

Using GIS Data Layers in the Field

From a non-GIS person perspective

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ESD Workshop – SRM 2013

Nevada ESD Team

- Assembled a Core Team for development of state-and-transition models in 2009
- Multi-agency/multi-discipline
- Team members:
 - Range scientists
 - Soil scientists
 - GIS specialist
 - Researchers



GIS Trifecta

- Office meetings – pre-planning and participation
- Field trips – pre-planning and participation
- Post field trip and office meetings
 - Clean-up

STM Development - Office Process

- Development of Disturbance Response Groups (DRG's) by MLRA
- Select modal site and soil for each DRG
- GIS specialist assists in providing ecological site locations, soils information, type locations, etc.

GIS Layers for Office

- Digital Raster Graphics (DRGs) - Digital Topo Maps
- National Agriculture Imagery Program (NAIP) aerial photography
- Land ownership
- National Map transportation layers
- Public Land Survey System (PLSS)
- Slope maps
- PRISM climate data
- Digital elevation models (DEM's)
- Soil survey, county boundaries

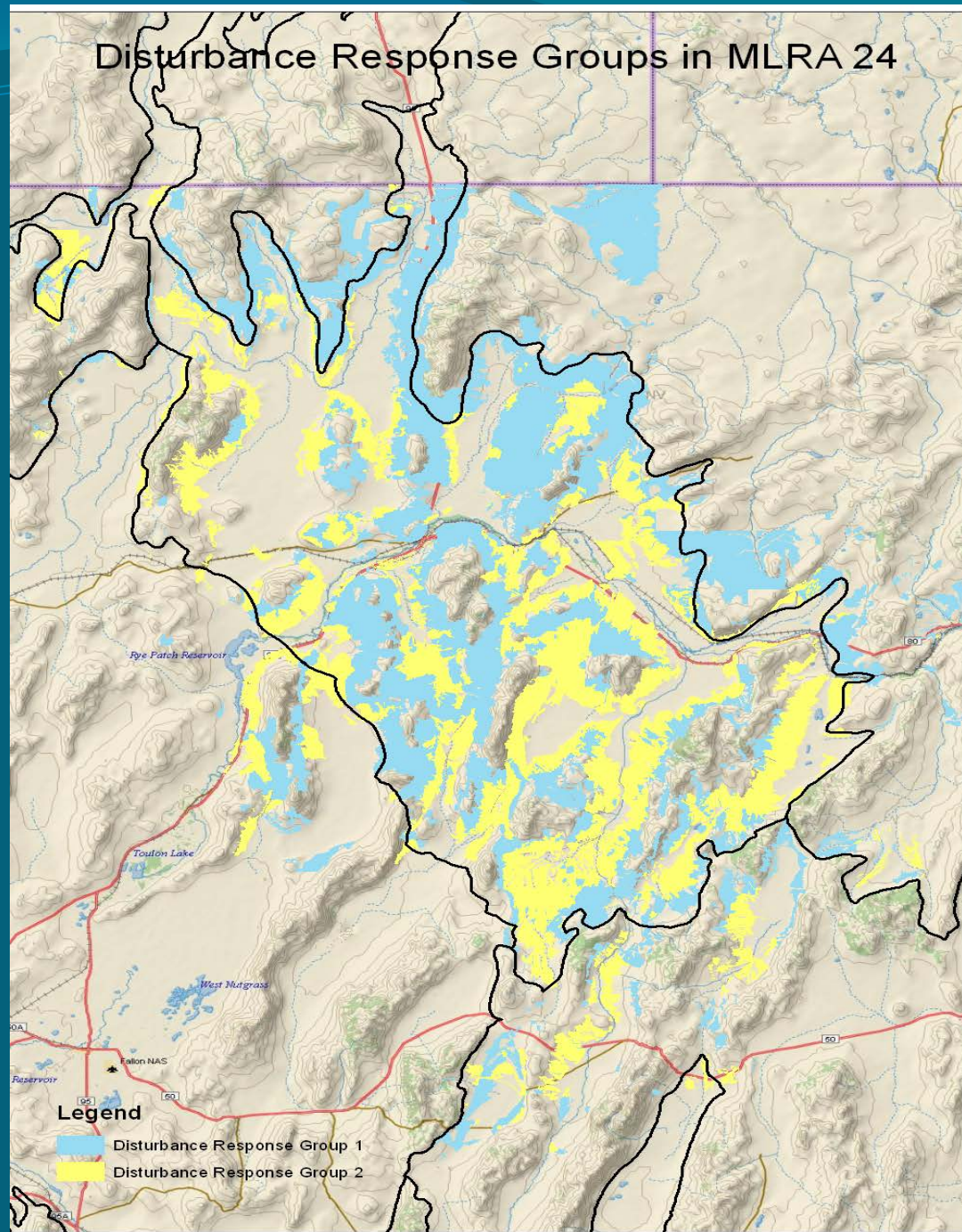
GIS Analysis – Office/Pre-field

- Analyses performed, specific to the project:
 - Wildfire data spanning nearly 30 years is compared in order to identify areas that were burned multiple times and the interval between burns.
 - Soils data was used to identify locations where specific ecological sites were likely to be mapped aside from the type locations.
 - Ready access to the soils data also provided soil properties for the sites that were visited.

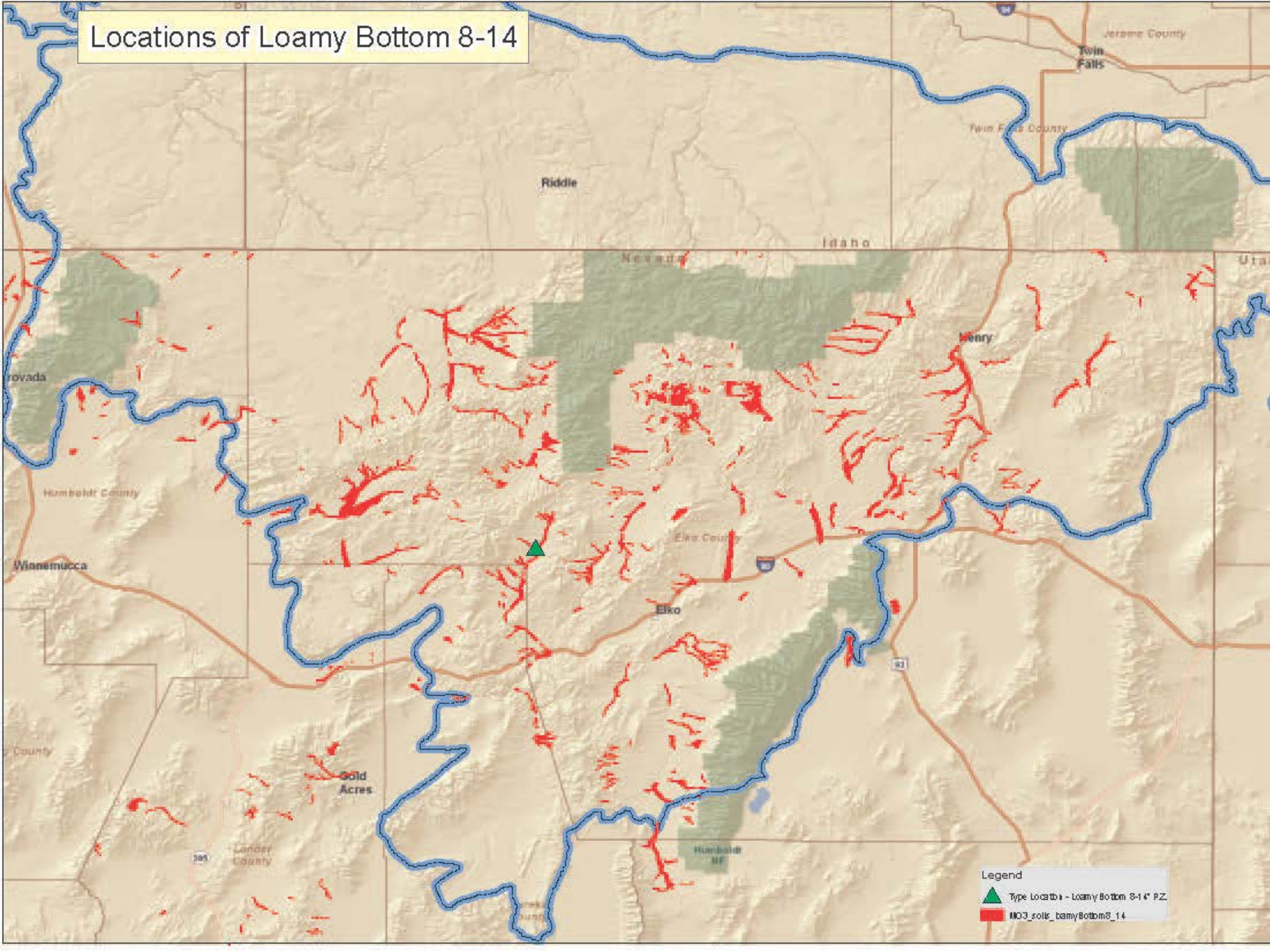
GIS Analysis – Office/Pre-field

- Determined acreage mapped of each ecological site within each MLRA
- Determined each ecological site that occurred within BLM District boundaries
- Developed Disturbance Response Group maps
- Developed ecological site maps

Disturbance Response Groups in MLRA 24



Locations of Loamy Bottom 8-14



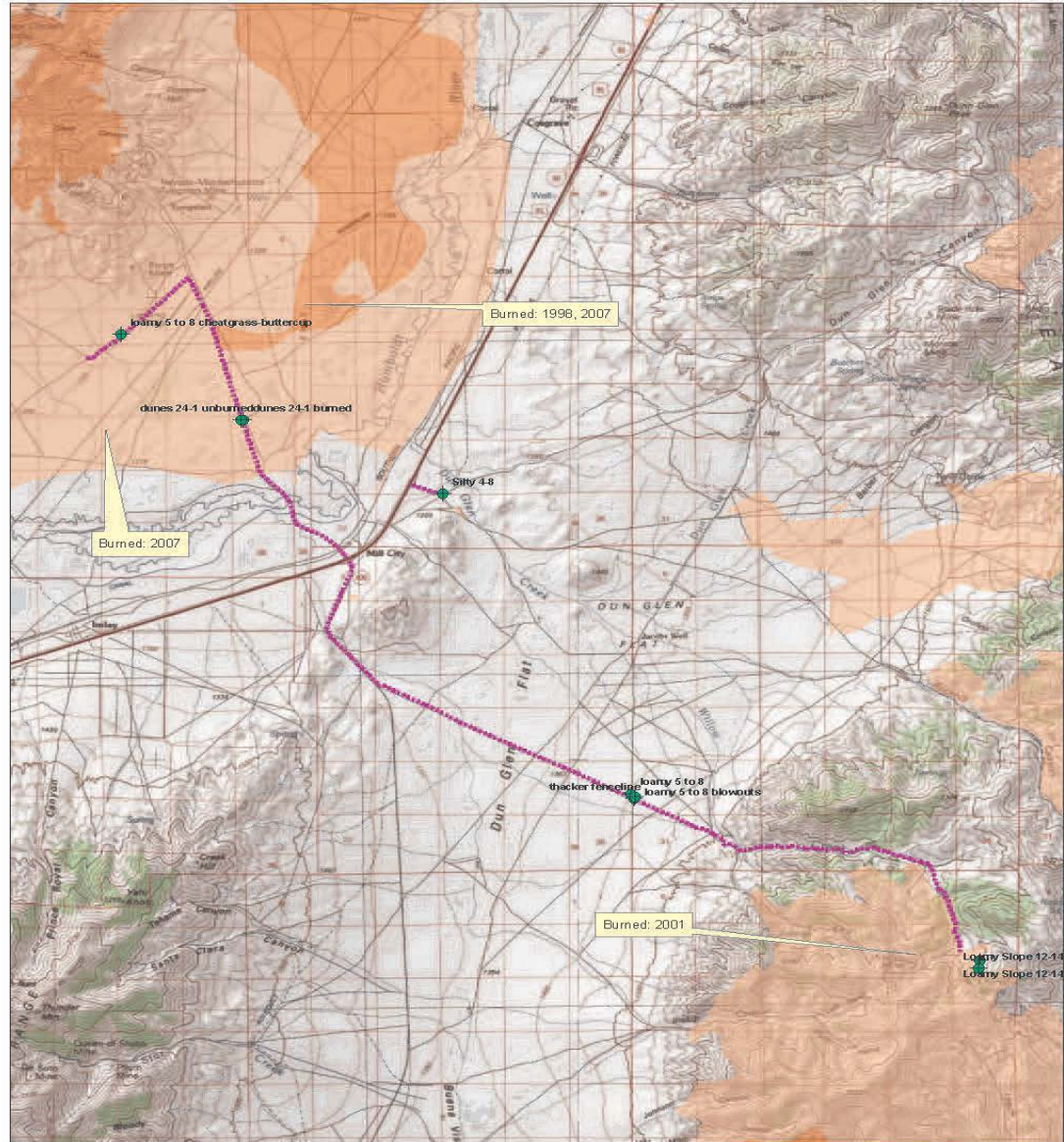
GIS Preplanning for Field Trips

- Route mapping for each field trip:
 - Select ecological site type locations
 - Select soil pedon locations
 - Wildfire areas – multiple burns
 - Ecological site locations according to the soil survey
 - Optimal routes to locations
 - Development of field maps for each vehicle and schedule of field stops






Visits to MLRA 24 State and Transition Model Sites

Original Visit: 04/26/2010

ROUTE MAP



Legend

- | | | |
|---|---|---|
|  Sites Visited June, 2010 |  One Burn |  Three Burns |
|  Sites Visited April, 2010 |  Two Burns |  Four Burns |

Project Specific Spatial Layers

- Ecological site type locations
- Soil sampling sites
- Official Soil Series Description locations
- GeoMAC remote-sensed wildfire location data
- NRCS Soils data (excerpted from the Soil Data Mart)
- BLM treatment data – brush management, prescribed burning
- UNR research data locations and information
- Sage-grouse lek locations

Other Files on Tablet

- Old range site descriptions
- Descriptions of disturbance response groups
- Soil series descriptions
- Web Soil Survey – soils and sites tabular data

Field Equipment

Panasonic CF-19 Toughbook

* Can also be used
as an umbrella



Field Equipment

- Garmin 10x Bluetooth GPS unit
- Garmin Oregon 550 - for photos and backup GPS location
- ArcMap with GPS toolbar for receiving GPS data from Garmin Bluetooth GPS unit.
- Two-way radios



Field Verification

- Navigate using the tablet and route maps for 10 minutes until flowers or shiny objects distract the lead vehicle



Field Verification

- Visited ecological site and soil type locations, wildfire and treatment areas, other disturbances (farming, railroad grades, herbivory, etc).

Range Seeding



Pinyon – Juniper Removal



Field Stops – GIS specialist

- Record GPS location on tablet
 - Elevation, slope, landform
- Verified ecological site and soil map unit ID
- Determined soil classification with a soil pit
- Recorded soil description on tablet
- As needed – verified occurrence of wildfires, other soils/sites mapped in the area, reviewed site and soil descriptions
- Photos using the Garmin Oregon 550

Field Stops – Range/Soil Scientists

- Ecological site information
- Soil pit with description and classification
- Plant species list
- Plant productivity
- Rangeland health
- Disturbances
- Photos
- LOTS of DISCUSSIONS on Soil/Site Dynamics

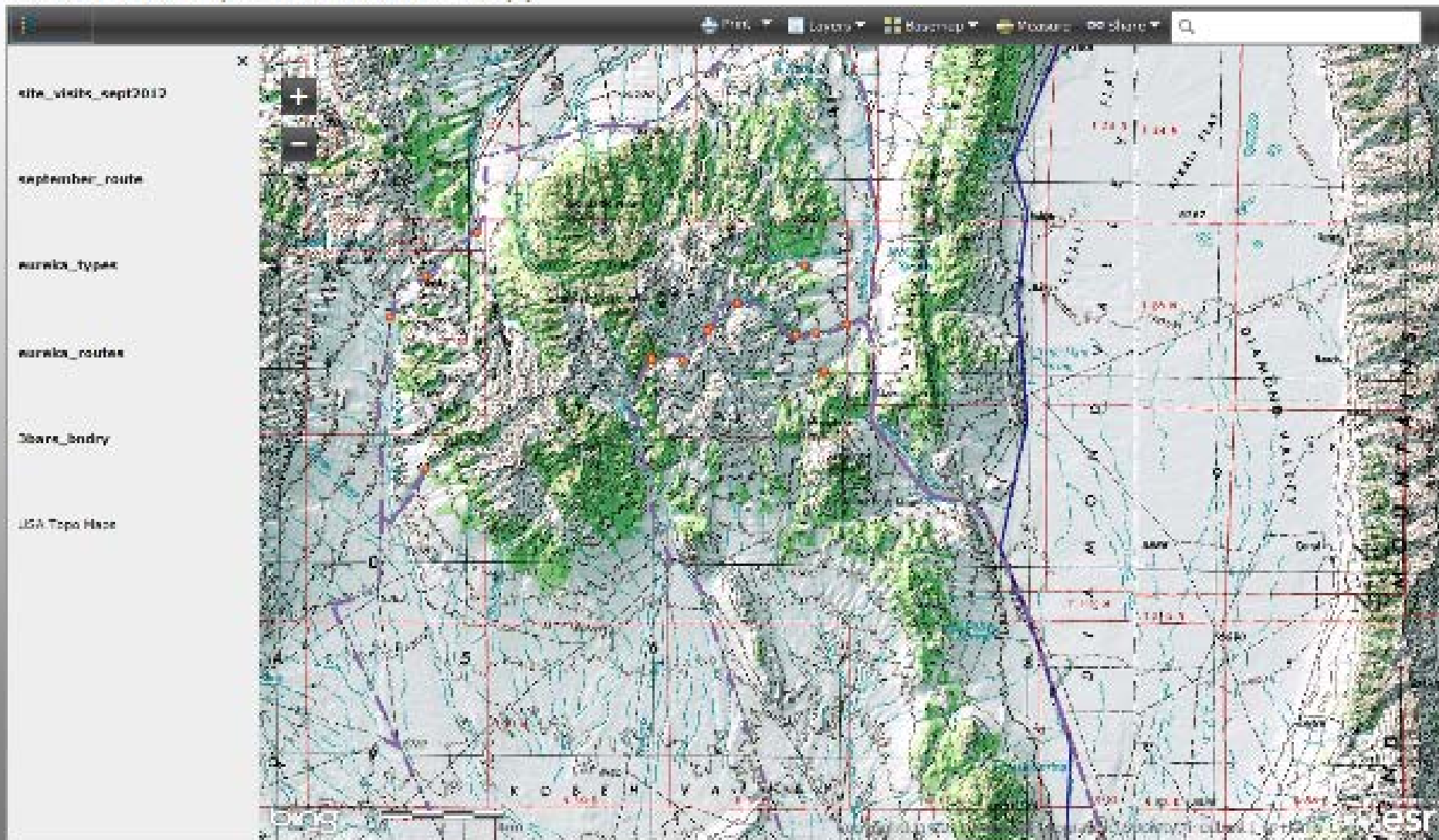
Soil Documentation



Post Field Trip

- Compile field stop shapefile and travel routes into a web mapping application
- Create an interactive map to view online
- Distribute to team through ArcGIS:
 - <http://www.arcgis.com/about/>
- Compile field notes for trip report

STM Field Trip - Eureka, NV-Copy



QUESTIONS??

