

Improving Utah's Water Quality

Virgin/Santa Clara River Watershed



UtahStateUniversity
WATER QUALITY EXTENSION

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MAJOR WATERBODIES

Santa Clara River
Virgin River
Kolob Reservoir
Quail Creek Reservoir
Sand Hollow Reservoir
Baker Dam Reservoir

MAJOR CITIES

St. George
Santa Clara
Virgin

MAJOR LAND USES

Agricultural
Tribal lands
Urban
Federal lands

LOCAL WATER QUALITY ISSUES

Temperature
Dissolved solids
Salinity
Selenium

LOCAL CONTACT:

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Conservancy District
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Watershed Description:

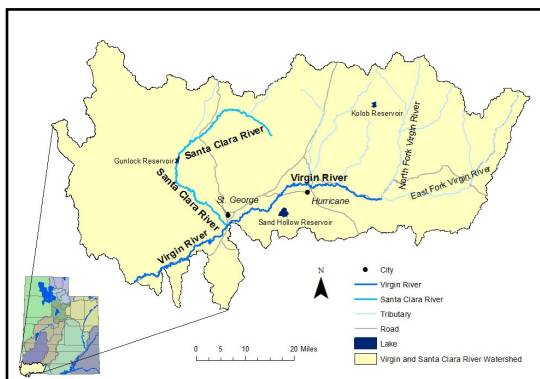
Many people know the Virgin River from the stunning landscape it carves through Zion National Park; however, this is only a small portion of the Virgin River Watershed. The Virgin River flows 162 miles, collecting water from 5,900 square miles of land in southwestern Utah. The river is formed by the confluence of the East Fork Virgin River and the North Fork Virgin River, both arising in the Dixie National Forest. The river flows through Zion National Park and makes its way to the southwestern corner of Utah through St. George.

The Virgin River watershed is highly diverse. To the southwest, mesas, cliffs, mountain ranges, narrow canyons, and wide valleys dominate the landscape, while the northwest area is predominantly mountainous. Elevations reach 10,500 feet in the headwaters of Deep Creek and plunge to 2,100 feet where the Virgin River crosses into Arizona.



This diverse landscape supports a large variety of wildlife, including the Mojave Desert tortoise, Utah's only native tortoise. The river and its tributaries provide food, shelter, and a migratory route for many species.

Because they are desert streams, the quantity and quality of both the Virgin and Santa Clara Rivers vary considerably throughout the year. Segments of the Virgin River are naturally quite salty because of numerous hot springs and soluble minerals in the soils. One of these springs, Pah Tempe hot springs, contains 10,000 parts per million of dissolved solids and water temperatures that exceed 42° C. This natural source led to site specific water quality standards for sections of the Virgin River.



The Virgin and Santa Clara Rivers both experienced severe flooding in January 2005 and December 2010. Flooding is a problem in this region when there are periods of heavy localized rainfall. Flash floods may result and incur millions of dollars of damage to structures along river banks.



Virgin/Santa Clara River Water Quality Improvement

Project Description:

A watershed management plan for the Virgin River was completed in 2004, which outlines water quality impairments and determines pollution load reductions to meet water quality standards. In addition, river stability and erosion studies were completed for the Virgin River, Santa Clara River, and Fort Pearce Wash following the devastating flooding in 2005. These studies were used as the basis for municipal floodplain development ordinances in St. George, Washington, and Santa Clara. The following activities are addressing water quality and other river issues:

- Over 100 property owners, municipal officials, regulatory authority representatives, and other citizens were trained on principles of stream bank stability and restoration at three annual stream bank restoration workshops.
- Ongoing removal of invasive tamarisk, or salt cedar, from the floodplains in an effort to restore river function, minimize flooding and erosion risk, prevent fires, improve habitat, and improve water quality conditions. Hundreds of acres of land have been cleared of tamarisk. Zion National Park has completely eradicated this invasive plant. Tamarisk transpires large amounts of water and can potentially dry up a water source. In addition, it excretes excess salt into the soil, which can increase salinity in nearby rivers. Removing these trees from the watershed can increase both the quantity and the quality of water.
- Five major irrigation systems have been converted from open canals to piped delivery systems. This effort is aimed at decreasing the amount of nutrients and salts in the river via irrigation return flows.



Partners

Utah State University Extension
Utah Association of Conservation Districts
U.S. Bureau of Land Management
U.S. Natural Resources Conservation Service
U.S. Forest Service
Utah Division of Water Quality
Utah Division of Water Resources
Utah Division of Water Rights
Utah Department of Natural Resources
Shivwits Band Paiute Indian Tribe
Dixie National Forest
Washington County Water Conservancy District
Kane County Water Conservancy District
County and City governments

Related Projects

Stream Stability and Restoration
Pinyon and Juniper Tree Removal
Tamarisk Removal
Education
Annual Washington County Water Fair
Stormwater Management
Livestock Management

References

UTDEQ, 2004, TMDL Water Quality Study of the Virgin River Watershed .
<http://www.waterquality.utah.gov/TMDL/approvedtmdls.htm>

Funding

EPA 319 funding
Local landowners and partners
Utah State nonpoint source funds

To learn how you can participate or lend your support to Utah community water quality projects, please contact your local conservation district or county agent.