

# Inventory and Use of "Rapid" Watershed Assessments



**Lee Woolsey, Resource Conservationist, Richfield, UT**

**435-896-6441 ext 140**

**Email: [lee.woolsey@ut.usda.gov](mailto:lee.woolsey@ut.usda.gov)**

# The Natl. Strategic Plan watershed approach:

- **Focuses on natural systems is key to conserving natural resources**
- **Encourages collaborative efforts to maximize results**

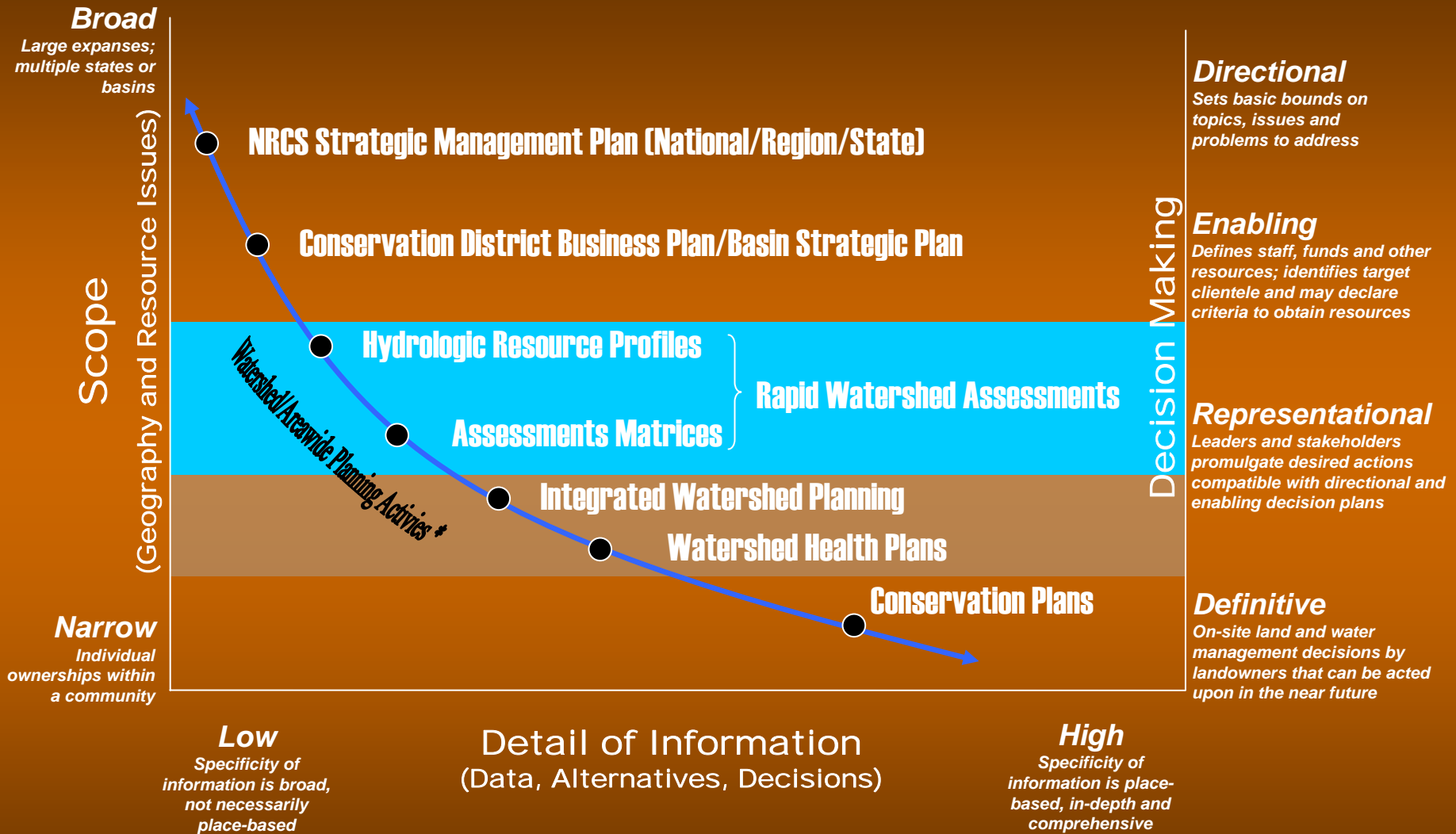
## And that NRCS will:

- **Provide services (technical assistance, technology, information, and programs) on W/S basis**
- **Use RWAs to tailor NRCS services**
- **Develop indices to measure resource health and accomplishments on W/S basis**

# What are RWA's?

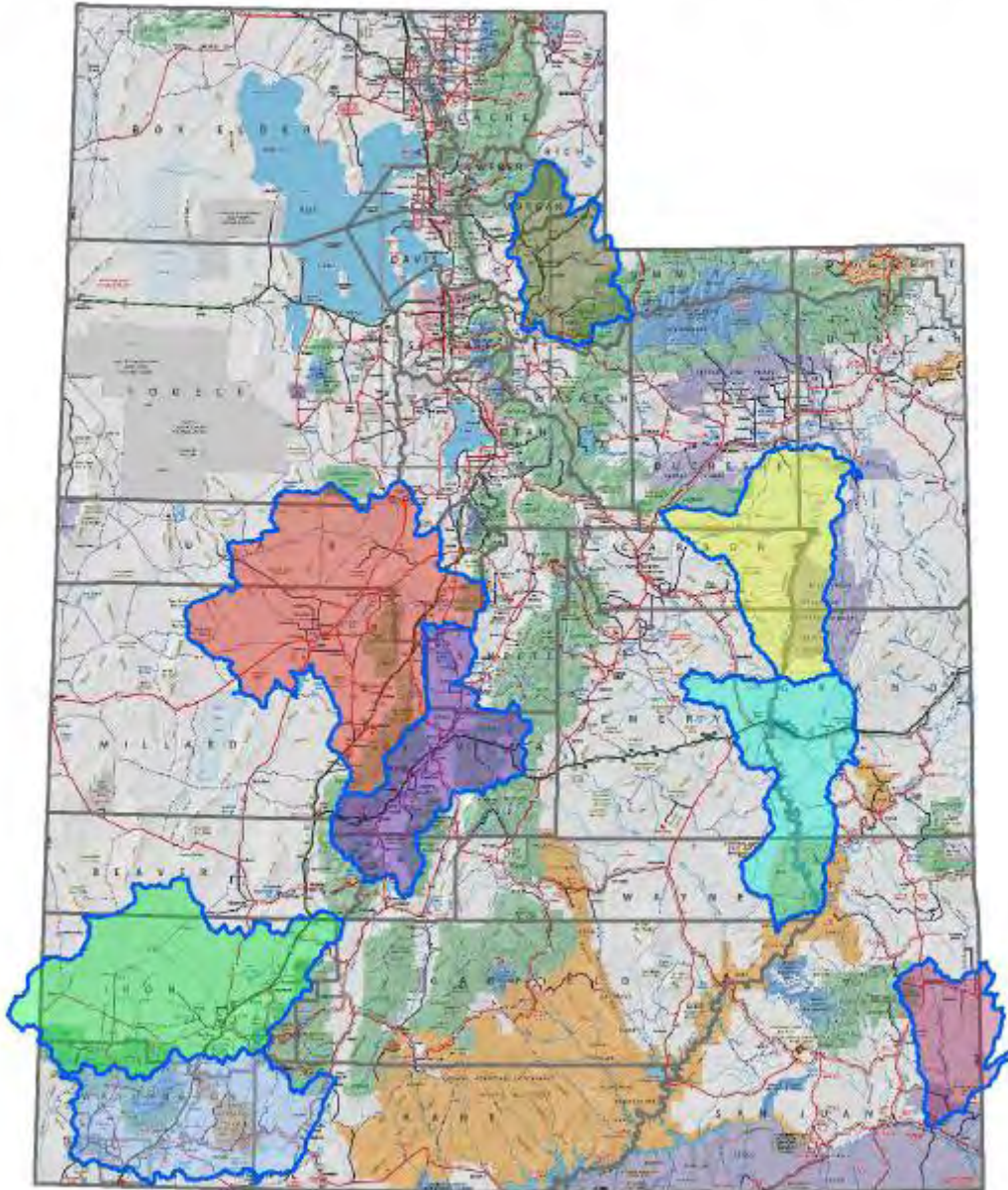
- Rapid watershed assessments provide initial estimates of where conservation investments would best address the concerns of landowners, conservation districts, and other community organizations and stakeholders. These assessments help land-owners and local leaders set priorities and determine the best actions to achieve their goals.

# NRCS Planning Continuum\*



**\* Watershed/Areawide Planning includes activities that gather resource data, analyze resource conditions, recommend alternatives and evaluate their effects.**

# Utah RWA Watersheds



Entire State  
54,320,000 acres

8 RWA Watersheds  
11,098,448 acres

Upper Virgin River  
1,397,443 acres

# The First Step is to develop a Watershed Resource Profile

- A descriptive set of data portraying the significant natural resource features of the watershed

# Watershed Resource Profile Contents

## **Introduction:**

Summary of the profile including its location, size, ownership, resource concerns and conservation status.

## **Physical Description:**

Provide information on land use, precipitation, soils, stream flows, water rights, and farms.

## **Social Amenability Towards Conservation**

Survey of land owners willingness to adopt conservation and the community's responsiveness to address social needs.

## **Resource Problems:**

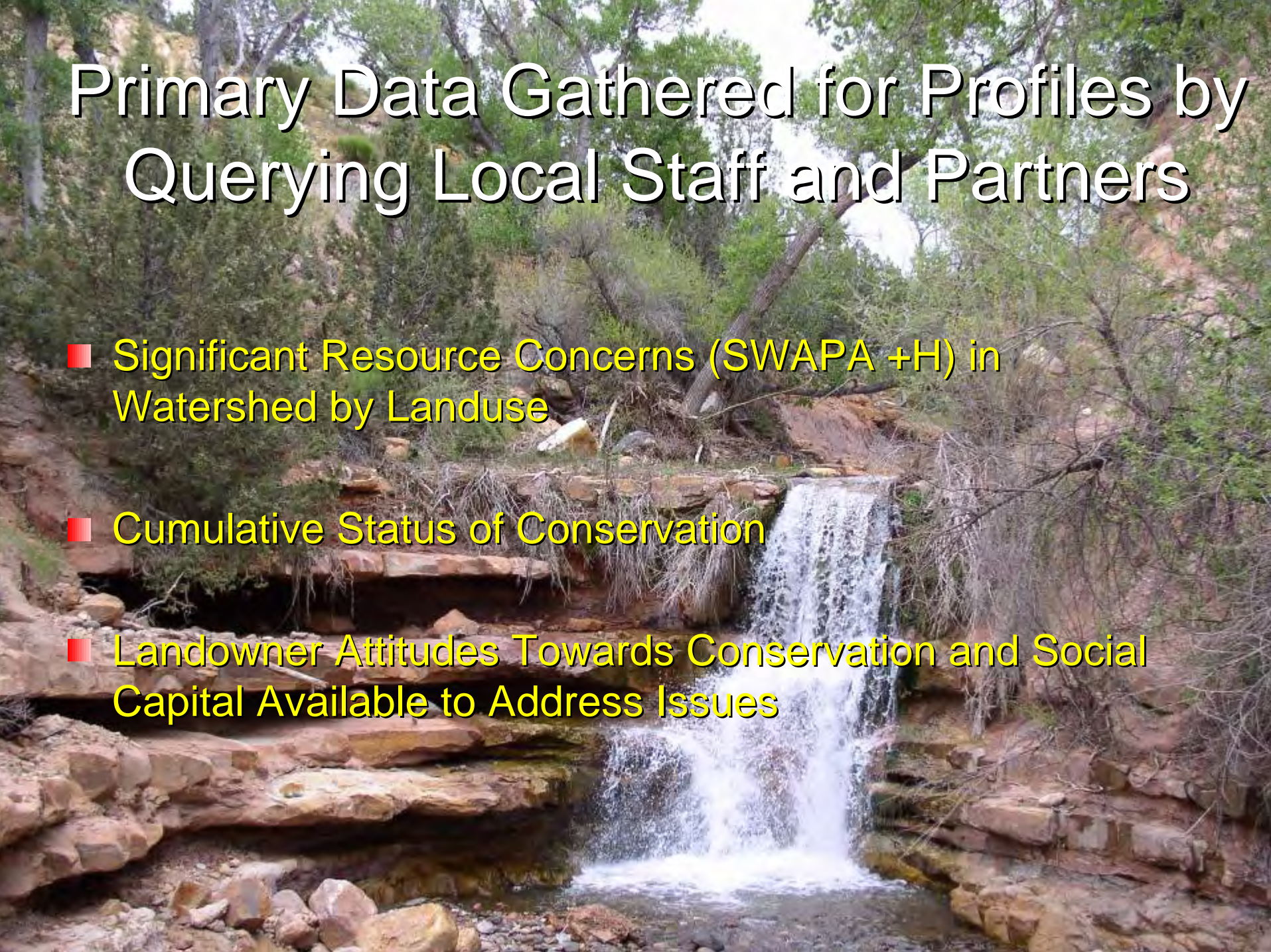
Water quality & quantity limitations, endangered species, soil erosion, and SWAPA resource concerns.

## **Conservation Progress:**

PRMS/PRS reported conservation treatments and cumulative conservation application including WRP and CRP.

# Primary Data Gathered for Profiles by Querying Local Staff and Partners


- Significant Resource Concerns (SWAPA +H) in Watershed by Landuse
- Cumulative Status of Conservation
- Landowner Attitudes Towards Conservation and Social Capital Available to Address Issues





# Watershed Profile Questions

- What are the significant resource issues and concerns facing agriculture in my state?
- Is there data available that is pertinent to these issues?
- Is the available data on a watershed basis? If not is there a way to convert it to a watershed basis?



**Public Survey/Questionnaire Results:  
Washington County  
Resource Assessment Survey Project  
July 20, 2005  
Dixie Soil Conservation District**



**Top Ranking Concerns that should be addressed immediately:**

- |    |   |     |
|----|---|-----|
| 1. | Soil Loss/Erosion on Land/Stream Channels | 72% |
| 1. | Wildfire Hazard                           | 72% |
| 2. | Loss of Open Space or Agricultural Lands  | 68% |
| 3. | Urban/suburban growth                     | 60% |
| 4. | Adequate Water Supply for Desired Uses    | 56% |
| 4. | Ground Water Quality & Quantity           | 56% |
| 5. | Storm Water Runoff & Flooding             | 48% |

## Top Ranking Concerns that should be addressed in the future:

- |    |   |     |
|----|---|-----|
| 1. | Air Quality, Including dust, Pollutants               | 60% |
| 1. | Recreational Opportunities                            | 60% |
| 2. | Plant Health, Production, and Adequate Quantities     | 48% |
| 3. | Soil contamination due to salts, chemicals, and other | 44% |
| 4. | Adequate Food, Water and Cover for Livestock          | 40% |
| 4. | Adequate Support of Historic/Prehistoric Resources    | 40% |
| 5. | Adequate Marketing for Ag Products                    | 36% |
| 5. | Adequate Energy Sources Available                     | 36% |
| 5. | Storm runoff or flooding                              | 36% |
| 5. | Soil Condition Due to Compaction or Other Changes     | 36% |



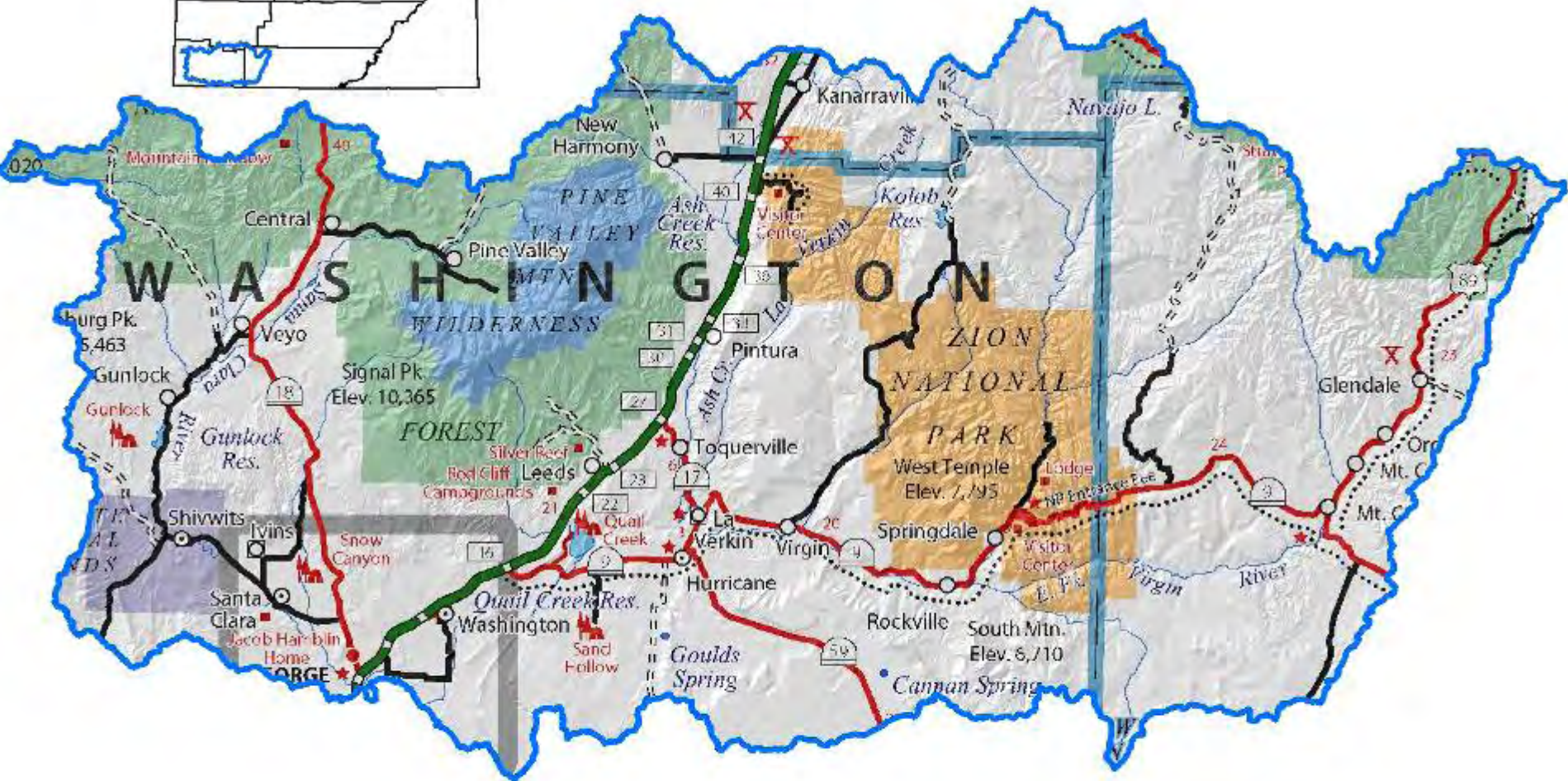
# Secondary Data Used in Profiles

- Southwest regional GAP dataset - landcover (USU)
- Precipitation (NRCS PRISM)
- Common Resource Areas (NRCS)
- Water Rights (Utah Div Water Rights)
- Stream Flow (USGS & Div Water Res)
- CAFOs (Utah Dept. of Agriculture & Food)
- 303d List (Utah Dept. of Environmental Quality-UDEQ)
- Watershed Projects (NRCS, UPCD, UDA)
- Water Related Land Use (Utah Div. Water Resources)
- Surface and Groundwater Protection Areas (UDEQ, EPA)
- Threaten and Endangered Species (USFWS, UDWR, NRCS FOTG)
- Farms Numbers (Census of Agriculture, NASS), HUC data
- Population (Census of Population, US Census Bureau)
- Conservation Progress (NRCS PRMS/PRS)







# Sources of Secondary Data

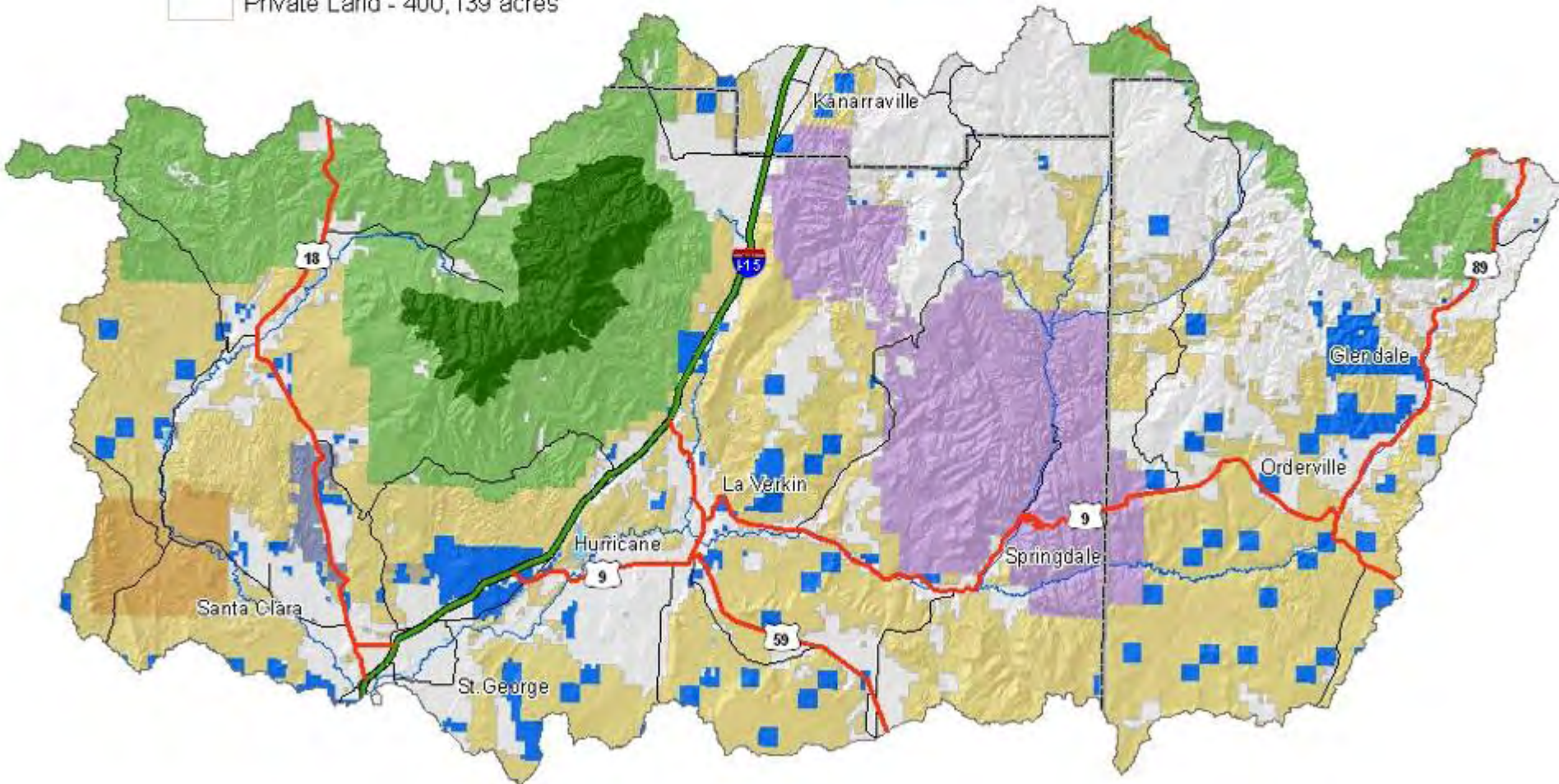
- NRCS Geodata Drives (DEM, orthophotos, climate, admin boundaries, etc.)
- NRCS Geospatial Data Gateway (<http://datagateway.nrcs.usda.gov>)
- Soils DataMart (<http://soildatamart.nrcs.usda.gov/>)
- NRCS & FSA Databases – Protracts, PRMS, PRS, CLU, Toolkit
- Climate Data: (<http://www.ocs.orst.edu/prism/>)
- USGS Land Use (<http://edc.usgs.gov/products/landcover.html>)
- USGS Water Information (<http://water.usgs.gov/>)
- BLM GIS Sites (<http://www.blm.gov/nstc/gis/GISsites.html>)
- Forest Service Plans (<http://www.reo.gov/gis/data/gisdata/index.htm0>)
- 2002 Census of Agriculture ([http://www.nass.usda.gov/Census\\_of\\_Agriculture/index.asp](http://www.nass.usda.gov/Census_of_Agriculture/index.asp))
- Census of Population (<http://factfinder.census.gov/home/saff/main.html? lang=en>)
- Surf Your Watershed (<http://www.epa.gov/surf>)
- Streamnet (<http://www.streamnet.org>)
- STORET Environmental Data (<http://epa.gov/storet>)
- State GIS Centers
  - Utah Automated Geographic Reference Center (<http://agrc.its.state.ut.us/>)

# Rapid Watershed Assessment 15010008

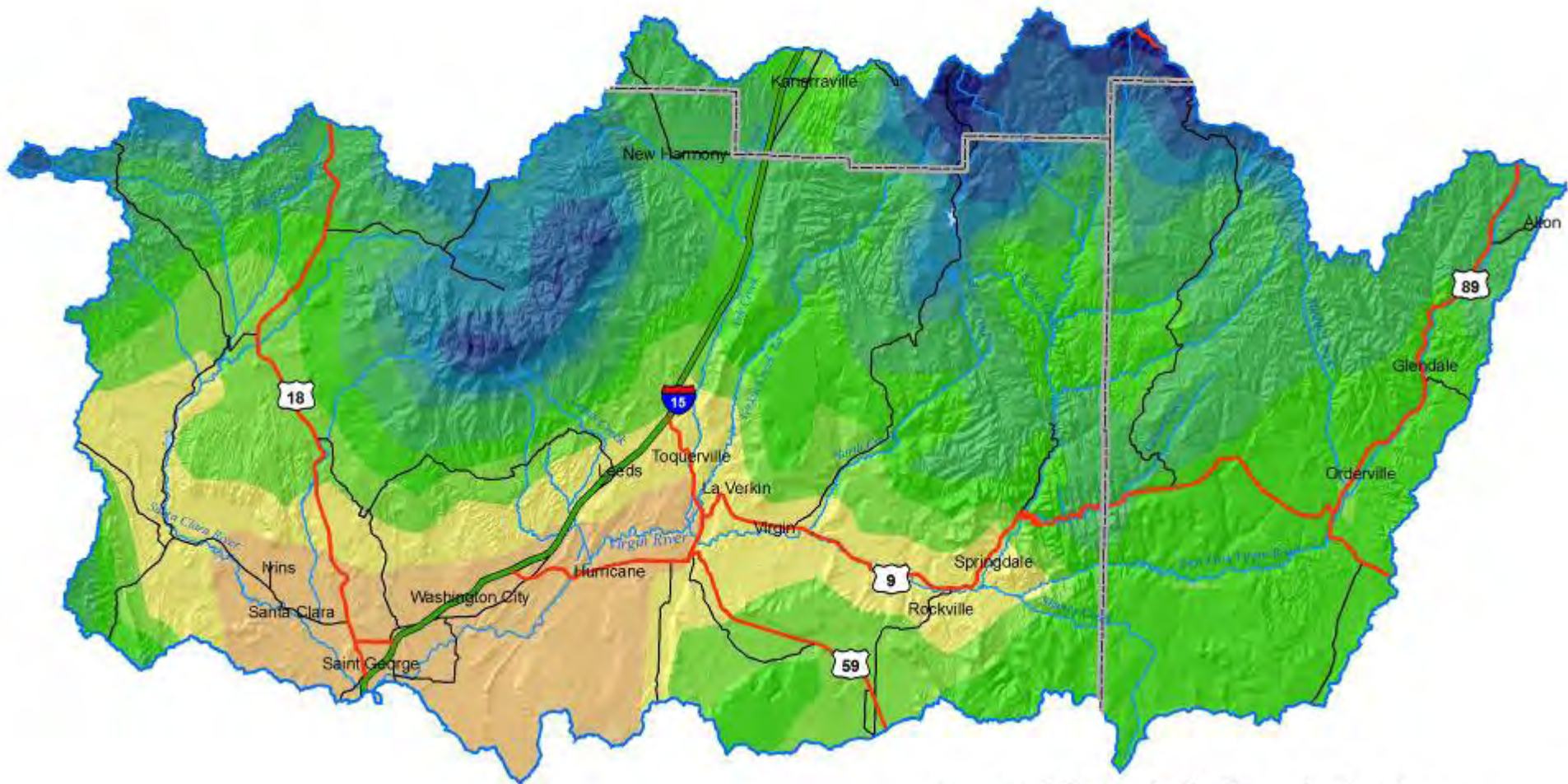


# Land Ownership

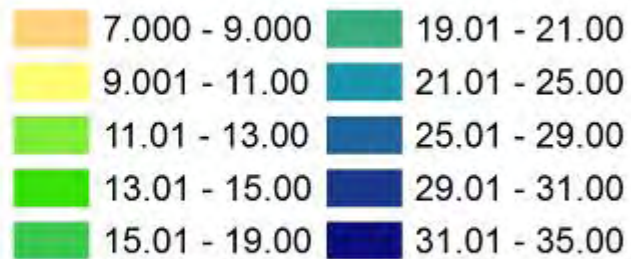
- |   |  |
|---|--|
|  State Trust Land - 71,601 acres           |  National Park Service - 144,191 acres              |
|  Bureau of Land Management - 467,942 acres |  State Parks and Recreation - 7,516 acres           |
|  US Forest Service - 225,823 acres         |  State Wildlife Reserve/Management Area - 826 acres |
|  USFS Wilderness Area - 50,237 acres       |  Other State Land - 3 acres                         |
|  Indian Reservation - 28,050 acres         |  Water - 1,113 acres                                |
|  Private Land - 400,139 acres              |  |

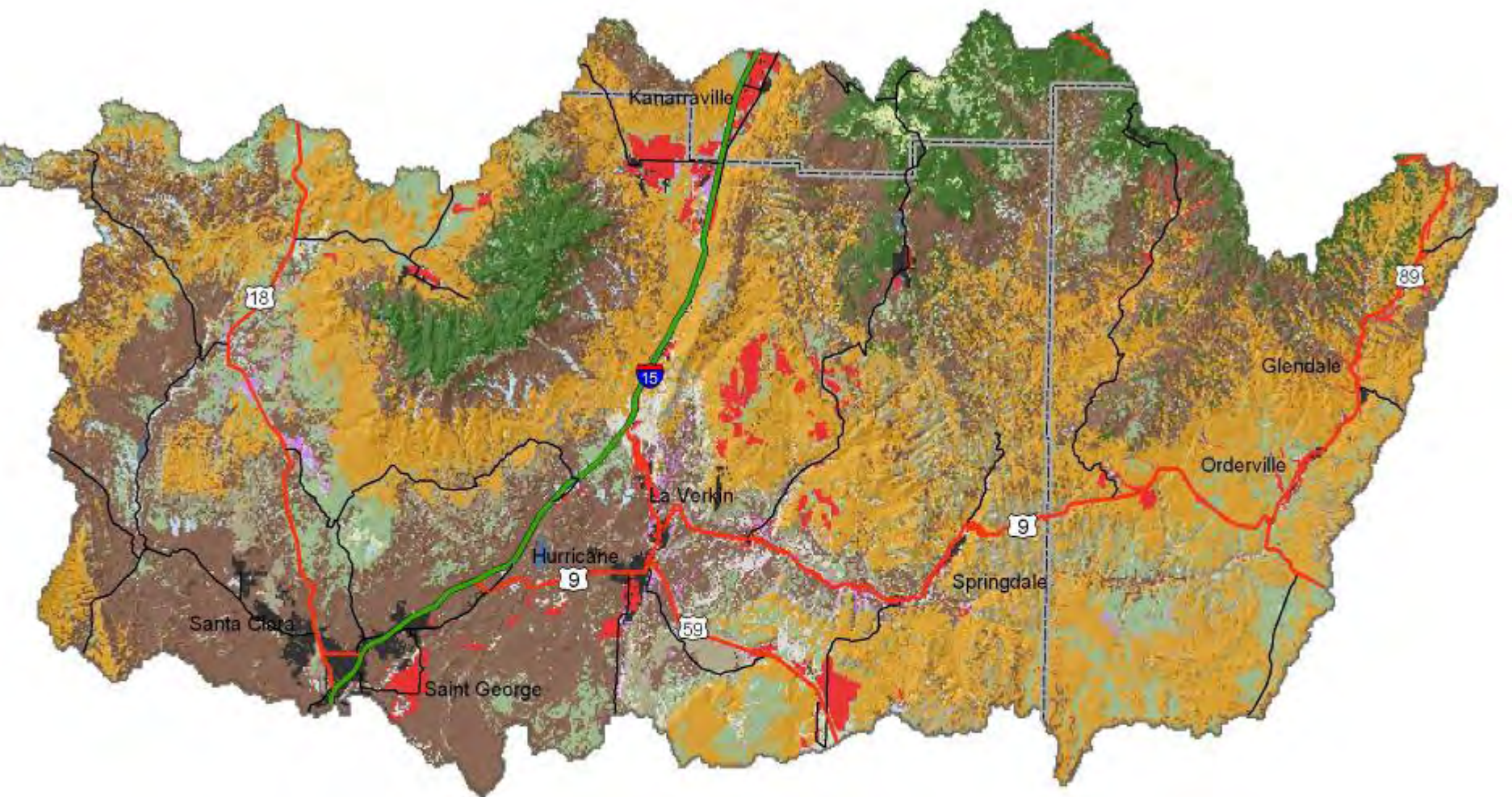






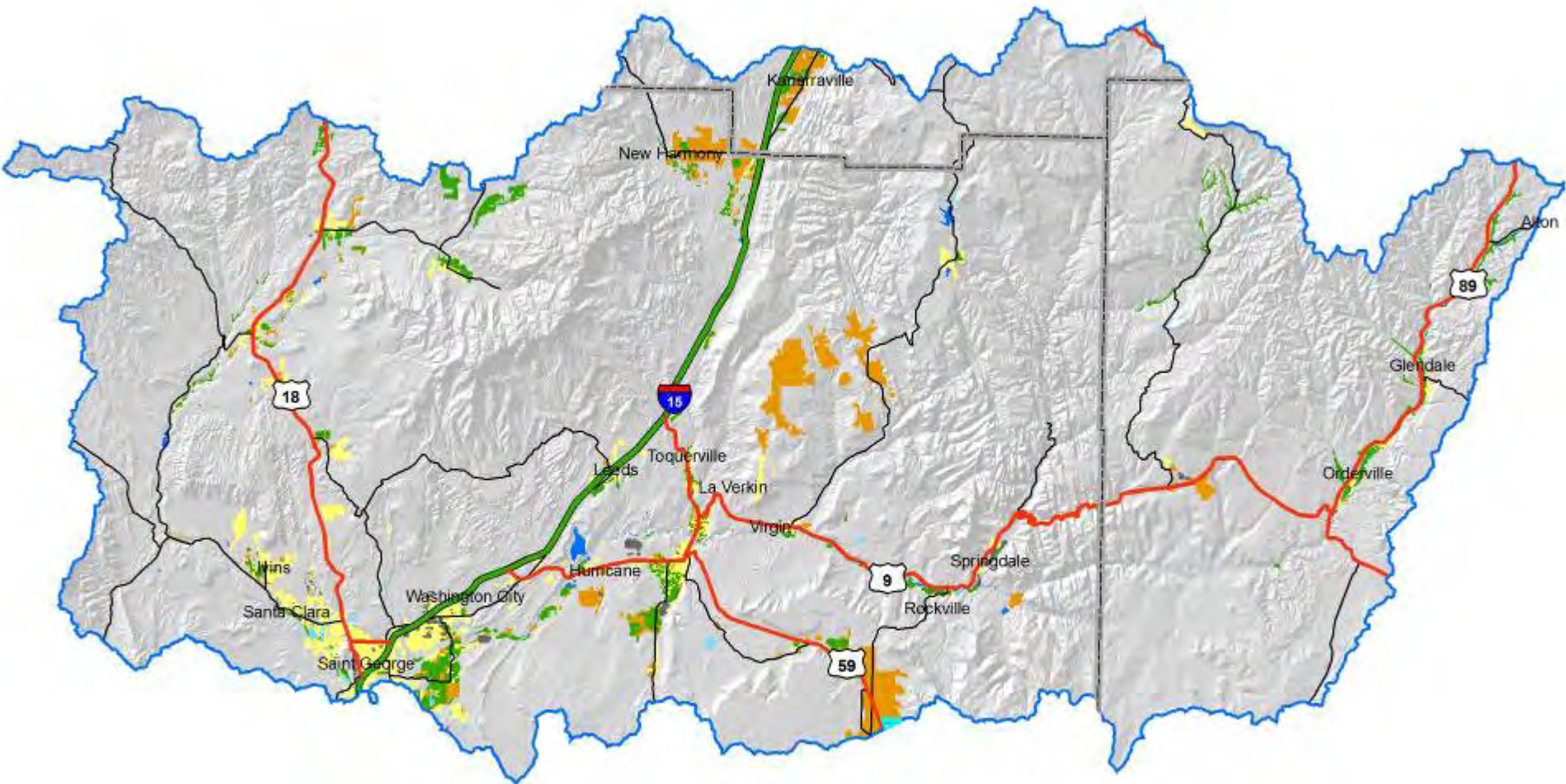
### Annual Precipitation in Inches





### Landcover

 Agriculture - 32,577 acres	 Grassland - 8,249 acres
 Developed - 19,519 acres	 Salt Desert Shrubland - 21,833 acres
 Forestland - 110,505 acres	 Invasives - 9,038 acres
 Pinyon-Juniper Woodland - 470,403 acres	 Rock\Barren\Sand Dune - 94,341 acres
 Sagebrush - 160,015 acres	 Riparian Area - 24,429 acres
 Other Shrublands - 445,140 acres	 Open Water - 1,345 acres

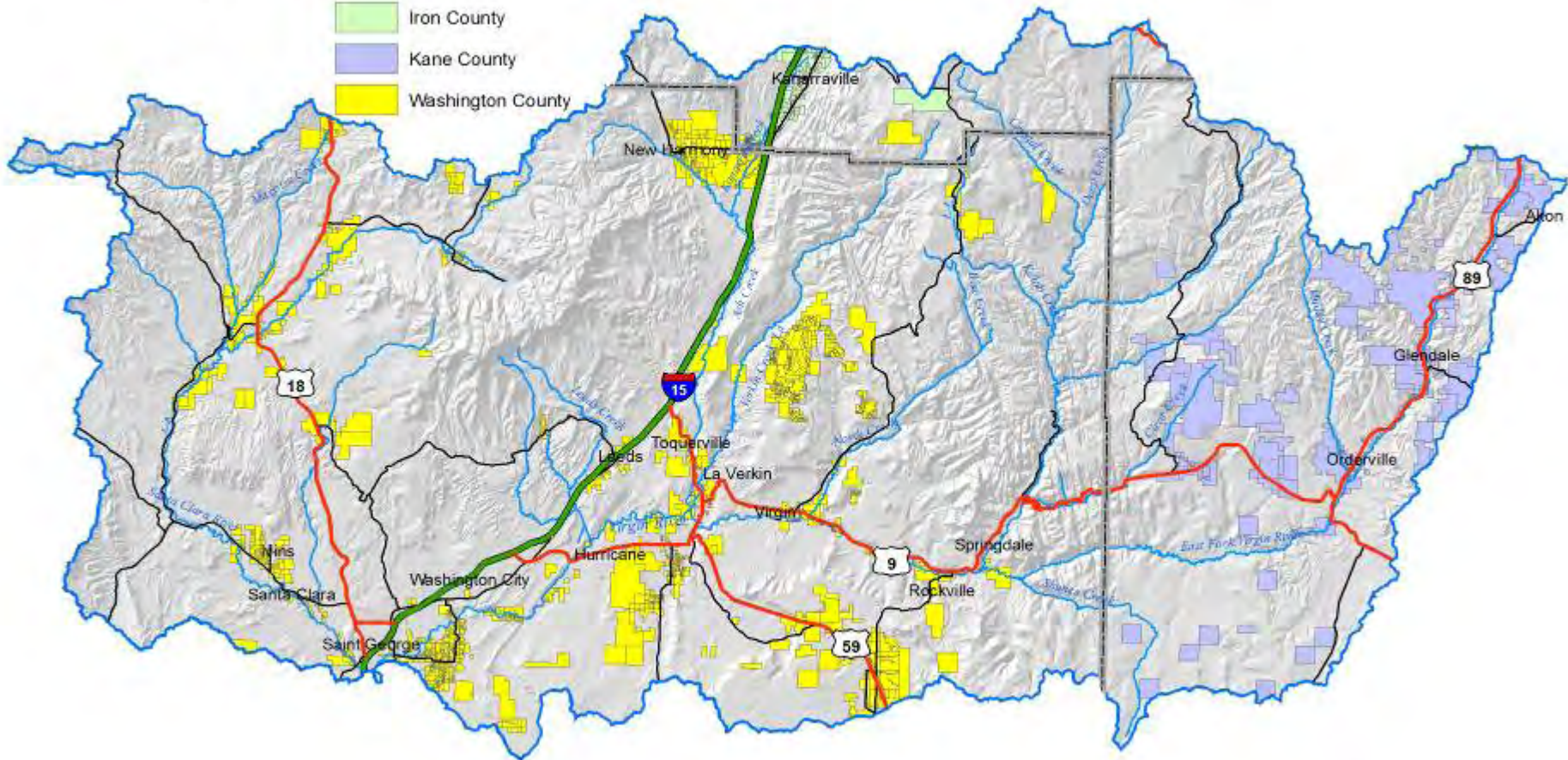


### Water Related Landuse (2001 Data)

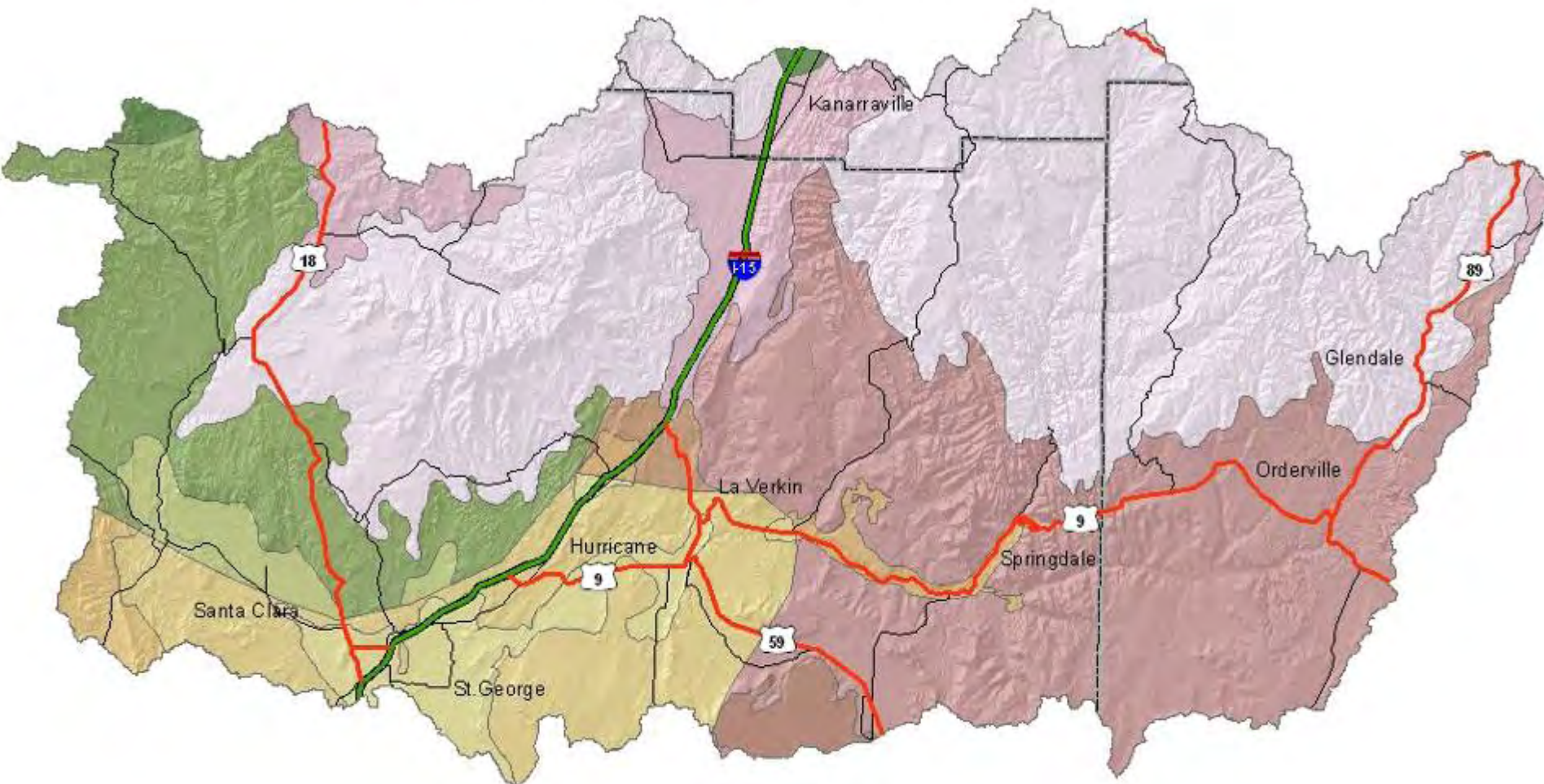
 Irrigated - 17,610 acres	 Riparian - 2,680 acres
 Non-Irrigated - 24,040 acres	 Urban - 2,420 acres
 Residential - 23,470 acres	 Water - 2,130 acres

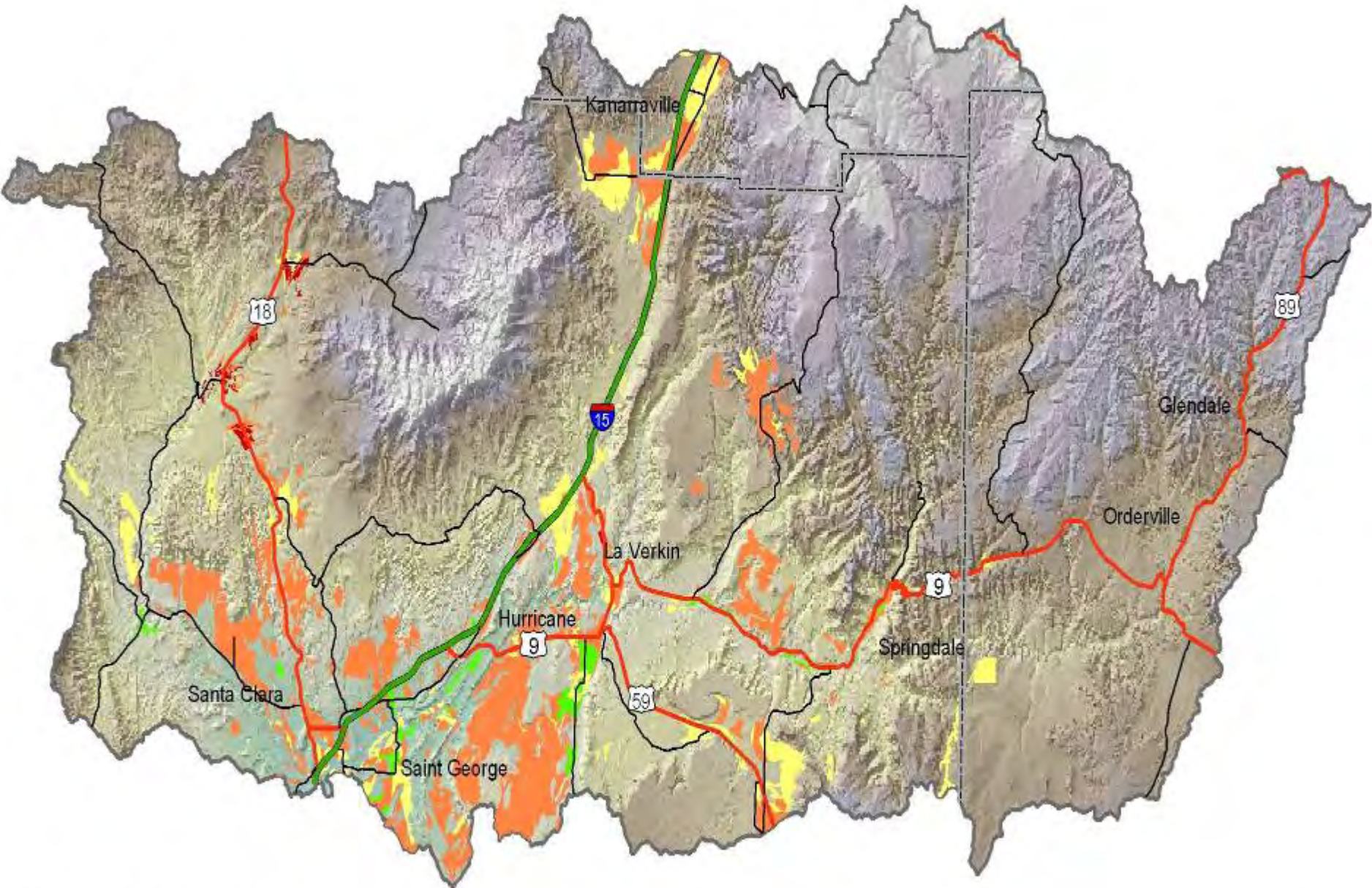
# FSA - Producer Farm Boundaries (Common Land Unit - CLU)

- Iron County
- Kane County
- Washington County



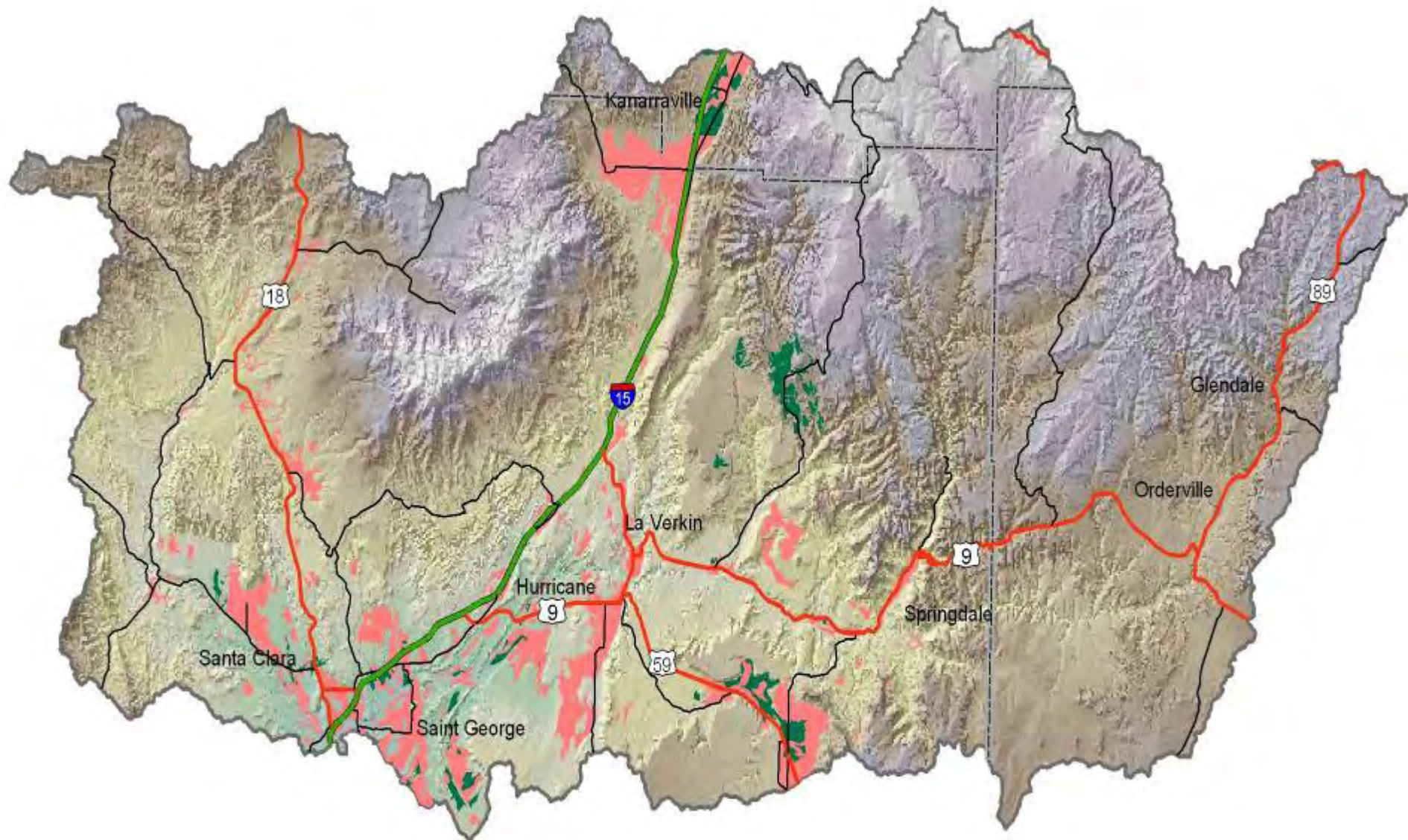
# Common Resource Area





**Land Capability Class**

- Class I - 5,344 acres
- Class II - 28,746 acres
- Class III - 76,470 acres
- Class IV - 1,675 acres

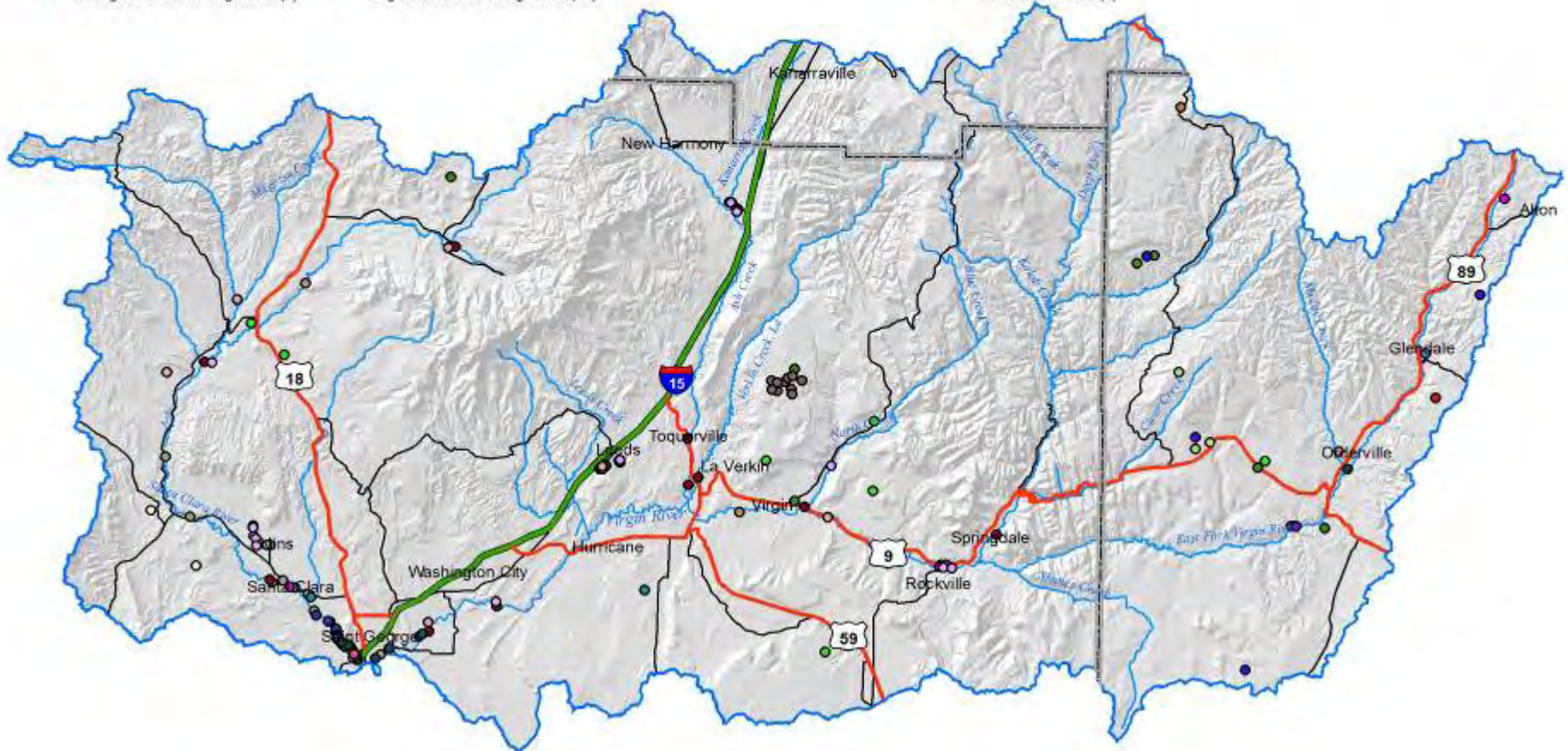


### Farmland Classification

- Farmland of statewide importance - 12,114 acres
- Prime farmland if irrigated - 65,437 acres

# NRCS Planned Practices 2005 to 2007 (no.)

- |                                   |   |                                |  |
|-----------------------------------|---|--------------------------------|--|
| ● Brush Management (20)           | ● Forest Stand Improvement (1)  | ● Land Smoothing (7)           | ○ Spring Development (3)                   |
| ● Channel Bank Vegetation (2)     | ● Irrigation Storage Reservoir (5)  | ● Nutrient Management (13)     | ● Streambank and Shoreline Protection (26) |
| ○ Channel Stabilization (1)       | ● Irrigation System, Microirrigation (1)  | ● Pasture and Hay Planting (9) | ● Tree/Shrub Establishment (1)             |
| ● Clearing and Snagging (18)      | ● Irrigation System, Sprinkler (27)   | ● Pest Management (12)         | ○ Upland Wildlife Habitat Management (7)   |
| ● Conservation Cover (10)         | ● Irrigation System, Surface and Subsurface (1)                                   | ● Pipeline (6)                 | ● Watering Facility (7)                    |
| ○ Conservation Crop Rotation (34) | ● Irrigation Water Conveyance, Pipeline, High-Pressure, Underground, Plastic (11) | ● Pond (1)                     | ● Wetland Enhancement (4)                  |
| ○ Critical Area Planting (7)      | ● Irrigation Water Conveyance, Pipeline, Low-Pressure, Underground, Plastic (1)   | ● Prescribed Grazing (19)      | ● Wetland Restoration (13)                 |
| ● Fence (12)                      | ● Irrigation Water Conveyance, Pipelines, Rigid Gated Pipeline (1)                | ● Range Planting (13)          |  |
| ● Forage Harvest Management (9)   | ○ Irrigation Water Management (23)  | ● Sediment Basin (1)           |  |





# Rapid Watershed Assessments can:

1. Provide information to develop business plans and strategies
2. Assist NRCS & others obtain technical & financial assistance
3. Provide information to help program managers & decisionmakers
4. Provide focus for forming effective partnerships
5. Lead to more detailed, comprehensive assessments and plans where needed to solve resource issues Seek and promote cooperative efforts to achieve conservation goals.
6. Facilitate the growth of market-based opportunities that encourage business and industry to invest in conservation on private lands.
7. Provide information and assistance to encourage and enable locally led, watershed-scale conservation.

[http://www.nrcs.usda.gov/about/strategicplan/StratPlan\\_read.pdf](http://www.nrcs.usda.gov/about/strategicplan/StratPlan_read.pdf)

# RWA at NRCS Utah State Level

## Use RWA's to:

- Respond to National Strategic Plan and possibly to policy in next Farm Bill.
- Encourage collaborative efforts with partners on watershed approach.
- Target areas needing more comprehensive watershed health implementation strategies.
- Provide information that can be used at local level with SWCDs, other partners and landowners.

***RWAs not looked at as being an end product.***

# RWAs at Local Level

- Use in developing Basin Strategic Plans & SWCDs Business Plans
- Revise rapid RWAs with more local input to increase stakeholder involvement & support.
- Integrate RWA with other watershed scale efforts.
- Assess local community visions for their watersheds
- Prioritize local provision of NRCS services, programs and technical assistance

12/02/2004

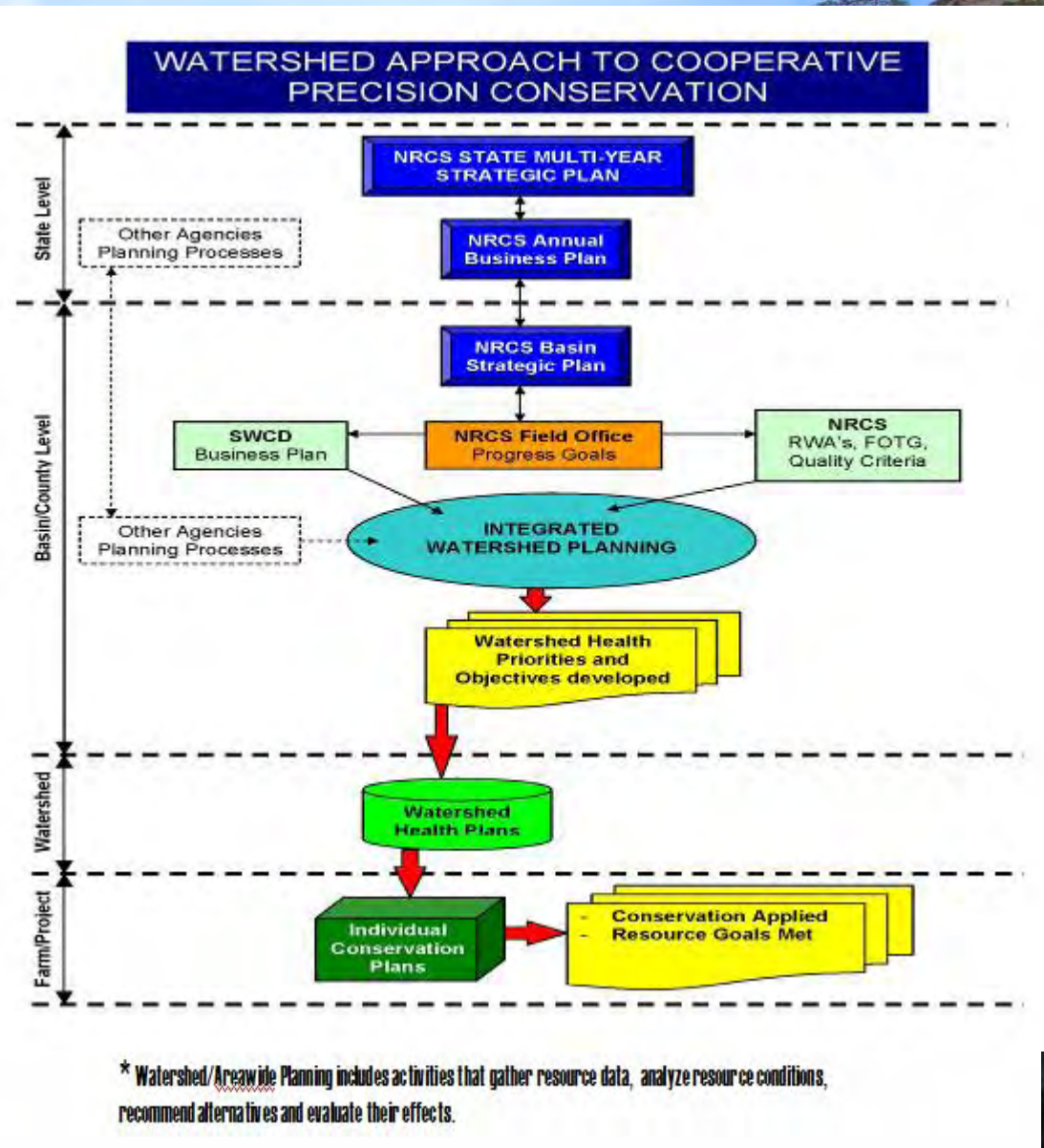
# **Rapid Watershed Assessments do not:**

- Address cumulative effects**
- Consider infrastructure needs**
- Establish water allocations**
- Set requirements for meeting water quality standards**
- Satisfy requirements under NEPA or the Endangered Species Act**
- Monitor conservation implementation progress**



*The next step...*

INTEGRATED  
WATERSHED  
PLANNING and  
Watershed Health  
Plans  
*through  
collaboration*



# Any Questions?



## THE UNRULY RIO VIRGIN RIVER



IN THE VERY EARLY HISTORY OF THIS AREA THE RIVER WAS CALLED THE RIO VERGEN. LATER THE SPELLING WAS CHANGED TO VIRGEN AND THEN TO VIRGIN AS IT IS KNOWN TODAY. IT HAS BEEN A BLESSING AND CURSE TO PEOPLE WHO SETTLED THIS AREA IN MAY OF 1857 WHEN THE TOWN OF WASHINGTON WAS ESTABLISHED. THESE EARLY PIONEERS WERE CALLED BY BRIGHAM YOUNG TO COME AND GROW COTTON. THIS WAS THE BEGINNING OF THE COTTON MISSION, ALSO KNOWN AS THE SOUTHERN MISSION. THIRTY-EIGHT FAMILIES CAME IN 1857, ALL SELECTED BECAUSE THEY WERE SOUTHERNERS. BRIGHAM YOUNG KNEW THEY HAD GROWN COTTON OR AT LEAST HAD SEEN IT GROWN. THERE WAS A LOT OF WATER AROUND THE CITY THAT CAME FROM SPRINGS BUT NOT A LOT OF FLAT FARMABLE LAND. THEY KNEW THEY HAD TO CONTROL THE VIRGIN SO THAT WATER COULD BE DIVERTED ONTO THE FLAT LAND SOUTH OF THE RIVER KNOWN AS THE WASHINGTON FIELDS TO PRODUCE THE CROPS THAT WERE NEEDED. IT APPEARED TO BE RELATIVELY EASY TO DIVERT THIS WATER SINCE THE WATER NEEDED TO BE RAISED ONLY A FEW FEET. JUST NORTH OF SHINOB-KIAB MESA (GOD'S MOUNTAIN) THEY BUILT A BRUSH DAM TO DIVERT THIS WATER INTO A CANAL WHICH THEN CARRIED IT TO THE VARIOUS FARMS ALONG ITS PATH SUPPLYING WATER FOR THE CROPS. THE DAM WASHED OUT TWICE THE FIRST YEAR THEY WERE HERE, TWICE MORE IN '58, THREE TIMES IN '59 AND AT LEAST ONCE EVERY YEAR THEREAFTER UNTIL THE WASHINGTON FIELDS DAM WAS BUILT IN 1891. THIS WAS AN EXTREMELY DIFFICULT TIME AND UNDERTAKING FOR THESE EARLY PIONEERS. THE WATER WAS COLD AND SOME HAD TO STAND IN IT WAIST DEEP FOR HOURS AS THEY PUT BRUSH AND ROCKS IN THE RIVER. THE HARDSHIPS OF WORKING ON THE DAM, PLUS POOR FOOD AND THE RAMPANT SPREAD OF MALARIA ALMOST CAUSED THE COTTON MISSION TO FAIL. THE PEOPLE'S COMPLEXIONS ACTUALLY HAD A BLUISH CAST BECAUSE OF THE EFFECTS OF MALARIA. THE RIVER WAS FULL OF QUICKSAND WHICH CAUSED THE DAMS TO WASH OUT WHEN THE EXCESS WATER SPILLED OVER THE SPILLWAY, AND QUICKLY WASHED AWAY THE SAND THE DAM WAS BUILT ON. IN 1886 THEY STARTED A PILE DAM THAT WAS TO SOLVE ALL THEIR PROBLEMS. FOUR ROWS OF WOODEN PILES WERE DRIVEN INTO THE RIVER TO FORM AN ANCHOR ON WHICH THE PILE DAM COULD BE BUILT. IN 1889 IT WAS COMPLETED AND WATER WAS DIVERTED ONTO THE FARMS. ON DECEMBER 7, 1889, A FLOOD CAME DOWN THE RIVER AND WASHED OUT HALF OF THE DAM. THEY CALLED A MEETING TO SOLVE THIS PROBLEM AND ON THE SAME DAY, DECEMBER 15, ANOTHER FLOOD CAME DOWN THE RIVER AND WASHED THE DAM COMPLETELY AWAY. THE PEOPLE WERE DISCOURAGED AND DEVASTATED. HALF OF THE POPULATION LEFT THE AREA. HALF OF THE HOMES WERE VACANT. THOSE REMAINING WERE TOO POOR TO LEAVE. IT WAS DECIDED TO FIND A NEW AND BETTER LOCATION FOR A DAM. JOHN P. CHIDESTER WAS THE ENGINEER FOR BOTH OF THESE DAMS AND WAS A LONG-TIME RESIDENT OF WASHINGTON. IT WAS COMPLETED IN 1891 AND ALL OF THE NEW CANAL WAS FINISHED IN 1893. FIVE TUNNELS (WHITEHEAD-MORRIS-CLARK, SCHLAPPI, BEARD, PICKET, AND SPROUL) WERE DUG ALONG THE COURSE OF THIS CANAL USING A STAR DRILL, SINGLE JACK, SHOVEL AND WHEELBARROW. THIS DAM MADE IT POSSIBLE TO FARM MORE THAN TWICE THE AMOUNT OF LAND THAN THE PREVIOUS DAMS. THIS DAM TAMED THE UNRULY RIO VIRGIN. THE RIVER WENT FROM A CURSE TO A BLESSING BY PROVIDING WATER FOR THE FARMS INSURING THE SUCCESS OF THIS AREA.

ERECTED BY THE CITIZENS OF WASHINGTON CITY AND THE WASHINGTON CITY HISTORICAL SOCIETY 2000