

Voluntary Groundwater Management & Enhancement Plan for Scott Valley Advisory Committee approved 10-22-12

Prepared by the Scott Valley Groundwater Advisory Committee

Approved by the Siskiyou County Board of Supervisors

_____, 2012

Overview

Plan Purpose: To provide a voluntary, locally driven direction for the management and enhancement of the Scott Valley groundwater basin that is mutually beneficial for the community and the environment. This strategy will be an ongoing effort and be reviewed periodically.

Goal #1: Keep the control of groundwater supply within Siskiyou County, protect property rights and Scott Valley's agricultural economy, and develop solutions to resolving environmental-related issues for the Scott Valley aquifer .

Goal #2: Seek ability to implement plan, which will take time and money, skills and commitment.

Basin Management Objectives:

1. Develop improved understanding of how groundwater and surface water behave.
2. Continue to maintain the long-term viability of the aquifer (which has never been in an overdraft condition).
3. Reduce the conflict between groundwater use and other uses of water; scientifically validate the effect of groundwater use on salmon and steelhead use of the Scott River and its tributaries.
4. Improve public understanding of how agriculture uses wells and applies irrigation to local crops.
5. Identify non-agricultural water demands.
6. Identify groundwater use efficiency and enhancement projects and implement through grants, agencies and the community.

"Overdraft" definition: Groundwater overdraft is defined as the condition of a groundwater basin or subbasin in which the amount of water withdrawn by pumping exceeds the amount of water that recharges the basin over a period of years, during which the water supply conditions approximate average conditions. Overdraft can be characterized by groundwater levels that decline over a period of years and never fully recover, even in wet years. (DWR Bulletin 118)

1. Background

1.1 Groundwater Rights

All water rights are usufructuary; that is, the right pertains to the use of the water, and not to ownership of the "corpus" or body of the water itself. In California, most surface water

Voluntary Groundwater Management & Enhancement Plan for Scott Valley

Advisory Committee approved 10-22-12

rights are riparian or appropriative. Riparian rights are considered "part and parcel" of land ownership and are real property. To qualify, a parcel of land generally must be contiguous to the stream. Riparian rights are "correlative" - that is, shared equally by all riparian owners on a stream. The individual riparian water use right is not "fixed" in quantity, but is shared equally as available and can be put to beneficial use. In addition, the use of water by a riparian user must be consistent with the rights of all other owners of land riparian to the same supply.

Appropriative water rights are acquired through possession and control of water by diversion, application of the water and continued beneficial use. Those who were "first in time, are first in right." (Fisheries were denied an appropriative right in the Scott River Adjudication because, under historic water law, they could not take discrete control of the water.)

Groundwater is treated similarly to riparian rights. All overlying owners of a groundwater basin share the right to use groundwater according to the "correlative rights doctrine."

1.2 Scott River Decree (see also Appendix A)

The Scott River Stream System is an adjudicated groundwater basin. In 1980, the Superior Court of Siskiyou County decided, upon recommendation of the State Water Resources Control Board (SWRCB), the water rights of surface water users as well as groundwater users in the interconnected groundwater zone under the Scott River Adjudication Decree. The California Water Code first had to be changed by the Legislature (section 2500.5) to declare that groundwater supplies which are interconnected with the Scott River are part of the "stream system" as a "foundation for a fair and effective judgment" of rights to the water of the Scott River. No other stream system in California has such a legal determination for similar hydrologic interconnections.

The Decree has several sections pertaining to interconnected groundwater, which was defined as "all groundwater so closely and freely connected with the surface flow in the Scott River that any extraction of such ground water causes a reduction in the surface flow in the Scott River prior to the end of a current irrigation season." A map delineates this zone of varying width in the reach between Clarks Creek and Meamber Bridge. [CDWR 2004; SWRCB 1980]

1.3 Past Studies

In 1953, a special groundwater investigation of Scott Valley was begun by the U.S. Geological Survey (Mack 1958). Field work confirmed descriptions of the geology and groundwater features, with the results providing the most comprehensive study of the aquifer to date. A decade later, the California Dept. of Water Resources (CDWR) explored the potential of groundwater development in Scott Valley to provide irrigation to existing and new lands (CDWR 1964). Their report concluded that managing the groundwater

Voluntary Groundwater Management & Enhancement Plan for Scott Valley

Advisory Committee approved 10-22-12

supply would cost less than developing surface storage projects. As background for the Scott River Decree, the State Water Board investigated the water supply and use of water in the early 1970s (SWRCB 1974) as well as the hydrology and geology of the sub-basin (SWRCB 1975). In a 1991 report, CDWR analyzed opportunities to augment streamflows in the Scott River during periods of inadequate fishery flows, at the request of the Klamath Basin Fisheries Task Force. Their study provided an updated groundwater contour map of Scott Valley and recommended further study of the surface flow-groundwater relationship, as well as an expansion of groundwater monitoring. The defining physical features of the Scott River Valley Groundwater Basin, classified as Basin Number 1-5, are summarized in the CDWR Bulletin 118 – *California's Groundwater*.

1.4 Regulatory Setting

Scott Valley's groundwater is the object of several regulatory approaches by state and federal agencies. In 2006, the North Coast Regional Water Quality Control Board (RWB) incorporated the "Action Plan for the Scott River Watershed Sediment and Water Temperature Total Maximum Daily Loads" (TMDL) into the *Water Quality Control Plan for the North Coast Region*. The TMDL's temperature model found that groundwater inflows may be a "primary driver" of stream temperatures in Scott Valley. To help address the issue of water temperature excessive to the needs of cold water fisheries, one of the plan's tasks was to have Siskiyou County prepare a groundwater study plan for the Scott Valley groundwater basin (see below.) More restrictive TMDL compliance actions do not appear to be forthcoming by the RWB as long as adequate progress is being made on the Action Plan. The RWB has no authority to regulate groundwater use, but it can set water quality targets which could influence how groundwater is managed.

California's Fish & Game Code and Endangered Species Act (CESA) rules and regulations are becoming focused on providing sufficient streamflow for salmon and steelhead, with an emphasis on the threatened coho salmon. Federally, the ESA as administered by NOAA's National Marine Fisheries Service (NMFS) is also seen as a potential tool to possibly regulate "take" of the threatened coho species through water use. Groundwater is implied as affecting streamflows in the Scott River sub-basin (NOAA 2012).

A lawsuit over management of Scott River's groundwater was initiated in 2010 by environmental and fisheries groups. The lawsuit seeks to extend the Public Trust Doctrine to groundwater and require Siskiyou County to undertake a Public Trust analysis for new well permits, as well as to make the State Water Resources Control Board assert authority over groundwater use. The State does not currently regulate groundwater use (with certain exceptions). As of September 2012, a procedural issue in the case was pending before the court of appeal, and the merits of the case had yet to be addressed.

Siskiyou County has the right to govern the management and extraction of groundwater resources within its jurisdiction in order to protect the health, welfare and safety of the residents of the County. This police power of counties and cities was

Voluntary Groundwater Management & Enhancement Plan for Scott Valley

Advisory Committee approved 10-22-12

confirmed in a 1994 court decision (Harter & Rollins 2008). Several groundwater ordinances to implement the County's authority have been adopted by the Board of Supervisors, as described below.

1.5 Voluntary Setting & the Scott Valley Groundwater Advisory Committee

The Scott Valley community desires to promote the voluntary management of groundwater in Scott Valley as a more positive approach. Keeping local control is an enduring interest and critical principle. The County Board of Supervisor established a county-wide ordinance in 2010 providing for the creation of Groundwater Advisory Committees for each of its groundwater basins (as defined in CDWR 2004). Their community experience and knowledge is considered very important in helping the County implement its legal groundwater management authority. Scott Valley was the first basin to have a Groundwater Advisory Committee created (via Board Resolution 10-291), with members appointed in early January 2011. Its eleven members represent groundwater users geographically distributed throughout the valley. As agriculture is the greatest user of groundwater, agricultural operators whose commercial production of agricultural commodities rely upon groundwater compose 7 of the members. Other members include the City of Fort Jones, which is solely dependent upon groundwater for its water supply, representatives of agricultural organizations, and a domestic groundwater user.

The Committee has many tasks and functions as outlined in the Resolution, with several directly related to this Plan:

- Identify proposed voluntary groundwater management strategies to address groundwater management challenges and/or concerns.
- Recommend possible goals and objectives for voluntary management of groundwater in the Scott Valley.
- Recommend appropriate voluntary management strategies to achieve these goals and objectives.
- Based upon the Scott Valley Community Groundwater Study Plan approved by the Board on February 12, 2008, and upon consideration and analysis of the items listed above, make recommendations to the Board on the possible development and content of a County voluntary groundwater management and protection plan.

The Committee finds that developing as well as exercising this Scott Valley Groundwater and Management Enhancement Plan is of immediate importance.

2. Current Management Approaches

Present efforts to better understand and manage the groundwater resources of Scott Valley provide the foundation for any additional strategies.

2.1 Scott Valley Well Monitoring

Voluntary Groundwater Management & Enhancement Plan for Scott Valley

Advisory Committee approved 10-22-12

2.1.1 Community Groundwater Measuring Program

In 2005, the Scott Valley Community Groundwater Measuring Program was begun through a Memorandum of Understanding (MOU) among 5 partners: Siskiyou Resource Conservation District (RCD), Natural Resource Conservation Service (NRCS), Scott River Watershed Council, University of California Cooperative Extension (UCCE), and Siskiyou County. Its objective is “to understand changes in the recharge/discharge balance in the Scott Valley aquifer, particularly how this balance changes by location in the valley, by season of year, and as a result of inter-annual variations in precipitation and climate.” Measurement protocols were designed and approved, participants solicited, and wells selected to cover a valley-wide grid (SRWC 2006). Monthly data collection began in April 2006 for 24 wells, later expanding to 42 wells, and now at 36. Funding has come from various local, state and federal government sources but is now privately and locally funded. The program is no longer a partner with any State or Federal agency. Data is submitted to the UC Davis Groundwater Cooperative Extension Program (see below.)

2.1.2 DWR Groundwater Level Monitoring

California DWR has overseen a well monitoring network collecting groundwater levels twice a year (spring and fall) for many decades. Scott Valley has had between 5 and 8 different wells in the program, with the oldest data going back to 1953. A few wells were dropped over the years and others were recently added, with 6 currently in the grid. All data are available on DWR’s website under Groundwater.
<http://www.water.ca.gov/groundwater/>

2.1.3 CASGEM Program

As the result of state legislation passed in 2009, the California State Groundwater Elevation Monitoring (CASGEM) Program was established. Its purpose is to collaborate between local monitoring parties and DWR to voluntarily collect groundwater elevations statewide and make this information available to the public. Siskiyou County has applied to be the local “monitoring entity”, which will preserve the eligibility of local agencies to access grants and loans for water supply and wastewater projects. In addition to DWR’s existing monitoring wells in Scott Valley, another 3 wells were volunteered to be added to the CASGEM network. All data are available on the DWR-CASGEM website.

2.1.4 Quartz Valley Indian Reservation Well Monitoring

QVIR received funding to install 13 groundwater monitoring wells on its Reservation lands near Shackleford Creek, all of which were installed by late 2011. This network is measuring (via dataloggers) groundwater temperatures and levels in and near streams for the purpose of helping develop a groundwater management plan and a drought management

Voluntary Groundwater Management & Enhancement Plan for Scott Valley

Advisory Committee approved 10-22-12

plan for QVIR. Data for the first full year of operation will soon be available. (USBR 2010; Rebecca Sluss, QVIR, personal communication).

2.2 Scott Valley Community Groundwater Study Plan

As part of the Scott Valley Temperature TMDL Action Plan (see above), the Regional Water Board requested Siskiyou County to produce a Groundwater Study Plan in partnership with the community. Several issues were of concern:

- The connections between groundwater and surface water (Scott River)
- The impacts of groundwater use on surface flows and temperature;
- The impacts of groundwater levels on the health of riparian (streamside) vegetation.

Technical assistance was sought from Dr. Thomas Harter, a groundwater specialist with the U.C. Davis Groundwater Cooperative Extension Program. With the help of several community and agency members, the Scott Valley Community Groundwater Study Plan (GWSP) was developed in 2007-08. Its goal is:

"To provide a scientific approach that can be used by Siskiyou County, the Scott Valley community, the State of California, and other interested parties to objectively assess the Scott Valley's groundwater resources and their effect on surface water resources."

Included in the Study Plan are: hypotheses, current Scott Valley conditions, description of groundwater dynamics, research methods, and a "road map" for plan implementation in three phases over a 20 year period (dependent on available funding). The GWSP was adopted by the County Board of Supervisors in February 2008.

2.2.1 UC Davis Groundwater Model

Implementation of the Plan's Phase I tasks began immediately after County adoption with the development of a groundwater model of Scott Valley. Through the work of graduate students under Dr. Harter's guidance, the model's framework has gradually evolved. Community feedback and detailed comments by the GWAC continue to provide improvements. An initial version has progressed to the present Version 2. Model validation is still needed before hypothesis testing can happen with results. Funding for the model has primarily been provided by the SWRCB.

2.2.2 Current Field Studies

Since Scott Valley data are needed for critical model inputs, a field monitoring program by UCD and UCCE is working with local landowners during the 2012 irrigation season on alfalfa fields. The purpose is to compare theoretical and grower application rates of water use. Measurements are being collected of applied irrigation amounts, soil moisture dynamics, crop water uptake, crop yield, and rainfall contribution. When field work is

Voluntary Groundwater Management & Enhancement Plan for Scott Valley

Advisory Committee approved 10-22-12

completed, data analysis will provide valuable inputs to help the groundwater model's use as a predictive tool.

2.3 Siskiyou County Ordinances

2.3.1 Standards for Wells (1990): Requires permit for well drilling, sets health and safety standards for construction, repair, and destruction of all wells.

2.3.2 Groundwater Management (1998): Primarily focused on regulating through a permit system the export of groundwater from the county.

2.3.3 Groundwater Advisory Committees (2010): To provide for the establishment of such local committees for each of the County's groundwater basins.

2.4 DWR Land & Water Use Surveys

About once a decade since the 1950s, DWR has performed a survey of land and water use in Scott Valley. The most recent completed survey was in 2000 but the 2010 results should be available soon. Estimates are based on aerial photo analysis of acreages for land use types, irrigated lands, crop types, and irrigation methods. Water use is estimated by assuming a standard amount of applied water per acre for each of the various crops. The surveys also indicate the amount of surface water and groundwater use for the surveyed years.

3. Future Management & Enhancement Approaches

Managing water resources involves the balance between supply and demand. In addition to current management actions described above, the following future voluntary actions are recommended.

3.1 Supply-side Management & Enhancement

3.1.1 Approach:

3.1.1.1 Identify and explore options to help increase groundwater and surface water supply.

3.1.1.2 Identify realistic scenarios in response to anticipated changes due to climate change (e.g., less snow; more rain; different precipitation patterns; hotter temperatures).

3.1.1.3 Determine which ones are economically, hydrologically and environmentally feasible and which are not.

3.1.1.4 Develop which potential solutions need to be run on the UCD model and evaluated as hypotheses, and/or pursued through assessment or implementation (adaptive management).

3.1.2 Increase Groundwater Recharge

3.1.2.1 Assess recharge effects from irrigation ditches and spring irrigation practices.

3.1.2.2 Evaluate the potential for an aquifer recharge project on the tailings reach on upper Scott River below Callahan.

Voluntary Groundwater Management & Enhancement Plan for Scott Valley

Advisory Committee approved 10-22-12

3.1.2.3 Investigate the recharge effect of slowing down runoff, through natural (e.g., beaver dams) or intentional means (e.g., artificial beaver dams).

3.1.2.4 Search other alternatives for increasing the timing and amount of groundwater recharge.

3.1.3 Improve Upland Storage and Management

3.1.3.1 Research if significant water yield benefits can be obtained in the Scott River watershed through forest management (e.g., managing forest canopy to manipulate snowmelt; patterns of timber harvest)

3.1.3.2 Review progress of the Watershed Council's Upland Management Committee's work and pursue promising options.

3.1.3.3 Assess yield and feasibility of adding more water storage at existing high mountain lakes.

3.1.3.4 Assess yield and feasibility of new storage facilities on the Scott's tributaries.

3.2 Demand-side Management

3.2.1 Continue to improve water efficiency practices that are supportive of environmental benefits.

3.2.1.1 Work with landowners to address inefficient irrigation systems.

3.2.1.2 Encourage UC Cooperative Extension / Farm Advisor to demonstrate improved irrigation methods through growers' seminars, workshops, and field tours. Encourage high participation by all local growers. Document cost savings of water efficient practices.

3.2.1.3 Evaluate new and existing irrigation management strategies and techniques to improve water-use efficiency.. Promote and encourage adoption of soil-moisture monitoring as a simple method to improve alfalfa and pasture irrigation management (see Orloff, Hanson & Putnam handout.)

3.2.1.4 Assess changes in applied water use over time with more efficient practices.

3.2.1.5 Assess impacts on flow and seasonal timing from changes in applied water use.

3.2.2 Explore opportunities for other groundwater saving practices.

3.2.2.1 Explore new genetic varieties of crops bred for water efficiency.

3.2.2.2 Consider the efficiency and environmental benefits of the alternative irrigation practice of using sump ponds.

3.2.2.3 Understand different seasonal irrigation needs , for fall irrigation of alfalfa (Orloff 2009).

3.2.2.4 Seek economic incentives for those wanting to apply deficit irrigation of alfalfa and pasture grass which will adequately compensate for the reduced yield in production [in drought years].

3.2.3 Promote education about groundwater management.

3.2.3.1 Solicit technical assistance to help irrigators become more aware of the latest, available best practices about water efficiency and conservation.

Voluntary Groundwater Management & Enhancement Plan for Scott Valley

Advisory Committee approved 10-22-12

3.2.3.2 Pursue sufficient financial assistance to help implement improved practices.

3.2.3.3 Develop publicity about this Plan and its implementation. Provide updated information to the media and public websites about current and planned groundwater management and enhancement efforts in Scott Valley.

4. Administrative Resources

4.1 Siskiyou County

4.1.1 Scott Valley Groundwater Advisory Committee: Advises the Board of Supervisors as per Resolution.

4.1.2 Environmental Health Division: Oversees implementation of Well Standards Ordinance.

4.1.3 Natural Resource Policy Specialist: Assists the Board and GWAC as needed and as available on water issues.

4.1.4 Agricultural Commissioner: Promotes and protects the local agricultural industry through pesticide use enforcement, environmental monitoring, noxious weed management, and other programs.

References:

California Dept. of Water Resources (CDWR). 1964. "Scott Valley Ground Water Development", in: Klamath River Basin Investigation. Bulletin No. 83.

-----, 1991. Scott River Flow Augmentation Study. Northern District, Red Bluff.

-----, 2004. "Scott River Valley Groundwater Basin" in: California's Groundwater. Bulletin 118. Sacramento.

-----, [various years]. Scott Valley Land & Water Use Surveys. Northern District, Red Bluff

-----, 2012. California State Groundwater Elevation Monitoring Program.
www.water.ca.gov/groundwater/casgem

California Legislature. Fish and Game Code. Water Code. www.leginfo.ca.gov/calaw.html

California Regional Water Quality Control Board, North Coast Region (RWB). 2006. Action Plan for the Scott River Watershed Sediment and Water Temperature Total Maximum Daily Loads (TMDL), in: Water Quality Control Plan for the North Coast Region. Santa Rosa, CA.

California State Water Resources Control Board(SWB). 1974. Report on Water Supply and Use of Water – Scott River Stream System. Scott Valley Adjudication. Division of Water Rights. Sacramento.

Voluntary Groundwater Management & Enhancement Plan for Scott Valley Advisory Committee approved 10-22-12

-
- , 1975. Report of Hydrogeologic Conditions in the Scott River Valley. Scott Valley Adjudication. Division of Water Rights. Sacramento.
- , 1980. Scott River Adjudication – Decree No. 30662, Superior Court for Siskiyou County. Sacramento. www.californiasourcecenter.org/viewpage.php?page_id=95
- Environmental Law Foundation, Pacific Coast Federation of Fishermen’s Associations, and Institute for Fisheries Resources. 2010. Petition for Writ of Mandamus and Complaint for Declaratory and Injunctive Relief. Superior Court of California, Sacramento. Case No. 34-2010-80000583.
- Harter, Thomas and Ryan Hines. 2008. Scott Valley Community Groundwater Study Plan. UC Davis Groundwater Cooperative Extension Program. Davis, CA. <http://groundwater.ucdavis.edu>
- Harter, Thomas and Larry Rollins (eds.). 2008. Watersheds, Groundwater, and Drinking Water: A Practical Guide. Univ. of Calif. Agricultural and Natural Resources Publ. 3497. Oakland, CA.
- Mack, Seymour. 1958. Geology and Ground-Water Features of Scott Valley, Siskiyou County, California. U.S. Geological Survey Water Supply Paper 1462, Wash. D.C.
www.scottriver.org/wp-content/uploads/2011/10/Mack1958.pdf
- NOAA-NMFS. 2012. Coho Recovery Plan for the SONCC Coho ESU. Draft.
- Orloff, Steve. 2009. “Fall Irrigation of Forages? – Generally, It’s not needed”. Field Crop Notes: Fall 2009. U.C. Cooperative Extension, Yreka.
- Orloff, S., Hanson, B., and D. Putnam. 2003. Utilizing Soil-Moisture Monitoring to Improve Alfalfa and Pasture Irrigation Management. U.C. Cooperative Extension.
www.plantmanagementnetwork.org/pub/cm/management/2003/moisture/
- Scott River Watershed Council (SRWC). 2006. Scott Valley Community Groundwater Measuring Program. Protocols & Memorandum of Understanding. Etna. www.scottriver.org
- Siskiyou County Board of Supervisors. Siskiyou County Code. www.co.siskiyou.ca.us
1990. Standards for Wells (Title 5, Chapter 8)
1998. Groundwater Management Ordinance (Title 3. Public Safety, Chapter 13 Groundwater Management.
2010. Groundwater Advisory Committees. (Title 3, Chapter 19 Groundwater Management Planning)
2011. Resolution Implementing Chapter 19, Title 3 of the Siskiyou County Code and Creating the Scott Valley Advisory Committee. (Resolution No. 10-291)
- U.S. Bureau of Reclamation (USBR). 2010. Quartz Valley Indian Reservation Wells Project. Draft Environmental Assessment. Sacramento.

**Voluntary Groundwater Management & Enhancement Plan for Scott Valley
Advisory Committee approved 10-22-12**

Appendices:

A – Scott River Decree: excerpts related to groundwater

**Voluntary Groundwater Management & Enhancement Plan for Scott Valley
Advisory Committee approved 10-22-12**

APPENDIX A – SCOTT RIVER ADJUDICATION

Decree No. 30662 Superior Court for Siskiyou County (1980)

Groundwater Excerpts

Definitions

4. Interconnected Ground Water (p.3)

Interconnected ground water means all ground water so closely and freely connected with the surface flow of the Scott River that any extraction of such ground water causes a reduction in the surface flow in the Scott River prior to the end of a current irrigation season. The surface projection of such interconnected ground water as defined herein is that area adjacent to the Scott River as delineated on the SWRCB map in the reach from the confluence of Clarks Creek and Scott River to Meamber Bridge.

General Entitlement

20. Ground Water Interconnected with the Scott River (Schedule C) (p.6.)

Claimants listed in Schedule C are allotted that amount of water, by subirrigation or by pumping from ground water interconnected with the Scott River, reasonably required to irrigate the acreage shown opposite their names. Rights for lands in Schedule C are not related to rights in Schedule D and may be exercised independently from rights in Schedules B, D and E and those set forth in Paragraphs 45 and 46.

Location of existing and proposed wells or sumps (diversion points) are described in Schedule 2. Additional wells or sumps may be constructed to augment irrigation or to replace subirrigation but must be located at least 500 feet from the Scott River or at the most distant point from the river on the land that overlies the interconnected ground water, whichever is less.

44. Changing from Surface Diversion to Interconnected Ground Water Diversion (p.11)

In lieu of exercising rights to divert surface water from the Scott River, Big Slough, Etna Creek, or Kidder Creek in Schedules D2, D3, D4, B18, B23, and B26, claimants may irrigate that portion of the place of use designated in said schedules that overlies the Scott River ground water basin by pumping from interconnected ground water under the same priority as rights in Schedule C, provided that the new wells or sumps must be located at least 500 feet from the Scott River, or at the most distant point from the river on the land that overlies the area of interconnected ground water, whichever is less.