



Tuolumne-Stanislaus Integrated Regional Water Management Plan

MEETING LOGISTICS: Wednesday, November 16, 2011
9:00 a.m. – 12:00 p.m.

LOCATION: Tuolumne Utilities District Office
18885 Nugget Blvd., Sonora

MEETING PURPOSE:

To develop a Prop 84 compliant Integrated Regional Water Management Plan for the Upper Tuolumne, Upper Stanislaus, and Little John Creek Watersheds.

MEETING GOALS:

- Confirm Planning Grant Committee membership
- Discuss Major Water-Related Needs/Challenges and Conflicts
- Data Management System Demonstration
- Receive subcommittee reports

| TIME | AGENDA ITEM | PRESENTER(S) |
|------|--|----------------------------|
| 15 | I. Meeting Opening <ul style="list-style-type: none"> • Introductions • Agenda Review • Member Identification Form • Homework/Binder Reminder | Carolyn Lott |
| 5 | II. Welcome MOU and Payment Update Collect In-Kind Tracking Sheets | Pete Kampa |
| 5 | III. Approval of October Meeting Summary | Carolyn Lott |
| 15 | IV. IRWM Plan Development Process Review (Handout #1) | Sachi Itagaki/Sean Maguire |
| 90 | V. Regional Description Discussion <ul style="list-style-type: none"> • Major Water-related Needs and Challenges (Handout #2) • Data Gaps and Information Needed (Handout #3) • Updated Region Water Demand and Population Projections (Handout #4) | Sachi /Sean |
| 15 | VI. Data Management System Committee Update and Demonstration | Sachi |
| 5 | VII. Federal Funding Leveraging Opportunities Overview <ul style="list-style-type: none"> • Tuolumne River Trust | Patrick Koepele |
| 5 | VIII. Interregional Coordination | John Mills |

| | | |
|----|---|--------------------------|
| 10 | IX. Committee Reports <ul style="list-style-type: none"> • DAC Outreach • Tribal Outreach • Data Management (Previously covered under Item VI) | Sachi |
| 5 | X. Public Comment | Carolyn |
| 5 | XI. Meeting Recap Action Items January Meeting Agenda Topics | Carolyn Sean Sachi |

MEETING HANDOUTS:

- Agenda*
- Meeting Summary*
- Handout #1: IRWM Plan Preparation Process
- Handout #2: Major Water Related Needs/Challenges and Conflicts*
- Handout #3: Data Gaps and Information Needed
- Handout #4: Draft Updated Region Water Use and Population Projections

* Sent in Advance

Meeting Videos, Agendas, Summaries, Documents, and Approved Draft Plan Sections Available Online at:

http://www.tudwater.com/project_development/integrated-regional-water-management-plan.htm



Tuolumne-Stanislaus IRWMP

Stakeholder Meeting

November 16, 2011

Tuolumne Utilities District

Sonora, CA

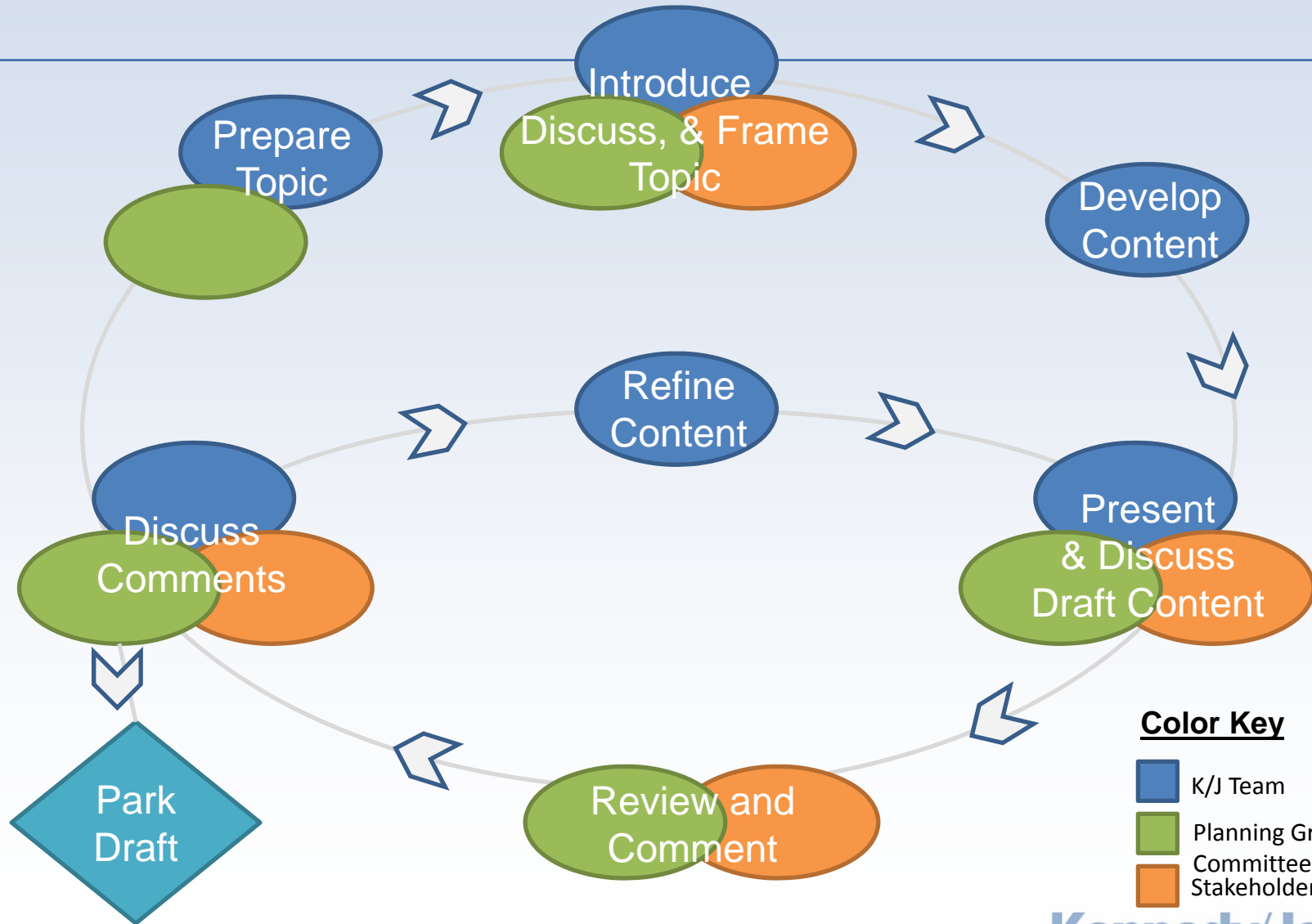


IRWM Planning Process Overview





Plan Section Development



Handout 2: Major Water Needs/Challenges and Conflicts for the Tuolumne – Stanislaus IRWM

In order to lay the foundation for the preparation of the Tuolumne-Stanislaus Integrated Regional Water Management (IRWM) Plan, the major water-related needs, challenges and conflicts within the region need to be described. The needs, challenges and conflicts are a part of the region description and will be used to identify the IRWM Plan objectives. The IRWM Plan objectives will in turn be used in conjunction with project selection criteria to develop and prioritize programs, projects, and/or actions that will address the water needs/challenges and conflicts.

The needs/challenges and conflicts were derived from the Regional Acceptance Process (RAP) application, the IRWM questionnaire responses submitted by stakeholders in December 2010 through early 2011, and the discussions at the IRWM Plan meetings on 21 September 2011 and 19 October 2011. The needs/challenges and conflicts have been aligned around the broad Resource Management Strategy (RMS) categories in the August 2010 Proposition 84 IRWM Program guidelines that define required IRWM Plan elements.

A 2-page summary of the Needs/Challenges and Conflicts is provided below which is followed by a more detailed discussion on page 3. In the detailed discussion, bulleted items under each Need/Challenge and Conflict describe currently available supporting information where available; yellow highlights identify areas where more information is needed. Additional information will be added as it is identified by the stakeholders. The order of the Need/Challenge and Conflict is not prioritized.

SUMMARY: Major Water Related Needs/Challenges and Conflicts

1. Water Use Efficiency

1.1 Need/Challenge: Increase current and future water use efficiency (WUE) in municipal and agricultural settings.

2. Water Supply Reliability

2.1 Need/Challenge: Development of reliable and affordable water supply to support existing and future land use planning/growth addressing issues such as increased agriculture, unreliable groundwater sources, fire flow needs and potential use of water recycling.

2.2 Conflict: Much of the water in the region is exported, stored, or used by senior water right holders outside the region, constraining the availability of water for local resources.

2.3 Conflict: Plans and activities of senior water rights holders outside the T-S Region do not get effectively communicated or coordinated with local agencies in the T-S- Region.

2.4 Need/Challenge: There is currently inadequate surface storage capacity for agencies within the region.

2.5 Conflict: The majority of water rights/contracts used for water supply and hydro power generation are held by agencies with the vast majority of their service areas outside the region. Where there are existing contracts with these agencies for water supply within the region may not be sufficient to meet future local needs. In other cases contracts for water

supply from those agencies are not available to local agencies which provide service to the region.

2.6 Need/Challenge: Maintenance of sufficient in-stream water flow to meet ecosystem needs.

2.7 Need/Challenge: Uncertain effect of climate change on T-S Region water supply.

2.8 Need/Challenges: Use of Wells as primary water supply in the region is problematic due to difficulty in predicting water supply and water quality due to the nature of the groundwater source (fractured rock highly subject to localized factors).

3. Operational Efficiency and Transfers

3.1 Need/Challenge: Single water source ditches/flumes are not protected from contamination, and are susceptible to interruption due to landslides/snowslides/trees/fires. This increases the need for additional storage, redundant conduit(s) and/or supply sources.

3.2 Conflict: Land use conflicts with historic water supply system (flumes, ditches, and canals).

3.3 Conflict: Some portions of the ditches are subject to significant water loss. Although this reduces available water, it contributes to riparian habitat and groundwater recharge.

3.4 Need/Challenge: Subsurface storage in some meadows/hillslopes is not currently optimized because of the need for restoration.

4. Water Quality

4.1 Need/Challenge: Non-point sources of pollution including failing septic systems, cattle grazing, and other sources of pathogens are believed to affect surface water and groundwater quality, affecting drinking water quality, recreation, and aquatic life.

4.2 Need/Challenge: Water quality impacts including pesticide/herbicide/fertilizer, sediments, oils and greases, animal manure, and other contaminants from agriculture and forestry, cattle grazing, recreation, urbanization and other land uses such as historic mining are present in the region and may be causing decreased water quality throughout the region.

4.3 Need/Challenge: Erosion and sedimentation of streams and lakes as well as past land use practices such as mining may be contributing to downstream water quality impacts.

4.4 Need/Challenge: Meeting Basin Plan and other Clean Water Act water quality objectives for wastewater discharges to land and/or surface water.

4.5 Need/Challenge: Compliance with the Safe Drinking Water Act (SDWA) at small surface water treatment plants, particularly for cryptosporidium, Guardia, E. coli, and turbidity.

4.6 Need/Challenges: Land use planning practices that do not incorporate low impact development exacerbate stormwater impacts (e.g. erosion, water quality, sedimentation)

5. Resources Stewardship – Watershed Enhancement and Restoration

5.1 Need/Challenge: Impact of some past/current land uses on High Sierra meadows and ponds resulting in degradation of meadow condition causing loss of groundwater storage/flood flow attenuation, increase in summer stream temperatures, loss of fisheries/riparian habitat and increased erosion and sediment loads.

5.2 Need/Challenge: Negative impacts of erosion on riparian corridors.

5.3 Need/Challenge: Modification of forestry management plans to reduce fuel loads, fire hazards, sediment loads and other water quality impacts.

5.4 Need/Challenge: Fire risk due to dense vegetation resulting in risk to public safety, water supply, water quality and ecosystem impacts.

5.5 Need/Challenge: Improved management of ecosystems such as springs, seeps, vernal pools, fens, bogs, riparian areas and marshes to maintain ecosystem function.

5.6 Need/Challenge: Some public and private roads used for OHV, logging, and other activities in the IRWM watersheds are unpaved and erode during the wet months contributing sediment to streams/rivers and reservoir/lakes.

6. Flood Management

6.1 Need/Challenge: Many stormwater systems within the region are in need of increased maintenance/attention to reduce the potential for catastrophic flooding.

7. Other Needs/Challenges and Conflicts

7.1 Need/Challenge: Local land use decisions are made that allow septic tanks and groundwater development to occur where the soil, slope and other conditions are not adequate to accommodate use of septic disposal systems, resulting in public health threats.

Discussion: Major Water Related Needs/Challenges and Conflicts

1. Water Use Efficiency

1.1 Need/Challenge: Increase current and future water use efficiency (WUE) in municipal (residential/commercial/industrial/institutional) and agricultural settings.

- Through preparation of Urban Water Management Plans, local water agencies have identified per capita water use targets that require implementation of WUE measures that will support meeting the statewide SBx7-7 goals of reducing per capita water use by 20% by 2020.

- Local water agencies anticipate financial challenges with implementing WUE measures because of the high program costs as compared to the relatively low marginal cost of water in the region.

2. Water Supply Reliability

2.1 Need/Challenge: Development of reliable and affordable water supply to support existing and future land use planning/growth.

- The 2010 UWMPs for TUD, GCSD, and CCWD provide estimated municipal/agricultural demands to 2035 for planned land uses accounting for approximately 80% of the Region's population. 2010 demands are about 22,000 Acre-feet/yr (AFY) and 2035 municipal/agricultural projections are 82,000 AFY. The UWMPs indicate that urban water supplies are expected to be reliable, even in dry years.
- Some areas in the region, particularly in disadvantaged communities, are supplied by unreliable groundwater sources (e.g. wells go dry during low precipitation/recharge years or have contamination problems) or have water systems in need of repair and improvement.
- Increased reliability of water supply quantity and infrastructure (discussed in RMS 3) to store, and deliver supply, especially for fire flow, is necessary.
- Recycled water is utilized in the region by TUD and other agencies, but there are opportunities to expand reuse. Graywater, stormwater capture may be other options to increase local water supplies.

2.2 Conflict: A significant quantity of water (almost 3 million AFY on average, with a low of 0.5 million AFY (1977) and a high of 7.6 million AFY (1983)) originates in the upper Tuolumne and Stanislaus watersheds. Much of the water is exported, stored, or used for other purposes (such as hydropower) and there is a resulting constraint on the availability of water for local resources.

- Senior water rights holders (e.g. Tri-Dam (OID/SSJID), USBR, PG&E, NCPA, SFPUC, TID, MID) have storage and hydro power facilities in the region.
- Some water agencies (e.g. GCSD and TUD) rely on contracts with senior water rights holders such as SFPUC and PG&E for their supply.
- **What are examples of effects on local resources?**

2.3 Conflict: Plans and activities (e.g. FERC relicensing and storage projects) of senior water rights holders outside the T-S Region do not get effectively communicated or coordinated with local agencies in the T-S- Region.

- Proposals from agencies outside the region have been made to raise Lyons Reservoir and construct a pumped storage hydroelectric project upstream of New Don Pedro Reservoir
- 401 water quality certification of Pinecrest Reservoir.
- Storage and reservoir management by agencies outside the region and the federal government
- **Other examples?**

2.4 Need/Challenge: There is currently inadequate existing surface storage capacity for agencies within the region.

- Most of the existing surface storage is owned and operated by agencies outside the region, including irrigation districts and the federal government.
- Local storage capacity is limited to a few small reservoirs including a portion of Lyons Reservoir and Phoenix Lake. Local agencies need additional satellite surface storage to increase reliability of water supply during droughts or outages to raw water conveyance facilities.

2.5 Conflict: The majority of water rights/contracts used for water supply and hydro power generation are held by agencies with the vast majority of their service areas outside the region. Where there are existing contracts with these agencies for water supply within the region may not be sufficient to meet future local needs. In other cases contracts for water supply from those agencies are not available to local agencies which provide service to the region.

2.6 Need/challenge: Maintaining sufficient in-stream water flow at appropriate times to meet ecosystem needs.

- FERC licenses for hydropower facilities provide in-stream flow requirements.

2.7 Need/Challenge: Uncertain effects of climate change on T-S- Region water supply.

2.8 Need/Challenge – Use of Wells as primary water supply – Most of the region does not contain a groundwater basin as such. Groundwater is found in fractured rock at varying depths, and predicting the safe yield of such water sources is very difficult. Water quality also varies from very good to poor depending upon highly localized factors. During significantly dry years and droughts, many wells within the region have gone dry and had to either be deepened or relocated to maintain supply needs.

3. Operational Efficiency and Transfers

3.1 Need/Challenge: Single water source ditches/flumes are open and not protected from contamination, and are susceptible to interruption from downed trees/landslides/snowslides in the wet season and fire in the dry season. The resulting outage potential and security risks drive

the need for additional storage, redundant conduit(s), and/or supply sources to withstand the outage.

3.2 Conflict: Land use conflicts with historic water supply system (flumes, ditches, and canals). Agencies have been unsuccessful in improving coordination of land use planning with regard to new roads, storm drains, encroachment of the conveyance on private property, and the associated liability of these facilities.

- Where has this been found to be a major concern? Have agencies in the region other than TUD experienced similar challenges?

3.3 Conflict: Some portions of the ditches are subject to significant water loss which reduces the amount of water available for use, but contributes to riparian habitat development adjacent to the ditches and possibly supports groundwater recharge.

- TUD estimates that 40% of raw water is lost through the ditch conveyance system. Do other agencies have estimates of raw water conveyance losses?
- How many riparian areas have been identified?

3.4 Need/Challenge: Subsurface storage in some meadows/hillslopes is not currently optimized because of the need for restoration. (See also 5.1)

- How many meadows/hillslopes have been identified, and where are they located?
- Improving meadow storage efficiency will also result in improved baseflow in water ways for ecological benefit.

4. Water Quality

4.1 Need/Challenge: Non-point sources of pollution including failing septic systems, cattle grazing, and other sources of pathogens are believed to affect surface water and groundwater quality and contribute to degradation of drinking water quality which makes the water more difficult to treat, recreation (e.g. closed swimming holes), and may affect aquatic life.

- Tuolumne County 1999 Groundwater Protection Report discusses an inventory of 497 problematic septic systems within the primary study area (which is generally the populated foothill area of the T-S Region). There are more than 7,500 septic systems in the county, so it is likely that there are many more problematic systems. (2007 Foothill Watershed Assessment) The location and severity is undetermined.
- TCRCO volunteer Stream Team sampling in Upper Tuolumne and Upper Stanislaus watersheds in 2008 and 2009 has identified elevated e-coli levels in many of the streams in Tuolumne County. The highest e.coli detections were observed Woods Creek at Rawhide Rd. and Peppermint Creek at Pulpit Rock Rd. (2008-2009 Tuolumne County Stream Team WQ Report).

- The Central Valley RWQCB has identified Curtis Creek (12 mi.), Sullivan Creek (11 mi.), and Woods Creek (15 mi.) in the Upper Tuolumne River Watershed as Clean Water Act (CWA) Section 303d listed for water quality impairment for E. Coli. contamination. Sources are listed as unknown.
- How many chronically failed septic systems are there and where are they located?

4.2 Need/Challenge: Other water quality impacts including pesticide/herbicide/fertilizer, sediments, oils and greases, animal manure, and other contaminants from agriculture and forestry, cattle grazing, recreation, urbanization and other land uses is occurring. These water quality impacts when mitigated have significant benefit to water supply and ecosystem.

- The Central Valley RWQCB has identified Don Pedro (11,056 Acres) and Hetch Hetchy Reservoir (1,840 Acres) in the Upper Tuolumne River Watershed and New Melones Reservoir (1,654 Acres) and Tulloch Reservoir (992 Acres) in the Upper Stanislaus River Watershed as Clean Water Act (CWA) Section 303d listed for water quality impairment for Mercury. Sources are listed as resource extraction.
- Open burning of excess forest biomass after logging may be producing ash and other by products that may be entering water ways.

4.3 Need/Challenge: Erosion and sedimentation of streams and lakes as well as past land use practices such as mining may be contributing to downstream water quality impacts.

- Surface water quality impacts to downstream water users and aquatic habitat is occurring (e.g. Phoenix Lake has experienced significant sedimentation)
- There are ten active mines within the Upper Stanislaus River Watershed. The commodities being mined include stone, talc, sand & gravel, magnesium, calcium and pumice. There are numerous historic mines, including abandoned gold and silver throughout the Upper Stanislaus River Watershed. (Source: Figure 5-8/ Table 106, Watershed Sanitary Survey)

4.4 Need/Challenge: Meeting Basin Plan and other CWA water quality objectives for wastewater discharges to land and/or surface water is a challenge.

- Current NPDES surface water discharge permits require compliance with copper and zinc effluent discharge limitations which are difficult to achieve without significant WWTP process improvements.
- Agencies employing land application under WDRs must provide adequate storage, beneficial use in land applications, and comply with other regulatory requirements such as the groundwater anti-degradation policy.

4.5 Need/Challenge: Agencies have difficulty complying with the Safe Drinking Water Act (SDWA) at multiple small surface water treatment plants particularly for cryptosporidium, giardia, E.coli (or TOC compliance for Disinfection Byproducts),and turbidity

- TUD (source: 2010 UWMP)
- NPS – Tuolumne Meadows (turbidity, cryptosporidium and giardia) (source: Tuolumne River Plan draft EIS, April 2011)

4.6 Need/Challenge – Land use planning practices that do not incorporate low impact development exacerbate stormwater impacts (e.g. erosion, water quality, sedimentation, flooding).

5. Resources Stewardship – Watershed Enhancement and Restoration

5.1 Need/Challenge: Some past and current land use practices have negatively impacted High Sierra meadows and ponds and resulted in the degradation of meadow condition resulting in loss of groundwater storage in the meadow, loss of flood flow attenuation, increased summer stream temperatures, loss of fisheries habitat, loss of riparian habitat, and increased erosion and sediment loads. (See also 3.3)

- **X meadows** have been identified in the T-S Region, of which **Y** have been evaluated and found to be impacted (**check with the USFS, Lindsay of RCD and Patrick of TRT**)

5.2 Need/challenge: **XX miles** of riparian corridor in the region are negatively impacted by erosion.

- **Where is the erosion a significant issue – (the Tuolumne River Plan draft has some discussion)**

5.3 Need/challenge: Some forestry and vegetation management practices could be modified to reduce fuel loads and fire hazards as well as reduce sediment loads and other water quality impacts. (Source: Central Stanislaus Watershed Analysis, 2002)

5.4 Need/Challenge: There are areas of the forest which have unnaturally dense vegetation that pose a significant fire risk with resulting public safety, public water supply (open ditch infrastructure), water quality, and ecosystem impacts.

- Stanislaus National Forest – **needs quantification** (Source: Central Stanislaus Watershed Analysis, 2002)
- Yosemite National Park – **needs quantification**
- **Other? Private lands?**

5.5 Need/Challenge: There are habitats such as springs, seeps, vernal pools, fens, bogs, riparian areas and marshes that should be managed to maintain their ecosystem functions.

- **How many of this type of habitat? Where are they located?**

5.6 Need/Challenge: Some public and private roads used for OHV, logging, and other activities in the IRWM watersheds are unpaved and erode during the wet months impact waterways by

contributing sediment to the streams/rivers and reservoirs/lakes to the detriment of water quality and ecosystem health.

- **Where are the sources, and affected locations?**

6. Flood Management

6.1 Need/Challenge: Stormwater systems are in need of increased maintenance/attention to reduce the potential for catastrophic flooding.

- Tuolumne County Public Works has identified areas of Sullivan, Sonora, Mormon, Woods and Curtis Creeks to be problematic. Some more rural areas with county or ranch roads have low water fords which flood and prevent access at times.
- Improvement to storm water management (e.g. Low Impact Development) will also reduce sediment loads and erosion.
- Localized flooding within the City of Sonora along Sonora Creek, generally west of and downstream of the Greenley Road area, but a factor within the Sonora Creek watershed. Flooding has occurred in the past within the City of Sonora's downtown area.

7. Other Needs/Challenges and Conflicts

7.1 Need/Challenge- Local land use decisions are made that allow septic tanks and groundwater development to occur where the soil, slope and other conditions are not adequate to accommodate use of septic disposal systems. Depending upon location, this may not only result in public health threats, but also impact water transmission systems (open ditches) as wells as natural waterways.

Current Projects/Reports

| Agency | Project/Report Title | Report Date | K/J has a Copy | File Location |
|---|--|---------------------|----------------|---------------|
| Calaveras Agency Formation Commission | Public Review Draft Water and Wastewater Municipal Service Review | 2011 | x | |
| Calaveras County | Calaveras County General Plan | | x | online |
| Calaveras County | Local Hazard Mitigation Plan | 2008 | x | |
| Calaveras County Water District (CCWD) | MOU and Settlement Agreement by and between CCWD and Utica Power Authority | 1009 | x | 2.14 |
| Calaveras County Water District (CCWD) | 2005+2010 Urban Water Management Plan | 2005/2010 | x | 1.2 |
| Calaveras County Water District (CCWD) | Stanislaus River Sanitary Survey | 2006 | x | 1.14 |
| Calaveras County Water District (CCWD) | Map-Water Demands within Calaveras County | 2009 | x | |
| Calaveras County Water District (CCWD) | Tech. Memo - Evaluating the Potential for Agricultural Development in Calaveras County | 15-Jun-11 | x | |
| Calaveras County Water District (CCWD) | Sewer System Management Plan | 2-Jul-05 | x | |
| California Rangeland Watershed Laboratory | Pilot Study Results Summer 2010 Water Quality on US Forest Service Grazing Allotments | 2010 | x | 1 |
| California Rangeland Watershed Laboratory | Water Quality on US Forest Service Grazing Allotments | 2010 | x | 1 |
| Central Sierra Environmental Resource Center (CSERC) | Water Quality Sampling and Study Report (2009 and 2010) | expected 11/30/2010 | x | 1.3? |
| Central Sierra Resource Conservation and Development Council (RC&D) | Stewardship through Education Program | N/A | x | |
| Central Valley Regional Water Quality Control Board (CVRWQCB) | Fourth Edition of Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basin | 2008 | x | ? |
| City of Angels Camp | City of Angels Camp General Plan | | x | |
| City of Sonora | Sonora Creek Watershed Study | | | |
| Clavey Watershed Council | Clavey River Watershed Action Plan | 2010 | x | 1.4 |
| Federal Energy Regulatory Commission (FERC) | Draft Environmental Impact Statement for Hydropower Licenses-Stanislaus River Projects | 2004 | x | 1.5 |
| Federal Energy Regulatory Commission (FERC) | Don Pedro-EIS Work Order-FERC | 2011 | x | |
| Federal Energy Regulatory Commission (FERC) | Don Pedro Additional Information | 2011 | x | 1.7 |
| Federal Energy Regulatory Commission (FERC) | Issued FERC Licenses | | x | |
| Groveland Community Services District (GCSD) | Water Master Plan | 2001 | x | 1.8 |
| Groveland Community Services District (GCSD) | Wastewater Master Plan | 2001 | x | 1.9 |
| Groveland Community Services District (GCSD) | Parks Master Plan | 2001 | x | 1.1 |
| Groveland Community Services District (GCSD) | District Property Land Use Study | 2007 | x | 1.11 |
| Groveland Community Services District (GCSD) | Recycled Water Disposal Expansion Study | | | |
| Groveland Community Services District (GCSD) | Wastewater Treatment Plant Upgrade Study | | | |
| Groveland Community Services District (GCSD) | Septic System Water Quality Study | 2002 | x | 1.12 |

Handout #3 - List of Documents

| Agency | Project/Report Title | Report Date | K/J has a Copy | File Location |
|---|--|--------------------|----------------|---------------|
| Groveland Community Services District (GCSDD) | 2005+2010 Urban Water Management Plan | 2010 | x | 1.13 |
| Local Agency Formation Commission (LAFCO) | 2007 MSR for CCWD | 2011 | x | |
| Local Agency Formation Commission (LAFCO) | 2007 MSR for GCSDD | 2007 | x | 2.8 |
| Local Agency Formation Commission (LAFCO) | 2007 MSR for Leland Meadows Water District | 2007 | x | 2.8 |
| Local Agency Formation Commission (LAFCO) | 2007 MSR for TUD | 2007 | x | 2.8 |
| Local Agency Formation Commission (LAFCO) | 2007 MSR for Twain Harte CSD | 2007 | x | 2.8 |
| Local Agency Formation Commission (LAFCO) | Murphys Sanitary District-Reply to Public Review Draft | 4/15/2011 | x | 2.8 |
| Local Agency Formation Commission (LAFCO) | CCWD- Reply to LAFCO MSR | 5/25/2011 | x | 2.8 |
| Local Agency Formation Commission (LAFCO) | Lee Schmedes-Reply to LAFCO MSR | 5/24/2011 | x | 2.8 |
| Local Agency Formation Commission (LAFCO) | Notice of Public Hearing | | | 2.8 |
| Local Agency Formation Commission (LAFCO) | Addendum UPA Re: Public Review Draft Water and Wastewater MSR | 5/24/2011 | x | 2.8 |
| Local Agency Formation Commission (LAFCO) | UPA Re: Public Review Draft Water and Wastewater Municipal Service Review | 5/24/2011 | x | 2.8 |
| Multiple Agencies (TCRCD/TUD/SNC, Master Gardeners, TRT, USFS, Tuolumne county) | Great Sierra River cleanup | N/A | x | |
| San Francisco Public Utilities Commission (SFPUC) | EIR for System Upgrades | | | |
| San Francisco Public Utilities Commission (SFPUC) | Upper Tuolumne River Ecosystem Project | 2009 | x | 1.1 |
| San Francisco Public Utilities Commission (SFPUC) | Urban Water Management Plan, 2010 | 2010 | x | 2.15 |
| Tuolumne County (TC) | Infrastructure Blueprint | | x | |
| Tuolumne County (TC) | Tuolumne County General Plan | | x | |
| Tuolumne County (TC) | Wastewater Ordinance Revisions | In progress (2010) | x | |
| Tuolumne County (TC) | The Foothill Watershed Assessment | 2007 | x | 2.1 |
| Tuolumne County (TC) | Tuolumne County Water Quality Plan | 2007 | x | 2.2 |
| Tuolumne County Resource Conservation District (TCRCD) | Stream Team Water Quality Data | 2008-2009 | x | 2.3 |
| Tuolumne County Resource Conservation District (TCRCD) | Meadow Restoration Outreach (as Subcontractor to Environmental Defense Fund) | | | |
| Tuolumne County Resource Conservation District (TCRCD) | Watershed Coordinator Grant | | x | |
| Tuolumne River Technical Advisory Committee | Habitat Restoration Plan for the Lower Tuolumne River Corridor | 2000 | x | |
| Tuolumne Utilities District (TUD) | Regional Wastewater Treatment and Reuse Plan | | x | |
| Tuolumne Utilities District (TUD) | Tuolumne Ditch System Sustainability Project | N/A | In progress | |
| Tuolumne Utilities District (TUD) | 2005+2010 Urban Water Management Plan | 2005/2010 | x | |
| Tuolumne Utilities District (TUD) | TUD Phoenix Lake Preservation and Restoration Plan | | In progress | |
| Tuolumne Utilities District (TUD) | Treated Water System Optimization Plan | | In progress | |
| Tuolumne-Stanislaus IRWM Program Planning Grant Committee Member Questionnaire | ATCAA Response (Craig Case) | 2011 | x | 3.1 |
| Tuolumne-Stanislaus IRWM Program Planning Grant Committee Member Questionnaire | Central Sierra Audubon Society Response | 2011 | x | 3.1 |
| Tuolumne-Stanislaus IRWM Program Planning Grant Committee Member Questionnaire | Me-Wuk | 2011 | x | 3.1 |
| Tuolumne-Stanislaus IRWM Program Planning Grant Committee Member Questionnaire | Sierra Club, John Stertevant | 2011 | x | 3.1 |

| Agency | Project/Report Title | Report Date | K/J has a Copy | File Location |
|--|---|---|----------------|---------------|
| Tuolumne-Stanislaus IRWM Program Planning Grant Committee Member Questionnaire | Stanislaus National Forest | 2011 | x | 3.1 |
| Tuolumne-Stanislaus IRWM Program Planning Grant Committee Member Questionnaire | Tuolumne Co. Development Department | 2011 | x | 3.1 |
| Tuolumne-Stanislaus IRWM Program Planning Grant Committee Member Questionnaire | TUD Ratepayer | 2011 | x | 3.1 |
| Tuolumne-Stanislaus IRWM Program Planning Grant Committee Member Questionnaire | Twain Harte | 2011 | x | 3.1 |
| Twain Harte Community Services District (THCSD) | 2010 Annual Report to the Drinking Water Program for Year Ending Dec. 31, 2010 | 2010 | x | 1.15 |
| U.S. Census Bureau | 2000 Census GIS Block Maps and Median Household Income Data | 2000 | x | |
| U.S. Census Bureau | 2010 Census GIS Block Maps and Median Household Income Data | 2010 | x | |
| U.S. Forest Service (USFS) | Stanislaus National Forest - Forest Plan Direction | 2010 | x | 2.4 (TOC) |
| U.S. Forest Service (USFS) | Wild and Scenic River Study | 1991 | x | 2.6 (TOC) |
| U.S. Forest Service (USFS) | Tuolumne River Wild and Scenic River Management Plan | 1988 | x | 2.7 (TOC) |
| U.S. Forest Service (USFS) | Central Stanislaus Watershed Analysis | 2002 | x | 2.9 (TOC) |
| U.S. Forest Service (USFS) | Clavey River Wild and Scenic River Value Review | 1997 | x | 2.10 (TOC) |
| U.S. Forest Service (USFS) | Water Quality Management on National Forest Lands in California: Best Management Practices | 2000 | x | 2.11 (TOC) |
| U.S. Forest Service (USFS) | Forest Service Manual | modified 1997 | x | 2.12 (TOC) |
| U.S. Forest Service (USFS)/Clavey River Ecosystem Project | Clavey River Ecosystem Project Clavey River Watershed Assessment | 2008 | x | 2.13 (TOC) |
| U.S. National Park Service | Yosemite National Park Wild and Scenic River Study and Management Plan for Tuolumne River | | | |
| UC Cooperative Extension | Master Gardener Program | N/A | x | |
| United States Bureau of Reclamation (USBR) | New Melones Lake Stanislaus River, CA-Supplemental Data on Use of Conservation Yield | 1973 | x | |
| United States Bureau of Reclamation (USBR) | New Melones Lake Area Final Resource Management Plan & Environmental Impact Statement | 2010 | x | 1.6 |
| USGS | Groundwater Quality Data for the Sierra Nevada Study Unit | 2008 | x | |
| Utica Power Authority | Where Does Your Water Come From? | 2009 | x | 2.14 |
| Utica Power Authority | Water Supply within the North Fork Stanislaus River-Mill Creek-Angels Creek System | 2010 | x | 2.14 |
| Utica Power Authority | Major Facilities and Related Projects Map | 2009 | x | 2.14 |
| Utica Power Authority | Memorandum of Understanding and Settlement Agreement by and between Calaveras County Water District and Utica Power Authority | 2009 | x | 2.14 |
| Utica Power Authority | Re: UPA Statements of Water Diversion and Use-2005,2006,2007 | 8/7/2008; 8/4/2008; 7/29/2008; 6/22/2010 | x | 2.14 |
| Utica Power Authority | UPA - Statement of Water Diversion and Use- 2005, 2006, 2007 Lower/Angels (and attachments) | | x | 2.14 |
| Utica Power Authority | Statement of Water Diversion and Use - 2005, 2006, 2007 Upper/Murphys(and attachments) | | x | 2.14 |

Handout #3 - List of Documents

| Agency | Project/Report Title | Report Date | K/J has a Copy | File Location |
|-----------------------|--|-------------|----------------|---------------|
| Utica Power Authority | Supplemental Statement of Water Diversion and Use Form - Lower/Angels (and attachments) | | x | 2.14 |
| Utica Power Authority | Supplemental Statement of Water Diversion and Use Form - Upper/Murphys (and attachments) | | x | 2.14 |

Handout #4 - Region Water Demands and Population Summary

T-S IRWM Plan
DRAFT WORKING DOCUMENT
11/16/2011

General Note: The following water demand and population data were derived from the local water agencies' Urban Water Management Plans and other available public documents. Although this data will be used for the purposes of this IRWM Planning Process, it is understood that not all agencies and entities that are IRWM stakeholders agree with the accuracy of the values presented.

1. Demand within the T-S IRWM Region

CCWD-Copper Cove/Copperopolis/Salt Springs Valley Projected Water Demands, ac-ft/year

| Water Use Category | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 |
|---------------------------------|--------------|--------------|---------------|---------------|---------------|---------------|
| Domestic | 1,424 | 2,503 | 3,620 | 5,011 | 5,901 | 6,779 |
| Groundwater Recharge | --- | 1,500 | 1,500 | 2,500 | 3,500 | 4,500 |
| Agricultural Use | --- | 4,850 | 12,014 | 19,179 | 26,343 | 33,507 |
| Recycled | 262 | 659 | 869 | 1,078 | 1,287 | 1,497 |
| Water loss and other water uses | --- | --- | --- | --- | --- | --- |
| Wholesale | --- | --- | --- | --- | --- | --- |
| Total | 1,686 | 9,512 | 18,003 | 27,768 | 37,031 | 46,283 |

Source: CCWD UWMP, 2010

Note: Water Loss is included within each category.

CCWD-Ebbetts Pass/Highway 4 Corridor Projected Water Demands, ac-ft/yr

| Water Use Category | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 |
|---------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Domestic | 2,062 | 3,264 | 3,296 | 3,392 | 3,488 | 3,575 |
| Groundwater Recharge | --- | 0 | 0 | 0 | 0 | 0 |
| Agricultural Use | --- | 1,750 | 2,500 | 3,250 | 3,250 | 4,000 |
| Recycled | 735 | 220 | 220 | 220 | 220 | 220 |
| Water loss and other water uses | --- | --- | --- | --- | --- | --- |
| Wholesale | --- | 150 | 160 | 170 | 170 | 170 |
| Total | 2,797 | 5,384 | 6,176 | 7,032 | 7,128 | 7,965 |

Source: CCWD UWMP, 2010

Note: Water Loss is included within each category.

GCSD Projected Water Demands, ac-ft/yr

| Water Use Category | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 |
|--|-------------|-------------|-------------|-------------|-------------|-------------|
| Domestic ¹ | 720 | 756 | 792 | 828 | 864 | 895 |
| Groundwater Recharge | --- | --- | --- | --- | --- | --- |
| Agricultural Use | --- | --- | --- | --- | --- | --- |
| Recycled ² | 167 | 175 | 184 | 193 | 203 | 213 |
| Water loss and other water uses ³ | 151 | 159 | 166 | 174 | 181 | 196 |
| Wholesale | --- | --- | --- | --- | --- | --- |
| Total | 1038 | 1090 | 1142 | 1195 | 1248 | 1304 |

Source: GCSD UWMP, 2010

1. Assumed 4.5% growth between 2030 and 2035

2. Assumed 4.5% growth rate

3. Assumed 14% Water Loss/Other Water Uses

Handout #4 - Region Water Demands and Population Summary

T-S IRWM Plan
DRAFT WORKING DOCUMENT
11/16/2011

TUD Projected Water Demands, ac-ft/yr

| Water Use Category | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 |
|---------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Domestic | 4,197 | 5,257 | 5,904 | 6,636 | 7,465 | 7,870 |
| Groundwater Recharge | --- | --- | --- | --- | --- | --- |
| Agricultural Use | 2,366 | 2,829 | 2,985 | 3,149 | 3,322 | 3,505 |
| Recycled | 1,850 | 2,308 | 2,421 | 2,540 | 2,664 | 2,794 |
| Water loss and other water uses | 6,391 | 7,662 | 8,437 | 9,305 | 10,275 | 10,834 |
| Wholesale | 709 | 864 | 912 | 962 | 1,015 | 1,071 |
| Total | 15,513 | 18,920 | 20,659 | 22,592 | 24,741 | 26,074 |

Source: TUD UWMP, 2010

UPA Projected Water Demands, ac-ft/yr

| | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 |
|--|-------------|-------------|-------------|-------------|-------------|-------------|
| City of Angels ¹ | 1000 | 1100 | 1200 | 1300 | 1450 | 1600 |
| City of Angels Recycled Water ² | 400 | 440 | 484 | 532 | 586 | 644 |
| UPUD ² | 861 | 947 | 1042 | 1146 | 1261 | 1387 |
| UPUD Recycled Water ² | 1004 | 1104 | 1215 | 1336 | 1470 | 1617 |
| Total | 3265 | 3592 | 3941 | 4315 | 4766 | 5248 |

1. Assumed linear growth rate for years 2015 & 2025

2. Assumed 10% growth between 2010 and 2035, similar to City of Angels

Total water demands in the Tuolumne-Stanislaus region are summarized in the table below.

Total Projected Water Demand, ac-ft/yr

| Agency | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 |
|-------------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| CCWD-Copper Cove/Copperopolis | 1686 | 9512 | 18003 | 27768 | 37031 | 46283 |
| CCWD-Ebbetts Pass | 2797 | 5384 | 6176 | 7032 | 7128 | 7965 |
| GCSD | 1038 | 1090 | 1142 | 1195 | 1248 | 1304 |
| UPA | 3265 | 3592 | 3941 | 4315 | 4766 | 5248 |
| TUD | 15513 | 18920 | 20659 | 22592 | 24741 | 26074 |
| Total | 24300 | 38498 | 49921 | 62902 | 74914 | 86874 |

Source: CCWD UWMP, 2010; GCSD UWMP, 2010; TUD UWMP, 2010; Calaveras MSR, 2011

2. Population Projections within the T-S IRWM Region

Population Projections

| Agency | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 |
|-------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| CCWD-Copper Cove/Copperopolis | 6,525 | 8,238 | 9,952 | 11,603 | 13,254 | 14,786 |
| CCWD-Ebbetts Pass | 13,140 | 13,568 | 13,996 | 14,409 | 14,822 | 15,205 |
| GCSD | 6,426 | 6,747 | 7,068 | 7,389 | 7,710 | 8,854 |
| UPA | --- | --- | --- | --- | --- | --- |
| TUD | 28,997 | 32,641 | 36,735 | 41,333 | 46,499 | 49,074 |
| Total | 55,088 | 61,194 | 67,751 | 74,734 | 82,285 | 87,919 |

Source: CCWD UWMP, 2010; GCSD UWMP, 2010; TUD UWMP, 2010