ATTACHMENT 2: DROUGHT IMPACTS

1.0 DROUGHT IMPACTS

The San Luis Obispo County IRWM region (SLO County Region) is experiencing severe drought impacts. As shown in the

Drought Monitor map (Figure 2.1), the SLO County Region (coterminous with the County boundary) is located in the hardest hit area of the State. *The U.S. Drought Monitor has classified the SLO County Region's drought condition as D4: Exceptional drought – the highest drought classification possible.* As of June 30, 2014, total annual rainfall in the SLO County Region was approximately 34% of the historical annual average, with annual precipitation well below average for the third consecutive year. It is unlikely precipitation will increase substantially this year, as most of the annual precipitation falls between November and April. Given the severe drought conditions and impacts to the region, the San Luis Obispo County (SLO County) Board of Supervisors proclaimed a state of local emergency on March 11, 2014. The proclamation of emergency facilitates the immediate implementation of drought responses, including the projects in this proposal, to provide relief from the drought.

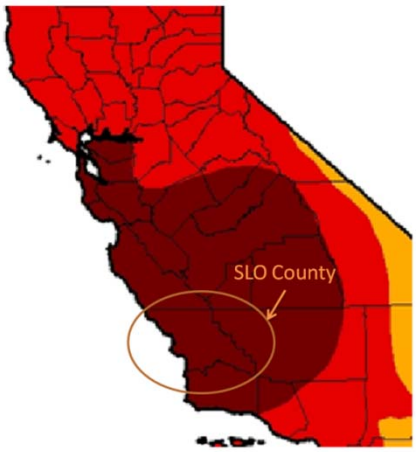

Figure 2.1: US Drought Monitor Map

Water used in the County is drawn from a number of supply sources, both inside and outside of the county. In-county reservoirs have a significant role in water supply, drainage and flood control, and recreation for the region. Groundwater basins, while currently threatened by contamination and over-pumping, are the largest source of in-county supply. While groundwater basins are relied upon for their perennial yield of drinking water, imported surface water from the California State Water Project (SWP) helps reduce the pressure on these basins when used conjunctively, based on availability of state water and facility capacity. Due to the 2014 drought, the reliability of each of these supply sources is in jeopardy and the region is experiencing severe regional drought impacts, including impacts to some communities that are at risk of not having access to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes (Human Right to Water). If the drought continues in 2015, these severe conditions will further intensify. As described below, the SLO County Region has encountered or will likely encounter the following five drought impacts by September 30, 2014:

- At risk of not meeting existing drinking water demands
- At risk of not meeting existing agricultural water demands
- At risk of not meeting ecosystem water demands
- Groundwater basin overdraft
- Other drought related adverse impacts (lack of fire protection)
  (MCL Violations and TMDL Violations – N/A)

The following section provides a description of the regional water management impacts due to the 2014 drought and any anticipated or projected impacts if drought conditions continue into 2015. Focus is placed on the areas of the county where projects are being proposed.

The SLO County Region is currently at risk of not meeting existing drinking water demands by September 30, 2014.

The SLO County drinking water supplies (groundwater, local reservoirs, and SWP) are severely impacted by the drought, putting communities at risk of having adequate supplies to meet demands. With the 2014 drought, groundwater levels have decreased and aquifers along the coast suffer from increased seawater intrusion. Reservoir levels in the County have also suffered. As shown in Figure 2.2, current water levels are well below historical values. The Nacimiento Reservoir has approximately one-third of the water level typically observed this time of year while the Salinas Reservoir has approximately one-half. Approximately 56% of the County's population relies on these reservoirs, as well as the Whale Rock and Salinas Reservoirs, for potable water use.

Additionally, regions around Morro Bay and the south SLO County are at risk because they rely heavily, and in some cases, solely on water from the SWP. In February 2014, the SWP reduced allocation levels to 0%; however, in April 2014, the SWP increased allocations to 5%. Dwindling groundwater and reservoir water levels, as well as uncertain SWP allocations, have placed stress on local communities where residential water needs compete with industrial and agricultural water users. Specific drinking water demands and drought conditions for Cambria, San Simeon, Chorro Valley, Heritage Ranch, and Santa Margarita project areas are detailed below.

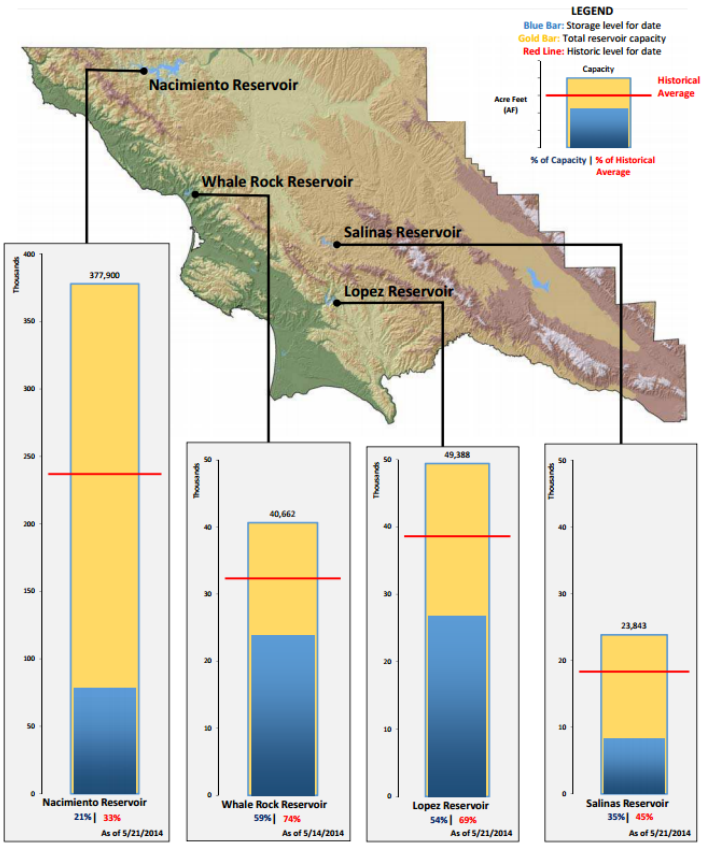

Figure 2.2: Current Reservoir Levels

The Cambria Community Services District (CCSD), which supplies water to the unincorporated town of Cambria, is one of two communities within the SLO County Region that has declared a Stage 3 water emergency. This is the highest level of water shortage emergency possible. The CCSD water supply is in jeopardy due to the limited rainfall, which is needed to recharge the two coastal stream aquifers serving as the community's sole water supply. This paired with historic issues of unreliable supply led the CCSD's Board of Directors to determine that "the demands and requirements of water consumers cannot be satisfied without depleting the water supply of the CCSD to the extent that there would be insufficient water for human consumption, sanitation and fire protection"[1]. It is expected that water will run out in early fall of 2014. The Cambria project will implement an indirect water reuse project that will provide an additional water supply of 250 acre-feet of water per six-month dry season.

San Simeon is the second community within the SLO County Region to declare a Stage 3 water emergency. Like Cambria, this community relies solely on a groundwater supply that has historically been unreliable and suffers from seawater intrusion, resulting in a growth moratorium since 1991. Typical swings in chloride levels range from 30 mg/L during wet weather to 300 mg/L during dry weather, well below the State's maximum contaminant level secondary standard of 500 mg/L. However, as recent as January 2014, levels have exceeded 1,000 mg/L. The current drought has further stressed this limited supply and the community is at risk of running out of water by fall of 2014. The San Simeon project will deliver reclaimed water from the existing San Simeon Community Service District's (SSCSD) treatment system to the proposed reclaimed water users in the community (commercial water use and community landscape irrigation), saving scarce potable water for existing drinking water demands. With distribution of recycled water to these water users, SSCSD's local potable water supply will be conserved and improved, the reliability of that supply will be increased, and fire flow and storage requirements would be satisfied.

The Chorro Valley Communities (a State prison, County Jail, Emergency Operations Center, and community college) are also at risk of not meeting drinking water demands. Currently SWP is the main

[1] Cambria Community Services District Resolution No. 04-2014, January 2014. 2014 06 06 CCSD EWSP Prop 84 PSP Table 9 - questions 1, 2, and 3.doc

water source for these facilities, and while there is sufficient water stored to meet demands in 2014, uncertainly exists about the ability to meet water demands in 2015 given the uncertainty of SWP. If water allocations from the SWP decrease to 0%, as they did this year, these facilities would be unable to meet basic drinking water needs. The proposed emergency Salinas Nacimiento Intertie will create flexibility for these communities so they can access other water sources in the event that SWP is unavailable.

Heritage Ranch Community Services District (HRCSD) is also at risk of not meeting existing drinking water demands by 2015. Currently, this community's only source of water is Nacimiento Reservoir water. HRCSD accesses this water via intake facilities on the Nacimiento River. The flow of water to the river is controlled by Monterey County Water Resources Agency (MCWRA) until the reservoir reaches the upper minimum pool boundary of 687.8 feet at which time all reservoir releases may stop. This situation has never occurred and water has always flowed in the river; however, the community has come very close in the past during several multi-year drought periods. These periods include 1960 (671 feet), 1977 (674 feet), 1989 to 1990 (672 feet), and 2009 (700 feet). On September 22, 2009, the California Department of Public Health (CDPH) issued a letter directing HRCSD to identify options for a permanent backup/emergency water supply for Heritage Ranch. The CDPH's focus is for HRCSD to provide an emergency water supply to maintain the health and safety of the community during dead pool conditions when there is no water in the river. If the drought continues into 2015, dead pool conditions could occur, leaving the Heritage Ranch community without water. The Heritage Ranch project will provide a more reliable water access location enabling HRCSD to access water during dead pool conditions.

Finally, the Santa Margarita community is also at risk of not meeting drinking water demands in 2015. The only water source for this community is groundwater, which experiences dropping water levels during periods of low rainfall resulting in inadequate supply. As of July 2014, the water depth at community's main well is 15.5 feet below the surface. Water alerts go into effect if groundwater levels are deeper than 15 feet in July. The current drought has seen lower well levels overall, compared to the last 4 times when an alert status has been triggered. If drought conditions continue and groundwater levels continue to drop, this community could run out of water. The highest water alert status (Critical Status) could occur in 2015 if the drought continues and the three-year average rainfall is less than 22 inches.

The SLO County Region is currently unable to meet existing agricultural water demands.

SLO County agricultural water demands are served primarily through groundwater. With the 2014 drought, water levels in the groundwater basins have decreased and aquifers along the coast suffer from seawater intrusion. These impacts to agricultural water supplies led the U.S. Department of Agriculture (USDA) to declare the county a primary natural disaster area[2]. Already, approximately 75% of the livestock have been sold or have been moved out of the county due to the drought. To maintain the remaining livestock, producers are having to go outside the county to haul in water and purchase feed, since available forage within the region is at 5% of the 13-year average.

Total annual revenue from County agricultural crops was $960 million in 2013 and provided over 15,000 jobs. Already, revenue and jobs have been affected with the 2014 drought and are even more at risk if the drought continues in 2015. As an example, avocado growers have been heavily impacted by the drought. Growers continue to cut their trees back, which will result in crop loss for several years and devastate a commodity valued at over $44 million in 2013. Growers continue to implement more water efficient irrigation systems, which may be necessary if drought conditions continue into 2015.

Projects included in the County of San Luis Obispo IRWM Drought Proposal (Proposal) deliver critically needed new water supplies to the region, directly off-setting the use of the overdrafted groundwater basins and reducing conflicts between agricultural and urban water users.

The SLO County Region is currently at risk of not meeting ecosystem water demands.

Dr. Bill Tietje of the University of California Cooperative Extension (UCCE) has conducted small mammal surveys in SLO County's oak woodlands since 1993. Many plants depend on small keystone mammals to disperse their seeds, and many additional animals depend on these keystone species for food. During the

[2] http://www.slocounty.ca.gov/Assets/AG/PressRelease/Drought+Declaration+2014.pdf

most recent drought, Dr. Tietje found that reproduction in keystone species has been largely curtailed[3]. This is a coping mechanism, which allows the animals to survive the harsh environmental conditions caused by the drought, and it is likely that when conditions improve reproduction will occur. The February and March 2014 rains were sufficient to trigger reproduction this year; however the small mammals are already stressed, and if drought continues in 2015, reproduction and thus ecosystem health is uncertain.

Trees in the SLO County Region are also stressed from lack of water. 2014 has been the driest year on record since 1870, drier even than the drought of 1988 to 1990. During this past drought, a study was conducted by Tietje et al. from UCCE to assess the drought's impact on oak trees. According to the study, by 1992 10% of the oak trees studied in SLO County, Santa Barbara County, and San Benito County had died[4]. It is likely that drought conditions contributed to these increased mortality rates. According to the study, trees with south exposure and shallow soil are most at risk. Given the severity of the current drought, it is possible that similar mortality will be observed with the 2014 drought. These oak tree mortality rates are problematic because the dying trees are not replaced. Continued drought conditions this year and into 2015 will only make this issue worse.

The SLO County Region is currently experiencing groundwater basin overdraft.

As previously documented, the main source of water for many communities within the SLO County Region is groundwater. Given the low regional rainfall this year, groundwater levels throughout SLO County are already quite low. Even before the 2014 drought, six basins within the SLO County Region were either certified or recommended as Level of Severity (LOS) III by SLO County's Land Use and Circulation Element Resource Management System (RMS). A basin is designated as LOS III when projected water demand equals or exceeds the estimated dependable supply[5]. During the current drought conditions, as communities pump water for potable use, these groundwater levels decrease even further to the point of overdraft. Some of the coastal aquifers are already experiencing seawater intrusion due to this over pumping. In particular, the project areas of San Simeon and Cambria are experiencing severe groundwater overdraft impacts.

The community of Cambria is experiencing groundwater basin overdraft. For Cambria, rainfall is at 32% of average, which is 20% less than the minimum rainfall needed to recharge the two aquifers serving the Cambria community. Uncertainty remains on whether upper springs that serve to provide underflow to the creeks during the dry season will cease earlier than normal due to the very dry conditions within each watershed. This could result in CCSD well levels dropping at an accelerated rate during the late summer to early fall period of 2014, which could lead to seawater intrusion, supply pumps losing suction, and possible land subsidence. Figure 2.3 shows that 2014 well levels are on track to drop as low as 2013 well levels in the fall months. The Cambria project will inject treated brackish groundwater upstream of CCSD's potable groundwater wells, thus lessening the observed basin overdraft while still allowing for necessary groundwater pumping.

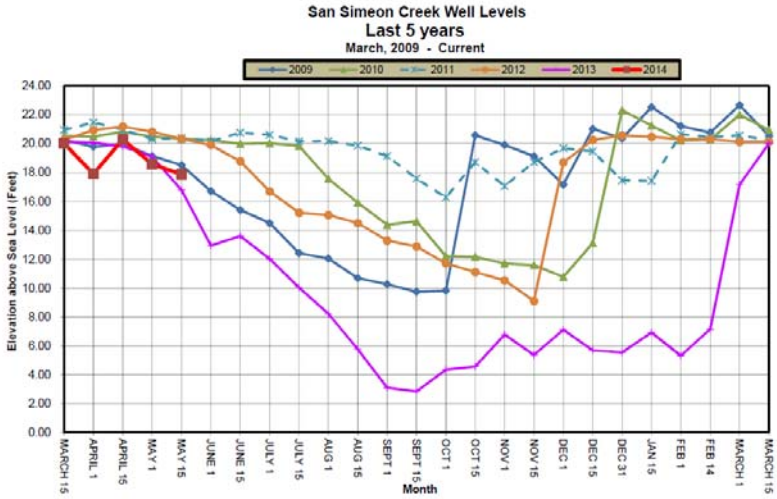

Figure 2.3: Historical Cambria Main Supply Well Level

[3] Personal communication with Dr. B. Tietje the Area Natural Resource Specialist for the University of California Cooperative Extension, June 24, 2014.
[4] Tietje et al., Drought Takes Toll on Native Oaks, *California Agriculture,* Volume 47, Number 6, November-December 1993.
[5] 2010-2012 Resource Summary Report, San Luis Obispo County General Plan, March 12, 2013, http://www.slocounty.ca.gov/Assets/PL/RMS/2010-2012_RMS.pdf

San Simeon has severe impacts from groundwater overdraft and the resulting seawater intrusion whenever the well levels reach 14 feet below sea level. With the 2014 drought, this community has already experienced seawater intrusion due to basin overdraft. Chloride levels spiked from 30 mg/L to 1,000 mg/L for a period of time in 2014 and caused damage to water-using appliances within the community. Due to spring rains, the seawater intrusion issue was mitigated; however, it is anticipated that chloride levels will rise again during the summer as water levels continue to decrease and will occur again if the drought continues in 2015. The San Simeon project will decrease the risk of overdraft by providing an alternate water source that is not linked to groundwater for irrigation and commercial users.

In addition to San Simeon and Cambria, the community of Santa Margarita is experiencing below average groundwater levels, which will only get worse as the drought continues this year and potentially into 2015. Currently the three-year average rainfall is approximately 50% below the local average, causing groundwater levels to drop 4.5 feet below non-drought year levels, putting the community at the highest alert status. This shallow groundwater basin below Santa Margarita is the only water source for the community.

The SLO County Region is currently experiencing a severe threat of fire due to drought conditions.

The drought conditions of 2014 have exacerbated the threat of fire across the SLO County Region. Figure 2.4 from SLO County's May 6th Monthly Drought Update shows the areas within the county most at risk. As of April 2014, there has been a 240% increase in the number of fires within SLO County compared to the historical yearly average. The number of acres burned has also increased by 200%. As the threat of fire increases due to dry conditions, the ability of communities to provide water to prevent these fires decreases. Especially in the districts where there is only one source of water and no emergency supply. Continued drought conditions in the fall of 2014 and into 2015 will lower groundwater and reservoir levels even further, limiting the ability of communities to provide water for fire protection and putting the need for fire protection in competition with agricultural water needs and the water necessary for human consumption.

Figure 2.4: Areas with a large fire potential

San Simeon is one community that is at severe risk for fire protection by the fall of 2014. As previously mentioned, this community relies solely on groundwater, which has already reached overdraft conditions. Currently the community is under a Stage 3 water emergency and could run out of water by fall of 2014. This threat to water supply has lead CAL FIRE (Station 10/Cambria) to approach SSCSD in search of an alternative option for water supply.

Cambria is another community with limited water resources for fire protection. Already they have determined that they will run out of water for human consumption by fall of 2014. Currently they are in a region that has above normal fire potential. As the summer continues, if a major fire occurs there could be potentially devastating consequences for residents who are counting on existing water resources for current drinking water demands.

Heritage Ranch, Santa Margarita and the Chorro Valley communities are all also at risk for fire protection because of their limited water supplies in general. Heritage Ranch's sole water source is Nacimiento Reservoir water, which they are unable to access if reservoir releases cease. The likelihood of this no-flow condition is high if drought conditions continue in 2015. The Chorro Valley Communities rely on SWP which is also at risk if the drought continues in 2015. Currently, Santa Margarita has a firewater storage facility able to hold 650,000 gallons of water. If this storage supply is exhausted by local or regional fires, it is possible that the community will have no way to replenish it due to limited water supplies, putting the community at risk.

2.0 WATER CONSERVATION MEASURES

As previously noted, a Proclamation of State Emergency was issued and a Proclamation of Local Emergency in SLO County (Appendices 2A and 2B, respectively) was issued on March 11, 2014. These proclamations have spurred the SLO County Region to put into place both mandatory and voluntary water reduction measures (see Figure 2.5). A 20% water reduction plan was put into place in February 2014 for SLO County facilities and grounds (Appendix 2C) and a 20% voluntary reduction in water usage was put into place for all SLO County residents (Appendix 2D). In many SLO County facilities low flow toilets, urinals, faucets, and showerheads have already been implemented. For the SLO County facilities and grounds reduction plans, the county will convert the remaining non low-flow fixtures to low-flow fixtures. Water efficiency investigations are also underway to reduce cooling tower blowdown, which currently uses 1.6 million gallons of water a year. Additionally some SLO County parks are being re-landscaped with lower water using plants and less turf. Irrigation schedules in all SLO County parks are also being adjusted to minimize water use. Like county parks, golf courses are also planning to use less irrigation water and will use weather station ET data to program irrigation water schedules with the utmost accuracy.

Figure 2.5: San Luis Obospo County Water Saving Logo

Outside of SLO County facilities, SLO County is asking all residents to conserve, calling for a 20% voluntary reduction in water use. The county created a "Get Ahead or Get Parched" Workshop on managing landscapes during the drought. Figure 2.6 shows one of the fliers used for advertising this workshop. The county also created a webpage that contains useful drought information. The homepage of one such website is shown in Figure 2.7. To reach water users directly, SLO County is using customer's monthly water bill as the first-line in consumer education. Notifications have been sent out with water bills encouraging water conservation. Zone 3 agencies[6] also provide recent historical water use information to customers, so they can see clearly if their water conservation efforts are working. Public Service Announcements also educate residents on water conservation and the 2014 drought. Local television news stations are airing water conservation slides prepared by SLO County Staff. SLO County staff are also investigating options for additional advertizing and education opportunities through television, radio, and billboards. On a local level, water conservation measures have been more aggressive throughout the county, particularly in the five communities where projects have been proposed with this grant application. A complete list of community measures implemented within SLO County can be found in Appendix 2E.

Four of the five project proponents (80%) included in the Proposal have implemented mandatory or voluntary 20% reduction water conservation measures as described below. The fifth project sponsor, Heritage Ranch, has implemented a 15% reduction water conservation program.

[6] Flood Control District Zone 3 treats and delivers Lopez Reservoir water to five agencies in the south county.

Figure 2.6: Flier for the Get Ahead or Get Parched Workshop

Figure 2.7: One SLO County Drought Conservation Website Homepage

Project 1: Intertie between CSA 23 (Santa Margarita) and Atascadero Mutual Water Company (AMWC) and Garden Farms Community Services District (GFCSD)
Project Sponsor: San Luis Obispo County

The Community of Santa Margarita's water system (CSA 23) is operated by SLO County and relies solely on groundwater. Since this community's water is operated by the County, SLO County's 20% voluntary water reduction is in effect here. Additionally, the region is currently under an ALERT status, shown in Figure 2.8, due to below average groundwater levels and rainfall (Appendix 2F). This alert calls for voluntary reductions in water use at a local level. Signs indicating this alert status have been posted along the El Camino Real asking commercial and residential customers to conserve. Additionally, fliers were sent out to water customers explaining the water situation and providing tips for saving water. Two such fliers are included in Appendix 2G. Furthermore, CSA 23 has been working with CAL Fire to limit the use of water from their water sources during fire events and mutual aid calls. This will help conserve CSA 23's limited water resources. Drought status is determined by both groundwater level and annual rainfall. If a CRITICAL water status is declared, mandatory water conservation measures will be implemented. If the drought continues into 2015, the water status will likely be raised to CRITICAL.

Figure 2.8: CSA 23 Alert Water Status

Project 2: Heritage Ranch Community Services District (HRCSD) Emergency Water Turnout
Project Sponsor: Heritage Ranch Community Services District

Heritage Ranch Community Services District (HRCSD) has only one source of water, which is unavailable when flow in the Nacimiento River drops to low levels. The projected flow in the Nacimiento River during the 2014 peak summer demand will be the lowest flow in over twenty years. Since April 15, 2014, HRCSD has been under a mandatory Stage 2 drought condition (i.e., Nacimiento Reservoir water elevation is between 720 and 700 feet) for all water users (Appendix 2H). A Stage 2 drought condition prohibits outdoor water use on Monday's, limits outdoor irrigation to three days per week, and limits or prohibits other specific water uses as well, such as car/boat washing and excessive plumbing leaks. The goal of this Stage 2 condition is to achieve a minimum of 15% reduction in water demand, and conserve the water supply for human consumption, sanitation, and fire protection. If the drought continues in 2015, further stages will be implemented that will increase water reduction goals to 30%, then 50%.

Project 3: Cambria Community Services District (CCSD) Emergency Water Supply
Project Sponsor: Cambria Community Services District

Cambria has been in a Stage 3 Emergency since January 2014 (Appendix 2I). This Stage 3 Emergency requires reducing commercial water use by 20% and restricts residential use to 50 gallons per person per day, which is greater than a 20% reduction. Use above these allotments will result in a fine starting at a 500% surcharge. Outdoor irrigation is prohibited as is washing vehicles, boats, trailers, sidewalks, windows, and buildings. Refilling swimming pools and using potable water for fire drills is also prohibited. The Stage 3 Emergency also closes public restrooms. In response to this emergency, restaurants are using paper plates and washing machines at the local laundromat have been replaced with high efficiency machines. If drought conditions continue into 2015, there is risk of seawater intrusion, pump suction loss, and possible subsidence. Currently no other water source is available.

Project 4: San Simeon Community Services District (SSCSD) Small Scale Recycled Water Project – Purple Pipe Distribution

Project Sponsor: San Simeon Community Services District

The San Simeon Community Services District (SSCSD) is also under a Stage 3 Emergency due to low groundwater levels and high seawater intrusion (Appendix 2J). With this Stage 3 Emergency, fines for restriction violations are tripled. While no percent reduction is listed in the Stage 3 proclamation, outdoor irrigation use is prohibited, hotels are not allowed to wash linens more than every other day, potable water use for construction is prohibited, restaurants are not allowed to serve tap water to their customers, refilling swimming pools is prohibited, and washing sidewalks, buildings, and automobiles is also prohibited. These mandatory measures go much further than a voluntary or mandatory 20% reduction in potable water use. Already, low groundwater levels have caused increased chloride levels, which damaged water-using appliances in the region. Seawater intrusion is only expected to increase during summer months. This community may run out of potable water in 2014 with no alternate water source (Appendix 2K).

Project 5: Nacimiento-Salinas-California Men's Colony (CMC) Water Treatment Plant Emergency Intertie

Project Sponsor: San Luis Obispo County Flood Control and Water Conservation District

The County Jail and Emergency Operations Center are both operated by SLO County and rely on State Water for potable water supplies. Since these communities' water systems are operated by SLO County, the County's 20% voluntary water reduction is in effect here. This 20% reduction involves public education through PSAs, fliers with monthly water bills, and various workshops as discussed above. The unavailability of SWP water this year has exacerbated the need for reliability measures and emergency supplies. These institutions currently have a small amount of SWP water in storage that can be delivered this year; however, that will be exhausted by the end of 2014. If SWP water is not available next year, these institutions/communities will be without water. The California Men's Colony (CMC) State Prison are not operated by SLO County. However, CMC has also implemented a specific local plan to achieve a 20% water use reduction (Appendix 2L). This plan includes limiting irrigation, limiting inmate shower time to five minutes, reporting plumbing leaks, not using water to clean sidewalks, and only washing full loads of dishes and laundry. Overall, the County Operations Center, Community College, and CMC already have a very low water usage of 70 gallons-per-person-per-day. They are taking measures to reduce this usage by 20%, but they still need to maintain the human right to water. Without SWP next year or another water source, the ability to provide this human right to water is in jeopardy.