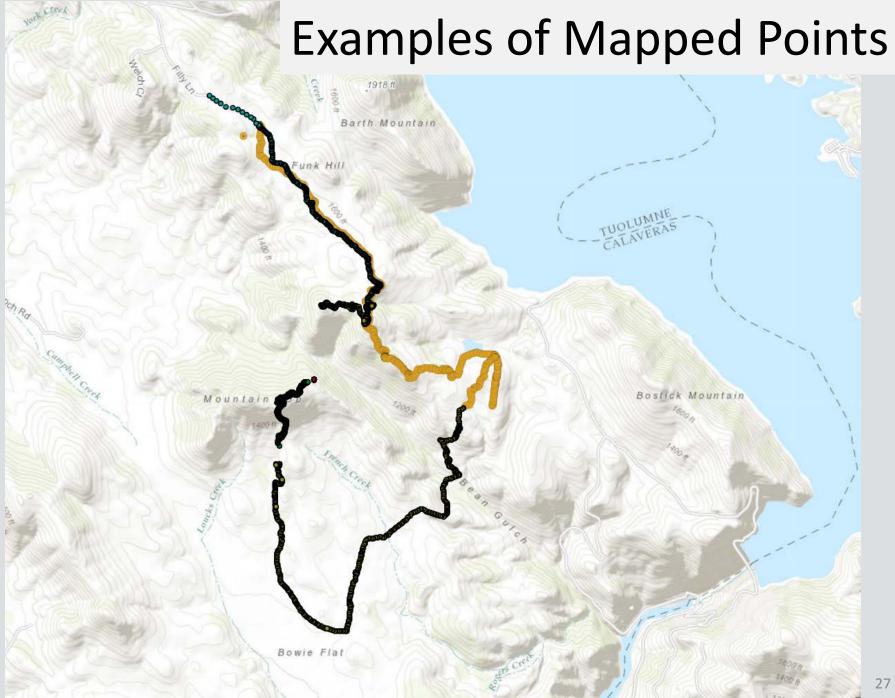
TrailsApril2013 - TrailApril2013h 🔁 🖩 🕅 🧖 🖾 🛛 …

+ Add 👻

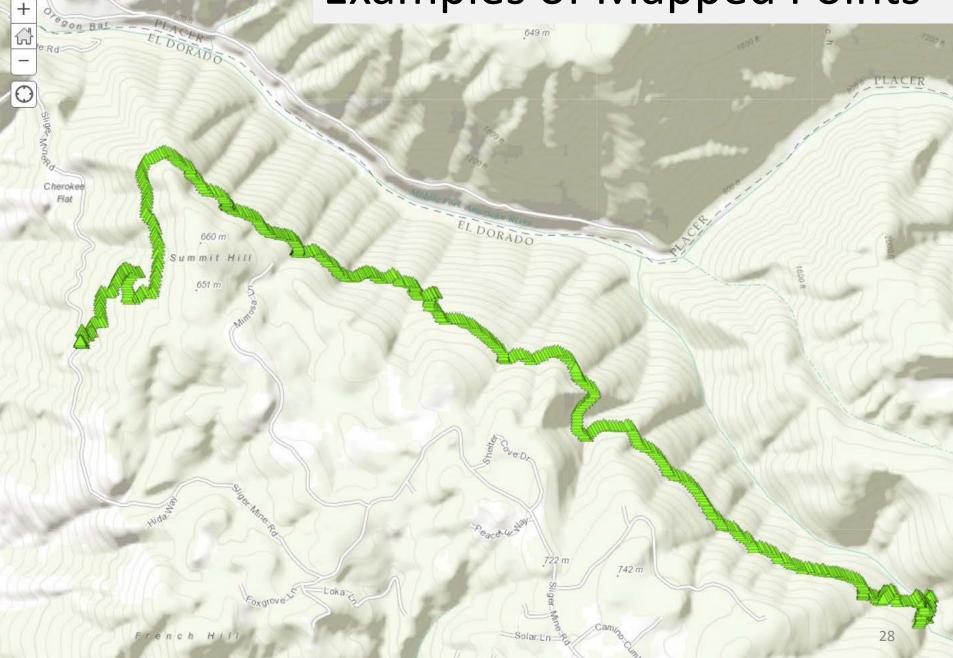
Basemap 🛛 🔣 Analysis

- TrailsApril2013 TrailApril2013g
- TrailsApril2013 TrailApril2013f
- TrailsApril2013 TrailApril2013e
- TrailsApril2013 TrailApril2013d
- TrailsApril2013 TrailApril2013c
- TrailsApril2013 TrailApril2013b
- TrailNov2015a TrailNov2015g
- TrailNov2015a TrailNov2015f
- TrailNov2015a TrailNov2015d
- TrailNov2015a TrailNov2015b
- TrailNov2015a TrailNov2015e
- TrailNov2015a TrailNov2015c
- TrailNov2015a
- Topographic

Esri.com ArcGIS Marketplace Help Terms of Use Privacy



### **Examples of Mapped Points**





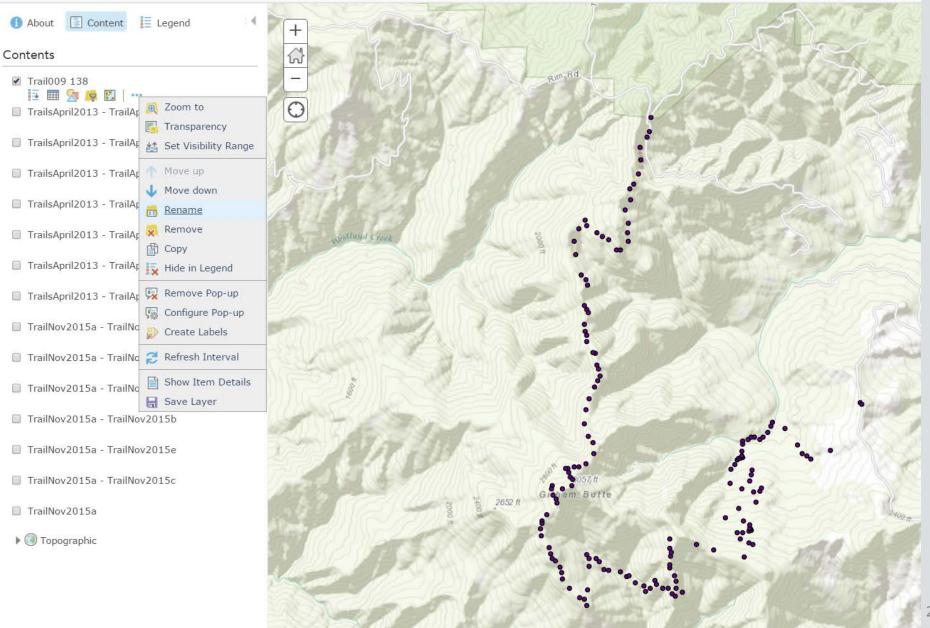
📩 Add 👻 🛛 🔡 Basemap

🔛 Analysis

Details

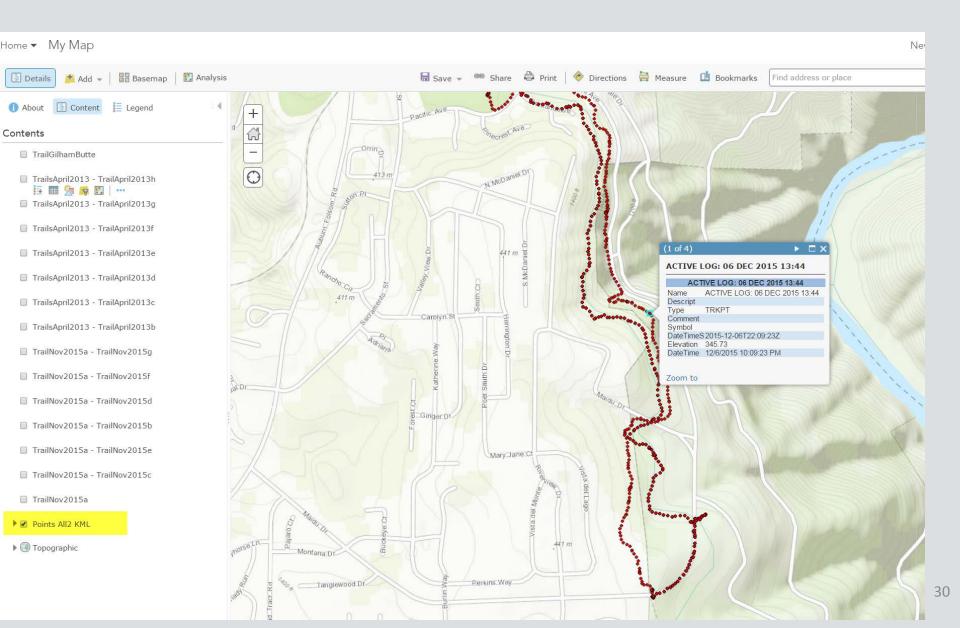
### **Edit Trail Features**

marks Find addres





### Track Attributes/Information



## Why ArcGIS Online – Story Map?

- ESRI hosted service in the cloud, basemaps
- Features from ArcGIS
- Photos in Picassa, Flickr or Facebook
- Video embed from YouTube, Vimeo, other Import into Map Template to create narrative, map and photographic documentation.
- Introduce subjects, issues, concerns in the field
- Used by planners, engaged citizens for cooperative purposes



## Which Story Map?

- Map Templates which basemap fits your story?
- Street map
- Imagery with labels?
- Topographic
- Other?



### Choose a Design for the Story Map

• Create the application (story map) from a

template

- Select a basemap to start
- For a Journal, use main stage and side panel
  - Insert narrative
  - Add sections to fit the order of your story

### Choose a Design for the Story Map

Create map extents (zooms) to change with

each section in the story

- Add photos
- Add videos



### Create the Story Map

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	Files		Paramedics - He	ealthcare V	Vorkforce Pilot Proj	T	Web Map	Dec 30, 2015		Organi	ization			~

## **Build the Story Map**

### Create a New Web App

What do you want to do?

Select a configurable app. 🕐

### Q Search



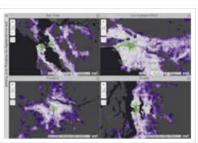
Compare Maps/Layers



**3D Data Visualization** 



Basic Viewer



×

Compare Analysis

Display a Scene (3D)

Explore/Summarize Data

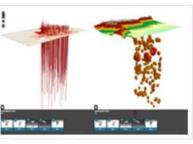
Make a Gallery

Map Social Media

Provide Local Information

Route/Get Directions

### Showcase a Map



**Compare Scenes** 

>>



Crowdsource Manager



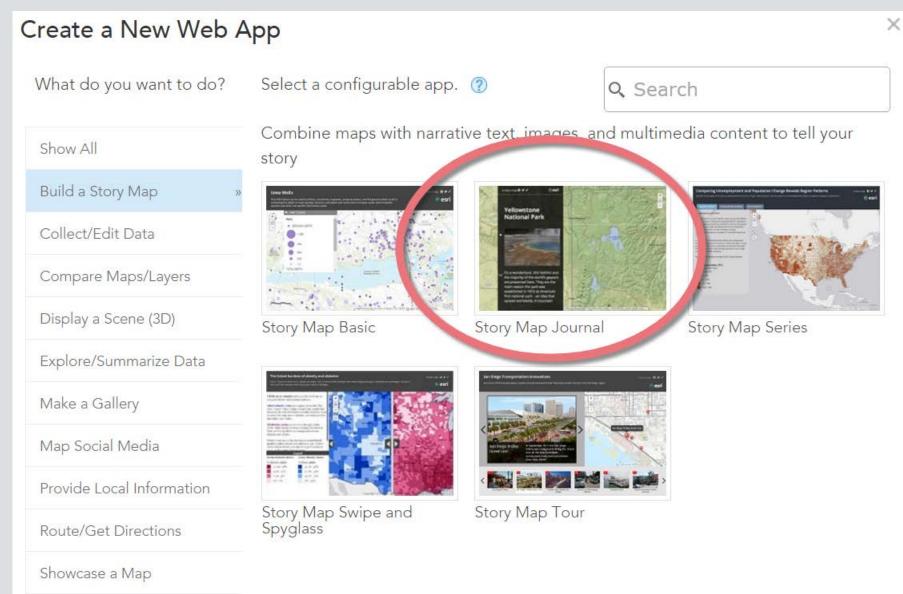
Crowdsource Polling







# **Build a Story Map Journal**



37



# Title Your Story Map

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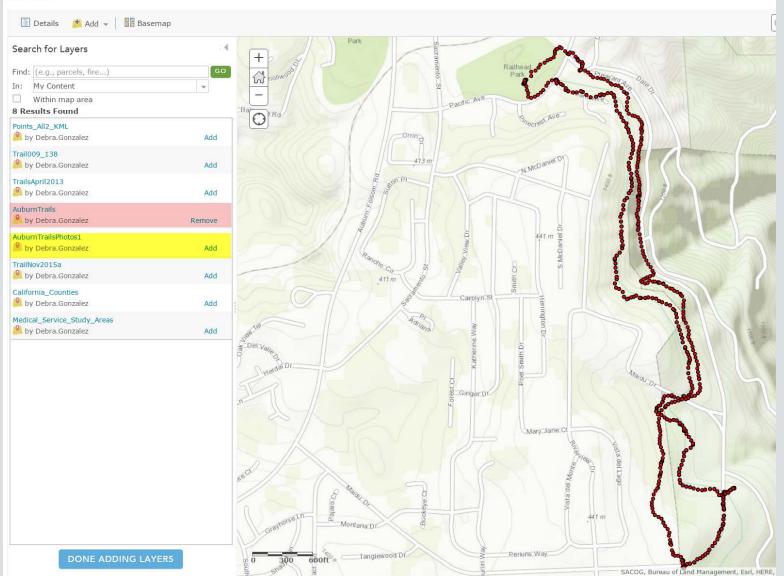


# Summarize Your Story Map

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Show	Tags:	Trails × Shirland Canal × Auburn State Recreation Area ×	Ĩ	one			
	9	Auburn Area Recreation and Park District $\times$ Bureau of Reclamation $\times$		one			
Maps		Add tag(s)					
Layers Scenes Apps	Summary:	This is the story of trails with multiple uses and managing agencies. It is an example of how to reveal what is most powerful, dramatic or meaningful for you and your area or people of concern.		zatior one	1		Г
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#### Select Features for Story Map

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#### Edit Story Map

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EDIT SECTIO	DN N
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Pop-up	Map default Custom configuration 3
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	SAVE CANCEL



Add Photos to Story Map
EDIT SECTION
The Shirland Canal is Part of California History
Main Stage Side Panel 2
CONTENT: 🔘 Map 📖 🔍 Image 📾 🔍 Video 🖬 🔍 Web page 🔀
fickr facebook Picasa. Ourl
SAVE CANCEL



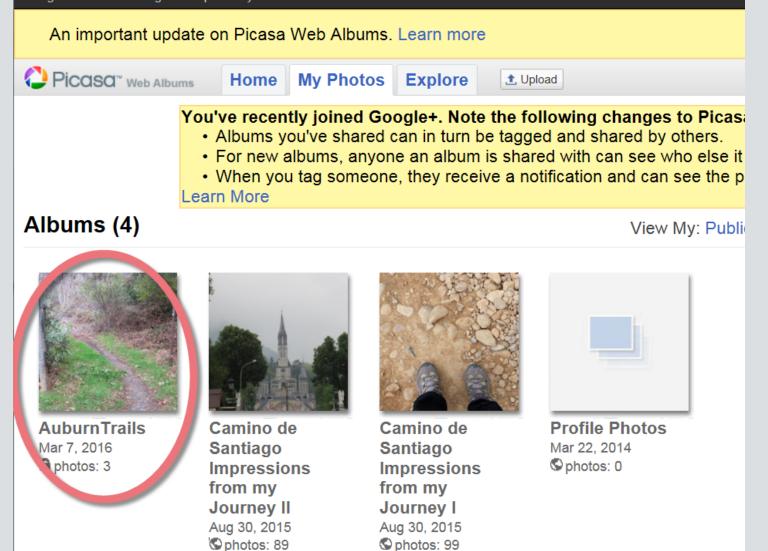
# Add Photos to Story Map Picassa and Gmail Account

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#### Add Photos to Story Map Picassa

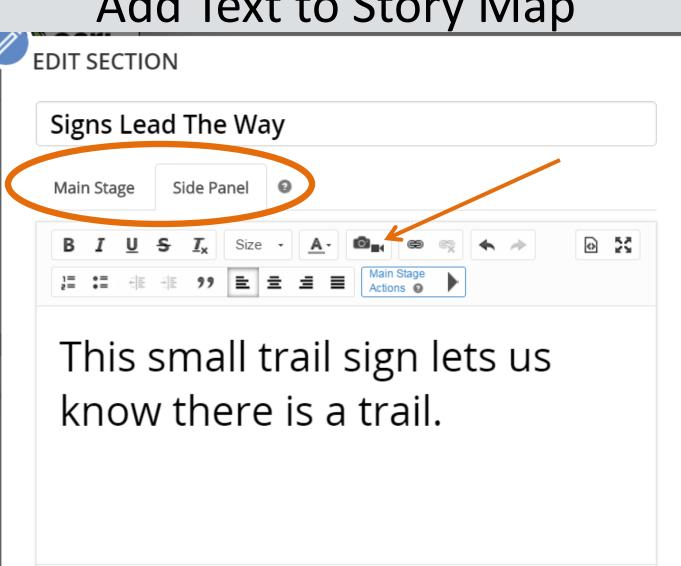




Signs Leac	Side Panel		
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Position			
	<b>V</b>		
Fill	Fit (won't crop)	Stretch	Center
(may crop)	(worrt crop)	(may distort)	



### Add Text to Story Map

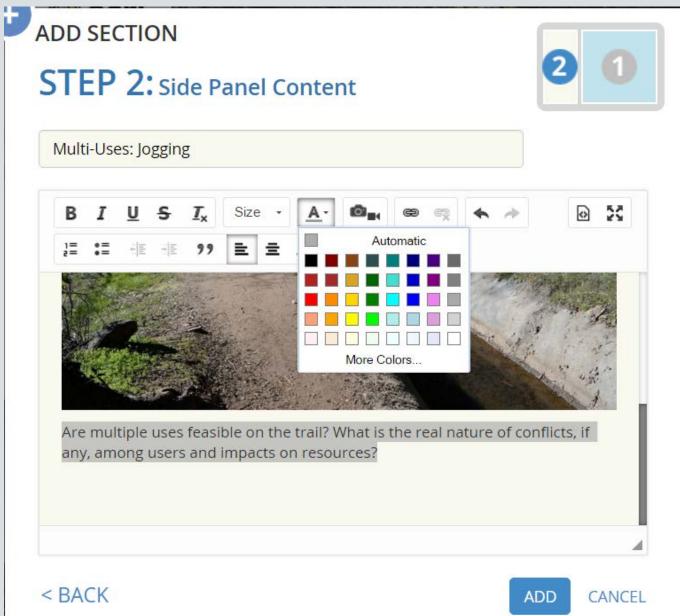


SAVE

CANCEL



## Edit Text in Story Map



#### **Develop Your Story Map Narrative**

Map extents may vary for each Act or Scene: <u>Act</u>

- 1 Introduce the trail, setting, window
- 2 Proposals coalesce in the 'primordial soup'
- 3 Issues emerge and compete for attention
- 4 Managers act, choose, deal, reverse
- 5 Find resolution, moral; evaluate, monitor

(apologies to Aristotle on drama, Kingdon on policy evolution)



#### Demonstration of a Story Map Journal

# Every Trail Tells a Story A Tale of Two Trails

http://oshpd.maps.arcgis.com/apps/MapJournal/index.html?appid= 71ee9142ba4249b39f633941bf535c1e

#### **Every Trail Tells a Story**

• Questions?