Santa Cruz County Water Resources Management Status Report for 2017

Santa Cruz County continues to address major water resource challenges. Most of the County's groundwater basins have historically been pumped in excess of sustainable yield and the major water supply agencies do not have sufficient supplies to meet current and future demand. Historic coho salmon and steelhead populations have been greatly diminished by reductions in streamflow, increased erosion and sedimentation, barriers to migration, and removal of large woody material from streams. Water quality has been degraded by urban runoff, leaky sewer systems, and failed septic systems. The natural benefits of wetlands, floodplains, riparian corridors, and groundwater recharge areas have been significantly diminished by land development and agricultural use. The effects of climate change are expected to increase the challenges by increasing rainfall intensity and flooding, reducing groundwater recharge, and increasing irrigation water demand.

The four year drought of 2012-15 greatly diminished streamflow and available water supplies, but water agencies and their customers were able to substantially reduce demand in order to accommodate the shortfall. In 2016 normal rainfall occurred, but groundwater basins and summer streamflow continued to be depressed. 2017 had substantially above normal rainfall amounts, leading to recovery of watersheds and stream flows. Major groundwater basins showed significant recovery, but still show long term depletion. The high rains and runoff of 2016/17 also resulted in significant flooding, storm damage, landsliding, erosion and sediment transport.

The County and its partner agencies continue to conduct a range of efforts for water resource management to address the above challenges. Following is a summary of 2017 water resource management organized under six topic areas:

1. Groundwater Management
2. Water Supply and Conservation
3. Stormwater, Recharge, Flood Management, and Climate Change
4. Watershed Health and Aquatic Habitat
5. Water Quality
6. Small Water Systems

1. Groundwater Management

a) The Sustainable Groundwater Management Act of 2014 (SGMA) went into effect on January 1, 2015. The County is actively working with local water agencies to pursue sustainability for the three major groundwater basins in the County as follows:

   i) Management of the Santa Cruz Mid-County Basin (formerly referred to as Soquel-Aptos) is overseen by a Joint Powers Agency (JPA) consisting of the County of Santa Cruz, City of Santa Cruz, Soquel Creek Water District and Central Water District. This JPA is referred to as the Santa Cruz Mid-County Groundwater Agency (MGA), which has been recognized by the State Department of Water Resources (DWR) as the Groundwater Sustainability Agency (GSA) for the basin. The MGA governing board includes three private well representatives and two representatives from each partner agency. In 2017, the MGA formed a 13-member Groundwater Sustainability Plan (GSP) Advisory Committee comprising representatives from various interest groups in the Basin. The Committee is tasked with analyzing groundwater sustainability questions

and making policy recommendations to the MGA Board. More information is available at www.midcountygroundwater.org. Staff to the MGA recently submitted a $1.5 million grant request to DWR for Plan development.

ii) Management of the Santa Margarita Basin is overseen by a Joint Powers Agency (JPA) consisting of the County, the Scotts Valley Water District, and the San Lorenzo Valley Water District. This JPA is referred to as the Santa Margarita Groundwater Agency (SMGWA), which has been recognized by DWR as the GSA for the basin. The SMGWA governing board includes two private well representatives, two representatives from each partner agency, and one representative each from the City of Scotts Valley, the City of Santa Cruz, and the Mount Hermon Association. More information is available at www.smgwa.org. Staff to the SMGWA recently submitted a $1 million grant request to DWR for Plan development.

iii) The Pajaro Valley Water Management Agency (PV Water) is the designated Groundwater Sustainability Agency for the Pajaro Valley Basin within the current Agency boundaries. They have submitted their 2014 Basin Management Plan Update to DWR as an alternative Groundwater Sustainability Plan, and are waiting to hear if it will be accepted. More information is available at www.pvwma.dst.ca.us.

b) In May 2017, the Santa Cruz Mid-County Groundwater Agency organized a project to map seawater intrusion in the groundwater aquifers immediately offshore of the Mid-County area. In partnership with international companies, the MGA collected and recorded geophysical measurements with a low-flying helicopter, using technology originally developed and used in Denmark. The helicopter-borne geophysical system collected measurements needed to identify where the freshwater/saltwater interface occurs, essential information for understanding the immediate risk to coastal wells from seawater intrusion. The results of this work are expected to be available in early 2018.

c) The County continues to work with a $250,000 grant from DWR to assist with outreach and Groundwater Sustainability Plan Development for the Mid-County Groundwater Basin. Funds will be used for further development of the groundwater model for the basin, update of the database on non-municipal wells and water users, outreach and services targeted to private well owners, and maintenance of the website.

d) The County continues to coordinate submission of groundwater level data to the State's 'CASGEM' groundwater monitoring program. County staff also implement a cooperative program to monitor private well levels in the inland Mid-County area.

e) County staff joined other water managers from the Santa Cruz area and other parts of the state as guests of the Kingdom of Denmark to learn about the successful approaches that Denmark has taken over the last 20 years for sustainable groundwater management.

2. Water Supply and Conservation

a) 2016-2017 brought the highest rainfall the region has seen in two decades. Water use remained significantly below the pre-drought levels probably due to the reduced irrigation demand as well as permanent water conservation measures such as plumbing fixture retrofits and drought tolerant landscaping that many residents implemented during the drought. All of the large public water systems continued to promote conservation.

b) County water use has steadily declined since 2000 even as the population has grown. This is due improved water conservation technology and practices (Figure 1). Figure 2 shows precipitation and water use from 1984-2017. Figure 3 shows the significant decline of inland groundwater levels during the drought and subsequent recovery, while Figure 4 shows that coastal groundwater levels actually came up during the drought as a result of the very substantial conservation efforts and reduced pumping by Soquel Creek Water District. Preliminary results indicate that in 2017 groundwater levels in the Pajaro Valley recovered several feet to levels observed in 2011 before the drought, but a significant part of the basin still had groundwater levels below sea level.

c) County staff have participated with all of the countywide water agencies in the Water Conservation Coalition of Santa Cruz County to increase outreach and education to the public. The Coalition participated in numerous tabling events including Earth Day and the County Fair, and maintained the website: www.watersavingtips.org.

d) Soquel Creek Water District has emphasized that due to their dependence on groundwater, one wet year will not solve their water deficit problems. The District has maintained the Water Demand Offset (WDO) program since 2003 which allows new development to proceed without increasing demand on the groundwater basin. The WDO Program requires developers to fund a reduction in existing water use and/or increase in supply amounting to 200% of their projected new water use, thus having a net positive effect on the groundwater basin. Proposed projects can satisfy their offset requirements by paying a WDO fee equivalent to $55,000 per acre-foot to be used. This fee is broken out:
   - 50% of offset fee goes towards long-term water conservation projects (e.g. stormwater recharge, smart metering)
   - 50% of offset fee goes to funding the enhanced toilet rebate program (e.g. purchasing "toilet rebate" credits to go towards development project)
   - Developers also have the option of directly installing ultra-high efficiency toilets or proposing an alternate offset effort to the District Board.

   There is currently a "wait list" for purchasing toilet rebate credits and some developers have indicated that these requirements create uncertainty, delay, and added costs and some potential projects have not been pursued as a result. However, it is recognized that the WDO program is a bridge (in-lieu of a moratorium) to allow development to occur while pursuing a supplemental supply. The District is exploring the use of stormwater recharge projects and other options to address these concerns. The District is also pursuing the development of a new supplemental supply, which may eventually eliminate the need for the WDO program.

e) The City of Santa Cruz Water Department and Soquel Creek Water District are continuing to work towards an initial effort to reduce groundwater pumping from the Mid-County Basin by providing excess winter surface water supply from the City to the District. The agencies are currently investigating the possible impacts that introducing surface water into the District distribution system could have on the pipes. This agreement does not include provisions for returning water from Soquel to the City in the event of a drought. However, the City Council's approved water supply augmentation strategy provides direction for the two agencies to begin discussions about longer term water exchanges and transfers.

f) The City of Santa Cruz Water Department is investigating the possibility of developing an Aquifer Storage and Recovery (ASR) program which would inject treated surface water into the Santa Margarita basin, and/or the Mid-County basin to increase storage. The intent

would be to withdraw the water during drought years with decreased surface water use. ASR is estimated to take 6-12 years before implementation, though there is a “go, no-go” decision point after the next phase of feasibility testing.

g) Soquel Creek Water District is pursuing its “PureWater Soquel” project to recharge purified recycled water into the Mid-County Basin to address the overdraft. This project would yield 1500 acre-feet per year (af/yr). The timeline to release the Environmental Impact Report for the project is late spring, 2018.

h) The City of Santa Cruz Water Dept. and Scotts Valley Water District both completed feasibility studies for various options to utilize recycled water to further augment water supplies. Scotts Valley will continue to utilize recycled water for landscape irrigation and Santa Cruz will pursue several irrigation projects. Purification for indirect potable reuse was not considered to be cost-effective for those entities at this time.

i) The County received a grant from the Wildlife Conservation Board Streamflow Enhancement Program to develop a San Lorenzo Watershed Conjunctive Use and Baseflow Enhancement Plan in partnership with the San Lorenzo Valley Water District. The Plan will be used to improve water supply reliability and increased summer stream flows in the immediate future, and recommend further infrastructure improvements needed in the long run. The County and San Lorenzo Valley Water District have implemented stream flow gaging and inflow studies to better understand surface water and groundwater contributions to flow in the San Lorenzo River.

j) The County, City of Santa Cruz, San Lorenzo Valley Water District, and Scotts Valley Water District recently signed a Memorandum of Agreement to work together on exploring conjunctive water use options in the San Lorenzo Water shed and Santa Margarita Groundwater Basin. These efforts will explore many ways to utilize excess surface water when available to increase groundwater storage and water supply reliability and increase dry season stream flow.

k) The County is finalizing the results of a $99,000 grant from the Department of Conservation to develop a voluntary Rotational Cover Crop Plan for the Pajaro Valley, in partnership with the Resource Conservation District and the Pajaro Valley Community Water Dialogue. Economic analysis and greenhouse gas emissions reduction analysis have been completed and a draft plan is being circulated for review.

l) In July, 2017, PV Water initiated the next steps to implementing its Basin Management Plan by meeting with community members to provide information on the College Lake Project, which will provide 2400 acre-feet per year of new water supply. Following several years of background work, PV Water has applied for water rights and initiated the environmental review process for the project. PV Water is close to completing a grant funded project to provide 1.5 million gallons of additional storage of recycled water at the Watsonville Treatment Plant, which will facilitate full use of recycled water, providing 750 af/yr of additional supply. PV Water is also implementing programs to encourage water conservation, voluntary land fallowing and increased groundwater recharge.

m) The Health Services Agency in partnership with Ecology Action, County Parks, and the City of Santa Cruz, implemented a turf replacement project at the County’s Emeline Campus. Three thousand square feet of turf was torn out and replaced with drought tolerant plants and mulch.

n) Pasatiempo Golf Club completed a recycled water project that will utilize treated wastewater from Scotts Valley for golf course irrigation and significantly reduce their demand for City of Santa Cruz potable water. This project was entirely funded by Pasatiempo.

o) Santa Cruz County partner agencies continue to work together on integrated regional water management (IRWM), with the Regional Water Management Foundation (RWMF) serving as a hub for the 12 partner agencies. The County and all of the cities and public agencies dealing with water are signatories to the Santa Cruz IRWM Memorandum of Agreement, which was updated in 2016. The agencies contribute $80,000 toward maintenance of the IRWM efforts.

p) The state has recently made available IRWM grant funds to further evaluate and address the water needs of disadvantaged communities in the Central Coast region, including the Santa Cruz and Pajaro regions. This project is being administered by the RWMF.

3. Stormwater, Recharge, Flood Management, and Climate Change

a) In order to be eligible for storm water funding through Proposition 1, the State Water Board required the development of Storm Water Resources Plans (SWRP) with the goal of changing the perception of stormwater from a nuisance to a resource. Environmental Health led the effort to write a SWRP for the Santa Cruz region. County staff worked closely with representatives from the four cities, the RCD, Ecology Action, and UCSC. The SWRP can be found online at: http://www.santacruzirwmp.org/resources/swrp. In spring 2017 the County received the letter of approval from the State Board accepting the SWRP.

b) Dr. Andrew Fisher from UCSC has completed work with the Resource Conservation District (RCD) on a Managed Aquifer Recharge (MAR) Suitability Study. MAR is a landscape management strategy that can help reduce aquifer overdraft by facilitating stormwater capture and infiltration into the aquifer. The results from the study include recharge suitability maps, that show area suitability for recharge projects based on a number of different factors.

c) The County of Santa Cruz Environmental Health, County Parks, and Soquel Creek Water District are partnering with the State Water Board to pilot a project to use DualEM geophysical survey equipment to assess potential recharge locations initially identified through the MAR suitability maps. The device measures the electrical resistivity at different depths to provide a detailed evaluation of subsurface conditions. In November 2017, nine locations in and around the Mid-County Basin were surveyed with the DuelEM equipment. The results will allow prioritization of the most promising sites and rule out sites with lower recharge potential without having to conduct more costly testing (i.e. soil borings and percolation tests).

d) The Resource Conservation District, UCSC, and the PV Water have started the Recharge Net Metering program. This is a unique 5-year pilot program that provides a financial incentive to landowners in the form of a rebate issued by PV Water for building a managed aquifer recharge (MAR) system on their property. The program will be tested for five years to assess the benefits to the Pajaro Valley Groundwater Basin and its residents. The

primary focus of the ReNeM program is on stormwater collection directed to infiltration facilities, using a variety of techniques, to improve groundwater supplies.

e) County Public Works Department (DPW) staff continue to maintain operation of the Automated Local Evaluation in Real Time (ALERT) flood warning system

f) The County, City of Watsonville, and other entities continue to pursue implementation of a project with the Army Corps of Engineers to significantly upgrade the flood conveyance system to provide an adequate level of flood protection for the Pajaro River, Salsipuedes Creek, and Corralitos Creek. The draft General Reevaluation Report and Environmental Assessment were completed by the Corps of Engineers and released in November 2017 for public review and comment.

g) County staff continue to implement the County's stormwater management program and update the program to address evolving State and Federal requirements. In 2017, County staff completed the stormwater Enforcement Response Plan to provide internal guidance for managing stormwater complaints.

4. Watershed Health and Aquatic Habitat

a) 2017 was a big year for high runoff, landsliding and flooding, with substantial damage to public roads and private property. The San Lorenzo River exceeded flood stage at Felton during five separate storm events with a peak flow of almost 19,000 cubic feet per second on February 7, 2017. This type of flow only occurs on average once about every 15 years. County Planning staff worked to inventory and assess the damage and provide technical assistance for 75 properties. The County also provided a grant to the Resource Conservation District (RCD) to also work directly with property owners to provide outreach and technical assistance on repairing and preventing storm damage. The RCD received and responded to 93 individual requests for technical assistance and advice during and after the 2017 winter. County roads and other infrastructure experienced $130 million worth of damage at 320 different locations. The San Lorenzo River discharged approximately 400,000 tons of sediment to Monterey Bay, as estimated by the US Geological Survey. However, the sediment load in 2017 was less than half the load produced by comparable flows in 1982-83, indicating a significant improvement in watershed conditions.

b) County staff continue to implement various programs to benefit steelhead and coho salmon, which are two anadromous salmonid species that have historically occurred in County watersheds but have experienced a severe drop in numbers as a result of habitat and watershed degradation. Coho are designated as endangered and steelhead are designated as threatened under the federal Endangered Species Act.

c) County staff continued to implement the Large Woody Material Management Program to maintain large wood for habitat value in County streams without increasing flood risks or jeopardizing public safety. There was significantly increased activity in 2017 with the high flows and landslides bringing more wood into the creeks, resulting in 38 requests for evaluation of wood accumulations.

d) County staff continued to work with water agencies to maintain annual sampling of stream habitat and juvenile salmonids in four watersheds: San Lorenzo, Soquel, Aptos and Pajaro.

In 2017, steelhead numbers increased significantly as a result of good stream flow, after four years of drought.

e) Water Resources has been working with the Planning Department to develop a program to enhance the condition of the riparian corridor in streamside residential areas. The Central Coast Wetlands Group partnered with the County to develop a Riparian Rapid Assessment Method (RipRAM) to document riparian condition. This winter, a pilot project will install native riparian plants within Paradise Park along the San Lorenzo River. The new Felton Library site will include a Riparian Demonstration Garden to showcase native riparian plants.

f) The County's Fishery Resource Planner partnered with California Department of Fish and Wildlife and the Monterey Bay Salmon and Trout Project to conduct a fish rescue on Corralitos Creek in July 2017. In one day, 660 young steelhead were moved from a section of Corralitos Creek that was drying out to better habitat further upstream.

g) Environmental Health is partnering with the County Information Services Department to complete a database and an interactive website to manage and display the results of fish monitoring efforts that were started by the County in 1981.

h) Staff from the County Planning Department and the HSA Environmental Health Division continued to meet with other regulatory agencies to coordinate effective approaches to environmental code compliance. During 2017 there were significant state and local efforts to develop regulations for cannabis cultivation to minimize the adverse environmental effects of those operations.

i) The Resource Conservation District received a grant to investigate the possibility of offstream storage and other methods for property owners along Soquel Creek to reduce dry season stream diversions. Several new stream gages have been installed along the creek to monitor flows.

j) The City of Santa Cruz and San Lorenzo Valley Water District continued efforts to monitor streamflow and habitat conditions downstream of their diversions in an effort to establish objectives for habitat improvement.

k) The Resource Conservation District continued to work with landowners and agency partners to complete habitat improvement projects through the Integrated Watershed Restoration Program (IWRP). These projects include wetland restoration, fish barrier removal, rural road upgrades, stream habitat improvement, managed aquifer recharge projects, stormwater management and community education.

l) In 2015, 2016, and 2017, the City of Santa Cruz released significantly more flow for fish than in previous years in Laguna Creek, the lower San Lorenzo River, and other streams as a part of an interim agreement with the fishery agencies.

m) The City of Santa Cruz conducted a number of efforts, including ongoing lagoon monitoring, hosting the third annual State of the San Lorenzo River Symposium, and pursuing illegal stream diversions on critical streams.

5. Water Quality

a) County staff continue to work with the State, City of Capitola, and the County Sanitation District to implement projects and conduct monitoring to assess public health threats, reduce bacterial contamination, and improve beach water quality. Following completion of a sewer line upgrade in Capitola, Capitola Lagoon and Capitola Beach met standards for safe swimming all summer for the first time since monitoring has begun.

b) County staff continued to participate with the City of Santa Cruz, Save the Waves Coalition, Surfrider Foundation, and the Sierra Club in the Cowell Beach Working Group, meeting monthly to better understand and control the elevated bacteria levels at Cowell Beach that have resulted in it being named as one of the most polluted beaches in the State. Previous City improvements have eliminated any significant sources of human contamination. In 2016, the City installed pigeon exclusion fencing under the wharf. Since the completion of the fencing, bacteria counts were far less than in previous years, and the number of days of posting was significantly reduced.

c) County staff continue to work with the City of Watsonville to monitor harmful algae blooms in Pinto Lake. The Resource Conservation District (RCD) completed work on a sediment basin on one of the tributaries to the Lake, while the City implemented an alum treatment to reduce internal nutrient loadings that drive cyanobacteria blooms. The Pinto Lake bloom in 2017 occurred much later in the year and was of shorter duration than previous years. The County continues to monitor and maintain warning signs as needed at both Pinto and Kelly Lakes.

d) County staff maintain ongoing efforts for water quality protection through septic system management, monitoring, and investigation, funded by County Service Area (CSA) 12. Properly functioning onsite sewage systems are a good method of groundwater recharge and contribute to approximately 14% of the San Lorenzo River's summer baseflow. County staff are working on updating the sewage disposal ordinance to comply with State standards for onsite sewage systems.

6. Small Water Systems

a) County staff continue to assist and oversee 110 small water systems with 5 to 199 connections to maintain compliance with public health standards and meet the ongoing needs of the people and communities that rely upon them. This includes regulation of water quality, quantity, treatment, distribution, water system organization, and evolving compliance requirements. Notable examples include:
   1) Overseeing the addition of a 600,000 gallon fire suppression tank, cross-connection control and other infrastructure upgrades at a local elementary school.
   2) Concluding a hazardous materials abatement project, adding new wells, and working with the State Revolving Fund to add needed water storage at a local school for drinking water and emergency purposes.
   3) Consolidation of a local commercial water system with the SLVWD.
   4) Permitting and oversight of well destruction and replacement for small and large water systems.
   5) Working with other divisions and agencies on resolving numerous landslide/flooding issues affecting small water systems as a result of last winter's heavy storms.
   6) Approving the creation of two new public water systems.

7) Assisting in the review, approval and opening of the Pasatiempo recycled water plant that will divert over one billion gallons of wastewater to use for irrigation instead of potable water over the course of its functional lifespan.

b) The Drinking Water program met and exceeded its annual evaluation goals and objectives for water system permitting and inspections established with the State Water Resources Control Board.

c) The County is tracking water use information based on the 2015 requirements for metering and reporting of water use by all small water systems. This provides additional information for assessment of rural water use and provides the County and the water systems with tools to identify and reduce excessive water use. As a result of this new information, the calculated water use of small water systems and rural properties was reduced by 25% and 18% respectively, from previous estimates. In addition, the community systems with 15 or more connections are working on installing meters on individual connections.

d) County staff continues to hold the Small Water Systems Forum to help build technical, managerial, and financial capacity among the small water systems within the community. Meetings topics included regulatory updates, well rehabilitation, non-profit technical assistance organizations such as the California Rural Water Association, and increased public access to water system information.

e) Now in its third year, County staff held a workshop providing hands-on training and assistance for systems to complete their report in the State electronic annual reporting system.

f) Small water systems that use surface water were transferred to State regulation at the beginning of 2017. Throughout the year, County staff provided support to these systems and State staff to navigate this transition.

g) County staff reviewed and approved Compliance Plans for implementation by six small systems in exceedance of the State's Hexavalent Chromium Maximum Contaminant Level (MCL). Subsequently the MCL was repealed, and is expected to be re-established within the next few years.

Table 1: Water Use in Santa Cruz County, 2016

Water Supplier	Connections	Population	Water Use acre-feet/yr	Ground water	Surface Water	Recycled Water	Imported
Santa Cruz City Water Dept.	24,440	96,142	7,856	6%	94%		
Watsonville City Water Dept	14,368	65,966	6,640	97%	3%		
Soquel Creek Water Distirct	14,376	40,404	3,090	100%			
San Lorenzo Valley (SLVWD)	7,321	25,485	1,862	41%	59%		
Scotts Valley Water Distirct	3,728	10,509	1,268	87%		13%	
Central Water District	808	2,700	381	100%			
Lompico Creek Water District	491	1,300	66	60%	40%		
Big Basin Water Company	596	1,680	135	95%	5%		
Mount Hermon Association	499	1,283	141	100%			
Forest Lakes Mutual Water Company	326	1,076	41	100%			
Smaller Water Systems (5-199 conn.)	2,340	7,157	770	77%	14%		9%
Individual Users*	8,000	21,000	2,630	95%	5%		
Pajaro Agriculture (SC Co only)**			22,430	93%		7%	
Mid- & North-County Agriculture*			2,400	90%	10%		
Totals	**77,293**	**274,702**	**49,710**	**78%**	**18%**	**4%**	**0.2%**
Summary of Water Source (acre-feet/year)				**38,720**	**9,186**	**1,988**	**75**
Summary of Non-Agricultural Use (af/yr)			**24,880**	**15,934**	**8,946**	**170**	**75**
*Values are Estimates							
**Ag water use on the Monterey County side of the Pajaro Basin, was 18,555 AF in 2016							

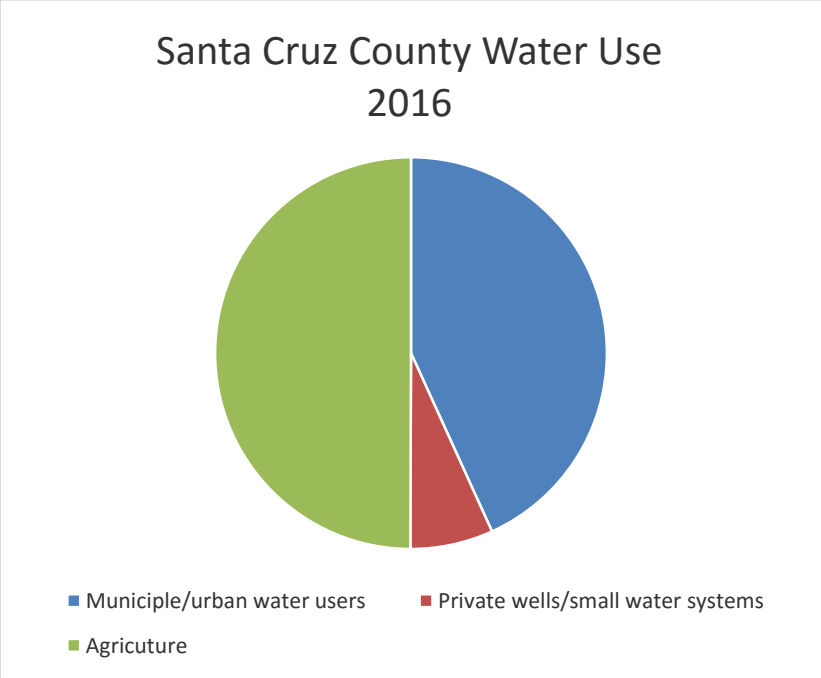
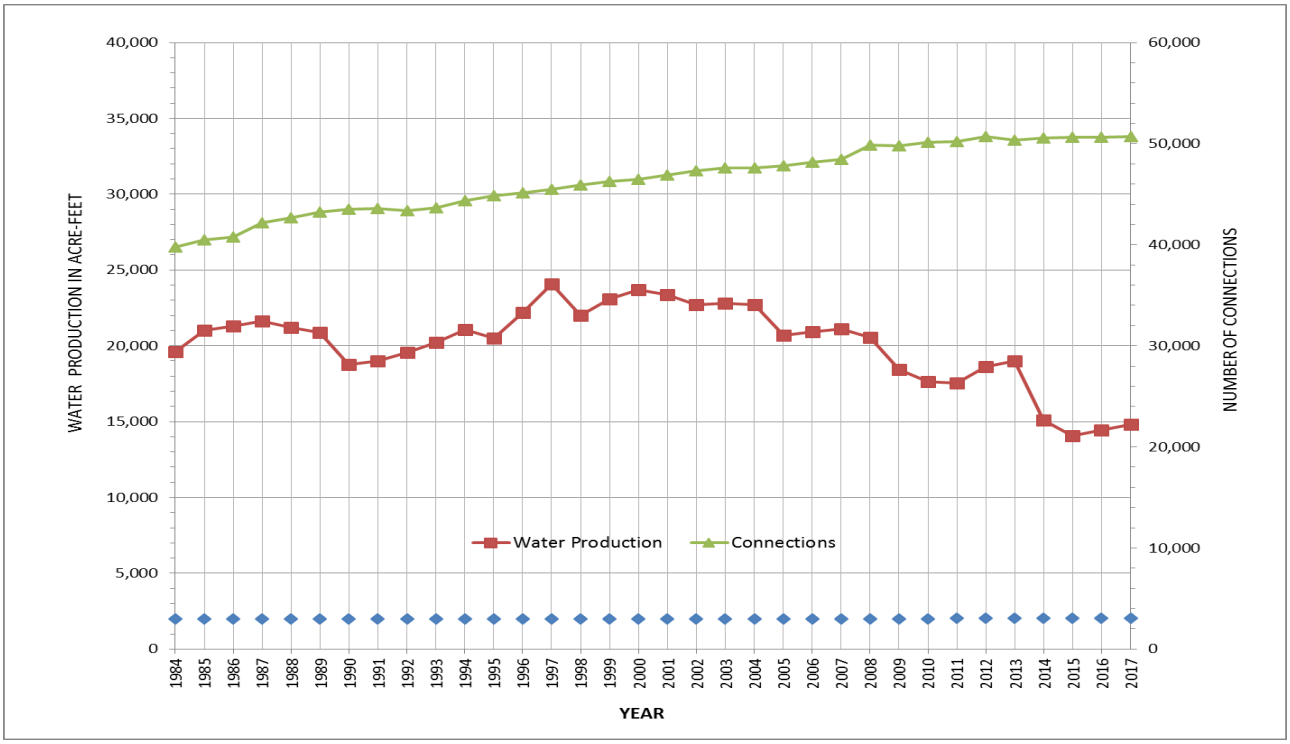


Figure 1: Water Production for Northern Santa Cruz County Water Purveyors* 1984 to 2017



* Water Suppliers include: City of Santa Cruz, Scotts Valley Water District, San Lorenzo Valley Water District, Soquel Creek Water District, and Central Water District

2017 total annual use is water use reported October 2016 through September 2017.

Figure 2: Water Production Compared to Precipitation

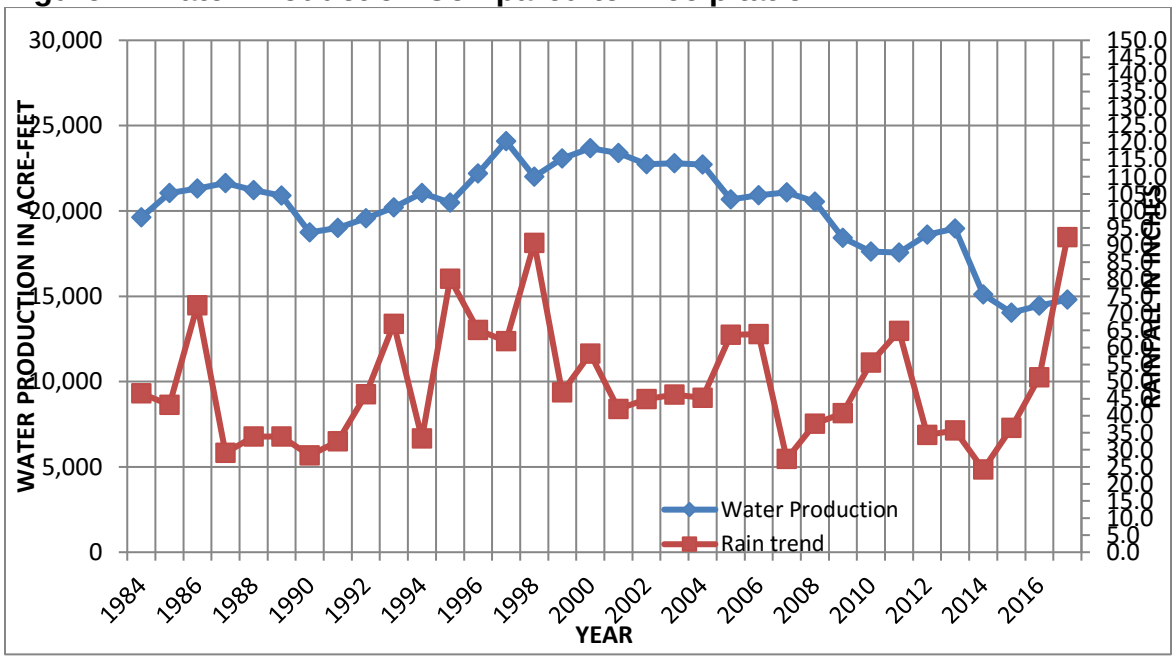


Figure 3: Inland Groundwater Levels, Mid-County Basin, Soquel Hills

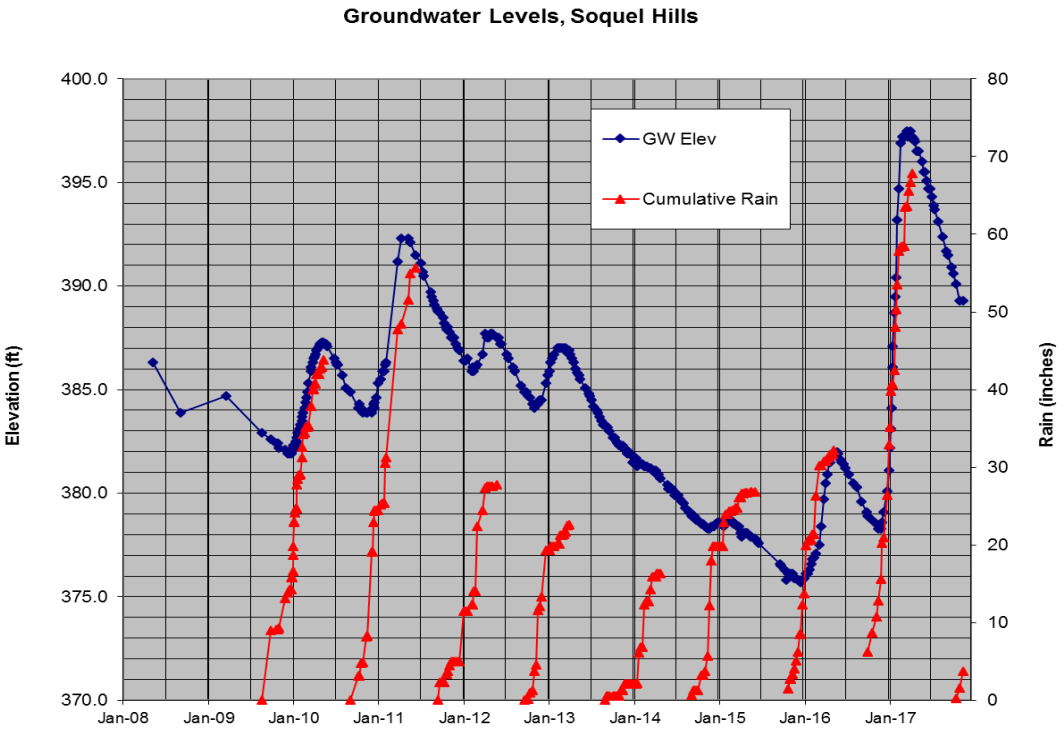


Figure 4: Coastal Groundwater Levels, Mid-County Basin, Capitola, Monitoring Well SC-5A