Table 26: Major tributary streams to the Scott River and the proportion of total flow inputs to the model domain simulated in SVIHM. The source for this data is the available tributary inflow records, with missing daily values interpolated using a streamflow regression model (see Chapter 2, Chapter 2.2.1.6, and Appendix 2-F for more information).

Tributary Name	Proportion of total inflow to SVIHM
East Fork	18%
Kidder Creek	18%
Etna Creek	15%
Shackleford Creek	12%
South Fork	11%
French Creek	8%
Patterson Creek	5%
Sugar Creek	4%
Mill Creek	4%
Moffett Creek	3%
Johnson Creek	1%
Crystal Creek	1%

3.4 Sustainable Management Criteria

3.4.1 Groundwater Elevation

SMC for groundwater levels are visualized in Figure 49, and in example hydrograph form in Figure 50.

3.4.1.1 Undesirable Results

Chronic lowering of groundwater levels is considered significant and unreasonable when a significant number of private, agricultural, industrial, or municipal production wells can no longer pump enough groundwater to supply beneficial uses, or when lower groundwater levels adversely affect environmental uses and users of interconnected surface water and groundwater-dependent ecosystems. SGMA defines undesirable results related to groundwater levels as chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply if continued over the planning and implementation horizon. The lowering of water levels during a period of drought is not the same as (i.e., does not constitute) “chronic” lowering of groundwater levels if extractions and groundwater recharge are managed as necessary to ensure that reductions in groundwater levels or storage during a period of drought are offset by increases in groundwater levels or storage during other periods.

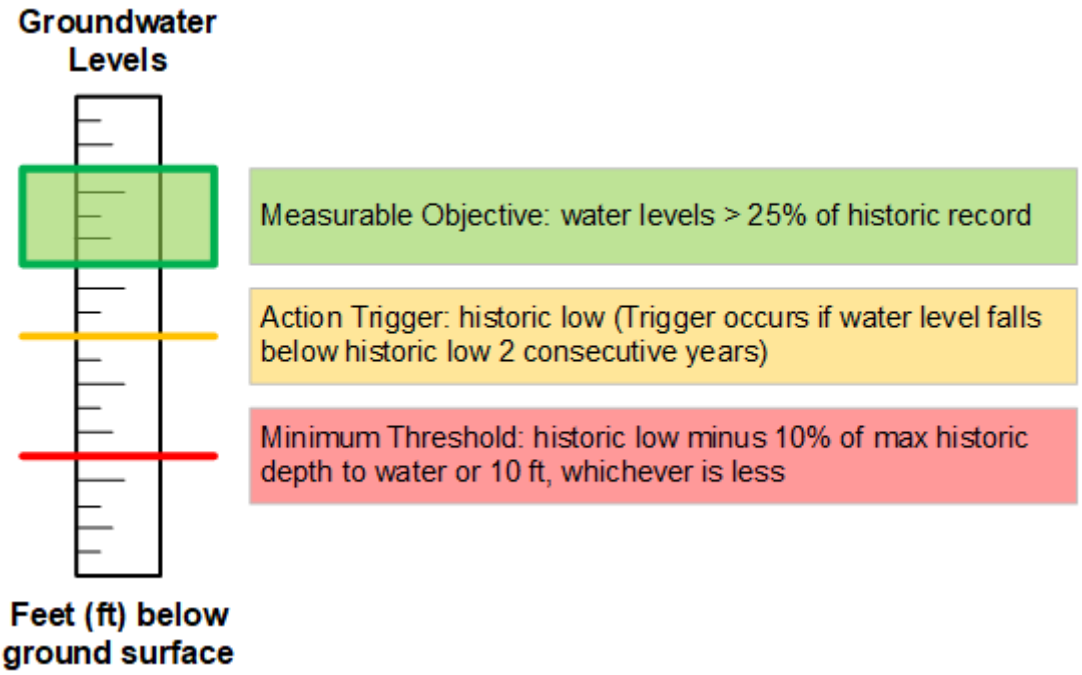

Figure 49: Thermometer visualization of SMC definitions for groundwater levels (WL).

Potential impacts and the extent to which they are considered significant and unreasonable were determined by the GSA with input by technical advisors and members of the public. During development of the GSP, the GSA identified potential significant and unreasonable depletion of supply, including:

- Excessive number of domestic, public, or agricultural wells going dry.
- Excessive reduction in the pumping capacity of existing wells.
- Excessive increase in pumping costs due to greater lift.
- Excessive need for deeper well installations or lowering of pumps.
- Excessive financial burden to local agricultural interests.
- Adverse impacts to environmental uses and users, including interconnected surface water and GDEs (also see Chapter 3.4.5).

With some caveats, none of the above conditions have occurred, either historically or since 2015. The primary exception is that interconnected surface water has been impacted by groundwater pumping and, hence, by resulting changes in water levels (Chapter 2). This undesirable result is addressed explicitly in Chapter 3.4.5.

The dry well condition is also worth expanding on. Available data suggests that this undesirable result is not occurring, though data gaps limit the ability to analyze it directly.

The data gap is a mismatch in two key data resources:

1) a database of well perforations and depths, collected from Well Completion Reports (WCRs) by UC Davis researchers during development of the SVIHM model (194 total wells, 61 with perforation interval data); and

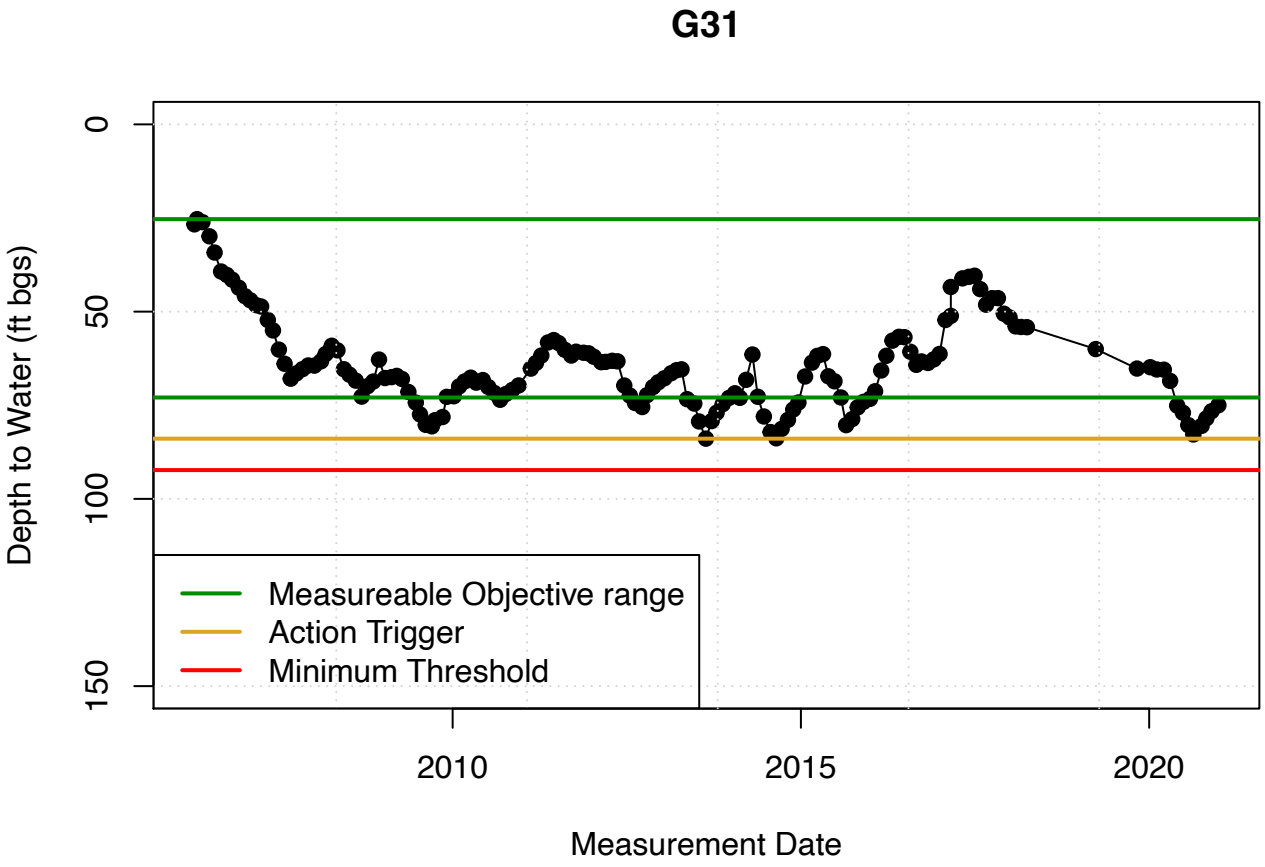

Figure 50: Example hydrograph visualization of SMC definitions for groundwater levels.

2) a database of groundwater elevation measurements (in 85 total wells). Though these datasets provide two necessary pieces of information, the vast majority of WCRs are only geo-located to the level of a PLSS section (with an area of one square mile), and the WCRs have not been associated with groundwater elevation records. This mismatch makes it impossible to systematically evaluate the risk of groundwater elevations falling below the relevant well screens.

Despite this data gap, indirect evidence suggests that this undesirable result is not taking place. Recently, only two dry wells have been reported in Scott Valley (DWR 2021). Additionally, a comparison between the distribution of depths of wells in Scott Valley (212 wells with depth data) and the distribution of observed groundwater depths in the past 10 years indicate that, while water levels falling below well depths certainly may have happened in the last 10 years, the aggregate observed groundwater levels are well above known well depths (Figure 51).

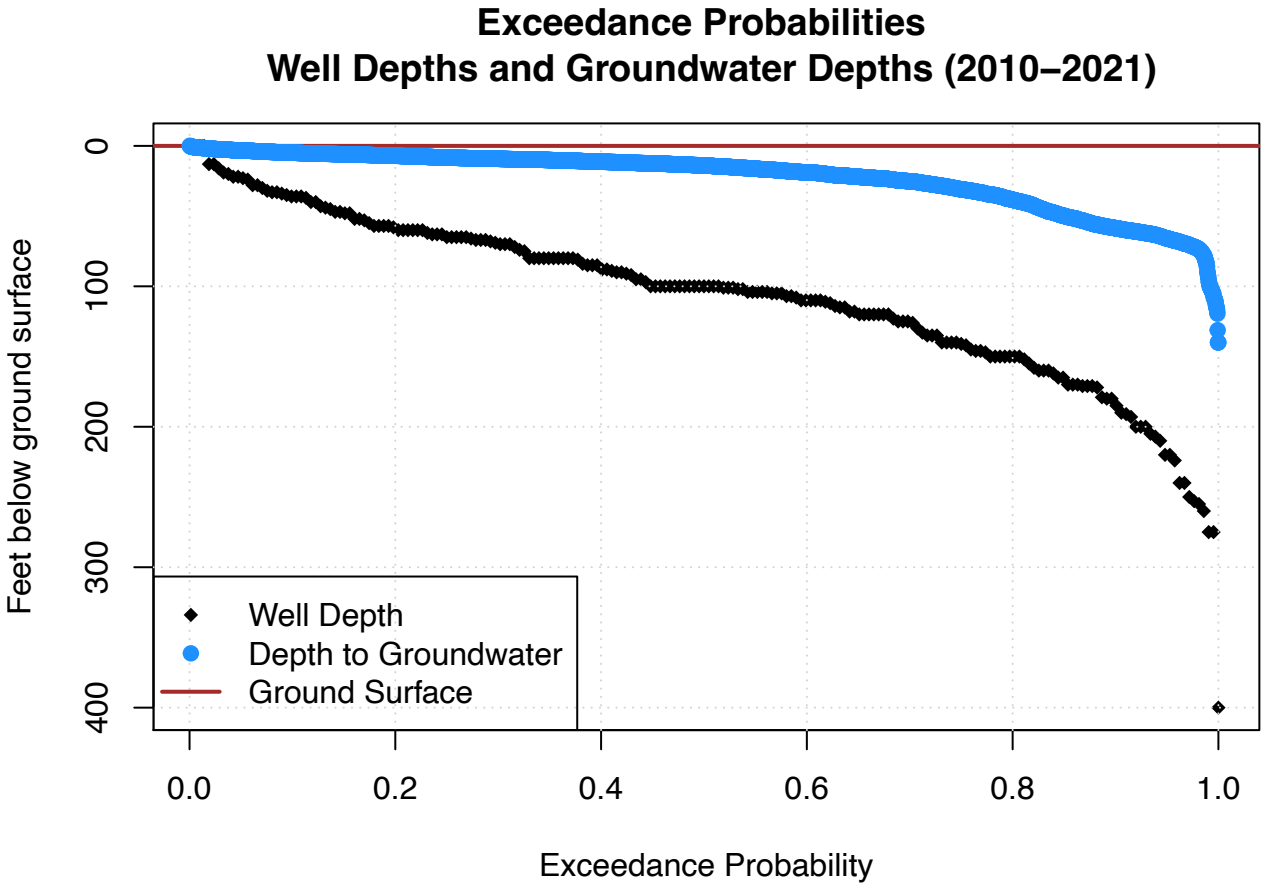

Figure 51: The probability, on the x-axis, of well depths (n = 212 wells) and groundwater depths (n = 4,414 measurements) exceeding the depth below ground surface listed on the y-axis. Displays the overall distribution of known well depths and groundwater depths measured 2010-2021.

Operationally, an undesirable result for water level would occur if the low water level observation in the fall (i.e., the minimum elevation in any given water year) in any of the representative monitoring sites in the Basin drop below their respective minimum thresholds in two consecutive years. No further federal, state, or local standards exist for chronic lowering of groundwater elevations.

Potential Causes Undesirable Results

Basin groundwater pumping currently does not exceed the sustainable yield of the Basin (as discussed in Chapter 2). Future decline in water levels in the Basin may occur due to several possible causes, even absent conditions of overdraft (see Chapter 2.2.3.3):

- Change in Basin pumping distribution and/or volumes.
- Reduction in natural recharge as a result of climate change, or other sources that reduce recharge or increase groundwater pumping.

Changes in pumping distribution and volume may occur due to significant rural residential, agricultural, and urban growth that depend on groundwater as a water supply. Climate change is expected to raise average annual temperatures, decrease the winter snow-pack, shorten the snow-melt season, and intensify rainfall periods while extending dry periods (DWR CCTAG 2015). Together with resulting vegetation changes in surrounding uplands, climate change may significantly increase or decrease recharge compared to historical conditions. To the degree that climate change may lead to reduced recharge in and runoff from surrounding uplands, stream recharge to the Basin (especially on the upper alluvial fans) will be lower and thus reduce the dynamic equilibrium water level in the Basin (Chapter 2, Chapter 2.2.3.3). On the other hand, future increased recharge and runoff in the surrounding uplands may have the opposite effects and thus raise water levels in the Basin.

The GSA will coordinate with relevant agencies and stakeholders within the Basin and the larger watershed to implement management actions and projects to sustainably manage groundwater levels in the Basin.

Effects of Undesirable Results on Beneficial Uses and Users

Undesirable results would prevent an unknown number of private, agricultural, industrial, or municipal production wells from supplying groundwater to meet their water demands. Some wells may even go dry temporarily. Chronic well outages are not expected in Scott Valley due to the lack of long-term overdraft and seasonal variation in water levels. Temporary well outages may initially affect the shallowest wells, which tend to be located in the valley bottom and in some locations, tend to be domestic wells.

The following provides greater detail regarding the potential impact of temporary well outages on several major classes of beneficial users:

- **Municipal Drinking Water Users** – Undesirable results due to declining groundwater levels can adversely affect current and projected municipal users, causing increased costs for potable water supplies.
- **Rural and/or Agricultural Residential Drinking Water Users** – Seasonal low groundwater levels can cause shallow domestic and stock wells to go dry, which may cause seasonal well outages and restrict water access during periods of highest crop or pasture water demand. Additionally, the lowering of the water table may lead to decreased groundwater quality drinking water wells.
- **Agricultural Users** – Excessive seasonal lowering of groundwater levels could necessitate changes in irrigation practices and crops grown and could cause adverse effects to property values and the regional economy.
- **Environmental Uses** – Deep groundwater levels may result in significant and unreasonable reduction of groundwater flow toward streams and GDEs. This would adversely affect ecosystem functions related to baseflow and stream temperature, as well as resident species.

3.4.1.2. Minimum Thresholds

At each individual water level RMP, the minimum threshold (MinT) is set at the RMP's historic maximum depth to water measurement prior 2015 (i.e., the historic low measured groundwater elevation prior to 2015), plus a buffer to allow for operational flexibility against the measurable objective under extreme climate conditions and to accommodate practicable triggers. The buffer is either 10% of the historic maximum depth to water measurement, or 10 feet, whichever is smaller (Table 27). The proposed representative monitoring points for groundwater levels and associated MinT depths to water are shown in Figure 52.

Additional analysis, suggesting that the number of wells affected by groundwater elevations at the MinT is probably very small, is included in Appendix 3-C (Scott Dry Well Risk Analysis). Limitations in available data resources introduce some uncertainty into this assessment that can be addressed once data gaps are filled.

Triggers

The primary trigger for management actions is if the water level falls below the historic low in any individual well for more than two consecutive years ("action trigger"). A secondary trigger for management actions will be if a significant number of well outage reports are received. The latter trigger is not water-level-specific but instead is informed by impacts to well users. If either of these triggers occurs, the GSA will conduct an investigation and may use management actions to proactively avoid the occurrence of (further) undesirable results.

3.4.1.3. Measurable Objective

The MO is defined as the desired operating range for groundwater levels, with a minimum and maximum value for the MO. The MO range is defined individually for each RMP. The goal for this SMC is to keep water levels above their historic lows. For this reason, the minimum MO elevation is set at the 75^{th} percentile lowest water elevation measured in each well (i.e., the observed elevation at which 25% of other observed elevations fall below it). The maximum MO is the highest observed water level at each RMP.

Minimum measurable objectives are shown in Table 27 and an example MO graph is shown in Figure 49.

The difference in groundwater levels between the minimum measurable objective and primary trigger gives a margin of operational flexibility, or margin of safety, for variation in groundwater levels due to seasonal, annual, or drought variations. Groundwater levels might drop in drought years but rise in wet years that recharge the aquifer and offset drought years.

3.4.1.4. Path to Achieve Measurable Objectives

The GSA will support achievement of the measurable objectives by monitoring groundwater levels and coordinating with agencies and stakeholders within the Basin to implement projects and management actions (PMAs). The GSA will review and analyze groundwater level data to evaluate any changes in groundwater levels resulting from groundwater pumping or recharge projects in the Basin. Using monitoring data collected as part of GSP implementation, the GSA will develop

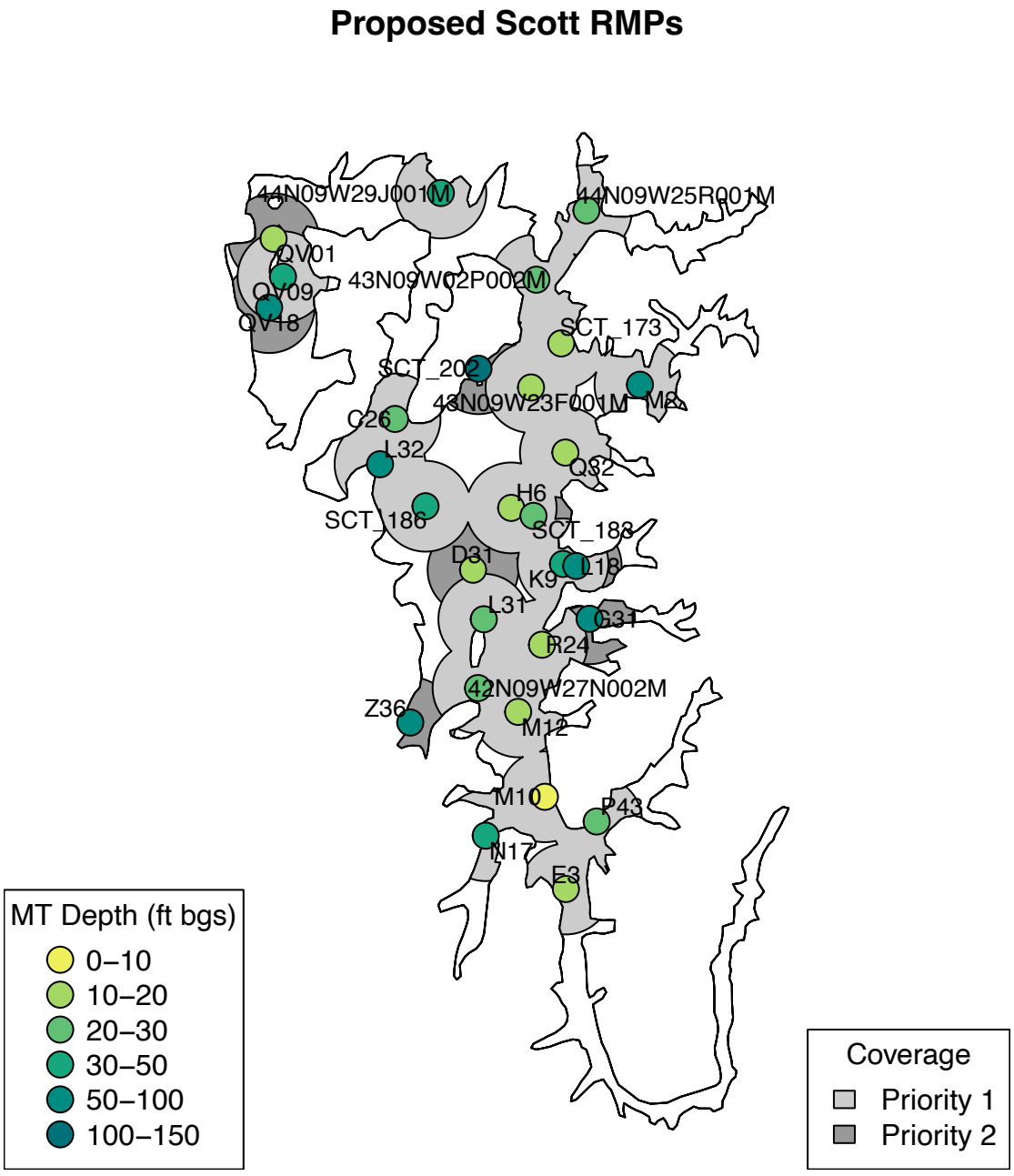

Figure 52: Minimum thresholds for the groundwater levels and storage monitoring network.

information (e.g., hydrograph plots) to demonstrate that projects and management actions are operating to maintain or improve groundwater level conditions in the Basin and to avoid unreasonable groundwater levels. Should groundwater levels drop to a trigger or minimum threshold as the result of GSA project implementation, the GSA will implement measures to address this occurrence as illustrated in Figure 53 that depicts the high-level decision making that goes into developing SMC, the monitoring to determine if criteria are met, and actions to be taken based on monitoring results.

To manage groundwater levels, the GSA will partner with local agencies and stakeholders to implement PMAs. PMAs are presented in further detail in Chapter 4. Implementation timelines and approximate costs are discussed in Chapter 5. Examples of possible GSA actions include stakeholder education and outreach and support for impacted stakeholders.

Where the cause of groundwater level decline is unknown, the GSA will conduct additional or more frequent monitoring or initiate additional modeling. The need for additional studies on groundwater levels will be assessed throughout GSP implementation. The GSA may identify knowledge requirements, seek funding, and help to implement additional studies.

Interim Milestones

Because undesirable results are not currently occurring, the management objective of the GSA will be to maintain groundwater levels above historic lows and defined MTs. Interim milestones are therefore not needed for this sustainability indicator.

3.4.1.5. Information and Methodology Used to Establish Minimum Thresholds and Measurable Objectives

Historical water levels indicate that there is no overdraft and no long-term decline in water levels. Where water levels have been observed since the 1960s, declines in fall water levels occurred in the 1970s, but have remained steady over the past 40 years. However, below average water year types have occurred more frequently over the past two decades. Average precipitation over the past 20 years (2000–2020) has been lower (19.7 inches/year (50 cm/year)) than the average precipitation during the measured record in the 20th century (20.7 inches/year (52.6 cm/year), see Chapter 2). Yet, water levels have been relatively steady over the past 20 years with seasonal fluctuations that are relatively small near the trough of the Valley and largest on upper alluvial fans (westside, eastside gulches, see Figure 22 in Chapter 2, Chapter 2.2.2.1). A few wells have seen declines in fall water levels but no declines in spring water levels over the 2000–2020 period. No significant trend is visible across the Basin over the detailed observation period from 2006 to 2018 (see Figure 22 in Chapter 2.2.2.1 and hydrographs all other wells in Appendix 2-A). The years 2001, 2014, and 2020 were exceptionally dry in Scott Valley, with the lowest water levels in most wells observed in 2014 and with lowest levels in some wells observed in 2020. Over the past two decades, due to climate conditions, low summer and fall water levels have likely occurred more often than in the second half of the 20th century, although very few water level data are available for that period.

The minimum thresholds were selected based on historical groundwater level data and stakeholder input. Historically, well outages have not been an issue in the Basin and maintaining groundwater levels at or above historical levels should avoid future outages. Groundwater level trends and current conditions are discussed in Chapter 2.2.2.1. In establishing minimum thresholds for groundwater levels, the following information was considered:

- Feedback about groundwater level concerns from stakeholders.
- An assessment of available historical and current groundwater level data from wells in the Basin.
- A collection of well information regarding water bearing formation, depth, and screen characteristics, as well as an assessment of data to inform a well outage analysis (insufficient data were available to complete this analysis).
- Results of the completed numerical groundwater model, indicating groundwater flow direction and seasonal changes in elevation.
- Input from stakeholders resulting from the consideration of the above information in the form of recommendations regarding minimum thresholds and associated management actions.

3.4.1.6. Relationship to Other Sustainability Indicators

Minimum thresholds are selected to avoid undesirable results for other sustainability indicators. In the Basin, groundwater levels are directly related to groundwater storage and groundwater-dependent ecosystems outside of streams. The relationship between groundwater level minimum thresholds and minimum thresholds for other sustainability indicators are discussed below.

- **Groundwater Storage** – Groundwater levels are closely tied to groundwater storage, with high groundwater levels associated with high groundwater storage. The undesirable result for groundwater storage is measured and thus defined as the occurrence of an undesirable result for groundwater elevations.
- Depletion of Interconnected Surface Water – Though groundwater elevations are related to the depletion of interconnected surface water, groundwater elevations are not a suitable proxy for surface water depletion in Scott Valley (see Chapter 3.3.5). Consequently, this GSP proposes to monitor stream depletion by simulating stream-aquifer fluxes, not measured groundwater elevations. Additional analysis during a future GSP update will be used to determine if the current groundwater level minimum thresholds would have a negative impact on depletion of interconnected surface water.
- **Seawater Intrusion** – This sustainability indicator is not applicable in this Basin.
- **Groundwater Quality** – A significant and unreasonable condition for degraded water quality is exceeding drinking water standards for COCs in supply wells due to projects and management actions proposed in the GSP. Groundwater quality could potentially be affected by projects and management action-induced changes in groundwater elevations and gradients. These changes could potentially cause poor quality groundwater to flow towards supply wells that would not have otherwise been impacted.
- **Subsidence** – Subsidence has not historically been a problem in Scott Valley. The groundwater level SMC will ensure that there is no onset of subsidence in the future. The minimum threshold for water level is sufficiently close to historic water levels that, under the hydrogeologic conditions prevalent in Scott Valley, no significant subsidence can occur due to lowering of water levels within the limits set by the minimum threshold.

Table 27: Objectives, triggers and thresholds for proposed Scott Valley RMPs for groundwater elevation. Fall Range refers to the maximum and minimum of measurements collected at each well during September–November. The minimum Measurable Objective (MO) is set as the 75th percentile of the fall measurement range - i.e., the measurement at which 25 percent of groundwater elevation measurements fall below it. The primary trigger (PT) is set at the historic low groundwater elevation measurement. The Minimum Threshold (MT) is set at the historic low plus a buffer. The buffer is either 10 percent of the historic low, or 10 feet, whichever is smaller.

Well ID	Well Depth (ft bgs)	Fall Range (ft bgs)	MO (ft bgs)	PT (ft bgs)	MT (ft bgs)
42N09W27N002M	60	10.9-23.5	> 18.2	23.50	25.90
43N09W23F001M	60	4.6-13.2	> 8.5	13.20	14.50
43N09W02P002M	80	15.1-27.0	> 20.1	27.00	29.70
44N09W25R001M	140	11.5-22.2	> 17.8	22.20	24.40
44N09W29J001M	60	35.2-44.7	> 40.6	44.70	49.20
C26	80	12.7-20.2	> 14.3	20.20	22.20
E3	60	5.1-10.3	> 7.4	10.30	11.40
H6	–	3.0-9.8	> 6.9	9.80	10.70
K9	60	23.8-41.2	> 37.1	41.20	45.30
L31	–	10.3-23.6	> 19.6	23.60	26.00
L32	203	33.8-62.2	> 48.7	62.20	68.40
M10	43	4.6-7.4	> 6.5	7.40	8.20
M12	–	13.1-17.0	> 16.6	17.00	18.70
M2	140	33.2-75.8	> 67.4	75.80	83.30
N17	179	20.3-36.7	> 24.2	36.70	40.40
P43	75	4.2-19.4	> 14.1	19.40	21.30
Q32	57	4.0-13.1	> 9.7	13.10	14.40
R24	100	10.6-16.2	> 13.8	16.20	17.80
SCT_173	70	13.2-16.9	> 16.3	16.90	18.50
SCT_186	48	31.9-35.0	> 34.5	35.00	38.50
QV09	40	28.2-41.0	> 39.8	41.00	45.10
D31	81	4.1-10.5	> 7.8	10.50	11.60
G31	236	39.3-81.3	> 77.0	81.30	89.40
L18	170	44.9-71.4	> 67.3	71.40	78.60
Z36	197	21.2-45.5	> 33.9	45.50	50.10
SCT_202	184	67.0-140.0	> 140.0	140.00	150.00
QV18	140	53.2-68.1	> 65.4	68.10	74.90
QV01	82	6.1-16.2	> 14.7	16.20	17.80
SCT_183	100	15.4-19.0	> 18.7	19.00	20.90

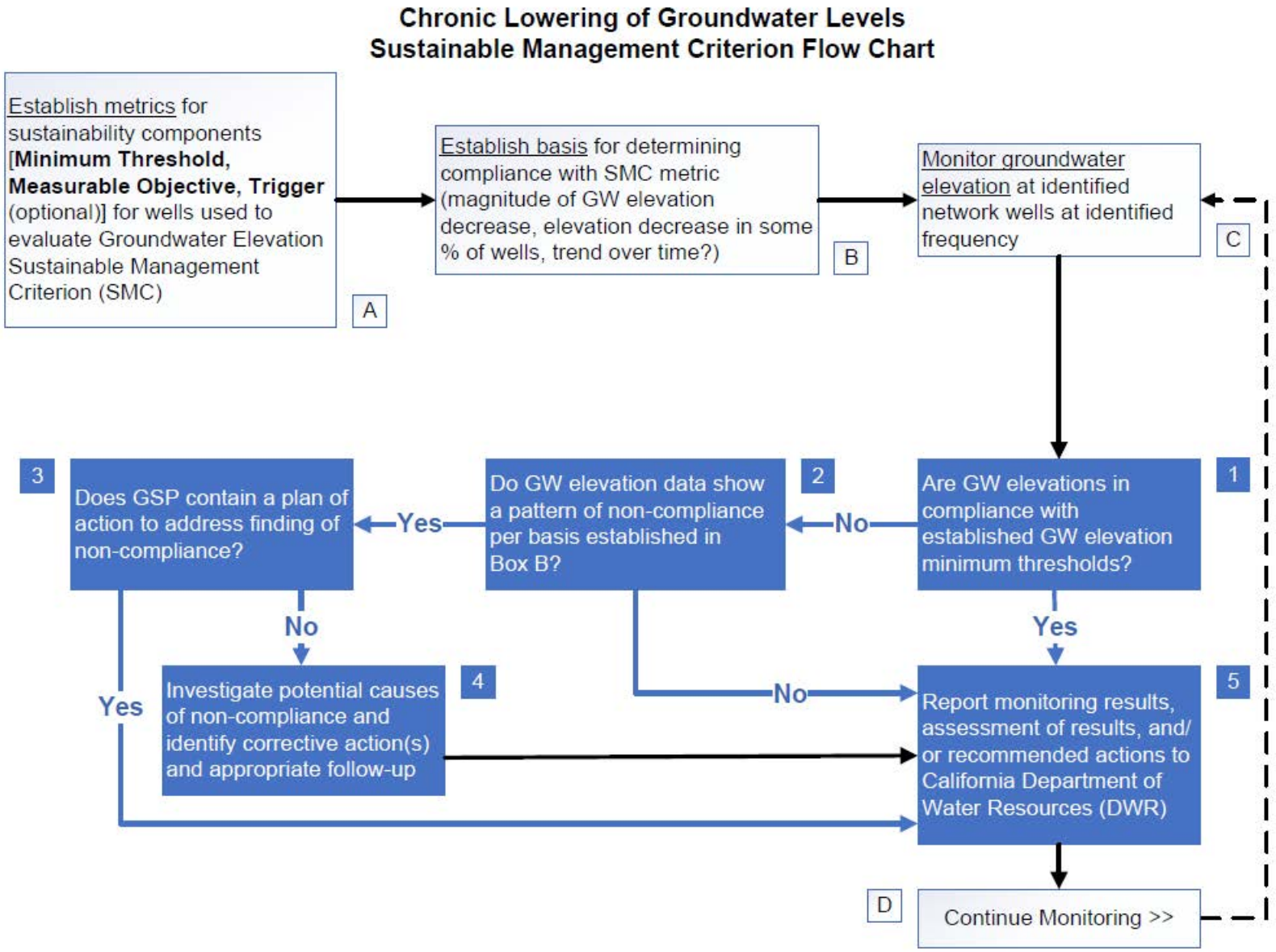

Figure 53: Groundwater level sustainable management criteria flow chart. The flow chart depicts the high-level decision making that goes into developing sustainable management criteria (SMC), monitoring to determine if criteria are met, and actions to be taken based on monitoring results.

3.4.2 Groundwater Storage

Groundwater levels are selected as the proxy for groundwater storage. Hence, the SMC are identical. According to the United States Geologic Survey, estimates of groundwater storage rely on groundwater level data and sufficiently accurate knowledge of hydrogeologic properties of the aquifer. Direct measurements of groundwater levels can be used to estimate changes in groundwater storage (United States Geologic Survey - California Water Science Center 2020). As groundwater levels fall or rise, the volume of groundwater storage changes accordingly, where unacceptable groundwater level decline indicates unacceptable storage loss. The hydrogeologic model outlined in Chapter 2 provides the needed hydrogeologic properties of the aquifer.

Protecting against chronic lowering of groundwater levels will directly protect against the chronic reduction of groundwater storage because the lowering of groundwater levels would directly lead to predictable reduction of groundwater storage. There cannot be a reduction in groundwater storage without a commensurate, observable reduction in water levels. There are currently no other state, federal, or local standards that relate to this sustainability indicator in the Basin.

An undesirable result from the reduction of groundwater in storage occurs when reduction of groundwater in storage interferes with beneficial uses of groundwater in the Basin. Since groundwater levels are being used as a proxy, the undesirable result for this sustainability indicator occurs when groundwater levels drop below the extended minimum threshold (Table 27), as defined by the undesirable result for the chronic lowering of groundwater levels. This should avoid significant and unreasonable changes to groundwater storage, including long-term reduction in groundwater storage or interference with the other sustainability indicators. Possible causes of undesirable reductions in groundwater storage are increases in well density or groundwater extraction or increases in frequency or duration of drought conditions.

The minimum threshold for groundwater storage for this GSP is the minimum threshold for groundwater levels. Information used to establish minimum thresholds and measurable objectives for groundwater levels can be found in Chapter 3.4.1. Since groundwater storage is defined in terms of water level, Chapter 3.4.1.2 for the water level indicator equally applies to define the relationship of the groundwater storage SMC to other sustainability indicators.

The measurable objective for groundwater storage is the measurable objective for groundwater levels as detailed in Chapter 3.4.1.3. The path to achieve measurable objectives and interim milestones for the reduction in groundwater storage sustainability indicator are the same measurable objectives and interim milestones as for the chronic lowering of groundwater levels sustainability indicator detailed in Chapter 3.4.1.4.

3.4.3 Water Quality

Groundwater quality in the Basin is generally well-suited for the municipal, domestic, agricultural, and other existing and potential beneficial uses designated for groundwater in the Water Quality Control Plan for the North Coast Region (Basin Plan), as discussed in Chapter 2.2.3 and in the water quality assessment in Appendix 2-D.

SMC are defined for two constituents: specific conductivity and nitrate. These identified COCs are consistent with the threats to groundwater quality highlighted in the *Staff Report for the North Coast*

Hydrologic Region Salt and Nutrient Management Planning Groundwater Basin Evaluation and Prioritization (NCRWQCB 2020). Although benzene is identified as a potential constituent of concern in Chapter 2.2.3, no SMC is defined for benzene as current benzene data are associated with leaking underground storage tanks (LUST) where the source of benzene is known and monitoring and remediation are in progress. These sites will be taken into consideration with PMAs undertaken by the GSA, as applicable. As part of the sustainability goal for the Basin, the specific objective for groundwater quality is to maintain a groundwater resource that meets the water quality needs of beneficial uses and users in the Basin, as regulated by federal and state water quality standards and regional water quality objectives. Avoiding significant degradation of groundwater quality is central to protecting uses that rely on groundwater. Categories of beneficial uses of groundwater in the North Coast Region, as listed in the Basin Plan, include municipal and domestic supply, agricultural and stock water supply, industrial service supply, industrial process supply, aquaculture, and Native American culture. Specific uses of groundwater in Scott Valley include groundwater use for irrigation in agriculture, a significant part of the local economy, as stock water, and as a municipal and domestic water source. Importantly, beneficial uses also include groundwater-dependent ecosystems and instream habitat where and when groundwater contributes to streamflow.

The role of the GSA is to provide additional local oversight of groundwater quality, collaborate with appropriate parties to implement water quality PMAs, and to evaluate and monitor, as needed, water quality effects of PMAs implemented to meet the requirements of other SMC. All future PMAs implemented by the GSA will be evaluated and designed to avoid causing undesirable groundwater quality outcomes. Federal and state standards for water quality, water quality objectives defined in the Basin Plan, and the management of known and suspected contaminated sites within the Basin will continue to be managed by the relevant agency. Groundwater in the Basin is used for a variety of beneficial uses which are protected by NCRWQCB through the water quality objectives adopted in the Basin Plan.

Available historical and current groundwater quality monitoring data and reporting efforts have been used to establish and document conditions in the Basin, as discussed in Chapter 2.2.3. These conditions provide a baseline upon which to compare future groundwater quality and identify any changes observed, including those due to GSP implementation. Groundwater quality monitoring in the Basin in support of the GSP will rely on the existing and planned wells in the monitoring network, as described in Chapter 3.3.3. Groundwater quality samples will be collected and analyzed in accordance with the monitoring protocols outlined in Appendix 3-B. The monitoring network will use information from existing programs in the Basin that already monitor for the COCs and programs where these constituents could be added as part of routine monitoring efforts in support of the GSP. New wells will be incorporated into the network as necessary to obtain information to fill spatial gaps in data or to gather data that cannot be collected at existing wells. Because water quality degradation is typically associated with increasing rather than decreasing concentration of constituents, the GSA uses the term “maximum threshold” (MaxT) in the context of water quality instead of “minimum threshold”. The use of the term “maximum threshold” in this GSP is equivalent to the use of the term “minimum threshold” in other SMC or in the SGMA regulations.

3.4.3.1 Undesirable Results

Significant and unreasonable degradation of groundwater quality is the degradation of water quality that would impair beneficial uses of groundwater within the Basin or result in failure to comply with groundwater regulatory thresholds. Degraded groundwater quality is considered an unde-

sirable result if concentrations of COCs exceed defined maximum thresholds or if a significant trend of groundwater quality degradation is observed for the identified COCs. Groundwater quality changes that occur independent of SGMA activities do not constitute an undesirable result. Based on the State's 1968 Antidegradation Policy[19], water quality degradation that is not consistent with the provisions of Resolution No. 68-16 is degradation that is determined to be significant and unreasonable. NCRWQCB and the State Water Board are the two entities that determine if water quality degradation is inconsistent with Resolution No. 68-16.

For purposes of quantifying and evaluating the occurrence of an undesirable result, the concentration data are aggregated by statistical analysis to obtain spatial distributions and temporal trends. Specifically, statistical analysis is performed to determine the ten-year linear trend in concentration at each well. This trend is expressed unitless as percent relative concentration change per year. From the cumulative distribution of all ten-year trends observed across the monitoring network, the 75th percentile, $trend75_{10year}$, is obtained. Similarly, the moving two-year average concentrations are computed at each well, and from their cumulative distribution the 75th percentile, $conc75_{2year}$, is obtained. Concentrations are expressed in their respective concentration units (µg/L, mg/L, or micromhos). For purposes of this GSP, a "water quality value" is defined by combining the measures of trend and concentration.

$$Water\ quality\ value = \max(trend75_{10year} - 15\%,\ conc75_{2year} - MaxT)$$

The undesirable result is quantitatively defined as:

$$Water\ quality\ value\ is > 0$$

This quantitative measure assures that water quality remains constant and does not increase by more than 15% per year, on average over ten years, in more than 25% of wells in the monitoring network. Mathematically this can be expressed by the following equation:

$$trend75_{10year}[\%] - 15\% \leq 0$$

It also assures that water quality does not exceed maximum thresholds for concentration, MT, in more than 25% of wells in the monitoring network. Values for maximum thresholds are defined in Chapter 3.4.3.4. Mathematically, this second condition can be expressed by the following equation:

$$conc75_{2year} - MaxT \leq 0$$

The water quality value is the maximum of the two terms on the left-hand side of the above two equations. If either of them exceeds zero, that is, if either of them does not meet the desired condition, then the water quality value is larger than zero and quantitatively indicates an undesirable result.

Potential Causes of Undesirable Results

Future GSA activities with potential to affect water quality may include changes in location and magnitude of Basin pumping, declining groundwater levels, and groundwater recharge projects. Altering the location or rate of groundwater pumping could change the direction of groundwater flow which may result in a change in the overall direction in which existing or future contaminant plumes move and thus potentially compromise ongoing remediation efforts. Similarly, recharge activities could alter hydraulic gradients and result in the downward movement of contaminants into groundwater or move groundwater contaminant plumes towards supply wells.

[19] State Water Resources Control Board. "Resolution No. 68-16: Statement of Policy with Respect to Maintaining High Quality of Waters in California", California, October 28, 1968.

Land use activities not associated with the GSA that may lead to undesirable groundwater quality include future contamination from urban and industrial sources, the application of fertilizers, certain agricultural practices, and/or waste discharges that may result in exceedances of constituents in groundwater. Existing leaks from underground storage tanks (USTs) in the Basin are currently monitored and managed, and though additional degradation is not anticipated from these known sources, new leaks may cause undesirable results depending on the contents of an UST, which may include petroleum hydrocarbons, solvents, or other contaminants. Groundwater quality degradation associated with known sources primarily will be managed by the entity currently overseeing these sites, NCRWQCB. Agricultural activities in the Basin are dominated by alfalfa and pasture production. The risk for fertilizer-associated nitrate leaching from these activities is considered low (Harter et al. 2017). Grain production is rotated with alfalfa production usually for one year after seven years of alfalfa production. Grain production also does not pose a significant nitrate-leaching risk. Animal farming, a common source of nitrate pollution in large, confined animal farming operations, is also present in the Valley, but not at stocking densities of major concern (Harter et al. 2017). However, NCRWQCB (2020) listed the Basin as "high" priority for the threat of water quality degradation from salts and nutrients.

Effects on Beneficial Uses and Users

Concerns over potential or actual non-attainment of the beneficial uses designated for groundwater in the Basin are and will continue to be related to certain constituents measured at elevated or increasing concentrations, and the potential local or regional effects that degraded water quality can have on such beneficial uses.

The following provides greater detail regarding the potential impact of poor groundwater quality on several major classes of beneficial users:

- **Municipal Drinking Water Users** – Under California law, agencies that provide drinking water are required to routinely sample groundwater from their wells and compare the results to state and federal drinking water standards for individual chemicals. Groundwater quality that does not meet state drinking water standards may render the water unusable or may cause increased costs for treatment. For municipal suppliers, impacted wells potentially may be taken offline until a solution is found, depending on the configuration of the municipal system in question. Where this temporary solution is feasible, it will add stress to and decrease the reliability of the overall system.
- **Rural and/or Agricultural Residential Drinking Water Users** – Residential structures not located within the service areas of the local municipal water agency will typically have private domestic groundwater wells. Such wells may not be monitored routinely and groundwater quality from those wells may be unknown unless the landowner has initiated testing and shared the data with other entities. Degraded water quality in such wells can lead to rural residential use of groundwater that does not meet potable water standards and results in the need for installation of new or modified domestic wells and/or well-head treatment that will provide groundwater of acceptable quality.
- **Agricultural Users** – Irrigation water quality is an important factor in crop production and has a variable impact on agriculture due to different crop sensitivities. Impacts from poor water quality may include declines in crop yields, crop damage, changes in the crops that can be grown in an area, and other effects. For example, irrigation with water containing moderate to high levels of nitrate may increase nitrate concentrations in the underlying groundwater.
- **Environmental Uses** – Poor quality groundwater may result in the migration of contaminants that could affect GDEs or instream environments and their resident species. Poor quality

groundwater may also add nutrients to water bodies that produce adverse ecological effects, including eutrophication.

3.4.3.2. Maximum Thresholds

Maximum thresholds for groundwater quality in the Basin were defined using existing groundwater quality data, groundwater beneficial uses designated in the Basin, existing regulations, including water quality objectives included the Basin Plan, Title 22 Primary and Secondary MCLs, and consultation with the GSA advisory committee and stakeholders (see Chapter 2.2.3). Resulting from this process, SMC were developed for two of the COCs in the Basin, nitrate and specific conductivity.

The selected maximum thresholds for the concentration of each of the two COCs and their associated regulatory thresholds are shown in Table 28.

Table 28: Constituents of concern and their associated maximum thresholds. Maximum thresholds also include a 15 percent average increase per year over ten years in no more than 25 percent of wells, and no more than 25 percent of wells exceeding the maximum threshold for concentration listed here.

Constituent	Maximum Threshold	Regulatory Threshold
Nitrate as Nitrogen	5 mg/L as N, trigger only; 9 mg/L as N, trigger only; 10 mg/L as N, MaxT	10 mg/L as N (Title 22)
Specific Conductivity	500 micromhos, trigger only; 900 micromhos, MT	500 micromhos (Basin Plan Upper Limit for the EC value not exceeded by 90% of wells); 900 micromhos (Title 22)

Triggers

The GSA will use concentrations of the identified COCs (nitrate and specific conductivity) as triggers for preventative action to proactively avoid the occurrence of undesirable results. Trigger values are identified for both nitrate as nitrogen and specific conductivity, as shown in Table 28. The trigger value and associated definition for specific conductivity is the 90% upper limit, or 90 percentile values for a calendar year, as specified in the Basin Plan. The Title 22 water quality objective for nitrate is incorporated by reference into the Basin Plan and the triggers provided in Table 28 correspond to 90% of the Title 22 MCL.

Method for Quantitative Measurement of Maximum Thresholds

Groundwater quality will be measured in wells in the monitoring network, as discussed in Chapter 3.3.3. Statistical evaluation of groundwater quality data obtained from the monitoring network will be performed using the equations described above. The maximum thresholds for concentration values are shown in Figure 54. This figure shows “rulers” for the two identified COCs in the Scott Valley Groundwater Basin with the associated maximum thresholds, range of measurable objectives, and triggers.

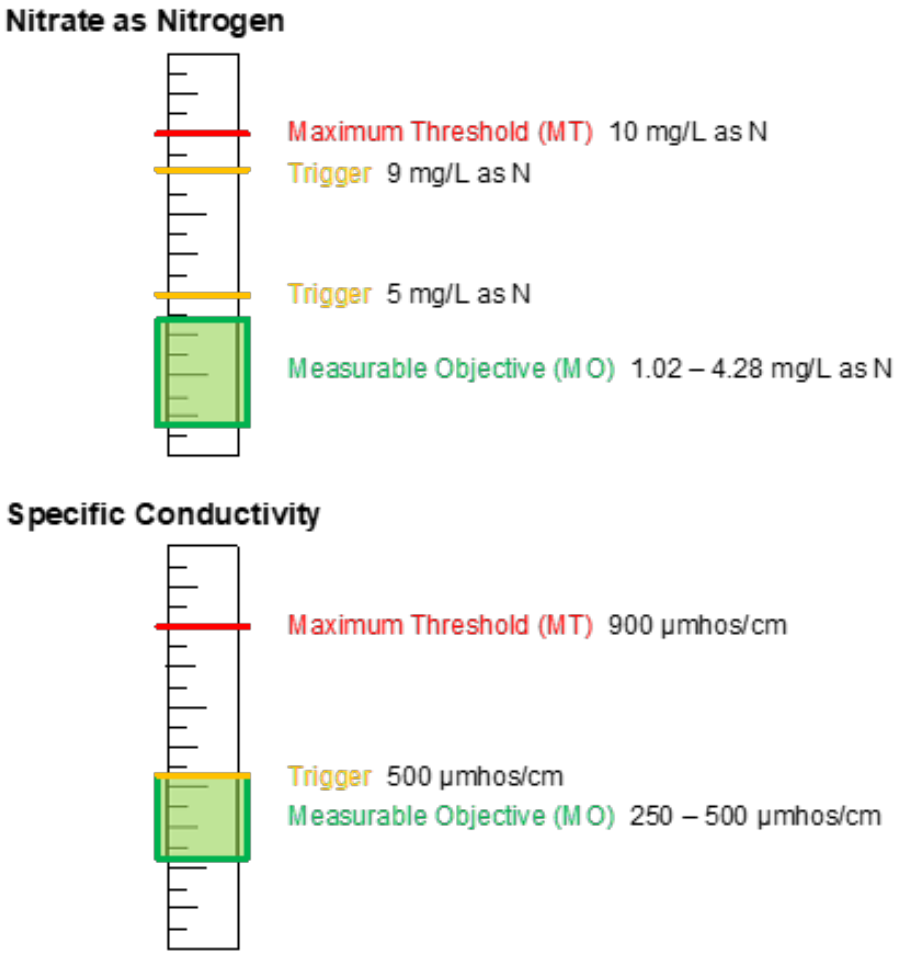

Figure 54: Degraded water quality thermometers for the constituents of concern in Scott River Valley.

3.4.3.3. Measurable Objectives

Within the Basin, the measurable objectives for water quality are established to provide an indication of desired water quality at levels that are sufficiently protective of beneficial uses and users. Measurable objectives are defined on a well-specific basis, with consideration for historical water quality data. Concentrations of some naturally occurring contaminants may not be possible to change through implementation of PMAs.

Description of Measurable Objectives The groundwater quality measurable objective for wells within the GSA's monitoring network (either existing or future wells), where the concentrations of COCs historically have been below the maximum thresholds for water quality in recent years, is to continue to maintain concentrations within the current range, as measured by long-term trends.

Specifically, for the two identified COCs, the action taken to meet the measurable objective will be to maintain groundwater quality at a minimum of 90% of wells monitored for water quality within

the range of the water quality levels measured over the past 30 years (1990-2020). In addition, no significant increase in long-term trends should be observed in COC concentrations as another mechanism for meeting MOs.

3.4.3.4. Path to Achieve Measurable Objectives

The GSA will support the protection of groundwater quality by monitoring groundwater quality conditions and coordinating with other regulatory agencies that work to maintain and improve the groundwater quality in the Basin. All future PMAs implemented by the GSA will comply with state and federal water quality standards and Basin Plan water quality objectives and will be designed to maintain groundwater quality for all uses and users and avoid causing unreasonable groundwater quality degradation. The GSA will review and analyze groundwater monitoring data as part of GSP implementation in order to evaluate any changes in groundwater quality, including those changes resulting from groundwater pumping or recharge projects in the Basin. The need for additional studies on groundwater quality will be assessed throughout GSP implementation. The GSA may identify knowledge requirements, seek funding, and help to implement additional studies.

Using monitoring data collected as part of project implementation, the GSA will develop information (e.g., time-series plots of water quality constituents) to demonstrate that PMAs are operating to maintain or improve groundwater quality conditions in the Basin and to avoid unreasonable groundwater quality degradation. Should the concentration of a constituent of interest increase to its maximum threshold (or a trigger value below that threshold specifically designated by occurrence), the GSA will determine an appropriate response based on the process illustrated in Figure 55. This process depicts the high-level decision making that goes into developing SMC, the monitoring to determine if criteria are met, and actions to be taken based on monitoring results. Exceedances of nitrate and specific conductivity water quality objectives will also be referred to NCRWQCB. Where the cause of an exceedance is unknown, the GSA may choose to conduct additional or more frequent monitoring.

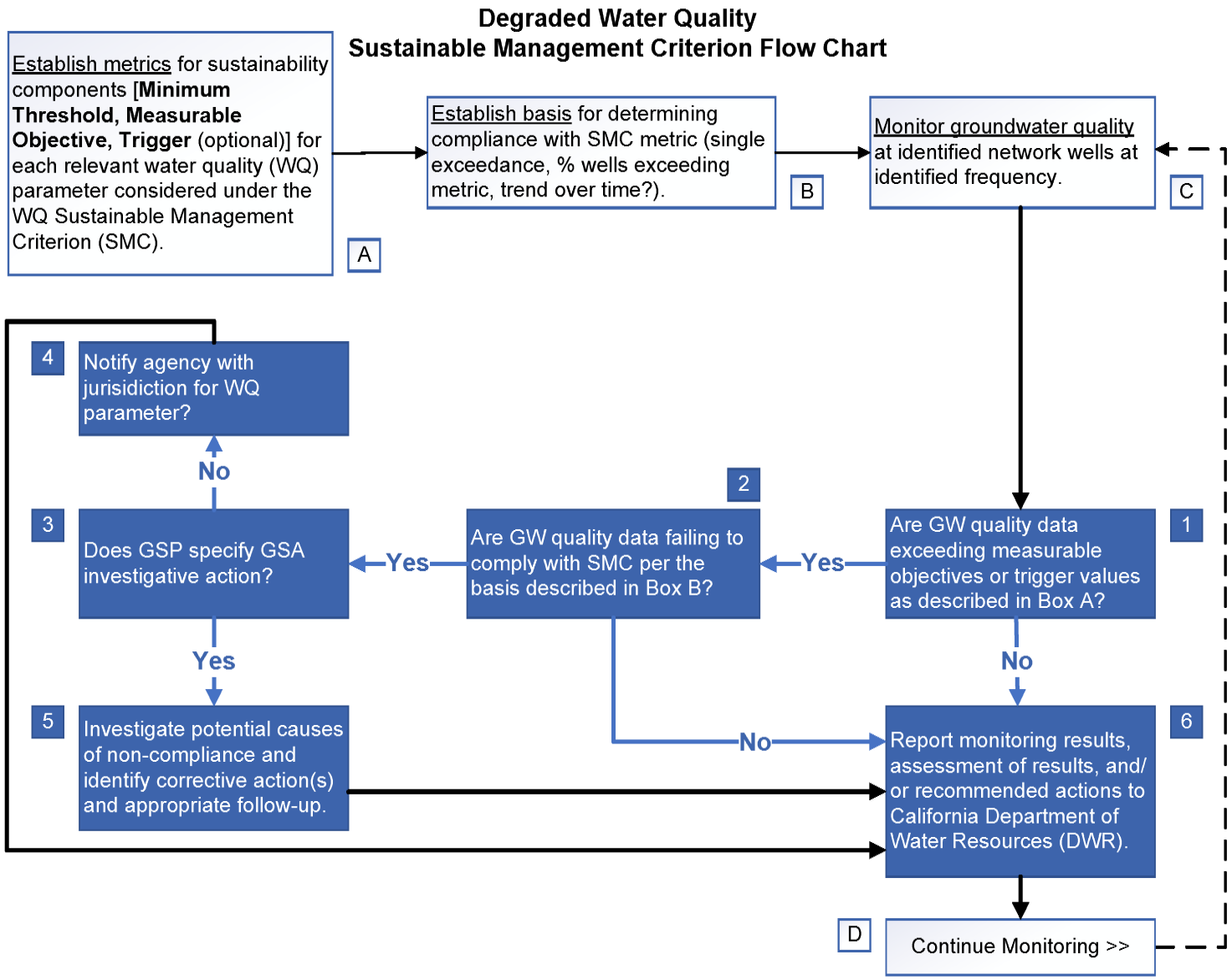

Figure 55: Degraded water quality sustainable management criteria flow chart. The flow chart depicts the high-level decision making that goes into developing sustainable management criteria (SMC), monitoring to determine if criteria are met, and actions to be taken based on monitoring results.

Interim Milestones

As existing groundwater quality data indicate that groundwater in the Basin generally meets applicable state and federal water quality standards, the objective is to maintain existing groundwater quality. Interim milestones are therefore set equivalent to the measurable objectives with the goal of maintaining water quality within the historical range of values.

3.4.3.5 Information and Methodology Used to Establish Maximum Thresholds and Measurable Objectives

A detailed discussion of the concerns associated with elevated levels of each constituent of interest is described in Chapter 2.2.3. As the COCs were identified using current and historical groundwater quality data, this list may be reevaluated during future GSP updates. In establishing maximum thresholds for groundwater quality, the following information was considered:

- Feedback about water quality concerns from stakeholders.
- An assessment of available historical and current groundwater quality data from production and monitoring wells in the Basin.
- An assessment of historical compliance with federal and state drinking water quality standards and water quality objectives.
- An assessment of trends in groundwater quality at selected wells with adequate data to perform the assessment.
- Information regarding sources, control options, and regulatory jurisdiction pertaining to COCs.
- Input from stakeholders resulting from the consideration of the above information in the form of recommendations regarding maximum thresholds and associated management actions.

The historical and current groundwater quality data used in the effort to establish groundwater quality maximum thresholds are discussed in Chapter 2.2.3. Based on a review of these data, applicable water quality regulations, Basin water quality needs, and information from stakeholders, the GSA reached a determination that the State drinking water standards (MCLs and WQOs) are appropriate to define maximum thresholds for groundwater quality. The established maximum thresholds for groundwater quality protect and maintain groundwater quality for existing or potential beneficial uses and users. Maximum thresholds align with State drinking water standards, which are derived from the maximum contaminant levels (MCLs) in Title 22 of the California Code of Regulations. The more stringent water quality objectives for specific conductivity, specified in the Basin Plan, are reflected in the trigger values defined for this constituent. New COCs may be added with changing conditions and as new information becomes available.

3.4.3.6. Relationship to Other Sustainability Indicators

Groundwater quality cannot typically be used to predict responses of other sustainability indicators. However, groundwater quality may be affected by groundwater levels and reductions in groundwater storage. In addition, certain implementation actions may be limited by the need to achieve minimum thresholds for other sustainability indicators.

- **Groundwater Levels** – Declining water levels can potentially lead to increased concentrations of COCs in groundwater, may alter the existing hydraulic gradient, and may result in movement of contaminated groundwater plumes. Changes in water levels also may mobilize contaminants that may be present in unsaturated soils. The maximum thresholds established for groundwater quality may influence groundwater level minimum thresholds by affecting the location or number of projects, such as groundwater recharge, in order to avoid degradation of groundwater quality.
- **Groundwater Storage** – Groundwater quality that is at or near maximum thresholds is not likely to influence pumping.
- **Depletion of Interconnected Surface Waters** – Groundwater quality that is at or near maximum thresholds may affect stream water quality.

- **Seawater Intrusion** – This sustainability indicator is not applicable in this Basin.

3.4.4 Subsidence

3.4.4.1 Undesirable Results

An undesirable result occurs when subsidence substantially interferes with beneficial uses of groundwater and land uses. Subsidence occurs as a result of compaction of (typically) fine-grained aquifer materials (i.e., clay) due to the overdraft of groundwater. As there has not been any historical documentation of subsidence in the Basin, and the aquifer materials are unlikely to present such a risk, it is reasonable to conclude that any land subsidence caused by the chronic lowering of groundwater levels occurring in the Basin would be considered significant and unreasonable. This is quantified as pumping induced subsidence greater than the minimum threshold of 0.1 ft (0.03 m) in any single year; essentially zero subsidence accounting for measurement error.

Effects of Undesirable Results on Beneficial Uses and Users

Subsidence can result in substantial interference with land use including significant damage to critical infrastructure such as canals, pipes, or other water conveyance facilities. Flooding of land, including residential and commercial properties, can lead to financial losses.

3.4.4.2 Minimum Thresholds

The minimum threshold for land subsidence in the Basin is set at no more than 0.1 ft (0.03 m) in any single year, resulting in no long-term permanent subsidence. This is set at the same magnitude as the estimated error in the InSAR data (+/- 0.1 ft [0.03 m]), which is currently the only tool available for measuring basin-wide land subsidence consistently each year in the Basin.

The minimum thresholds for land subsidence in the Basin were selected as a preventative measure to ensure maintenance of current ground surface elevations and as an added safety measure for potential future impacts not currently present in the Basin and nearby basins. This avoids significant and unreasonable rates of land subsidence in the Basin, which are those that would lead to a permanent subsidence of land surface elevations that would impact infrastructure and agricultural production in the Scott Valley and neighboring groundwater basins. There are currently no other state, federal, or local standards that relate to this sustainability indicator in the Basin.

3.4.4.3 Measurable Objectives

Land subsidence is not known to be significant in the Scott Valley. There is no historical record of inelastic subsidence in the Basin resulting in permanent land subsidence. Recent InSAR data provided by DWR (TRE Altamira) show no significant subsidence occurring during the period of mid-June 2015 to mid-September 2019. Small fluctuations observed in these datasets are likely due to seasonal variations in the local hydrologic cycle and agricultural practices and are not significant or unreasonable. Additionally, the specific geology of the aquifer materials comprising the Basin is not known to contain the thicker clay confining units that typically exhibit inelastic subsidence due to excessive groundwater pumping (i.e., overdraft conditions).

The guiding measurable objective of this GSP for land subsidence in the Basin is the maintenance of current ground surface elevations. This measurable objective avoids significant and unreasonable rates of land subsidence in the Basin, which are those that would lead to a permanent

subsidence of land surface elevations that impact infrastructure and agricultural production. As this subsidence measurable objective is essentially already met, the specific goal is to maintain this level of land subsidence (i.e., essentially zero) throughout the GSP implementation period. Land subsidence in the Basin is expected to be maintained throughout the implementation period via the sustainable management of groundwater pumping through the groundwater level measurable objectives, minimum thresholds, and interim milestones, as well as the fact that the aquifer geology is not very likely to be susceptible to significant and unreasonable subsidence, even under groundwater overdraft conditions.

The margin of safety for the subsidence measurable objective was established by setting a measurable objective to maintain current surface elevations and opting to monitor subsidence throughout the implementation period, even though there is no historical record of subsidence, and the aquifer is not deemed to be likely to succumb to inelastic subsidence. This is a reasonable margin of safety based on the past and current aquifer conditions and more conservative than the alternative of simply setting the subsidence indicator as 'not applicable' in the Basin due to current and documented historical evidence. As the current measurable objective is set to maintain the present land surface elevations of the Basin, the interim milestones are set as check-in opportunities to review year-to-year subsidence rates from the previous five-year period to assess whether there are longer-period subsidence trends than may be observed in the annual reviews.

3.4.4.4 Path to Achieve Measurable Objectives

Land subsidence in the Basin will be quantitatively measured by use of InSAR data (DWR-funded TRE Altamira or other similar data products). If there are areas of concern for inelastic subsidence in the Basin (i.e., exceedance of minimal thresholds) observed using the InSAR data, then ground-truthing studies could be conducted to determine if the signal is potentially related to changes in land use or agricultural practices or from groundwater extraction. If the subsidence is determined to result from groundwater extraction and is significant and unreasonable, then ground-based elevation surveys might be needed to monitor the situation more closely.

3.4.4.5 Relationship to Other Sustainability Indicators

By managing groundwater pumping to avoid the undesirable result of chronic lowering of groundwater levels, the possibility of land subsidence, already unlikely due to aquifer geology, will be mitigated. Avoiding or limiting land subsidence through sustainably managed groundwater levels in the Basin will also lessen impacts due to declines in groundwater storage and/or impacts to the sensitive, and relatively shallow, interconnected surface water/groundwater system that defines much of the Basin.

3.4.5. Depletion of Interconnected Surface Water

3.4.5.1. Undesirable Results

Undesirable Results in the Context of Interconnected Surface Water

As described in Chapter 2, groundwater throughout the Basin is interconnected with the Scott River stream network including its tributaries. As also described in Chapter 2, the Scott River stream network is ecologically stressed due, in part, to periodically insufficient baseflow conditions during the summer and fall. Summer baseflow levels are, in part, related to groundwater levels and storage which determine the net groundwater contributions to streamflow. Excessive stream temperatures are also related to earlier completion of the snow melt/spring flow recession, and due to later onset of the fall flush flow from the first significant precipitation event of the season. These adverse conditions impact, among others, two species of native anadromous fish, coho and Chinook salmon. Adverse stream flow conditions have occurred primarily since the 1970s, exacerbated by the large frequency of dry years that have occurred over the past 20 years. Low streamflow conditions are similar in dry years since the 1970s. Lowest streamflow conditions in dry years between the 1940s (when the Scott River stream gauge near Fort Jones was established) and the 1970s were about four times larger than more recently: 40 cfs (1.1 cms) instead of 10 cfs (0.28 cms). There exists no long-term trend in water-year-type-dependent streamflow minima. However, the frequency of low precipitation years has been higher over the past 20 years than in the second part of the 20th century. Ecosystem stresses in the Scott River stream network also include geomorphic conditions unrelated to flow (channel straightening and incision, sediment deposition).

Potential Causes of Undesirable Results

Causes of the overall low flow challenges in the Scott River stream system include consumptive use of surface water and groundwater and climate variability (which must be accounted for in the GSP). Some consumptive uses of groundwater may have a more immediate impact on streamflow than others; for example, a well that begins pumping groundwater 66 ft (20 m) from the river bank may cause stream depletion hours or days later, while a well that begins pumping two miles (3 km) west of the river bank may not influence streamflow for months or even a year. Possible causes of undesirable results include increasing frequency or duration of drought conditions, increased groundwater extraction, and continued surface water diversions.

Effects of Undesirable Results on Beneficial Uses and Users

Agricultural Land Uses and Users – depletion of interconnected surface water due to groundwater pumping can reduce the surface flow available to downstream diverters.

Some of the PMAs considered in the GSP development process, which are designed to reduce or reverse stream depletion, can make less water available for consumptive use, which would negatively impact some agricultural operations. However, the PMAs prioritized in this GSP do not use mandatory restrictions on water available for consumptive use on currently active agricultural land.

Domestic and Municipal Water Uses and Users – depletion of interconnected surface water can negatively affect municipalities, including the City of Etna, that are reliant on surface water as a drinking water source.

None of the PMAs considered in the GSP development process would change operations for domestic water users pumping less than 2 AFY (2,467 m3/year), as these are *de minimis* groundwater users who are not regulated under SGMA. Similarly, none of the PMAs prioritized in the GSP development process would negatively affect municipal water users.

Recreation – depletion of interconnected surface water can affect the ability of users to partake in recreational activities on surface water bodies in the Basin.

Environmental Land Uses and Land Users – depletion of interconnected surface water may negatively affect the following: near-stream habitats for plant and animal species; instream ecosys-

tems, including habitat necessary for reproduction, development, and migration of fish and other aquatic organisms; terrestrial ecosystems reliant on surface water; and wildlife that rely on surface waters as a food or water source. Additionally, low flow conditions can result in increased stream temperature that can be inhospitable to aquatic organisms, including anadromous fish. Low streamflow can also lead to increased concentrations of nutrients which can result in eutrophication.

Addressing Undesirable Results That Existed During the Baseline Period (prior to 2015)

SGMA requires that a GSP design SMCs to avoid undesirable results that did not already exist prior to 2015. Optionally, the plan may address undesirable results that occurred before January 1, 2015 (California Water Code 10727.2(b)(4)). In Scott Valley, undesirable results associated with depletion of interconnected surface water that have occurred since January 1, 2015, had already existed for 24 years as of 2015. No additional undesirable results have occurred since January 1, 2015 (Chapter 2.2.1.6 and Table 29). Table 29 shows that stream depletion since 2014 (30 cfs or less) has not exceeded the highest stream depletion observed in the 24-year period prior to 2015 (over 40 cfs).

SGMA also requires that the design of the SMC is consistent with existing water rights and regulations (23 CCR § 354.28(b)(5)). With respect to the interconnected surface water SMC in the Basin, relevant rights and regulations include (Cantor et al. 2018): the 1980 Scott River Adjudication, Porter-Cologne Water Quality Control Act (NCRWQCB Basin Plan and TMDL), Endangered Species Act (ESA), and Public Trust Doctrine (PTD). These programs are described in Chapter 2 and briefly summarized here as they relate to the SMC development.

Adjudication. The 1980 adjudication decree defined all groundwater within approximately 1,000 ft (305 m) from the mainstem Scott River as interconnected to surface water and assigned a water right to groundwater pumpers. The GSP is not allowed to alter water rights, including the 1980 adjudication in the Basin, which allows landowners within the Adjudicated Zone to pump groundwater (Superior Court of Siskiyou County 1980). SGMA's definition of "basin" for the Scott Valley Groundwater Basin is limited by Water Code sections 10720.8(a) and (e), which provide that the portion of the Scott Valley Basin within the area included in the Scott River Stream System is not subject to SGMA.

ESA. Under the ESA, coho salmon occurring in the Scott Valley are listed as a threatened species. CDFW has proposed minimum instream flow recommendations for the fish; however, the SWRCB has not set instream flow requirements for the Scott River to date.

Porter-Cologne. For the Scott River, the NCRWQCB's Basin Plan has established fish and wildlife beneficial uses, and set water quality objectives and an implementation plan to protect these uses (Scott River TMDL Action Plan, NCRWQCB, (2018)).

The Scott River TMDL Action Plan establishes a framework to support meeting water quality objectives. Permitting authority is established under the NCRWQB's Basin Plan and Porter-Cologne. The TMDL Action plan establishes voluntary and regulatory programs related to water quality management actions that would, among others, expand riparian shading and control irrigation return-flows to streams to protect stream temperature (currently regulated under the 2018 Scott River TMDL Conditional Waiver of Waste Discharge Requirements). The TMDL staff report has identified groundwater discharge to streams as a factor controlling stream temperature and a groundwater study plan has been completed.

Porter-Cologne (through NCRWQCB's Basin Plan and using the TMDL Action Plan) encourages water users to develop and implement water conservation practices (surface water and ground-

water, Table 4-10 of the TMDL Action plan). However, the TMDL Action Plan does not include legal requirements for groundwater management actions that would increase baseflow as a tool to maintain or improve cold streamflow temperature conditions (NCRWQCB 2010).

Public Trust Doctrine. A recent court decision on the public trust doctrine (PTD) identifies the County of Siskiyou as an extension of the SWRCB with administrative responsibilities for protecting public trust resources when issuing groundwater well permits; specifically, the Scott River. The court decision identifies groundwater pumping that leads to surface water depletion as subject to public trust considerations, specifically, balancing public trust resource needs against the public interest.

Given the history of stream depletion associated with groundwater pumping outside the adjudicated zone, SGMA does not require the GSA to address undesirable results associated with depletion of interconnected surface water. However, current Basin conditions indicate a need to improve conditions for fish. The GSP furthers that goal. Reversal of stream depletion is one action that can help achieve that goal. Neither the ESA, TMDL, or PTD specify mandatory targets, minimum thresholds, or specific project requirements. They do not use, as SGMA does, the concept of "significant and unreasonable undesirable results" as an absolute legal measure. Instead, targets, projects, and management actions to address surface water depletion are developed as part of a program implementation and depend on environmental outcomes, scientific studies, public interest concerns about PMAs, and best available technology.

The GSA designed this interconnected surface water SMC to be consistent with the requirements of SGMA and the programmatic structures of the NCRWQCB Basin Plan (including the TMDL Action Plan), ESA, and PTD.

Undesirable Results to Define a Minimum Threshold and Measurable Objectives for ISWs versus the aspirational "Watershed Goal"

According to SGMA regulations, "Undesirable results occur when significant and unreasonable effects for any of the sustainability indicators are caused by groundwater conditions occurring throughout the basin" (23 CCR § 354.26). For the interconnected surface water sustainability indicator, undesirable results commonly arise from habitat conditions that are affected by the amount of streamflow, as described above. However, reductions in streamflow – even during periods of baseflow – are not identical to "stream depletion due to groundwater pumping". Rather, streamflow and streamflow changes are subject to several contributing factors as described above and in Chapter 3.3.5.1 (monitoring of surface water depletion). For improving streamflow conditions, various agencies and NGOs managing watersheds typically target one or several aspirational "watershed goals". The SGMA undesirable result is only one of several contributing mechanisms impairing these watershed goals. **The undesirable result that is relevant to SGMA is the stream depletion that can be attributed to groundwater pumping outside of the adjudicated zone to the degree it leads to significant and unreasonable impacts on beneficial uses of surface water.**

In assessing how stream depletion reversal less than the MTs and MO would result in significant and unreasonable effects on beneficial uses of surface water, it is helpful to consider the following standards for "significant" and "unreasonable". Case law concerning the California Environmental Quality Act (CEQA) defines a "Significant effect on the environment" as "a substantial, or potentially substantial, adverse change in the environment." (Pub. Resources Code, § 21068.)

There is considerable case law interpreting the concept of an "unreasonable" use of water under Article 10, Section 2 of the California Constitution that is instructive when evaluating the reason-

ableness of competing uses of water. (See e.g., *Gin Chow v. Santa Barbara* (1933) 217 Cal. 673, 705-706; *Peabody v. City of Vallejo* (1929) 2 Cal.2d351, 367; *City of Lodi v. East Bay Mun. Utility Dist.* (1936) 7 Cal.2d 316, 339-341; *Joslin v. Marin Municipal Water Dist.* (1967) 67 Cal.2d 132, 141; *Erickson v. Queen Valley Ranch Co.* (1971) 22 Cal.App.3d578, 585-586). These cases essentially say that whether a water use is reasonable depends on the circumstances, and these circumstances can change over time. The reasonableness of groundwater use that may contribute to stream depletion could depend on a number of circumstances, including the benefits of pumping groundwater and the resource impacts of pumping groundwater.

Furthermore, in the Scott Valley, the definition of surface water depletion due to groundwater pumping must account for the jurisdictional boundary of the 1980 adjudication, as SGMA only allows regulation of those wells outside of the Adjudicated Zone (Wat. Code, § 10720.8(a)(20).). In the SGMA context, the GSA's enforcement responsibilities are limited to stream depletion due to groundwater pumping outside of the Adjudicated Zone. This is reflected in the design of the quantification of stream depletion (Chapter 3.3.5.1): the "no pumping reference scenario" refers to no pumping outside of the Adjudicated Zone. No pumping inside of the Adjudicated Zone would be a (voluntary) PMA and has also been evaluated as a "bookend" PMA scenario (Appendix 4-A).

In the context of assessing MTs for the ISW SMC, the GSA has determined that it is reasonable to hold groundwater producers outside the adjudicated zone (regulated by the GSP) to a modest percentage of stream depletion reversal.

While its enforcement responsibilities are narrowly focused on groundwater extraction outside of the Adjudicated Zone, the GSA's collaborative goals are broader than its enforcement responsibilities and include support toward meeting aspirational watershed goals. The GSP seeks to reflect these efforts in the design of the measurable objective for interconnected surface water.

Consequently, for the sustainability indicator of Interconnected Surface Water (ISW), this GSP makes a distinction between the Undesirable Result (which must consider the impacts on surface water beneficial uses attributable to groundwater use outside of the Adjudicated Zone) and overall challenges related to surface water beneficial uses throughout the watershed. This distinction reflects the fact that SGMA can address only a portion of the water supply challenges of the entire Scott Valley.

The objective of securing sufficiently functional environmental flows has been referred to as an aspirational "watershed goal" indicating that action by all water users in the watershed may be necessary to achieve it. Quantification of the MO for the ISW sustainability indicator supports achievement of the aspirational watershed goal.

Choosing the aspirational watershed goal itself as the MO would not meet regulations. DWR requires that the metrics used to quantify and measure stream depletion and to establish the minimum threshold, Chapter 3.3.5.1, must also be used to quantify the MO (23 CCR § 354.30): "(b) measurable objectives shall be established for each sustainability indicator, based on quantitative values using the same metrics and monitoring sites as are used to define the minimum thresholds".

The GSA seeks to elevate its priority for being an active partner in an integrated watershed management process involving many collaborations and partnerships by emphasizing that the MO helps support this aspirational, *integrated* watershed management goal. As discussed below in Chapter 3.4.5.3, the GSA's MO for interconnected surface water sustainability accounts for Porter-Cologne, the TMDL, the Public Trust Doctrine, and the Endangered Species Act, by targeting substantial stream depletion reversal in order to benefit Scott River fish and wildlife beneficial uses.

To summarize, the ISW Undesirable Result is narrower in scope than the overall low flow chal-

lenges in the Scott River stream network and is defined as "stream depletion due to groundwater extraction from wells subject to SGMA (i.e., outside of the Adjudicated Zone) to the degree it leads to significant and unreasonable impacts on beneficial uses of surface water." It is protected by the MT and the MO. However, GSP implementation is part of a broader, integrated effort across multiple partners and partnerships to address overall low flow challenges in the Basin. Hence, the minimum MO is only the lowest end of a broader range of desirable stream depletion reversal (green-shaded area in Figure 56) that is inclusive of the aspirational watershed goal.

Identifying Undesirable Results for Purposes of Setting a Minimum Threshold

The GSA decided that quantification of stream depletion that constitutes the Undesirable Result depends on the results of a balancing test between public trust needs (environmental improvements) and the public interests.

In public meetings, the Scott GSA Advisory Committee (AC) evaluated the flow benefits and the public interest impacts of various PMAs. The AC determined that, based on the diverse array of PMAs that could be implemented in the Scott Valley, it would be reasonable to undertake some combination of PMAs to reduce stream depletion while exposing stakeholders to reasonable economic costs.

The committee considered both, information provided on protecting environmental beneficial uses and users; and information provided on the public interests of the Basin:

- *Environmental Beneficial Uses and Users:* Detailed biological assessments relating specific instream flows, functional flow elements, or habitat to specific biological outcomes are not available (Chapter 2). However, the advisory committee considered the minimum instream flow requirements proposed by CDFW (2017) and the drought instream flow requirements proposed by CDFW in 2021 (2021).
  - The economic value of the environmental benefits achieved specifically from Scott River flows recommended by CDFW is currently unknown. Kruse and Scholz (2006) provide an analysis of environmental economic benefits from Klamath River dam removal (for a summary, see Appendix 5-D, Chapter 4.3).
  - The Advisory Committee considered a wide range of PMA scenarios and hypothetical scenarios to assess their environmental outcome. Among the scenarios considered, none consistently achieve the proposed CDFW instream flows (Appendix 4-A). Among the simulated scenarios, scenarios with an outcome that would come closest to the proposed minimum instream flow requirements include those that either abandon all groundwater pumping inside and outside the adjudicated zone (Appendix 4-A, page 75) or completely abandon both groundwater and surface water irrigation in the Basin (Appendix 4-A, page 75).
- *Public Interests in the Basin and Siskiyou County.* The economic impact of various degrees of permanent irrigation curtailment have been evaluated through an economic analysis and presented to the Advisory Committee (Appendix 5-D).
  - Of the economic scenarios considered, Scenario 1c ("All alfalfa and pasture are fallowed by 60%, with no ability to re-operationalize land and water use reductions with other crops.") most closely represents the permanent curtailments of all Basin groundwater use or all Basin groundwater and surface water use that would be needed to achieve CDFW recommended instream flow. The economic impact of scenario 1c for the Scott

Valley Basin is $20 million in total annual lost output and $15 million in total annual lost 'value added', leading to an estimated 140 lost jobs (Table 17 in Appendix 5-D).

- The economic impact of scenario 5 ("Total agricultural water use cutback by 15%, and model given flexibility to optimize distribution of cutbacks across individual crops.") for the Scott Valley Basin is $5 million in total annual lost output and $3.8 million in total annual lost 'value added', leading to an estimated 35 lost jobs (Table 17 in Appendix 5-D).

Considering this analysis and the presence of multiple Disadvantaged Communities in the Basin, the AC and GSA found that the instream flows identified by CDFW to protect environmental uses and users did not reasonably balance public interest and environmental considerations. It would also be outside the GSA's legal authority to implement to the degree achievement of those flows would require curtailments from adjudicated users or surface water diverters.

Nonetheless, based on this assessment of reasonableness by the AC, the GSA decided to implement PMAs to reduce current rates of stream depletion due to groundwater use in wells within the GSA's jurisdiction. This would address Undesirable Results existing in 2014 and continuing to exist today.

Quantitative Metric for Purposes of Setting a Minimum Threshold and Measurable Objective

The reduction in stream depletion is referred to as "stream depletion reversal". "Current rates" of stream depletion are "measured" using SVIHM (see Chapter 3.3.5.1) as the stream depletion rates due to groundwater pumping outside of the Adjudicated Zone. These rates cannot be directly measured with field instruments for the reasons discussed in Chapter 3.3.5.1.

Chapter 3.3.5.1 describes how stream depletion reversal due to a PMA is measured by comparing a PMA scenario against a BAU scenario. That section also explains that the comparison includes several metrics, readily available from the SVIHM simulations. Metrics that the AC has considered in its deliberations include:

- dates of the spring flow recession (date when simulated Scott River flows at the Fort Jones gauge fall below, 40 cfs, 30 cfs, 20 cfs, or 10 cfs)
- simulated monthly baseflow at the Fort Jones gauge [in cfs] during the summer and fall
- dates of the fall flush flow (dates after which simulated Scott River flows at the Fort Jones gauge reach at least 10 cfs, 20 cfs, 30 cfs, or 40 cfs)

Differences between PMA scenarios and the BAU scenario for the above three metrics have been compiled in Appendix 4-A (with electronic versions of detailed spreadsheet tables available in Digital Appendices 2-A-1 and 2-A-2). The documents provide in some detail year- and month-specific stream depletion reversal for a specific PMA for the 28-year period from 1991 - 2018. For purposes of quantitatively communicating each PMA's complex stream depletion reversal, it is here represented by a single representative number that focuses on the critical low-flow period of September–November: the 28-year average "Relative PMA Depletion Reversal" (measured in percent), as defined in Chapter 3.3.5.1, with respect to simulated monthly Scott River flow at the Fort Jones gauge in September, October, and November.

In summary, the minimum threshold (and measurable objective) is set as the amount of stream depletion reversal achieved by one or an equivalent set of multiple minimum required PMAs to meet the intent of SGMA (no additional undesirable results) and to further Porter-Cologne and the PTD (some reversal of existing undesirable results). The stream depletion reversal effects of

PMAs and combinations of PMAs were evaluated using the SVIHM and the full portfolio of results is discussed in Chapter 4 and Appendix 4-A. This framework for the minimum threshold is consistent with 23 CCR 354.28(c)(6), which (A) specifies the use of models to measure stream depletion, (B) implies that consideration of impacts on beneficial uses and users of interconnected surface water necessary, but (C) does not require that streamflow itself is used to set the minimum threshold, triggers, or interim targets.

3.4.5.2. Minimum Thresholds

Based on deliberations of the AC, a combination of Managed Aquifer Recharge (MAR) in the winter (January through March) and In-Lieu Recharge (ILR) in the spring (April until June), on days when streamflow, above CDFW interim instream flow criteria is available after meeting surface water deliveries on 6,250 combined acres of active alfalfa and pasture was considered to be a “guiding” scenario to define the minimum amount of stream depletion reversal set as the minimum threshold.

The MAR-ILR scenarios, once fully implemented, provide a relative stream depletion reversal that averages **19%** during September–November under 1991–2018 climate conditions, as measured by the SVIHM monitoring tool. In other words, stream depletion is reduced, on average, to **81%** of stream depletion under business-as-usual. Appendix 4-A provides detailed monthly data for all months in 1991–2018, including relative and absolute stream depletion reversal and relative and absolute remaining stream depletion. It also provides information on the change in timing of spring recess and fall pulse flows each year.

Advisory Committee discussions further lead to the conclusion that the implementation of multiple PMAs is desired over implementation of a single PMA. Implementation of the MAR-ILR scenario, without consideration of other actions to increase instream flows, was considered ambitious. The Advisory Committee agreed that a portfolio of PMAs that includes some MAR, some ILR, increased irrigation efficiencies, conservation easements, habitat improvements (e.g., beaver dam analogs), crop changes, and other PMAs (see Chapter 4) represents a preferable and more realistic approach to meeting the minimum threshold set for this sustainability indicator. With these considerations, the Advisory Committee chose to set an operationally flexible minimum threshold.

The minimum threshold is **any portfolio of PMAs** that achieves an individual monthly stream depletion reversal **similar to, but not necessarily identical to, the stream depletion reversal achieved by the specific MAR-ILR scenario** presented to the Advisory Committee (Table 29). The **average stream depletion reversal** of the implemented PMAs during September–November must **exceed 15% of the depletion caused by groundwater pumping from outside the adjudicated zone in 2042 and thereafter**, where depletion is defined by the SVIHM “no-pumping outside the adjudicated zone scenario 1” described in the appendix. The average remaining stream depletion during September–November therefore must not exceed 85% of that achieved under the BAU scenario.

The average (relative) stream depletion reversal, the average remaining stream depletion, and all other “measurable” outcomes to be expected from PMA implementation are obtained through long-term SVIHM simulations encompassing at least 28 years of actual climate conditions (see Chapter 3.3.5.1). Because SVIHM is the “measurement tool”, the expected outcome of a PMA or combination of PMAs can be obtained from simulation, without waiting for the actual implementation of PMAs and subsequent observation over a long time period. For the simulation “measurement”, the time series of recent climate conditions that have actually occurred in the Scott Valley (a wide

range of climate conditions), and the design of the PMA provide the required model input. The assessment and improvement process for SVIHM "measurements", also described in Chapter 3.3.5.1, ensures that SVIHM remains the appropriate tool for determining PMA outcomes, even under future climate and Basin conditions.

Since the minimum threshold reflects a reversal of an existing undesirable result, the management "glide-path" (sometimes considered for the gradual elimination of water level decline in basins in overdraft) is instead a "climbing-path" for this interconnected surface water SMC: a gradual increase in the minimum required stream depletion reversal (and gradual decrease in the maximum allowable remaining stream depletion) over time. **Due to the climbing-path, the minimum threshold of 15% stream depletion reversal only becomes enforceable under SGMA in 2042 and thereafter, when sustainable conditions must be achieved.**

Along the "climbing-path" of the interim twenty-year period, the GSP sets milestones that ensure that the GSA can meet and exceed MT conditions by 2042. **The milestones toward the final MT implementation in 2042 and thereafter are:**

- 2027: PMAs have been implemented that yield average relative stream depletion reversal of at least 5% (remaining stream depletion: no more than 95% of BAU).
- 2032: PMAs have been implemented that yield average relative stream depletion reversal of at least 10% (remaining stream depletion: no more than 90% of BAU).
- 2037: PMAs have been implemented that yield average relative stream depletion reversal of at least 15% (the 2042 MT; remaining stream depletion: no more than 85% of BAU).
- 2042: PMAs have been implemented that exceed the 2042 MT and show progress toward meeting the measurable objective.

By setting a milestone to achieve MT conditions no later than 2037, five years prior to the date set for the MT deemed to reflect sustainable groundwater conditions, the GSP provides a reasonable "climbing-path" toward a measurable objective that exceeds the MT and achieves the sustainability goal. **During the interim period, the GSA will use milestones to demonstrate that the GSA is on a path to compliance with the 2042 Minimum Threshold** (23 CCR Section 355.6(c)(1)).

Table 29: Average of daily simulated stream depletion (cfs) due to groundwater pumping outside of the adjudicated zone, by calendar year. Stream depletion was computed using SVIHM, by comparing the base case scenario (calibrated historic model) against a scenario, for the same simulation period, in which no groundwater pumping occurred outside the adjudicated zone. Daily stream depletion [cfs] is the difference in simulated streamflow at the Fort Jones gauge between the no-groundwater pumping scenario (generally more flow) and the base scenario (generally less flow). Stream depletion due to groundwater pumping is currently not available for periods after 2018. SVIHM will be regularly updated during the GSP implementation to reflect more current conditions.

Year	Depletion (cfs)
1991	36
1992	43
1993	40
1994	33
1995	35
1996	27
1997	17
1998	25
1999	45
2000	25
2001	36
2002	32
2003	34
2004	30
2005	13
2006	30
2007	33
2008	33
2009	35
2010	29
2011	27
2012	29
2013	32
2014	31
2015	22
2016	28
2017	28
2018	30

Table 30: Percent and average flowrate (cfs) of Total Stream Depletion (due to groundwater pumping in wells outside of the Adjudicated Zone), from Sep 1 to Nov 30, reversed by the “guiding” minimum PMA, Managed Aquifer Recharge and In-Lieu Recharge (MAR and ILR), categorized by water year type, and adjusted to the final 2042 minimum threshold of 15 percent. Water year type is based on quartiles of total flow recorded at the Fort Jones USGS flow gauge, water years 1977-2018 (where water years start Oct 1). IM indicates Interim Milestone, in units of Percent Depletion Reversed by PMAs, by water year type.

Water Year Type	Years	2042 Minimum Threshold for Total Depletion Reversed, Sep 1-Nov 30 (cfs)	Average Depletion Reversed, Sep-Nov (cfs)	IM for 2022	IM for 2027	IM for 2032	IM for 2037	IM for 2042
Dry	1991, 1992, 1994, 2001, 2009, 2013, 2014, 2018	20.60%	4.10	0	7%	14%	21%	21%
Below Avg	2002, 2004, 2005, 2007, 2008, 2010, 2012, 2015	11.20%	3.50	0	3%	7%	11%	11%
Above Avg	1993, 2000, 2003, 2011, 2016	9.50%	3.00	0	3%	7%	10%	10%
Wet	1995, 1996, 1997, 1998, 1999, 2006, 2017	18.60%	5.00	0	6%	12%	19%	19%

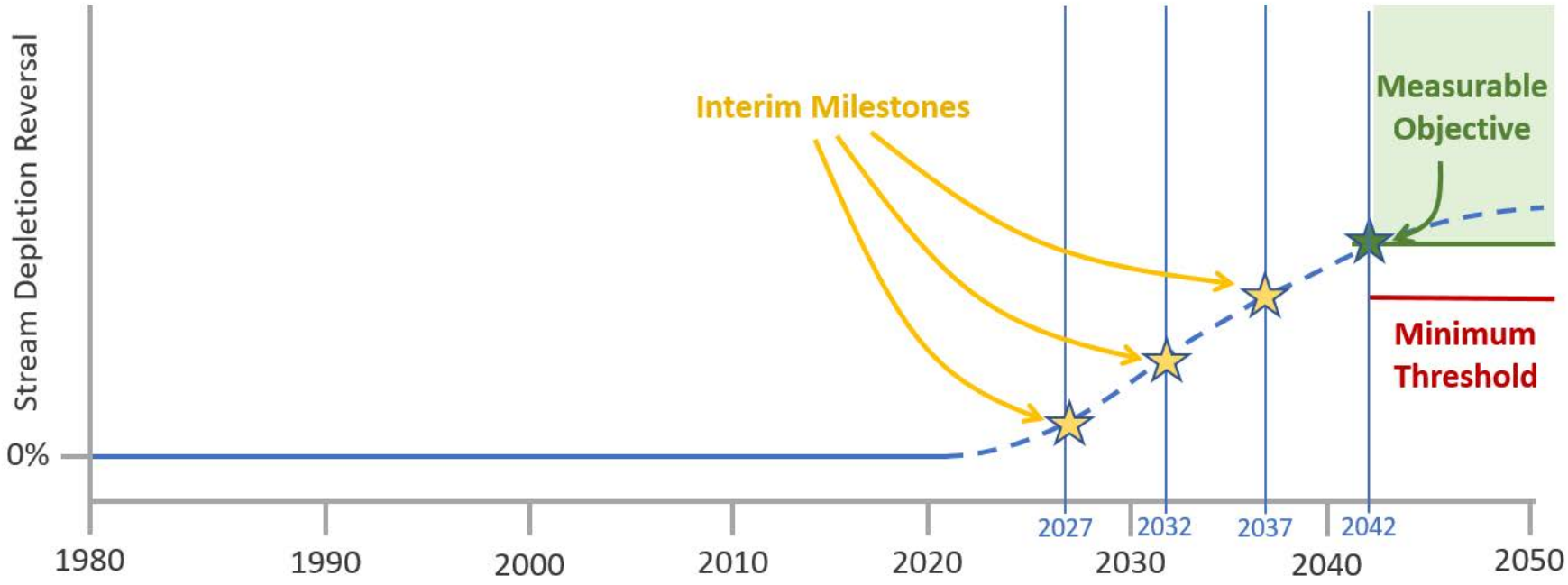

Figure 56: Conceptual outline of the sustainable management criteria for interconnected surface water (reversal of stream depletion due to groundwater pumping). Current Basin conditions indicate a need to improve conditions for fish and the GSP furthers that goal. Reversal of stream depletion is one action that can help achieve that goal. The minimum threshold for stream depletion reversal is higher than current or recent historic conditions. The minimum threshold deemed to reflect sustainable conditions will be effective from 2042 onward. Prior to 2042, interim milestones are set for 2027, 2032, and 2037. The interim milestone for 2037 is equal to the 2042 minimum threshold. The measurable objective represents a percentage of stream depletion reversal that exceeds the reasonable margin of operational flexibility for improving overall conditions in the basin. Graphic modified from California DWR, Draft Sustainable Management Criteria BMP, November 2017, Figure 15B.

3.4.5.3. Measurable Objectives

More than any other sustainable management criteria besides water quality, the interconnected surface water SMC is tightly linked to the water management efforts outside direct groundwater management. Managing the interconnected surface water SMC is part of a broader watershed portfolio of projects and management actions that engages multiple federal, state, and local agencies, NGOs, and volunteer groups. To be successful, implementation of the GSP for interconnected surface water must be closely integrated with these broader, collaborative water management efforts. To articulate the integrated water management characteristic of this SMC, the Measurable Objective is considered to be part of the overall, aspirational "watershed goal". The watershed goal constitutes a management objective covering all consumptive water uses as well as land management in the Scott Valley Basin and its surrounding watershed. Because the GSA has no legal authority over some of these uses, collaboration with surface water users in the Basin, with upland land managers, and with groundwater users in the Adjudicated Zone, as well as with local organizations and state and federal agencies will be necessary to work towards the aspirational watershed goal.

It is worth noting that the GSP regulations allow the GSA to consider using the MO as an aspirational goal by setting a MO that exceeds the reasonable margin of operational flexibility for improving overall conditions in the basin (23 CCR 354.30(g).), but this is not required. Nothing in SGMA otherwise precludes discussion of "aspirational" goals.

Consistent with the metrics for the minimum threshold, the measurable objective is defined as **any portfolio of PMAs** that achieves an individual monthly relative stream depletion reversal **similar to, but not necessarily identical to, the relative stream depletion reversal achieved by the specific MAR-ILR scenario** presented to the AC. The measurable objective is achieved when **average relative stream depletion reversal** of the implemented PMAs during September–November is **20% or above in 2042 and thereafter**, where depletion is defined by the SVIHM "no-pumping outside the adjudicated zone scenario 1" described in the appendix. The average remaining stream depletion during September–November, under the measurable objective, is 80% or less of that achieved under the BAU scenario. The difference between measurable objective (20% or above) and the minimum threshold (15%) provides for necessary operational flexibility in the implementation of PMAs. The range of the measurable objective (20% or above) is consistent with the aspirational watershed goal.

This measurable objective meets the legal requirement that the measurable objective must use the same metrics and monitoring tools as that used for setting the minimum threshold (23 CCR Section 354.30(b)). Implementation of the SMC is closely tied to the broader water management in the Basin and its surrounding watershed. To emphasize the desire to integrate the efforts of the GSA with other agencies' and groups' water management efforts, achieving the measurable objective will be part of a broader, albeit aspirational, integrated water management goal to establish appropriate, healthy stream and stream flow conditions. The implementation of the Plan contributes, in collaboration with other agencies and groups, to improving water temperatures and protecting public trust resources. This explicit linkage between the measurable objective with the aspirational watershed goal also provides flexibility for compliance with potential future regulations or actions, in an integrated water management approach.

3.4.5.4. Path to Achieve Measurable Objectives

The GSA will support achievement of the measurable objective by conducting monitoring related to interconnected surface water, including streamflow monitoring and collaboration with entities that conduct biological monitoring for the environmental beneficial uses and users of interconnected surface water in the Basin. PMAs to reverse surface water depletion and ensure compliance with the minimum threshold will be undertaken by the GSA, either as the lead agency, or as a project partner. The GSA will review and analyze data, and update the model to evaluate any changes in depletion of surface water due to groundwater pumping or PMA implemented in the Basin. Using monitoring data collected as part of GSP implementation, the GSA will develop information to demonstrate that PMAs are operating to maintain or improve conditions related to the depletion of interconnected surface water in the Basin and to avoid undesirable results. Should the minimum threshold be exceeded, the GSA will implement measures to address this occurrence.

To manage depletion of interconnected surface water, the GSA will partner with local agencies and stakeholders to implement PMAs. PMAs are presented in further detail in Chapter 4. Implementation timelines and approximate costs are discussed in Chapter 5.

The GSA may choose to conduct additional or more frequent monitoring. The need for additional studies on depletion of interconnected surface water will be assessed throughout GSP implementation. The GSA may identify knowledge requirements, seek funding, and help to implement additional studies.

3.4.5.5. Information and Methodology Used to Establish Minimum Thresholds and Measurable Objectives

The minimum threshold is defined in terms of modeled monthly stream depletion reversal for climate period 1991-2018 conditions under proposed PMAs. This is measured with the SVIHM, simultaneously in percent of Total Depletion reversed, in cubic-feet-per-second (cfs), and in year-specific number of days gained in the spring recess flow and fall pulse flow for specific flow thresholds (e.g., 10 cfs, 20 cfs, 30 cfs, or 40 cfs) at the simulated Fort Jones gauge. A detailed discussion of interconnected surface water and GDEs in the Basin is described in Chapter 2.2.1.7. In establishing minimum thresholds for depletion of interconnected surface water, the following information was considered:

- Feedback on concerns about depletion of interconnected surface water and feasibility of PMAs from stakeholders.
- An assessment of interconnected surface water in the Basin.
- Results of the numerical groundwater model, which was used to calculate surface water depletion under a variety of scenarios.
- Input from stakeholders resulting from the consideration of the above information in the form of recommendations regarding minimum thresholds and associated management actions.

The minimum thresholds were selected based on results of scenarios, modeled using SVIHM, used to identify a realistic and reasonable amount of surface water depletion that can be achieved through the proposed PMAs. The proposed PMAs included in the scenarios to improve the decline in spring flow recession, summer and fall baseflow conditions, and the onset of the fall flush flow in dry and some average years, individually and in combination were:

- Winter and spring managed aquifer recharge.
- Beaver dam analogues and other fish-friendly structures.
- Changes in irrigation technology or crop type.
- Surface water storage.
- Seasonal pumping restrictions in the non-Adjudicated Zone.
- Voluntary pumping restrictions in the Adjudicated Zone.
- Conservation easements that would limit irrigation in some or all water years.
- An expanded surface water leasing program.

Along with Depletion Reversal for specific scenarios of PMAs, other output of SVIHM was also used to compute and present other relevant project outcome metrics important to understanding and assessing the project and management action benefits to streamflow. Information considered by the Advisory Committee include:

- The ratio of Depletion Reversal and Total Depletion, which is the **"Relative Depletion Reversal"**, measured in percent. The computation of this value is shown in Figure 57.
- Streamflow on any given day and location, a metric relevant to measure environmental outcomes.
- The number of days gained in stream connectivity in dry and some average years, both in the summer after the end of the spring flow recession, and in the fall when streamflow increases for the fall flush.
- Other relevant metrics including the timeseries of relative streamflow increase and simulated streamflow.
- Evaluation under Future Climate Conditions: The Total Depletion under future climate conditions, as well as the Depletion Reversal under future climate conditions, can be modeled in the same way as for the 1991-2018 models, using future climate data and DWR's protocol for simulating climate change conditions.
- Uncertainty Analysis: SVIHM also allows for uncertainty analysis in predicting Total Depletion, as well as Depletion Reversal for specific projects and management actions under current or future climate conditions.
- For each group of projects and management actions that are implemented, the Depletion Reversal is a measure of the amount of surface water depletion that is reversed relative to business as usual (BAU) conditions. PMAs are therefore – through SVIHM – inextricably, deterministically, and directly linked to specific "measured" outcomes: streamflow, streamflow gains, Depletion Reversal, Relative Depletion Reversal, number of days gained in stream connectivity, etc.

A full portfolio of the scenarios and results are included in Appendix 4-A.

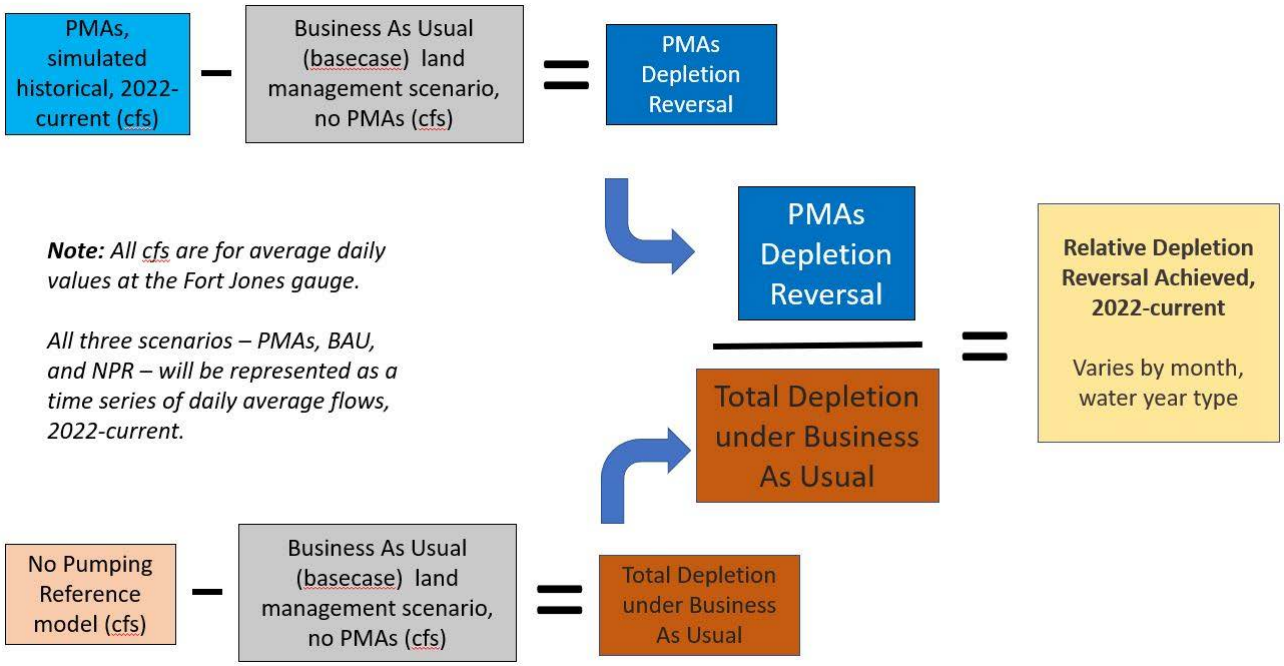

Figure 57: Computation of the Relative Depletion Reversal as the ratio of Depletion Reversal (due to PMAs) and Total Depletion. The graphic also shows the computation of the Total Depletion and the Depletion Reversal as defined above. The Relative Depletion Reversal is a unitless fraction. Multiplied by 100, it has units of percent. PMAs may lead to less than 100 percent Relative Depletion Reversal, or even more than 100 percent Relative Depletion Reversal. Just like Total Depletion and project or management action-specific Depletion Reversal, the Relative Depletion Reversal varies from day to day.

3.4.5.6. Relationship to Other Sustainability Indicators

Minimum thresholds are selected to avoid undesirable results for other sustainability indicators. Depletion of interconnected surface water is a complex function of groundwater storage and groundwater level dynamics that are in turn the result of groundwater pumping patterns. The relationship between depletion of interconnected surface water minimum thresholds and minimum thresholds for other sustainability indicators are discussed below.

- **Groundwater Level** – depletion of interconnected surface water occur in conjunction with decreases in groundwater levels measured in shallow groundwater wells, relative to the (unmeasured) conditions under no-pumping or less-pumping. Minimum thresholds for groundwater levels may serve to avoid significant additional stream depletion due to groundwater pumping but are insufficient as a tool to manage the interconnected surface water sustainability indicator. Vice versa, the minimum threshold for interconnected surface water is protective of groundwater levels and supports achievement of the groundwater level SMC.
- **Groundwater Storage** – depletion of interconnected surface water are related to groundwater storage in a similar way as they are related to water level changes.
- **Seawater Intrusion** – This sustainability indicator is not applicable in this Basin.
- **Groundwater Quality** – groundwater quality is not directly related to depletion of interconnected surface water.

- **Subsidence** – depletion of interconnected surface water are related to subsidence in a similar way as they are related to water level changes. The minimum threshold for interconnected surface water will avoid significant lowering of water levels and thus also avoid subsidence.

Chapter 4: Project and Management Actions

4.1 Introduction and Overview

To achieve this Plan's sustainability goal by 2042 and avoid undesirable results as required by SGMA regulations, multiple projects and management actions (PMAs) have been designed for implementation by the GSA. This section provides a description of PMAs necessary to achieve and maintain the Basin sustainability goal and to respond to changing conditions in the Basin. PMAs are described in accordance with §354.42 and §354.44 of the SGMA regulations. Projects generally refer to infrastructure features and other capital investments, their planning, and their implementation, whereas management actions are typically programs or policies that do not require capital investments, but are geared toward engagement, education, outreach, changing groundwater use behavior, adoption of land use practices, etc. PMAs discussed in this section will help achieve and maintain the sustainability goals and measurable objectives, and avoid the undesirable results identified for the Basin in Chapter 3. These efforts will be periodically assessed during the implementation period, at minimum every five years.

In developing PMAs, priorities for consideration include effectiveness toward maintaining the sustainability of the Basin (including the amount of environmental benefit to be gained through implementation of the PMA); minimizing impacts to the Basin's economy; seeking cost-effective solutions for external funding; and prioritizing voluntary and incentive-based programs over mandatory programs. As the planned or proposed PMAs are at varying stages of development, complete information on construction requirements, operations, permitting requirements, overall costs, and other details are not uniformly available. A description of the operation of PMAs as part of the overall GSP implementation is provided in Chapter 5.

In Scott Valley, the PMAs are designed to:

- to achieve the thresholds and objectives for the interconnected surface water sustainability indicator (Section 3.4.5);
- to prevent the lowering of groundwater levels to protect wells from outages;
- to preserve ground-water dependent ecosystems; and
- to avoid additional stresses on interconnected surface water and their habitat.

The identified PMAs reflect a range of options to achieve the goals of the GSP and will be completed through an integrative and collaborative approach with other agencies, organizations, landowners, and beneficial users. Few PMAs will be implemented by the GSA alone. The GSA considers itself to be one of multiple parties collaborating to achieve overlapping, complementary, and multi-benefit goals across the integrated water and land use management nexus in the Basin. Furthermore, PMAs related to water quality, interconnected surface waters, and groundwater-dependent ecosystems will be most successful if implemented to meet the multiple objectives of collaborating partners. For many of the PMAs, the GSA will enter into informal or formal partnerships with other agencies, NGOs, or individuals. These partnerships may take various forms, from GSA participation in informal technical or information exchange meetings, to collaborating on third-party proposals, projects, and management actions, to leading proposals and subsequently implementing PMAs.

The GSA and individual GSA partners will have varying but clearly identified responsibilities with respect to permitting and other specific implementation oversight. These responsibilities may vary from PMA to PMA or even within individual phases of a PMA. Inclusion in this GSP does not forego any obligations under local, state, or federal regulatory programs. Inclusion in this GSP

also does not assume any specific project governance or role for the GSA. While the GSA does have an obligation to implement the GSP and reach sustainability within 20 years of plan adoption, it is not the primary regulator of land use, water quality, or environmental project compliance. It is the responsibility of the respective implementing, lead agency to collaborate with appropriate regulatory agencies to ensure that the PMAs for which the lead agency is responsible for following all applicable laws. The GSA may choose to collaborate with regulatory agencies on specific overlapping interests such as water quality monitoring and oversight of projects developed within the Basin.

PMAs are classified under four categories: groundwater demand management, surface water supply augmentation, stream habitat improvement, and groundwater recharge. Examples of project types within these four categories are shown in Table 31. Further, PMAs are organized into three tiers reflective of their timeline for implementation:

1. **TIER I**: Existing PMAs that are currently being implemented and are anticipated to continue to be implemented.
2. **TIER II**: PMAs planned for near-term initiation and implementation (2022 to 2027) by individual collaborating/partner agencies.
3. **TIER III**: Additional PMAs that may be implemented in the future, as necessary (initiation and/or implementation 2027 to 2042).

PMAs recently completed in the Basin are discussed in Chapter 2. A general description of existing and ongoing (Tier I) PMAs is provided in Table 31; descriptions of Tier II and Tier III PMAs are provided in Section 4.1 and Section 4.2, respectively. The process of identifying, screening, and finalizing PMAs is illustrated in Figure 58. Existing and planned projects were first identified through review of different reports, documents, and websites. Planned and new projects also received stakeholder input in their identification. These projects were then categorized into four categories: supply augmentation, demand management, stream habitat improvement, and groundwater recharge. In the next step, all projects were evaluated to identify those with the highest potential to be included in the GSP. Using the Scott Valley Integrated Hydrogeological Model (SVIHM), the effectiveness of some projects, or a combination of projects, was assessed to identify those projects that, if implemented, will most likely bring the Basin into sustainability. Monitoring will be a critical component in evaluating PMA benefits and measuring potential impacts from PMAs.

Funding is an important part of successfully implementing a PMA. The ability to secure funding is an important component in the viability of implementing a particular PMA. Funding sources may include grants or other fee structures (Section 5). Under the Sustainable Groundwater Management Implementation Grant Program Proposition 68, grants can be awarded for planning activities and for projects with a capital improvement component. As such, state funds for reimbursing landowners for implementation of PMAs, including land fallowing and well-shut offs, currently cannot be obtained under this program. Funding will also be sought from other local, state, federal, and private (NGO) sources.

The existing PMAs have been extracted from the following documents:

- Supply Enhancement (in Streams)
  - Siskiyou Land Trust (website)
  - Scott River Water Trust (website)

- Demand Management (of Groundwater)
  - Permit required for groundwater extraction for use off the parcel from which it was extracted (Title 3, Chapter 13- Groundwater Management, Siskiyou County Code of Ordinances)
  - Siskiyou County Groundwater Use Ordinance (Title 3, Chapter 13, Article 7- Waste and Unreasonable Use, Siskiyou County Code of Ordinances)
  - Siskiyou County Well Drilling Permits (Standards for Wells, Title 5, Chapter 8 of Siskiyou County Code of Ordinances; (Siskiyou County 1990))
  - Well location restrictions (Scott River Adjudication Decree No. 30662, 1980)
  - Scott Valley and Shasta Valley Watermaster District (website)
- Recharge
  - NFWF Scott Valley Managed Aquifer Recharge Project (see Appendix 4-B for the draft final proposal for this project)
- Habitat Improvement
  - National Fish and Wildlife Foundation Grant Slates (website)
  - Siskiyou RCD (website)
  - Scott River Watershed Council (website)

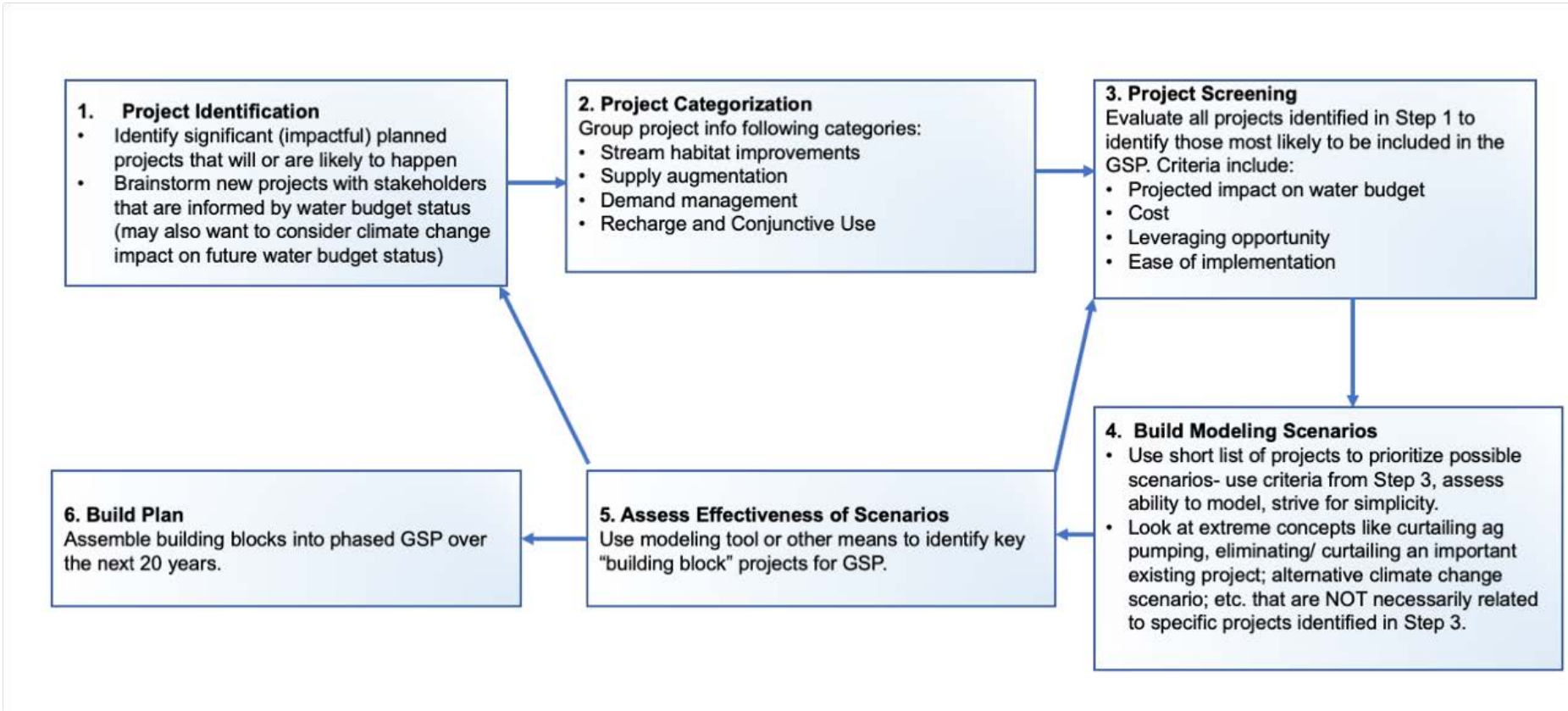

Figure 58: General process for identification and prioritization of PMAs. Further details are included in Chapter 5 and appendices.

Table 31: Projects and Management Actions Summary.

Tier	Title	Description	Lead Agency	Category	Status	Anticipated Timeframe	Targeted Sustainability Indicator(s) / Benefits
I	Well Drilling Permits	Siskiyou County Well Drilling Permits (Standards for Wells, Title 5, Chapter 8 of Siskiyou County Code of Ordinances). Location limitations for new wells with respect to the interconnected zone (per Scott River Adjudication Decree No. 30662).	County of Siskiyou	Demand Management	Existing/ Ongoing	Active	Groundwater levels, Interconnected surface water.
I	Groundwater Use Restrictions	Prohibition of the use of groundwater underlying Siskiyou County for cannabis cultivation (Article 7, Chapter 13, Title 3 of Siskiyou County Code of Ordinances).	County of Siskiyou	Demand Management	Existing/ Ongoing	N/A	Groundwater levels
I	Administrative Permit Process for Groundwater Extraction for use Off-Parcel from Which it was extracted.	Permit requirement for extraction of groundwater for use off-parcel (Article 3.5, Chapter 13, Title 3 of the Siskiyou County Code of Ordinances).	County of Siskiyou	Demand Management	Existing/ Ongoing	Active	Groundwater levels
I	Watermaster Program	Watermaster services currently exist on Wildcat Creek and French Creek. Among other things, a watermaster provides enforcement of water leases under the authority of Scott River Water Trust and 1707 dedications and transfers.	Scott Valley and Shasta Valley Water-master District	Demand Management	Existing/ Ongoing	N/A	Interconnected surface water

Table 31: Projects and Management Actions Summary. *(continued)*

Tier	Title	Description	Lead Agency	Category	Status	Anticipated Timeframe	Targeted Sustainability Indicator(s) / Benefits
I	Scott River Water Trust Leasing Program	Voluntary program leases water from active water diverters on priority stream reaches in exchange for financial compensation. Diverters include but are not limited to SVID, Farmers Ditch, and locations on French Creek, Sugar Creek, and Shackleford Creek.	Scott River Water Trust	Supply Augmentation	Existing/ Ongoing	N/A	Interconnected surface water
I	Scott River Tailings Streamflow and Ecological Benefit Planning Restoration Projects	Improve instream connectivity in the tailings section of the Scott River, which connects the East Fork, South Fork, and Sugar Creek tributaries to the main stem Scott River.	Scott River Water-shed Council	Supply Augmentation	Existing/ Ongoing	N/A	Interconnected surface water
I	South Fork Scott River Floodplain Connectivity Project Description:	This three-phase project reconnects historical floodplains in the South Fork of the Scott River that were disconnected as a result of historical mining activity. In addition to reconnecting floodplains, the project creates habitat improvements through engineered log jams and wood loading in a mile-long stretch of the South Fork of the Scott River.	Siskiyou Resource Conser-vation District	Supply augmentation, Habitat Improvement	Existing/ Ongoing	Phase I and II complete. Phase III completion by 2021-2022	Groundwater levels, interconnected surface water, instream habitat improvement

Table 31: Projects and Management Actions Summary. *(continued)*

Tier	Title	Description	Lead Agency	Category	Status	Anticipated Timeframe	Targeted Sustainability Indicator(s) / Benefits
I	Patterson Creek Wood Loading	Uses streamside trees that are felled into the channel to create cover, scour pools, increase slow water habitat and improve floodplain connectivity. Â	Scott River Water-shed Council	Habitat Improvement	Existing/ Ongoing	Phase I and Phase II were implemented in 2018 and 2019, respectively. Phase III is planned for summer 2021.	Improve habitat for GDEs
I	French Creek Wood & Gravel Enhancement	This project aims to improve coho salmon spawning and rearing conditions by adding large wood and spawning gravels.	Scott River Water-shed Council	Habitat Improvement	Existing/ Ongoing	Phase I was implemented in 2018 and Phase II is planned to begin summer 2021.	Improve habitat for GDEs (coho salmon)
I	Irrigation Improvements	Improvements in irrigation efficiency in Scott Valley (as detailed in Chapter 2.2.1.5).	N/A	Demand Management	Existing	N/A	Groundwater levels, interconnected surface water
I	Lower Scott River Side Channel Connectivity and Habitat Enhancement project	As a continuation of the recently constructed off-channel pond (2020), SRCD will complete restoration efforts within the mainstem and oxbow side-channel area to improve channel function and enhance access to slow water habitat. This project will incorporate side channel activation, BDA (beaver dam analogs) and engineered log jams.	Siskiyou Resource Conser-vation District	Habitat Improvement	Existing / Ongoing	Off channel pond complete in 2020. Channel connectivity and instream habitat improvements completion by 2022.	Increased groundwater levels, interconnected surface water with off-channel pond, instream habitat improvement, improved habitat for salmonids

Table 31: Projects and Management Actions Summary. *(continued)*

Tier	Title	Description	Lead Agency	Category	Status	Anticipated Timeframe	Targeted Sustainability Indicator(s) / Benefits
I	Scott River Groundwater Monitoring	This project will provide monitoring services related to groundwater enhancement and recharge projects. During the 2020 drought, the SRCD will be involved with groundwater transactions in Reach 9 of the Scott River (between Highway 3 and the National Forest Land). This includes daily monitoring of the groundwater response to restrictions in irrigation in both Scott River and in adjacent fields through temporary wells and established wells.	Siskiyou Resource Conser-vation District	Supply augmentation, recharge	Ongoing and in de-velopment	Current, TBA	Increased groundwater levels, interconnected surface water, improved water temperature, improved habitat for GDEs (coho salmon)
II	Avoiding Significant Increase of Total Net Groundwater Use from the Basin	Avoid significant future increase of total net groundwater use within the Basin through planning and coordination with land use zoning and well permitting agencies	GSA, County of Siskiyou, City of Etna, City of Fort Jones	Demand Management	Conceptual Phase	Conceptual Phase	Groundwater levels, interconnected surface water
II	Beaver Dam Analogues	Beaver dam analogues (BDAs) are instream structures that mimic beaver dams. BDAs can be used to increase beaver abundance and promote watershed restoration.	Scott River Water-shed Council	Habitat Improvements	Planning Phase	Planning Phase	Instream habitat improvement
II	High Mountain Lakes	Use of dams at the outlets of high-altitude lakes in Scott Valley to increase streamflow.	TBD	Supply Augmentation	Conceptual Phase	Conceptual Phase	Interconnected surface water

Table 31: Projects and Management Actions Summary. *(continued)*

Tier	Title	Description	Lead Agency	Category	Status	Anticipated Timeframe	Targeted Sustainability Indicator(s) / Benefits
II	Upslope Water Yield Projects	Building green infrastructure in the upper watershed, especially of the East Fork (e.g., former Hayden Ranch, now Beaver Valley Headwater Preserve) and French Creek to increase water yield. Green infrastructure includes fuel reduction, road improvements, canopy opening to manage snow shade and accumulation, and other large landscape projects that increase water storage within the upper watershed during wet periods and baseflow from the upper watershed during dry periods.	Scott River Water-shed Council	Supply Augmentation	Planning Phase	Planning Phase, East Fork Scott in Implementation Phase	Interconnected surface water
II	East Fork Scott Project	To improve conditions within the E Fork Scott watershed. Potential activities include riparian areas, fuels reduction, mine reclamation, stand density reduction, and wildlife habitat improvements.	Salmon/ Scott River Ranger District, Klamath National Forest	Habitat Improvements	Implementation Phase	Active	Improve habitat for GDEs.
II	Irrigation Efficiency Improvements	Increase irrigation efficiency (and in some cases, yields) through infrastructure or equipment improvements. Consider funding incentives through the NRCS EQIP program.	GSA, UCCE	Demand Management	Planning Phase	Planning Phase	Groundwater levels, interconnected surface water
II	Stockwater diversion and delivery system Improvements	Assessment and implementation of options related to stockwater diversion and delivery to increase efficiency.	GSA	Demand management	Conceptual Phase	Conceptual phase	Groundwater levels, interconnected surface water

Table 31: Projects and Management Actions Summary. *(continued)*

Tier	Title	Description	Lead Agency	Category	Status	Anticipated Timeframe	Targeted Sustainability Indicator(s) / Benefits
II	MAR & ILR - NFWF Scott Recharge Project	Evaluate use of groundwater recharge as to augment Scott River flows during critical periods (i.e., late summer and fall).	Scott Valley Irrigation District	Recharge	Active	Expected completion by February 2023.	Groundwater levels, interconnected surface water
II	MAR & ILR	Managed aquifer recharge and - during the irrigation season - in lieu recharge on irrigated agricultural land to increase baseflow during the critical summer and fall low flow period.	GSA, Siskiyou Resource Conser-vation District	Recharge	Planning Phase	Planning Phase	Groundwater levels, interconnected surface water
II	Voluntary Managed Land Repurposing	Reduce water use through voluntary managed land repurposing activities including term contracts, crop rotation, irrigated margin reduction, conservation easements, and other uses	GSA, TBD	Demand Management	Conceptual Phase	Conceptual phase	Groundwater levels, interconnected surface water
II	Wel Inventory Program	Development of an inventory and defnitiion of active wells in the Basin.	GSA, TBD	Demand Management	Planning Phase	Planning Phase	Groundwater levels, interconnected surface water
II	Instream Habitat Improvement on the East Fork Scott River	Improve stream flow, create scour pools, and increase habitat for spawning and over summering salmonids in the E Fork of the Scott River on the Beaver Valley Headwater Preserve.	Siskiyou Resource Conser-vation District	Habitat improvement	Planning Phase	Planning Phase	increased surface water connectivity, habitat improvement for GDE (coho salmon)

Table 31: Projects and Management Actions Summary. *(continued)*

Tier	Title	Description	Lead Agency	Category	Status	Anticipated Timeframe	Targeted Sustainability Indicator(s) / Benefits
II	Scott River Basin Stream Flow Monitoring	Reinstate historic stream flow monitoring activated throughout the watershed to improve knowledge of stream flow response in relation to existing and modified conditions. The SRCD will reinstall instream monitoring devices and monitoring wells to measure water levels, temperature, and water quality across all tributaries to the Scott River. This network will assess surface water contributions to groundwater and will augment and inform the SVIHM (as laid out in Chapter 3, Section 3.3, lines 238-246). This network will also be used to inform agencies involved with protecting and conserving GDEs in the system.	Siskiyou Resource Conser-vation District	Monitoring	Planning Phase	Current, TBA	Realtime data available to developers of the SVIHM, water users, and various conservation organizations in the Scott Valley.
III	Alternative, lower ET crops	Pilot programs on introducing alternative crops with lower ET but sufficient economic value. Incentivize and provide extension on long-term shift to lower ET crops.	GSA, UCCE, TBD	Demand Management	Conceptual Phase	Conceptual Phase	Groundwater levels, interconnected surface water

Table 31: Projects and Management Actions Summary. *(continued)*

Tier	Title	Description	Lead Agency	Category	Status	Anticipated Timeframe	Targeted Sustainability Indicator(s) / Benefits
III	Floodplain Reconnection/ Expansion	Expand access of the Scott River to old or new floodplain features to promote groundwater recharge, create habitat, provide more functional ecosystem, while also recharging groundwater, possibly as part of conservation easements	TBD	Supply Augmentation, Habitat Improvements	Conceptual Phase	Conceptual Phase	Groundwater levels, interconnected surface water
III	Reservoirs	Construct surface water reservoir (s) to capture and store runoff and excess stream flows to augment Scott River flows during critical periods	TBD	Supply Augmentation	Conceptual Phase	Conceptual Phase	Groundwater levels, interconnected surface water
III	Sediment Removal and River Restoration	Streambed alterations to remove sediment that has accumulated between Fort Jones and Scott River canyon to improve instream flow conditions on the Scott River downstream from Oro Fino Creek during the critical summer and fall baseflow period.	TBD	Habitat Improvement	Scoping Phase	Scoping Phase	Instream habitat improvement
III	Strategic Groundwater Pumping Restriction	Strategic timing of groundwater pumping restrictions. This management action would only be developed if Tier I and Tier II PMAs are insufficient. It would be an alternative tool for the GSA in support of the groundwater level SMC.	GSA	Demand Management	Conceptual Phase	Conceptual Phase	Groundwater levels

Table 31: Projects and Management Actions Summary. *(continued)*

Tier	Title	Description	Lead Agency	Category	Status	Anticipated Timeframe	Targeted Sustainability Indicator(s) / Benefits
III	Watermaster Program	Water master services on tributaries other than Wildcat Creek and French Creek and on the Scott River. Among other things, a water master provides enforcement of water leases and 1707 dedications and transfers.	Scott Valley and Shasta Valley Water-master District	Demand Management	Conceptual Phase	Conceptual Phase	Interconnected surface water

4.2 TIER I: Existing or Ongoing Projects and Management Actions

As shown in Table 31 there are multiple existing and ongoing PMAs in the Basin (Tier I). The Basin has a range of existing PMAs in place to provide demand management, supply augmentation, and habitat improvement.

Well Drilling Permits and County of Siskiyou Groundwater Use Restrictions

There are several existing regulations that are included in the demand management category of PMAs. These include the permitting requirements for new wells, as detailed in Title 5, Chapter 8 of the Siskiyou County Code of Ordinances and well drilling restrictions per the Scott River Adjudication Decree No. 30662. Siskiyou County also has ordinances that require permitting for extraction of groundwater for use off-parcel (per Title 3, Chapter 13. Article 3.5) and a prohibition on wasting groundwater with underlying Siskiyou County for use cannabis cultivation (Article 7, Chapter 13, Title 3 of Siskiyou County Code of Ordinances). Providing demand management, these management actions benefit multiple sustainability indicators, including declining groundwater levels, groundwater storage, and depletion of interconnected surface waters.

Scott and Shasta Valley Watermaster District

Water Master services currently exist on Wildcat Creek and French Creek. Among other things, a Water Master provides enforcement of water leases and 1707 dedications and transfers (see Water Trust PMA, below). Expanding current Water Master services to Shackleford, Kidder, Etna, Patterson, Sugar, Crystal, Mill, Orofino Creeks, the main stem of the Scott River, and the interconnected zone in the Scott River Decree could further help enforce and expanded the Water Trust program (see Tier III PMAs for further discussion).

Scott River Water Trust Leasing Program

This is a voluntary program that leases water from active water diverters on priority stream reaches in exchange for financial compensation. Diverters include, but are not limited to, SVID, Farmers Ditch, and locations on French Creek, Sugar Creek, and Shackleford Creek. Benefits from implementation of this MA include leaving water in the stream and thus, providing benefit to instream flows. Leases in the fall months benefit flows for migration of Chinook and coho spawning adults, while leases throughout the summer months benefit the juvenile fish through improvements in rearing habitat for juvenile fish in tributaries to the Scott River. Leases are either temporary through forbearance agreements or permanent instream transfers through the Water Code 1707, which are facilitated by SWRCB. This program is ongoing but there is potential to expand its operations in the future.

Scott River Tailings Streamflow and Ecological Benefit Restoration Projects

This project, with ongoing implementation by the Scott River Watershed Council, aims to improve instream connectivity in the tailings section of the Scott River, which connects the East Fork, South Fork, and Sugar Creek tributaries to the mains stem Scott River. Benefits from this project include instream habitat improvement with particular benefit to anadromous fish species in the Scott River.

Patterson Creek Wood Loading

This project, implemented by the Scott River Watershed Council, uses streamside trees that are felled into the channel to create cover, scour pools, increase slow water habitat, and improve floodplain connectivity. Implementation in 2018, 2019, additional work is ongoing. The primary benefit from this project includes improvement of spawning habitat for anadromous fish.

French Creek Wood & Gravel Enhancement

This Scott River Watershed Council project aims to improve coho salmon spawning and rearing conditions by adding large wood and spawning gravels. Using a phased approach, the first series of wood structures and gravel augmentation began in 2019. The primary benefit expected from this project includes habitat improvement for coho salmon.

4.3 TIER II: Planned Projects and Management Actions

Tier II PMAs, planned for near-term initiation and implementation (2022-2027) by individual agencies, exist at varying stages in their development. Project descriptions are provided below for each of the identified Tier II PMAs. The level of detail provided for the eight PMAs described below depends on the status of the PMA; where possible the project descriptions include information relevant to §354.42 and §354.44 of the SGMA regulations.

i. Avoiding Significant Increase of Total Net Groundwater Use from the Basin
ii. Beaver Dam Analogues
iii. Conservation Easements
iv. East Fork Scott Project
v. High Mountain Lakes
vi. Irrigation Efficiency Improvements
vii. MAR & ILR - NFWF Scott Recharge Project
viii. MAR & ILR
ix. Upslope Water Yield Projects
x. Voluntary Managed Land Repurposing

Avoiding Significant Increase of Total Net Groundwater Use from the Basin

Project Description

The goal of this MA is to avoid water level declines and additional streamflow depletion in Scott Valley that would result from significant expansion of net groundwater use relative to the practice over the past two decades. Net groundwater use is defined as the difference between groundwater pumping and groundwater recharge in the Basin. Under conditions of long-term stable recharge (from precipitation, irrigation, streams, floods) and long-term stable surface water supplies in the Basin, significant increases in long-term average ET (or other consumptive uses) in the Basin lead to significant increases in long-term average net groundwater use. While not leading to overdraft, such increase of net groundwater use would result in less groundwater discharge toward the Scott River and, hence, lower dynamic equilibrium water levels in the Basin or portions of the Basin, possibly at levels lower than the minimum threshold (MT) for groundwater levels or for interconnected surface water, for significant periods of time (see Chapter 2.2.3.3). This MA helps to ensure that the sustainable yield of the basin is not exceeded (see Chapter 2.2.4) and that sustainable management criteria are met. The MA sets a framework to develop a process for avoiding significant long-term increases in average net groundwater use in the Basin, while protecting current groundwater and surface water users, allowing Basin total groundwater extraction to remain at levels that have occurred over the most recent twenty-year period (2000-2020). By preventing future declining water levels, the MA will help the GSA achieve the measurable objectives of several sustainability indicators: groundwater levels, groundwater storage, subsidence, and interconnected surface water and GDEs. Due to the direct relationship between net groundwater use and ET, implementation of the MA is measured by comparing the most recent five and ten year running averages of agricultural and urban ET over both the Basin and watershed, to the average value of Basin ET measured in the 2010-2020 period, within the limits of measurement uncertainty. Basin ET from anthropogenic activities in the Basin and surrounding watershed cannot increase significantly in the future without impacting sustainable yield. This design is intended to achieve the following:

- To avoid disruption of existing urban and agricultural activities.
- To provide an efficient, effective, and transparent planning tool that allows for new urban, domestic, and agricultural groundwater extraction without increase of total net groundwater use. This can be achieved through exchanges, conservation easements, and other voluntary market mechanisms while also meeting current zoning restrictions for open space, agricultural conservation, etc. (see Chapter 2).
- To be flexible in adjusting the limit on total net groundwater extraction if and where additional groundwater resources become available due to additional recharge dedicated to later extraction.

Critical tools of the MA will be monitoring and assessment of long-term changes in Basin and surrounding watershed hydrology (ET, precipitation, streamflow, groundwater levels, see chapter 3), outreach and communication with stakeholders, well permitting, collaboration with land use planning and zoning agencies, and limiting groundwater extraction to not exceed the sustainable yield.

Measurable Objectives Expected to Benefit

This MA directly benefits the measurable objectives of the following sustainability indicators:

- Groundwater levels – Avoids declining water levels below those corresponding to the most recent twenty-year period.
- Groundwater storage – Avoids declining storage levels below those corresponding to the most recent twenty-year period.

- Depletion of Interconnected Surface Waters and Protection of Groundwater-Dependent Ecosystems – Avoids depletion of interconnected surface waters with declining groundwater levels.

Circumstances for Implementation

Currently, there is no threat of chronically declining water levels in Scott Valley. The Basin is not in a condition of overdraft. Future threats to groundwater levels fall into two categories (Chapter 2.2.3.3), further explained below:

- Increased total net groundwater use in the Basin (total net groundwater use: difference between Basin landscape recharge and Basin pumping).
- Reduced recharge into and runoff from the watershed surrounding the Basin.

This MA ensures that future declining water levels are not the result of any significant expansion of groundwater pumping in the Basin (first category), which would lead to new, lower equilibrium groundwater level conditions (see Chapter 2). While not constituting a condition of overdraft, these new dynamic equilibrium conditions may possibly exceed the MT for water level, also affecting the protection of groundwater dependent ecosystems (GDEs) and increasing the depletion of interconnected surface water due to groundwater pumping at periods of critically low streamflow conditions (summer and fall).

Increasing Basin Net Groundwater Extraction

Groundwater levels in the basin are fundamentally controlled by (Chapter 2.2.3.3):

- The elevation and location of the Scott River along the valley trough. The main-stem Scott River is a net gaining stream, naturally draining the Basin.
- The amount of recharge along the tributaries on the upper and middle alluvial fan sections.
- The amount of recharge from the Basin landscape due to precipitation, irrigation return flows, flooding, and managed aquifer recharge (MAR).
- The amount of groundwater pumping for irrigation (the net consumptive groundwater use by domestic and public users is relatively small after accounting for return flows from septic systems and wastewater treatment plants to either groundwater or streams).

A dynamic equilibrium already exists between the recharge across the Basin, groundwater pumping, and net discharge to the Scott River. Water levels near the Scott River vary within a relatively small range due to the interconnectedness of groundwater and surface water at the Scott River. Water levels generally slope from the valley margins toward the Scott River. Water levels fluctuate most near the valley margins: the upper eastside gulches and near the western mountain front. A significant future increase in net groundwater use within the Basin would lead to less groundwater discharge toward the Scott River and, hence, a lowering of the water level gradient toward the Scott River. A lower water level gradient means permanent lowering of the water table in the Basin or portions of the Basin. By preventing a significant long-term increase in total net groundwater use through proactive planning, the groundwater basin, which is not in overdraft conditions, remains at a dynamic equilibrium in water level conditions, above the MT, as long as natural recharge from streams flowing into the Basin remains stable.

Decreasing Recharge in or Runoff from the Surrounding Watershed

The Basin is part of the larger Scott Valley watershed. The Basin has relatively little groundwater inflow and outflow across its aquifer boundaries. As a result, pumping and recharge outside the Basin do not affect groundwater levels. Long-term climatic changes cause changes in both precipitation amount and in snowmelt timing over the surrounding watershed. This will affect the dynamics of streamflow into the Basin, especially on the upper alluvial fans of the tributaries, and the amount of recharge. Finally, the amount of surface water diversions may change, which in turn affects pumping in the Basin. The SVIHM will be used throughout the implementation period to assess the impacts of these changes on sustainable yield.

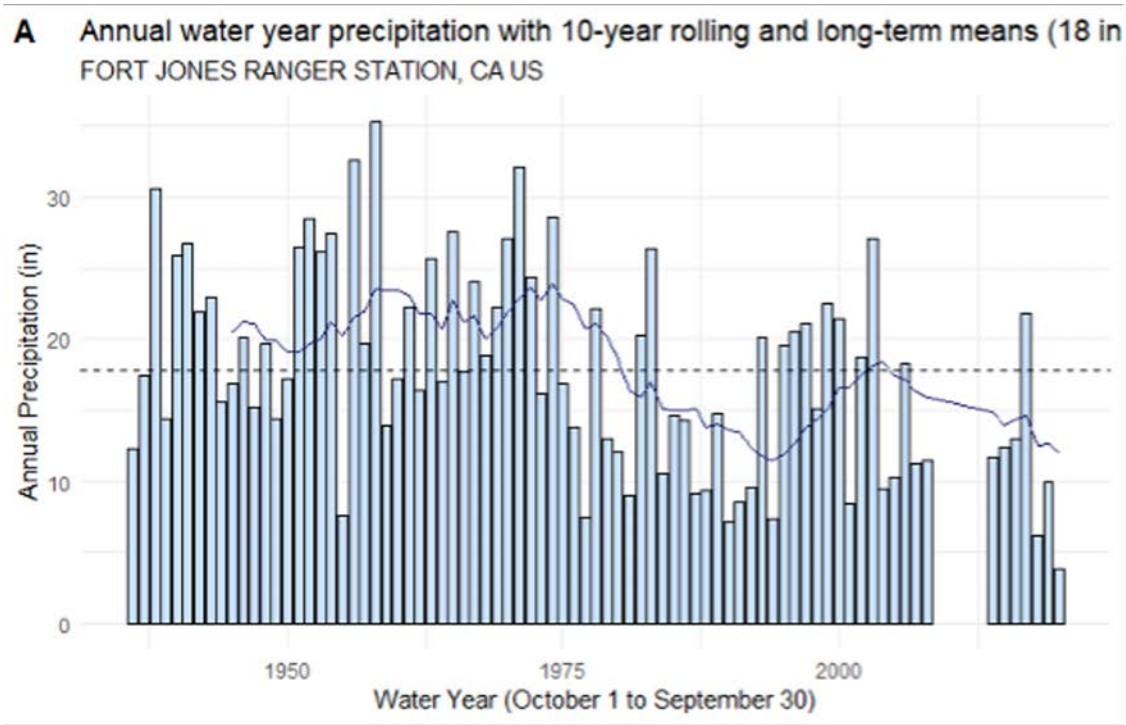

Figure 59: Annual precipitation over the 1936-2019 record as measured at the Fort Jones Ranger weather station (USC00043182).

Historic water levels indicate that there is no overdraft and no long-term decline in water levels. Where water levels have been observed to fluctuate since the 1960s, declines in dry year fall water levels occurred in the 1970s, relative to prior decades, but have been steady over the past 40 years. Average precipitation over the past 20 years (2000–2020) has been significantly lower than the average precipitation during the measured record in the 20th century (Figure 59, also see Chapter 2).

Based on current conditions in the Basin, this MA will be implemented immediately upon approval of the GSP by DWR in partnership with other relevant agencies. During MA implementation, if groundwater levels stabilize at higher elevations due to GSA activities or climate change, total net groundwater use and the sustainable yield may be adjusted upward. The mechanism for off-ramping the MA is described in the implementation section below.

Public Noticing

The GSA will implement the following education and outreach actions regarding the MA:

- Post and advertise the progress of MA implementation through the submittal of annual progress reports to DWR.

Implementation: Collaboration with Permitting and Regulatory Agencies

Implementation of the MA is focused on developing active coordination between the GSA with other planning, permitting, and regulatory entities within the Basin, including the Siskiyou County Department of Environmental Health and local land use zoning agencies:

Siskiyou County Department of Environmental Health

The GSA will develop a formal partnership with the well construction permitting agency that operates within the Basin, the Siskiyou County Department of Environmental Health. The objective of the partnership is to develop a well permitting program for agricultural, urban, and large domestic wells that is supportive of and consistent with the GSA's goal not to expand total net groundwater use in the Scott Valley Basin. The permitting program would ensure that construction of new extraction wells does not significantly expand current total net groundwater use in the Basin (to the degree that such expansion may cause the occurrence of undesirable results, as defined in Chapter 3 under sections 3.4.1.1, 3.4.3.1, 3.4.4.1, and 3.4.5.1). This can be achieved through commensurate well retirements and through water market instruments.

Well replacement may not require that the new well has the same construction design as the old well, including well capacity. Here are two illustrative examples of an appropriate use of well replacement:

Example 1: Replacement of a 1,000-gpm agricultural well that will be properly decommissioned with a new 1,000-gpm agricultural well is permissible.

Example 2: Replacement of a 1,000-gpm agricultural well that will be properly decommissioned with a new 2,000-gpm capacity agricultural well is permissible with the explicit condition that the 10-year average total net groundwater extraction within the combined area serviced by the old and the new well does not exceed the average groundwater extraction over the most recent 10-years.

Land Use Zoning Agencies

The GSA will develop a partnership with all relevant land use zoning agencies in the watershed. Land use zoning agencies in the Basin include:

- Siskiyou County
- City of Etna
- Town of Fort Jones

The objective of the partnership is for those agencies to develop land use zoning and land use permitting programs that are supportive of and consistent with the GSA's goal not to expand total net groundwater use in the Basin. Developing close partnerships and timely transfer of information will best prevent an expansion of total anthropogenic consumptive water use in the Basin. Preventing an expansion of total net groundwater use in the Basin and surrounding areas still allows for both urban and agricultural growth.

Urban expansion is not currently planned to occur in Scott Valley in the near future. If needed it would be by expansion into either agricultural or natural lands, within the constraints of land use planning objectives and zoning laws. Agriculture-to-urban land use conversion does not increase

net groundwater use within the footprint of that conversion. Sometimes the net groundwater use may be lower after conversion (due to lower evapotranspiration). The total annual volume of net groundwater use reduction can be made available for net groundwater use increase elsewhere in the Basin through designing appropriate land use zoning and permitting processes, and after considering ecologic, public interest, and hydrologic or hydrogeologic constraints to such exchanges.

Market instruments encompass a wide range of management tools that rely on monetary transactions to efficiently and effectively trade water uses in ways that do not affect the overall water balance of a basin. The following are two hypothetical examples of water market transactions to illustrate how such instruments may be applied, if circumstances and zoning regulations are appropriate. These are intended to be examples only and are not specific to the Basin.

Example 1: Expansion of urban groundwater use into agricultural lands, where consistent with zoning and land use planning – Net groundwater use per acre of urban land is generally similar to or lower than under agricultural land use (this accounts for the fact that wastewater is recharged to groundwater and that the largest consumptive use in urban settings is ET from green landscapes). A hypothetical example: lets assume that urban net groundwater use is 1.5 acre-feet per acre, whereas it is 3 acre-feet per acre on agricultural land. Net water use is the difference between groundwater pumping and groundwater recharge over the area in question. Let's further assume that an urban expansion occurs into 500 acres of agricultural land. Prior to the land use conversion, net water use was 3 x 500 = 1,500 acre-feet. After the land use conversion, net water use is 1.5 x 500 = 750 acre-feet. The land use conversion makes 750 acre-feet available for additional annual groundwater pumping elsewhere in the Basin.

Example 2: Expansion of urban groundwater use into natural lands, where consistent with zoning and land use planning – Net groundwater use of urban land is generally larger than under natural land use. A hypothetical example: urban net groundwater use is 1.5 acre-feet per acre, whereas it is 0.5 acre-feet per acre prior to the land-use conversion. Let's again assume that the urban expansion is 500 acres. Prior to the land use conversion, water use on the 500 acres was 0.5 x 500 = 250 acre-feet. After land use conversion, the net water use is 1.5 * 500 = 750 acre-feet. The land use conversion therefore requires an additional 500 acre-feet of water. If the city also purchases 500 acres of agricultural land for urban development, as in example 1, it already has a credit of 750 acre-feet, of which it may apply 500 acre-feet toward this additional 500 acre expansion into natural land. Alternatively, the city would need to purchase a conservation easement on 200 acres of agricultural land elsewhere in the basin (net groundwater use: 3 acre-feet per acre, or 3 x 200 = 600 acre-feet) that converts that agricultural land to natural land (net groundwater use: 0.5 acre-feet per acre, or 0.5 x 200 = 100 acre-feet). The net groundwater use on the easement would be reduced from 600 acre-feet to 100 acre-feet, a 500 acre-feet gain to balance the city's development into natural lands, above. Costs for the easement may include costs for purchasing or leasing that land and the cost for maintaining the conservation easement. We note that conversion to natural land may require significant and habitat development and management as appropriate.

The above examples do not account for possible water rights issues that will also need to be considered. In California, urban groundwater rights are generally appropriative, while agricultural water rights are overlying, correlative rights.

Agricultural expansion, where permissible under zoning regulations, is similarly made possible, e.g., by voluntary managed land repurposing of existing agricultural activities in the same location or elsewhere within the Basin and ensuring that there is no increase in net groundwater extraction between the expansion on one hand and land repurposing on the other. This may be achieved through land purchasing or trade of net groundwater extraction rights (water markets) or through contractual arrangements for land repurposing (e.g., conservation easements) to balance expansion and reduction of net groundwater use. If additional Basin total net groundwater extraction capacity becomes available (after a prolonged period of water level increase), the GSA will work with the land use zoning agencies to ensure land use zoning and permitting is adjusted accordingly, following a hydrologic assessment.

De-minimis exceptions to net groundwater use expansion: domestic water use, up to 2 acre-feet per household, contributes minimally to net groundwater extraction of a basin. Nearly all household water use other than irrigation is returned to groundwater via septic systems leachate. Larger household water use, above de-minimis levels, is typically due to irrigation of pasture or lawn and therefore, will be considered a net groundwater extraction.

If additional net groundwater extraction becomes available (after a prolonged period of water level increase), the partnership will ensure that well permitting is adjusted accordingly.

Implementation: Monitoring

In a groundwater basin where agricultural pumping exceeds 95% of applied groundwater use in the basin, the total long-term change in the amount of net groundwater use (groundwater pumping minus recharge) can be estimated by quantifying the long-term changes in the basin's evapotranspiration (ET) from irrigated landscapes. This assumes that long-term trends in precipitation and applied surface water are sufficiently negligible such that only a significant increase in Basin ET leads to changes in the long-term groundwater balance or that their impacts are separately assessed using a model (Section 2.2.4). Monitoring of Basin ET, together with the monitoring programs outlined in chapter 3 and use of the Scott Valley Integrated Hydrologic Model (SVIHM) provide the basis for comprehensive monitoring of net groundwater use in the Basin. Furthermore, water level and groundwater storage monitoring (chapter 3) provide an instrument to continually assess the effectiveness of avoiding the expansion of total net groundwater use.

Legal Authority

The GSA only has authority for groundwater within the Scott Valley Groundwater Basin, outside of the adjudicated zone. The GSA has no land use zoning authority. The GSA will collaboratively work with the County of Siskiyou, other land use zoning agencies, and stakeholders within the Scott Valley Basin to implement this MA.

Schedule The schedule for implementing the MA is as follows:

- The GSA will create partnerships within the first year of the GSP, by January 31, 2023.
- The partnerships will have the MA program in place no later than January 31, 2024.
- Benefits are to be seen immediately; that is, total net groundwater use during the 2020-2030 decade will not exceed total net groundwater use in the Basin during the 2000-2020 baseline period.

Expected Benefits

Benefits generated by the MA will include:

- Security of groundwater pumping for existing groundwater users.
- Efficient, effective, and transparent planning tools available for new groundwater uses through voluntary market instruments.

Estimated Costs and Funding Plan

Costs associated with conversions of land use are detailed in Appendix 5-D.

Beaver Dam Analogues

Project Description

Beaver dam analogues (BDAs) are instream structures that mimic beaver dams and create structural complexity. The Scott River Watershed Council (SRWC) has been implementing BDAs in the Watershed since 2014. The primary objective of BDAs is to improve habitat for anadromous fish, particularly coho salmon, in the Basin (see Chapter 2). BDAs may require permitting and/or approval from the National Oceanic and Atmospheric Administration (NOAA), U.S. Army Corps of Engineers, SWRCB, and CDFW (Charnley 2018). The Scott River Watershed was the first location in California to use BDAs for watershed restoration, implementing the first BDAs in 2014 (Charnley 2018). The first three BDAs in the Basin were constructed on Sugar Creek and since 2014, additional BDAs have been constructed on French Creek, Miner's Creek, and Rattlesnake Creek. Monitoring associated with existing BDAs in the Scott River Watershed have shown improvements in stream temperatures, amount of aquatic habitat, and groundwater levels (Yokel et al. 2018). Additional proposed BDAs are in the planning phase. Implementation of additional BDA projects would require:

- Securing funding.
- Site selection and access agreements, if on private lands.
- Securing required permits.
- Installation of monitoring equipment, as necessary.

Based on current conditions in the Basin, these projects will continue to be implemented by SRWC. In the future, the GSA and other potentially interested organizations may be cooperators, project partners, or take the lead on additional BDA projects.

Monitoring data in the BDA program include, but are not limited to:

- Location and date of operation of the BDA.
- Major construction details of the BDA (width, height).
- Water level elevation in the BDA under typical operation.
- Groundwater level monitoring data, if available.
- Scientific and technical reports, if available.

Upslope Water Yield Projects

Project Description

The objective of these types of projects is to increase water yield from the upper watershed, especially East Fork and French Creek, through green infrastructure. Green infrastructure may include fuel reduction, road improvements, canopy opening to manage snow shade and accumulation, and other actions that reduce direct runoff to surface waters.

These projects are mostly in the planning phase. Projects in the implementation phase include the East Fork Scott Project (see below). Additionally the Scott River Watershed Council has furthered prescribed fire efforts through development of the Siskiyou Prescribed Fire Burn Association, which resulted in several burns in 2021. Anticipated benefits from these types of projects include increased water storage in the upper watershed during the wet season, improved flows from the upper watershed during the dry season, and the support of desired instream flow conditions.

Changes in streamflow entering the Basin will be monitored and evaluated through existing and proposed new streamflow gauges on key tributaries to the Scott River (see Section 3.3) and through statistical analyses of these data.

East Fork Scott Project

Project Description

The Salmon/ Scott River Ranger District of the Klamath National Forest is the lead agency for this project to improve conditions in the East Fork Scott River Watershed. This project has multiple components, the most relevant to the GSA being a combination of treatments including the addition of large woody debris along four miles of stream, modification of stream crossing structures, meadow restoration, and others. The objective of these activities is to add stream habitat structure and complexity and improve connectivity and aquatic organism passage. This project is currently in the implementation phase, following the decision notice and a finding of no significant impact issued on November 18, 2020.[20]

Changes in streamflow entering the Basin will be monitored and evaluated through existing and proposed new streamflow gauges on key tributaries to the Scott River (see Section 3.3) and through statistical analyses of these data.

High Mountain Lakes

The High Mountain Lakes are 33 reservoirs located in three Wilderness areas, the Marbles, Russians, and Trinity Mountain Wildernesses. These reservoirs are naturally existing, however outflow and maintenance structures were constructed in the early 1900s by hand prior to the Wilderness Act. These reservoirs were utilized for irrigation and/or hydraulic mining. Many of the constructed structures were destroyed during the 1964 floods and were not repaired afterwards as they were no longer being actively used for irrigation or mining. The reservoirs still fill through natural inflow; however, outflow is no longer maintained and storage capacity as a result of the damaged maintenance structures have decreased. If repaired, stored water would be utilized solely for mitigation efforts to maintain fall adult migration flows with an estimation that the 33 reservoirs could provide upwards of 3,520 acre-feet (AF) of additional flow to the Scott River and its tributaries. A feasibility study is needed that would analyze the on-the-ground work needed to restore the reservoirs, the

[20] https://www.fs.usda.gov/nfs/11558/www/nepa/105793_FSPLT3_5536448.pdf

storage capacity of the reservoirs if fully restored, the direct and indirect in-stream benefits, authorization needed to restore the reservoirs, and the cost of restoring and utilizing the reservoirs, among others.

Use of high-altitude lakes for flow augmentation in Scott Valley previously was explored (California Department of Water Resources (DWR) 1991), this type of project and recommended against developing mountain lakes as water sources to augment Scott River flows at that point in time due to include aesthetic concerns in addition to access, logistical, and legal constraints.

This project class provides additional surface water and functions to offset depletions of interconnected surface water and improve streamflow. High Mountain Lakes would require appropriate permitting from the State Water Board and avoidance of injury to other water rights holders. If located on USFS lands, permitting from USFS would also be required. Restrictions under the Wilderness Act may also apply if the desired location is in a designated Wilderness Area.

Irrigation Efficiency Improvements

Project Descriptions

Achieving increases in irrigation efficiency through equipment improvements are anticipated to reduce irrigation pumping and diversions during the growing season, lessening the chance of river disconnection during critical periods. This is expected to support desired instream flows, fish migration, and aquatic habitat. Potential benefits were quantified through modelled scenarios of a 10% increase, 20% increase, and 10% decrease in irrigation efficiency. Relative stream depletion reversals resulting from these scenarios were 4%, 12% and -2%, respectively (Appendix 4-A). Higher irrigation efficiencies reduce the amount of surface water diversion and groundwater pumping during the irrigation season, benefitting stream flows. Higher irrigation efficiencies also reduce the amount of recharge to groundwater to the degree that ET is not significantly reduced. This will increase stream depletion. For pumping near streams, the effect of reduced pumping has a more immediate impact on surface water depletion, whereas the effect of reduced recharge on stream depletion may be delayed in time. This may provide short-term gains in stream depletion reversal, balanced by later increases in stream depletion (from lack of recharge), but outside of the summer baseflow season. More direct gains in stream depletion reversal come from reducing the amount of evaporation from irrigation spray, e.g., when converting to highly efficient LESA systems on center pivots.

More specifically, improving irrigation efficiency may have both positive and negative impacts on surface flows, but because of differences in timing, the net effect during the dry season is expected to be positive. In simulations of this management scenario (see Appendix 4-A, Flow Change Results for the Fort Jones Gauge), results indicated an increase in flows (on average) in May-Oct, and a decrease in flows in Dec-March (with no or little average change in April and November).

Currently, this project is in the planning phase and funding options will be explored during the first five years of GSP implementation. This project involves an exploration of options to improve irrigation efficiency, assessment of irrigator willingness, outreach and extension activities, demonstration projects, and development of funding options, primarily by cooperators, possibly in cooperation with NRCS. This PMA is likely to be accomplished through a voluntary, incentive-based program. Cost estimates have not yet been completed for this PMA.

Future benefits of implemented projects to streamflow depletion reversal (and remaining streamflow depletion) will be evaluated and assessed with SVIHM using the methodology described in

Section 3.3 and using monitoring data that describes the implementation of the irrigation efficiency improvement program.

Monitoring data collected in this irrigation efficiency improvement program include, but are not limited to:

- Total acreage with improved irrigation efficiency equipment.
- Location of fields under improved irrigation efficiency equipment.
- Assessment of the increase in irrigation efficiency, with particular emphasis on assessing the reduction or changes in consumptive water use (evaporation, evapotranspiration) based on equipment specification, scientific literature, or field experiments.
- Cropping systems in fields with improved irrigation efficiency equipment.
- Metering of water use

MAR & ILR - NFWF Scott Valley Managed Aquifer Recharge Project

Project Description

The project will divert up to 43 cfs (the maximum ditch capacity) of water from the Scott River into the Scott Valley Irrigation District (SVID) ditch in winter when enough water is available in the river based on interim CDFW recommended instream flows (or flows to be identified in project-specific permitting discussions), starting in the winter of 2021 through at least the winter of 2023. This water will be applied on dormant agricultural fields for recharge.

Measurable Objective

The purpose of this study is to evaluate the use of groundwater recharge to augment Scott River flows during critical periods (i.e., late summer and fall). Key outcomes of this study include determination of when and where water that is recharged enters the Scott River, the amount of water that recharges the groundwater system, and potential water quality benefits associated with groundwater recharge.

Circumstances for Implementation

Previous work has been completed in the Basin examining the potential benefits of managed groundwater recharge in the Basin and findings from this study will build on that previous work.[21] This project is included in the Tier II projects, as planned for near-term implementation. Currently in the implementation phase, this project is scheduled to continue through winter of 2023. This small-scale pilot project includes only a small number of fields.

Public Noticing

Groundwater recharge testing began in January and February of 2021 in one pilot area. Public notice was provided prior to the start of the project and outreach was conducted to landowners that are SVID users. Outreach will continue to be conducted for additional recharge activities in 2022 and 2023 and following project completion. Findings from this project will be made publicly available following project completion.

Permitting and Regulatory Process

[21] Dahlke H, Brown A, Orloff S, Putnam D, O'Geen T. 2018. Managed winter flooding of alfalfa recharges groundwater with minimal crop damage. Calif Agr 72(1):65-75. https://doi.org/10.3733/ca.2018a0001

For MAR projects, a temporary Water Rights Permit (i.e., SWRCB Application for Temporary Permit filed pursuant to Water Code 1425 to Divert to Underground Storage During High Flow Events) is needed to allow diversion of water from the Scott River during winter months. As permits can be issued for up to 180 days, this permit will be needed for every application year. CDFW also requires a Lake and Streambed Alteration Agreement when a project may affect fish and wildlife resources. The temporary Water Rights Permit has been submitted for 2022. The appropriate coordination will be completed to secure these permits. ILR will only be implemented in areas with existing (riparian) surface water rights that are not currently exercised.

Schedule for Implementation

This project began in January of 2021 but will be developed at larger scale starting in January 2022. Surface water diversions through temporary permit are planned for both the 2022 and 2023 winter seasons.

Implementation

Prior to 2022 and 2023 implementation of this project, baseline conditions have been monitored and studied at the pilot site. Sites selection for the next steps is being considered, water conveyance infrastructure evaluated, and landowner permission and outreach conducted.

2021 Scott Valley Winter Recharge – Pilot Project Methodology

Using existing water rights, the water started to be diverted from the Scott Valley Irrigation Ditch (SVID) on February 10, 2021. During the first week the grower collaborator turned the flood off for a couple of days. The water was running continuously from the second week until the end of March. Water samples from Scott River, SVID, recharge water, groundwater, and rain have been collected weekly and shipped to UC Davis for isotope analysis and analysis of groundwater quality.

Groundwater levels have been monitored weekly using a water level sounder. Initially, groundwater levels were measured in one location between the recharge field and Scott River (piezometer access closer to Scott River). A second groundwater level measurement point was added to the pilot project during the third week of recharge (piezometer access closer to the recharge site).

During summer 2021, continuous pressure transducers were installed in five existing wells to measure water levels and temperature in transects across the river near the fields that are expected to be flooded in winter 2022. An additional five existing wells have been identified for instrumentation with pressure transducers and installation is planned in 2022. Outreach to stakeholders is ongoing.

2022-2023 Full Scale Pilot implementation

A temporary permit will be obtained for winter 2022 and has already been discussed with SWRCB and CDFW. Potentially flooded land acreage will be extended with respect to the pilot 2021 project. Isotopes and water quality connection will complement the data collected through the continuous transducers in the piezometers and will help the understanding of flow direction and the evaluation of the portion of potential recharge contributing to the aquifer and the portion contributing to the river.

Expected Benefits

This study is expected to provide information on the amount and timing of groundwater recharge and associated benefits, including to water quality, that will help inform future recharge projects. Benefits of future recharge projects are further discussed with SVIHM model results under MAR and ILR (see Section 4.3) and in Appendix 4-A.

Future benefits of implemented projects on streamflow depletion reversal (and remaining streamflow depletion) will be evaluated and assessed with SVIHM using the methodology described in Section 3.3 and using monitoring data that describes the implementation of this managed aquifer recharge program.

Monitoring Data

Monitoring for this project includes a minimum of ten shallow piezometers with pressure transducers to measure continuous groundwater level and temperature with a subset also containing sensors to collect electrical conductivity data. During the period of time when water is diverted for groundwater recharge, the flow will be analyzed at the USGS station at river-mile 21 to ensure that the CDFW instream flows are met. Additional monitoring data that will collected in this managed aquifer recharge program include, but are not limited to:

- Total acreage used each winter for MAR.
- Location of fields used for MAR.
- Monthly total volume of MAR applied.
- Summer crop yields to assess agronomic impacts, as applicable

Legal Authority

This project would require appropriate permitting from the State Water Board and avoidance of injury to other water rights holders or neighboring landowners. Permitting includes temporary Water Rights Permit which provides the authority to divert water from the Scott River during winter months for groundwater recharge.

Estimated Costs and Funding Plan

This project is funded through a grant administered by the National Fish and Wildlife Foundation with federal funding from the U.S. Fish and Wildlife Service. Funding already has been secured for this project and the total contract amount is $199,338.

Managed Aquifer Recharge and In-Lieu Recharge

Project Description

Managed Aquifer Recharge (MAR) is the process of intentionally adding water to aquifers and In-Lieu Recharge (ILR) is intentionally storing or preserving groundwater through replacement of some or all of groundwater use with surface water. This project uses MAR and ILR (during the irrigation season) to recharge groundwater. The project is a larger scale version of the ongoing groundwater recharge project (associated with NFWF) presented above. Potential partner or lead agencies include the SRCD, who continues to work with landowners, water districts, and ditch companies to develop potential managed aquifer recharge projects within critical areas of the Scott River Basin.

Measurable Objective

Use of MAR and ILR has been explored in the Basin and elsewhere in California as an option to increase groundwater recharge. The purpose of this PMA is to increase baseflow in Scott River during the critical summer and fall low-flow period and support the reversal of streamflow depletion, as presented in Chapter 3 as part of the discussion on sustainable management criteria for Interconnected Surface Water.

Public Noticing

Public noticing for this project will be conducted by the GSA prior to project implementation and will include submittal of the appropriate CEQA/NEPA or other environmental documentation, if required. Additional public notification is planned with significant project changes or additional project elements.

Permitting and Regulatory Process

A temporary Water Rights Permit (i.e., SWRCB Application for Temporary Permit filed pursuant to Water Code 1425 to Divert to Underground Storage During High Flow Events) is needed to allow diversion of water from the Scott River during winter months. As permits can be issued for up to 180 days, this permit will be needed for every application year. CDFW also requires a Lake and Streambed Alteration Agreement when a project may affect fish and wildlife resources. The appropriate coordination will be completed to secure these permits.

Schedule for Implementation

This PMA is in the planning and conceptualization stage. An exploration of funding sources, project location, and project feasibility are planned within the first five years of GSP implementation. Several years ago, a groundwater advisory committee provided UC Davis a map with specific fields that may be most suitable for MAR and/or ILR (Tolley, Foglia, and Harter 2019).

Implementation

This PMA utilizes excess winter and spring flows for recharge to temporarily increase groundwater storage to augment streamflows during critical periods (increased baseflow). The project includes:

- Finding landowners willing to participate.
- Securing project funding.
- Obtaining water rights and other permit requirements, as necessary.
- Constructing infrastructure and installing monitoring equipment, as necessary, to identify potential project impacts and quantify project benefits.

One PMA, simulated using SVIHM, simulated the implementation of MAR and ILR on one potential configuration of fields. The results of this simulation are illustrated in Appendix 4-A. The fields were selected with the following criteria in mind: 1) fields had access to surface water, either from adjacent diversions or from the SVID ditch; 2) had a total infiltration capacity that did not exceed the maximum capacity of the diversion ditch (43 cfs), and 3) were located downgradient of the relevant diversion points or ditch outlets. This set of fields represents only one possible configuration for a future MAR and ILR project, and specific field choices are to be determined.

Expected Benefits

The primary benefit of MAR and ILR is to reverse streamflow depletion through augmenting baseflow in Scott River during the critical summer and fall periods. This is expected to provide benefits to aquatic species, including anadromous fish (as discussed in Chapter 2), water quality, and habitat. Potential expected benefits from implementation of these projects were modelled and results are presented in Appendix 4-A. MAR and ILR were modelled both separately and together to identify the benefits associated with each practice, and in combination. Benefits are quantified using relative depletion reversal as a metric (see Section 3.4.5). The potential relative depletion reversal using MAR on 1,390 acres from January to March was found to be 10%. Using available surface

water applied to 5,490 acres for ILR during the early growing season, a potential relative depletion reversal of 9% was estimated. The combination of MAR and ILR yielded a potential depletion reversal of 19%.

Legal Authority

With the appropriate permitting, and without infringement on existing water rights, the GSA is authorized to divert surface water for use with MAR and ILR.

Estimated Costs and Funding Plan

Costs and funding for this project have not yet been explored. Potential funding sources will be explored during the first five years of GSP implementation.

Voluntary Managed Land Repurposing

Project Description

Voluntary managed land repurposing programs include a wide range of voluntary activities that make dedicated, managed changes to land use (including crop type) on specific parcels in an effort to reduce consumptive water use in the Basin to improve and increase groundwater levels and instream flow during the critical late spring recess, summer baseflow, and early fall flush flow period. These activities may include any of the following:

Term Contracts: In some circumstances, programs like the Conservation Reserve Program (CRP) could provide a means of limiting irrigation on a given area for a term of years. Because of low rates, the CRP has not been utilized much in California, but this could change in the future. In addition, other term agreements may be developed at the state or local level. The Scott River Water Trust Leasing Program is an example of such a term contract.

Crop Rotation: Landowners may agree to include a limited portion of their irrigated acreage in crops that require only early season irrigation. For example, a farmer may agree to include 10% of their land in grain crops that will not be irrigated after June 30.

Irrigated Margin Reduction: Farmers could be encouraged to reduce irrigated acreage by ceasing irrigation of field margins where the incentives are sufficient to offset production losses. For corners, irregular margins, and pivot end guns, this could include ceasing irrigation after a certain date or even ceasing irrigation entirely in some instances.

Crop Support: To support crop rotation, particularly for grain crops, access to crop support programs may be important to ensure that this option is economically viable. Some type of crop insurance and prevented planting payment programs could provide financial assurances to farmers interested in planting grain crops.

Other Uses: In some circumstances, portions of a farm that are currently irrigated may be well suited for other uses that do not consume water. For example, a corner of a field may be well suited for wildlife habitat, solar panels, managed aquifer recharge infiltration areas, or water storage, subject to appropriate zoning requirements to avoid undesirable outcomes. Other voluntary managed land repurposing projects include conservation easements that reduce or eliminate surface water diversion for irrigation (streamflow augmentation). Such streamflow augmentations effectively offset an equivalent amount of (pre-existing) depletion of interconnected surface water due to groundwater pumping. Conservation easements or similar instruments may also include temporary, seasonal, or permanent restriction of groundwater, where the restriction may be defined either

by an amount of groundwater pumping restriction or by the acreage not receiving irrigation from groundwater. Depending on the circumstances of an individual project, conservation easements may include habitat conservation easements, wetland reserve easements, or other easements that limit irrigation with surface water or groundwater on a certain area of land. It may be established that certain portions of a property may be suitable for an easement, while the rest of the property remains in irrigated agriculture. Many form of such temporary, seasonal, or permanent easements are possible. They may additionally specify restrictions or requirements on the repurposed use, e.g., to ensure appropriate habitat management.

Currently in the planning phase, this project type is to be developed throughout the next 5 years.

Implementation of this project type includes consideration of the following elements:

- Role of the GSA versus other agencies, local organizations, and NGOs
- Development of education and outreach programs in collaboration with local organizations
- Exploration of program structure.
- Contracting options.
- Exploration and securing of funding source(s).
- Identification of areas and options for easements or other contractual instruments (especially within the Adjudicated Zone).

Anticipated benefits from this type of project include improvement in instream flow conditions on the Scott River and its tributaries during critical late spring recess, summer and fall baseflow, and fall flush flow periods.

Monitoring data collected in this voluntary managed land repurposing program include, but are not limited to:

- Total acreage and timing of land repurposing.
- Location of parcels with land repurposing.
- Assessment of the effective decrease in evapotranspiration (consumptive water use) and applied water use.
- Description of the alternative management on repurposed land with: + Quantification and timeline of surface water dedications to instream flow specified in the easement. + Quantification and timeline of groundwater pumping restrictions, including water year type or similar rule to be applied and specified in the easement.
- Annual Water Master certification of easement implementation, as appropriate.

Future benefits of implemented projects to streamflow depletion reversal (and remaining streamflow depletion) will be evaluated and assessed with SVIHM using the methodology described in Section 3.3 and using the above monitoring data that describe the implementation of voluntary managed land repurposing programs.

Well Inventory Program

In feedback from DWR on other GSPs, a better inventory and definition of active wells was requested along with discussion of impacts to these wells in annual reports, as some shallow wells may be impacted if MTs are reached.

A detailed well inventory will improve the understanding of the Basin conditions and will be valuable for modelled results. It will also help solve ongoing issues with evaluation of de-minimus users and their proper inclusion in SVIHM.

4.4 TIER III: Potential Future Project and Management Actions

Tier III projects include:

i. Alternative, Lower ET Crops
ii. Floodplain Reconnection/Expansion
iii. Reservoirs
iv. Sediment Removal and River Restoration
v. Strategic Groundwater Pumping Reductions
vi. Watermaster Program

Alternative, Lower ET Crops

The “alternative, lower ET crop” PMA is a pilot program to develop and introduce alternative crops with lower ET but sufficient economic value to the Basin’s agricultural landscape. The implementation of such crop changes would occur as part of the Tier II Voluntary Managed Land Repurposing PMA. The objective of this PMA is to develop capacity in the Basin to facilitate crop conversion in some of the agricultural landscape that would reduce total crop consumptive use (evapotranspiration) of water in the Basin, as needed. The management action is to develop a program to develop and implement pilot studies with alternative crops that have a lower net water consumption for ET, and to provide extension assistance and outreach to growers to facilitate and potentially incentivize the crop conversion process. This PMA will be implemented jointly with University of California Cooperative Extension, the Siskiyou County Farm Bureau, the Siskiyou County Resources Conservation District, and/or other partners. Currently in the conceptual phase, this project involves:

- Scoping of potential crops.
- Pilot research and demonstrations.
- Defining project plan.
- Exploration of funding options.
- Securing funding.
- Development of an incentives program.
- Implementation of education and outreach.

Anticipated benefits from this project include introduction of lower consumptive water use crops and either an increase in recharge (on surface water irrigated crops) or a reduction in the amount of irrigation or both. As a result, water levels in the aquifer system will rise. This will also lead to an increase in instream flows and some reversal of streamflow depletion will occur. The potential benefits associated with transitioning to alternative, lower ET crops were investigated using the SVIHM. The relative depletion reversal (see Section 3.3 for explanation), used as a metric to quantify potential benefits, was 61% for a generic reduction of total crop ET in the Basin to 80%, and

29% for a generic reduction of total crop ET in the Basin to 90% due to a hypothetical crop change (see Appendix 4-A). Implementation of this project will include an assessment of the economic value of alternative, lower ET crops to growers.

Future benefits of implemented projects to streamflow depletion reversal (and remaining streamflow depletion) will be evaluated and assessed with SVIHM using the methodology described in Section 3.3 and using monitoring data that describes the implementation of the alternative, lower evapotranspiration program.

Monitoring data collected in this alternative, lower evapotranspiration program include, but are not limited to:

- Total acreage with alternative, lower ET crops.
- Location of fields with alternative, lower ET crops.
- Assessment of the effective decrease in ET.
- Cropping systems used as alternative, lower ET crops.

Floodplain Reconnection/Expansion

While little understood, the profound effects of the hydrogeomorphic change in the Basin due to channel straightening and resulting stream incision has historically lowered groundwater levels and conveyed water out of the valley at a higher rate. The floodplain reconnection/expansion program will reverse some of these historical effects on groundwater dynamics by reconnecting the river to the floodplain and thus, avoiding further channel incision and leading to stable or even increased water level elevations from flooding. It is possible that reversing channel incision through aggradation (i.e., raising the channel bed) would not only increase recharge by increasing the frequency of overbank flows, but would also reclaim (increase) aquifer storage by reducing the depth to which the water table is lowered by drainage to the channel during the spring recession.

This program will involve a series of stream infrastructure improvements. Areas have been identified where such a reconnection can be constructed with relatively minor physical landscape alterations (Scott River Watershed Council (SRWC) 2018). At this time, the assessment is based on physical characteristics and the ability to seasonally inundate the accessed floodplain for recharge. The identified areas may not all be suitable due to existing infrastructure and the need for landowner agreements. However, the areas identified provide an initial assessment of the potential to improve floodplain reconnection as a multi-benefit project, improving habitat, stream conditions, and increasing recharge.

Floodplain reconnection/expansion may be achieved using various tools, including a part of the conservation easements program (see above), to expand the use of the conserved property to include ecological habitat flood recharging.

Another option that may be explored is seasonal flooding of pastureland, which also would have multiple benefits, including improved animal forage production with nutrient deposition, and increased recharge. Grazing management would need to be adjusted to a new regime. Floodplain Reconnection/ Expansion would require appropriate permitting from the State Water Board and avoidance of injury to other water rights holders.

This type of restoration falls into the “process based” restoration category (Pollock et al. 2017; Wheaton et al. 2019). To achieve a significant scale of restoration likely would require some

land easement/purchases to allow streams and rivers to be moved out of their currently confined and incised condition. The program will therefore work closely with the conservation easement program.

Future benefits of implemented projects to streamflow depletion reversal (and remaining streamflow depletion) will be evaluated and assessed with SVIHM using the methodology described in Section 3.3 and using monitoring data that describes the implementation of the floodplain reconnection/expansion program.

Monitoring data collected in the floodplain reconnection/expansion program include, but are not limited to:

- Geospatial description of geomorphic alterations completed.
- Monitoring of flooding frequency, duration, and depth.
- Monitoring of adjacent groundwater levels, if available.

Reservoirs

The objective of this PMA is to capture and store runoff and excess stream flows to augment Scott River flows during critical periods. This project, still in the conceptual phase, consists of a reservoir of up to 5,000–10,000 AF that would be constructed in an off-stream location (possibly Hamlin Gulch or other eastside locations). The SVID canal would be used to divert up to 42 cfs during winter flows to store in a reservoir for later use as streamflow augmentation during summer and fall critical periods. Augmentation may be direct or in-lieu. Previous, preliminary studies included three locations for a 20,000 AF reservoir at Noyes Valley (East Fork Scott River), Meadow Gulch (East Fork Scott River), or French Creek (California Department of Water Resources (DWR) 1991).

Anticipated benefits from this project include reversal of stream depletion to increase instream flows in Scott River during critical periods. Quantification of potential benefits was completed using the SVIHM (scenarios and results included in Appendix 4-A). For a 9 TAF reservoir with a 30 cfs release, relative depletion reversal ranges from 26 to 58%, dependent on reservoir location. For reservoirs that are “entirely reliable” (i.e., provides guaranteed, desired, dry-season release), a 29 TAF reservoir with a 30 cfs release would result in 53% relative stream depletion reversal and a 134 TAF reservoir with a 60 cfs release result would provide a 184% relative stream depletion reversal. One or multiple reservoirs may be implemented to meet the interconnected surface water minimum threshold (as described in Chapter 3). Temperature consideration may limit direct discharge into streams or require management of discharge, i.e., as recharge near streams (to lower temperatures) or use for irrigation in lieu of groundwater pumping and (cold) surface water diversions.

Significant regulatory, policy, and funding challenges come with this PMA. A first step for the GSA would be to implement a feasibility and scoping study to develop a long-term strategy, if any, for determining feasibility, funding, design, and implementing of this PMA option.

Sediment Removal and River Restoration

A river restoration project to remove significant sediment from the main stem Scott River from Fort Jones to the mouth of the canyon is envisioned to improve stream flow connectivity and habitat

for fish. Still in the scoping phase, implementation of this project would require additional scoping, studies, planning, identification of funding, obtaining any applicable permits, and implementation. Anticipated benefits from this project include supporting instream flows and increasing the probability and duration of river connection during critical periods to support fish migration and habitat in the lower section of Scott Valley.

Strategic Groundwater Pumping Restriction

In Scott Valley, the current level of Basin pumping is determined to be sustainable provided the implementation of Tier I and Tier II PMAs will assist in maintaining sustainability and help ensure that pumping at current levels can continue. Through SGMA, the GSA has the ability to implement groundwater pumping restrictions within locations of the GSA's jurisdiction, which in Scott Valley, does not include the adjudicated zone along the Scott River. Although the GSA has the ability to implement pumping restrictions, the development and implementation of Tier I, Tier II, and other Tier III PMAs are designed to maintain sustainability within the Basin, making pumping restrictions a last resort under this GSP.

Considerably more work, data collection and discussion would need to be done to define the policies and procedures for pumping restrictions, and the GSA would first determine, using the SVIHM and other hydrologic assessment tools, the amount of water that affected pumpers could take sustainably prior to determining what may need to be restricted. Restrictions may be temporary, seasonal, or permanent.

Monitoring data collected in the Strategic Groundwater Pumping Restriction Program may include, but are not limited to:

- Well construction records.
- Land area serviced by the well through irrigation.
- Metering of extraction
- Amount of historic pumping, if known.
- Amount and timing of restricted pumping.

Watermaster Program

A Watermaster Program currently exists on Wildcat Creek and French Creek. This MA would expand watermaster services to other tributaries and to the mainstem of the Scott River. The main objective of these expanded watermaster services would be to enforce surface water rights diversions in more areas in Scott Valley, reducing unauthorized diversions to benefit instream flows.

The benefits of this program will be further incentives for conservation easement programs and water leases and more transparent, reliable, and better documented implementation of such conservation easements and water leases. Future benefits of actual implementation status to streamflow depletion reversal (and remaining streamflow depletion) will be evaluated and assessed with SVIHM using the methodology described in Section 3.3 and using monitoring data that describes the implementation of the irrigation efficiency improvement program.

Monitoring data that may be collected as part of implementation of this PMA include:

- Monitoring of diversions.
- Monitoring of instream flow dedications.
- Quantification of instream flow dedications and conservation easements.

Additional PMAs

Several additional PMAs have been suggested through the public comment and require further investigation into the feasibility, method of implementation, requirements and potential timelines. These projects are listed below.

- a study of the tailings for groundwater storage
- recharge weirs, fish-friendly structures to decrease flow rates in Scott River and its tributaries
- construction of a clay dam or permeable plug at the lower end of Scott Valley
- direct addition of water to the river during periods of low flow but have not yet been investigated.

4.5 Other Management Actions

Monitoring Activities

Chapter 3 and the data gap Appendix (Appendix 3-A) clearly describe the importance of establishing an extensive monitoring network which will be used to support future GSP updates. A summary of the proposed monitoring activities includes, but is not limited to:

- Development of new RMPs (Representative Monitoring Points) to support the groundwater quality SMC
- New stream gauges in both the mainstem of Scott River and in key tributaries
- Juvenile steelhead data is limited in the Basin, as migration occurs largely outside of the window of operation for the fish counting facilities used for coho and Chinook salmon. Though coho and Chinook salmon outmigration data exists, flow requirements for juvenile outmigration are not quantified here. Planning the required monitoring and/or targeted studies to fill this data gap should be done in coordination with a biologist or agency with extensive knowledge in fish monitoring (i.e., CDFW, Siskiyou RCD are potential partners)
- Use of satellite
- Use of satellite images, twice per year, to evaluate status of Groundwater Dependent Ecosystems
- Potential metering of fall/ winter diversions for stockwater to for future inclusion SVIHM

Voluntary Well Metering

This project would facilitate the collection and reporting of groundwater extraction data. Accurate groundwater extraction data improves the quality of information used in modelling, and in decision-making. Additionally, collection of pumping data is useful for tracking the effectiveness of the proposed demand reduction PMAs.

Future of the Basin

This project would entail developing a study of the economic impacts of the projects and management actions included in the GSP. This would include an evaluation of how implementation of the project could affect the economic health of the region and on local agricultural industry. It would also consider the projected changes to the region's land uses and population and whether implementation of these projects would support projected and planned growth. While an agricultural economic analysis considering groundwater regulation has been completed (see Appendix 5-D) and provides a good starting point, additional work is needed.

Chapter 5: Plan Implementation, Budget and Schedule

5.1. Description of GSP Implementation Elements

Groundwater management has been conducted in the Scott Valley Basin (Basin) for decades. As described in prior sections, a variety of project and management actions (PMAs) are currently, or have previously been, implemented, that support groundwater levels, groundwater storage and interconnected surface waters. Existing and planned PMAs will contribute to the attainment of the groundwater sustainability goal in the Basin over the planning horizon of this Groundwater Sustainability Plan (GSP). These PMAs, as described in Chapter 4, enable the continued use of groundwater and protection of groundwater uses and users into the future.

In this section, the GSP implementation plan for the Basin is defined. Elements of this plan include:

1) Management and Administration
    a. GSA management, administration, legal and day-to-day operations.
    b. Reporting, including preparation of annual reports and 5-year evaluations and updates.
2) Implementation
    a. Implementation of the GSP monitoring program activities described in Chapter 3.
    b. Technical support, including model updates, data collection and other technical analysis.
    c. Projects and Management Actions (PMAs) as described in Chapter 4.
3) Outreach and Education
    a. Coordination activities with stakeholders and entities in the Basin.
    b. Ongoing outreach activities to stakeholders

Cost estimates and funding methods for GSP implementation are also presented in this section.

The following sections describe the tasks and functions that will be required for implementation of this implementation.

5.1.1 Management and administration

GSA management, administration, legal and day-to-day operations

GSA functions associated with the management and administration of the GSP implementation activities are covered under this category, which includes the administrative, technical and finance staff support and related expenses, office supplies and materials, insurance, and grant writing to support funding for specific projects and/or management actions. GSA staff will provide work products, administrative support, staff leadership, and management for the GSA.

As the GSP implementation begins in February 2022, staffing support and ongoing administrative and management needs will be further evaluated so that the budget can be refined, as necessary. Staffing needs will be reevaluated annually during the early years of GSP implementation to gain a better understanding of the support required and associated costs.

GSA administration activities include coordination meetings with other organizations on projects or studies, email communications for updating GSA stakeholders about ongoing activities within the Basin, administration of projects implemented by the GSA, and general oversight and coordination. Other oversight and administrative activities will occur on an as-needed basis.

The GSA is responsible for, and authorized to take, appropriate action to achieve sustainable management of groundwater within the Basin based on the authority granted under Section 6 of the California Water Code. On an as-needed basis, the GSA may seek legal services to assist in the interpretation of legal requirements and provide legal advice during GSP implementation.

Reporting, including preparation of annual reports and 5-year evaluations and updates

As part of GSP implementation starting in 2022, the GSA must prepare and submit to DWR annual reports and 5-year assessments. Annual reports will be submitted to DWR by April 1st of each year and an initial 5-year GSP assessment and update will be due to DWR by April 2027. Requirements for each of these reports are explained below.

Annual Reporting

Per Water Code Sections 10727.2, 10728, and 10733.2, SGMA regulations require the GSAs to submit an annual report on the implementation of the GSP to the Department of Water Resources (DWR). Development of the annual report will begin at the beginning of each water year, October 1, to assess the previous water year. The report will be submitted to DWR on April 1st of the following calendar year. A template for annual reporting is provided as Appendix 5-B. The annual reports will be completed in a format consistent with Section 356.2 of the SGMA regulations and will include three key sections: general information, Basin conditions and plan implementation progress.

General Information

General information will include a map of the Basin and an executive summary that includes a description of the sustainability goal, ongoing PMAs in the subbasin, jointly funded PMAs and their progress, as well as an updated implementation schedule.

Basin Conditions

This section will describe the current groundwater conditions and monitoring results, used to evaluate how groundwater conditions have changed in the Basin during the previous year. SGMA regulations require the following key components to be included in this section:

- Groundwater elevation data from monitoring wells, including (1) groundwater elevation contour maps for the principal aquifer in the Basin depicting seasonal high and low groundwater conditions, and (2) hydrographs of historical-to-current-reporting-year data showing groundwater elevations and water year type.
- Groundwater extractions during the preceding water year summarized by water use sector, including a map showing the general location and volume of groundwater extractions, as well as the method of measurement (direct or estimate) and accuracy of measurements. Metering of groundwater extraction is only included as a voluntary action and this information will be collected as the PMA is implemented, also based on availability of funding.
- Surface water supply for managed groundwater recharge or in-lieu use, including the annual volume and sources for the preceding water year.
- Total water uses by water use sector and water source type, including the method of measurement (direct or estimate) and accuracy of measurements.
- Maps of changes in groundwater storage for the principal aquifer and a graph depicting historical-to–current-reporting-year water year type, groundwater use, annual change in groundwater in storage, and the cumulative change in groundwater storage for the Basin. This information may change over time to incorporate potentially revised GSA priorities and to reflect new Basin conditions and applicable SGMA requirements.

Plan Implementation Progress

The progress made toward achieving interim milestones, as well as implementation of PMAs, will be explained in this section, along with a summary of plan implementation progress and sustainability progress.

Periodic Evaluations every Five Years

Per Water Code Sections 10727.2, 10728, 10728.2, 10733.2, and 10733.8, SGMA regulations require the GSA to provide a written assessment of GSP implementation and progress towards meeting the sustainability goal at least every five years. A similar evaluation must also be submitted whenever the GSP is amended. The five-year assessment reports will be completed in a format consistent with Section 356.4 of the SGMA regulations and include the following elements:

Sustainability Evaluation

The overall Basin sustainability and current groundwater conditions for each applicable sustainability indicator will be described, including progress toward achieving interim milestones and measurable objectives, and an evaluation of groundwater elevations at each of the representative monitoring points (RMPs) in relation to minimum thresholds.

Plan Implementation Progress

This section will describe the current implementation status of PMAs, along with the effect on groundwater conditions resulting from their implementation, if applicable.

Reconsideration of GSP Elements

Elements of the GSP may require revision due to one or more of the following: collection of additional monitoring data during GSP implementation; implementation of PMAs; significant

changes in groundwater uses or supplies and/or land uses. Such new information may require revision to the following GSP elements: Basin setting, water budgets, monitoring network, SMC, or PMAs.

Monitoring Network Description

This section will provide an assessment of the monitoring network's function, an analysis of data collected to date, a discussion of data gaps and the needs to address them, and identification of areas within the Basin that are not monitored in a manner commensurate with the requirements of Sections 352.4 and 354.34(c) of the SGMA regulations.

Consideration of New Information for Basin Setting and SMC

New information made available after GSP adoption will be described and evaluated. If new information warrants re-evaluation of the Basin setting and SMC then corresponding revised descriptions will be included in the five-year assessment report.

Regulations or Ordinances

If DWR adopts new regulations that impacts GSP implementation, the update will also identify and address those requirements that may require updates to the GSP.

Legal or Enforcement Actions

Any enforcement or legal actions taken by the GSA or their member agencies to contribute to attainment of the sustainability goal for the Basin will be summarized.

Plan Amendments

Each five-year assessment report will include a description of amendments to the GSP, including adopted amendments, amendments that are underway during development of the report, and recommended amendments for future adoption.

Coordination

A summary of coordination that has occurred between Basin, with different agencies in the Basin, or with agencies with jurisdiction over land use and well construction will be incorporated in the five-year assessment report. The five-year assessments will also include any other information deemed appropriate by the GSA to support DWR in its periodic review of GSP implementation, as required by Water Code Section 10733.

5.1.2 Implementation

Monitoring Networks Summary

The SMC monitoring networks were developed leveraging current and ongoing monitoring to assess minimum thresholds. A summary of the existing monitoring networks and planned expansion is presented in Table 32.

Groundwater level and storage

The groundwater levels monitoring network combined with the current DWR CASGEM network serves as basis for assessing all SMCs except for water quality and depletions of interconnected surface waters. All 21 wells that have been selected for the groundwater level monitoring network are either wells that are currently monitored as part of the Community Groundwater Monitoring program or are wells included in the CASGEM network and monitored by DWR twice per year. The current minimum monitoring frequency of twice each year (spring and fall) is used for all wells. Wells are not anticipated to be added to the monitoring network at this point in time. If funding is secured, additional continuous sensors can be installed with telemetry to increase the frequency of monitoring and remove the need for monitoring site visits. Groundwater storage uses the levels monitoring network as a proxy and has no additional requirements.

Groundwater quality

The three existing wells selected for the water quality monitoring network are part of the GAMA system. They are regularly monitored as public supply wells, but the frequency varies. Wells added as part of the monitoring network extension will be monitored at a minimum frequency of once every two years for the first two years followed by once every three years if there are no groundwater quality issues detected. The program seeks to augment these wells with at least five additional wells for additional coverage (see Appendix 3-A). Results will be complemented with the ongoing monitoring undertaken by for the public supply wells mentioned above and included in the GAMA program. The monitoring plan will be augmented as needed if constituents will exceed the criteria or if specific increasing trends in constituent concentrations are observed.

Interconnected surface water and GDEs

The interconnected surface water monitoring network consists of 10 wells instrumented near the river for the Scott Recharge Project and 2 wells near the river that are part of the existing Community Groundwater Monitoring Network (well IDs SCT_183 and SCT_192). Additional expansion will depend on funding and the adequacy of data collected from the existing monitoring network.

Subsidence

DWR will periodically provide InSAR data that will be analyzed and assessed by the GSA for any occurrence or worsening subsidence trends.

Implementation of the monitoring program activities described in Chapter 3

This category covers the functions associated with monitoring activities, including logistics and coordination with third party entities performing monitoring in the GSP Monitoring Network and any related monitoring data management. The GSP Monitoring Networks for groundwater level and groundwater quality, including the agencies performing that monitoring, are detailed in Chapter 3. A summary of existing and proposed monitoring for the assessment of SMCs is presented in Table 32. The existing data in the first column of Table 32 are the representative monitoring points (RMPs) identified in Chapter 3 and will need to be monitored at the frequency specified and reported as part of the annual reports submitted by the GSA.

To address data gaps (extended data gap section is presented in Appendix 3-A) that are identified

during GSP implementation, improvements to or expansion of the GSP Monitoring Network may be necessary. In that event, additional monitoring wells, monitoring well instrumentation; sampling and in-situ measurements; sample analysis; and associated data management and analysis may be required in the future. Costs for those facilities and activities are not addressed in this section.

Monitoring and data-related activities include:

- Groundwater Elevation Monitoring.
- Groundwater Quality Monitoring.
- Streamflow Monitoring.
- Monitoring data management (including data management system (DMS) maintenance), data validation (QA/QC), data entry and security, and data sharing.

Table 32: Monitoring and Planned Expansion for Sustainable Mangement Criteria in Scott Valley.

SMC	Wells (Existing)	Wells (New)	Measurement (Existing)	Measurement (New)	Other, Based on Future Funding Availability
Groundwater Levels	Priority 1 wells: 21 (Including 5 CASGEM wells and 16 wells historically participating in the Community Groundwater monitoring program) Priority 2 wells: 8	0	Measured at least 2x/year (a)(b)	(c)	N/A
Storage	Groundwater Levels as Proxy				
Water Quality	3	5 or more (d)	Once every 2 years, unless otherwise specified (see Table 3 in Chapter 3).	Once every 2 or 3 years (e)	N/A
ISW	12(f)	(g)	Continuous	(c)	Stream flow gauges (g)
Subsidence	InSAR Data (h)	-	Spatially continuous (InSAR Data (h))	-	

[a] Access agreements have not been secured for all wells in the Priority 1 and Priority 2 monitoring network (as of November 18, 2021). Prior to the first semi-annual monitoring event, access agreements will be confirmed with all relevant well owners.

[b] Some wells are monitored continuously (eight wells in Scott Valley as of November 18, 2021), with water elevations recorded every 15 minutes using pressure transducers and preprogrammed data loggers. This high-frequency monitoring can be used to supplement manual water level measurements but is not currently incorporated into the RMP network.

[c] No new wells are planned at this time. New wells may be added for monitoring due to PMA implementation, changes in land use or activities, or as necessary during implementation.

[d] A minimum of five existing wells will be added to the water quality monitoring network in the first five years of implementation. Additional wells may be added to the monitoring network as available or as deemed necessary to achieve adequate spatial coverage and monitoring for PMAs.

[e] Minimum measurements for water quality will be once per year for the first two years of implementation. If there are no issues in water quality, measurements will be taken once every three years. Measurement may be more frequent if necessary to achieve monitoring objectives, or if the well is sampled at a greater measurement frequency as part of another monitoring program.

[f] This includes ten wells instrumented near the river for the Scott Recharge Project and two wells near the river that are part of the existing private monitoring network (well IDs SCT_183 and SCT_192).

[g] In addition to new near-stream wells drilled for the purpose of monitoring ISWs, the installation of continuous monitoring equipment in existing shallow wells may be considered in the future as implementation funding become available and based on the adequacy of the current data. Shallow wells will be paired with flow and/or stage gauges, pending funding availability over the first five years of the implementation period. Feasibility study required to assess potential locations. Gauges may benefit by using telemetry to provide continuous data.

[h] InSAR data analyzed as it becomes available from DWR, but no more frequently than once every two years.

Technical support, including SVIHM model updates, SMC tracking, other data analysis and technical support

SVIHM updates – Management activities and ongoing performance evaluation of the SMC are informed by SVIHM model output, which will require periodic updates and refinements as more data become available. Model updates and refinements help maintain, and potentially improve, the model functionality and its capabilities in providing more representative simulation results. These activities include incorporation of new model tools and features, data input and model parameter updates, calibration updates as additional data from the monitoring network and stream gauges is obtained, use of SVIHM to update water budgets, assess water usage, and assess the status of Basin-wide storage volumes, and related work to support ongoing simulations of PMAs, including recharge projects. Model updates may occur as frequent as annually and re-calibration is proposed to be completed every 5 to 10 years.

SMC tracking – synthesis of data to analyze and track the status of compliance with SMC at the representative monitoring points (RMP) wells in the Monitoring Network. This information will comprise an essential element of the annual reports and 5-year updates. A template for SMC tracking based on the annual report requirements from DWR is available in Appendix 5-B

Data analysis – Additional data analysis and associated technical support, outside of the GSA's resource capabilities, will be needed for annual reporting and 5-year GSP update and outreach activities. The GSA will also have an ongoing need for technical support for the Basin management, such as vulnerability assessments for climate change, hydrologic technical support, assessment of managed aquifer recharge opportunities, economic and funding mechanisms assessments, and studies to address data gaps. It is anticipated that the GSA may also require various planning and programmatic support assistance for ongoing GSP- and SGMA-related requirements.

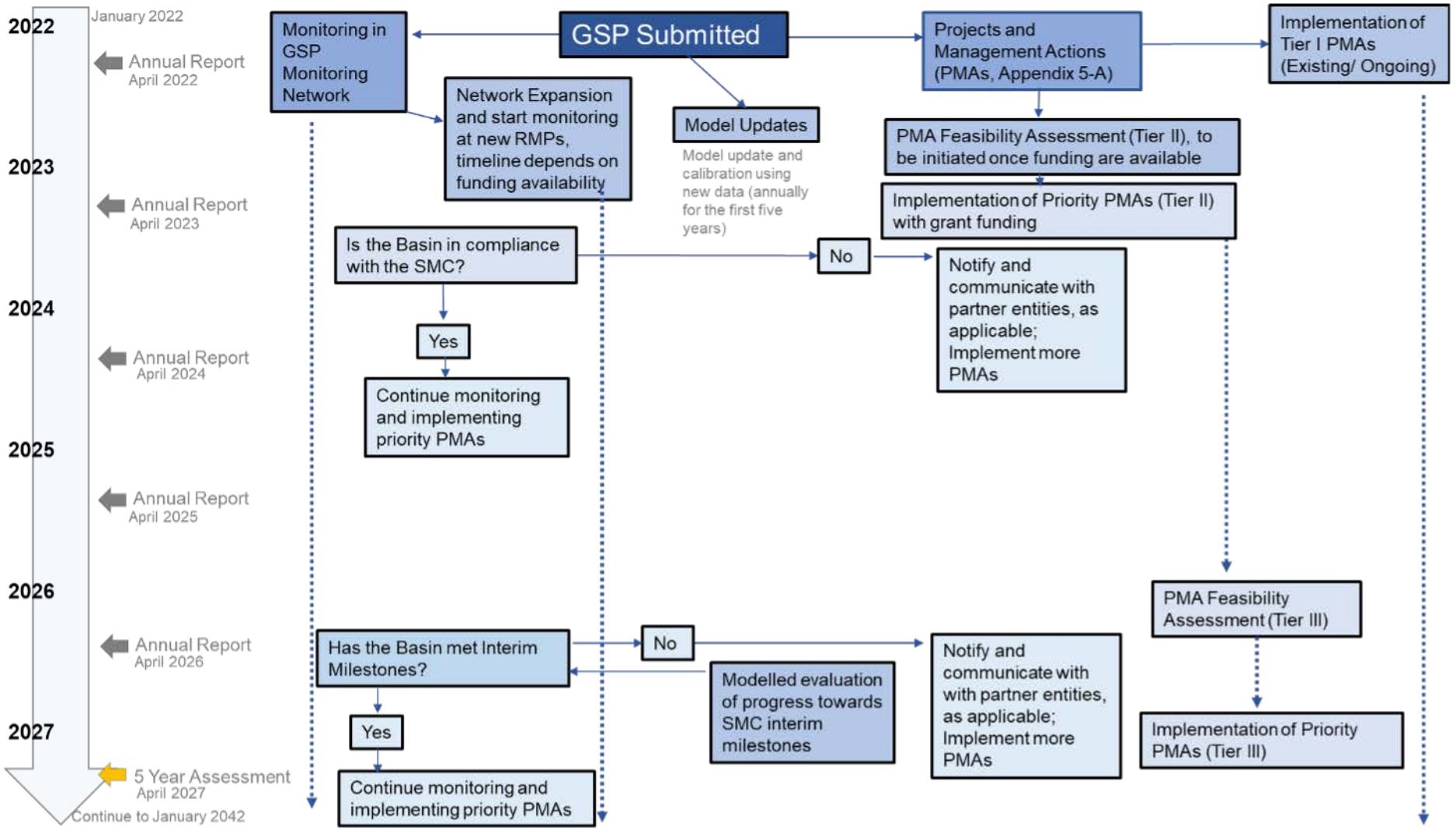

Figure 60: GSP implementation process for the first 5-years implementation. The road map is expected to be similar for the following 5-years cycles.

Results of the monitoring program activities inform GSA actions and next steps. The flowchart shown in Figure 60 illustrates the process and decision points for the first five years of GSP implementation. This process will be refined, as necessary, throughout the first five years of GSP implementation and will be updated in parallel with the five-year evaluations. Further detail on the prioritization and implementation timeline of PMAs can be found in the discussion of PMAs below, and in Appendix 5-A.

Projects and Management Actions described in Chapter 4.

Chapter 4 of this GSP identifies three different tiers of projects and management actions (PMAs) in the Basin, as follows:

1. Tier I: Existing PMAs that are currently being implemented and are anticipated to continue to be implemented.
2. Tier II: PMAs planned for near-term initiation and implementation (2022–2027) by individual member agencies.
3. Tier III: Additional PMAs that may be implemented in the future, as necessary (initiation and/or implementation 2027–2042).

The PMAs listed in Chapter 4 reflect a collection of potential options that may be employed to support the sustainability goals outlined in this plan. Although PMAs have been categorized into three tiers based on the anticipated timeframe for initiation and implementation, **these categorizations may change as additional monitoring data, information, and sources of funding are gained and as conditions change**. Tier I PMAs are anticipated to continue to be implemented throughout the GSP implementation period. A preliminary strategy for PMA prioritization and associated criteria, have been developed for PMAs. As a first step in Plan implementation, PMAs identified in the Tier II category will be evaluated using criteria including the effectiveness, completeness, complexity, cost, uncertainty, and level of support for the project or management action. A full description of the criteria used in this evaluation and associated scoring system can be found in Appendix 5-A as well as a preliminary PMA assessment table. This preliminary prioritization step will be initiated immediately after submission of the GSP to provide the GSA with enough time to evaluate projects feasibility and include the selected projects into future funding requests. The GSA is expected to continue to refine this prioritization as more information on the feasibility, costs and anticipated benefits becomes available for these PMAs.

The management actions that will be undertaken by the GSA or in partnership with other entities active in the Basin, include:

- A variety of coordination activities, including:
  - Coordination with agencies with local land use authority
  - Coordination with entities sponsoring major beneficial projects
  - Coordination to support water use efficiency measures
  - Coordination with Siskiyou County Environmental Health Division

As a priority during the first months of GSP implementation, the Advisory Committee will meet and evaluate project management actions. Based on factors including ability to secure funding, effectiveness and feasibility of implementation, the Advisory Committee will recommend a prioritization scheme based on factors including ability to secure funding, effectiveness and feasibility of implementation.

5.1.3 Outreach

Coordination activities with other entities

The GSA will need to budget for ongoing coordination during GSP implementation. Coordination will be required with the following entities on the following topical areas:

- With agencies in the Basin with land use jurisdiction to identify and communicate regarding activities that may impact Basin sustainability.
- With water supply agencies, such as irrigation districts or municipal providers, to obtain updated information regarding water use efficiency programs, encourage such programs, and obtain information regarding the impacts of those programs on water demands.
- With entities sponsoring projects, such as recharge or efficiency improvements, in the Basin that will provide benefits to attainment of sustainability goals and objectives, including support for grant funding.
- With any other entities working in the Basin to support the sustainability goal and aspirational watershed goal, as applicable. To achieve this coordination, the GSA will need to develop governance and communication processes to support these activities efficiently and effectively.

Outreach to stakeholders

Activities under this element of the GSP implementation plan include continuation of education, outreach, and engagement with stakeholders, building off the framework and activities established in the Communication and Engagement Plan, as described in Chapter 1. Such activities performed during GSP implementation include maintaining the Basin webpage on the County website and the online/social media presence, community meetings, workshops, and public events. These activities may also include electronic newsletters, informational surveys, coordination with entities conducting outreach to diverse communities in the Basin, and development of brochures and print materials. Decisions regarding the nature and extent of these outreach activities will be made by the GSA.

Continued Communication with Native American Indian Tribes

Once implementation begins, the GSA will initiate additional outreach with local Native American Indian Tribes, and in early 2022 look to establish regular coordination meetings to discuss aspects of implementing the GSP.

5.2 Estimate of GSP Implementation Costs

The implementation costs for the Scott Valley GSP will include funding for functions associated with the GSP implementation elements described above, including GSA management and administration, monitoring, technical support, data management, coordination, reporting, management actions, and outreach. GSP implementation costs will also cover the building of sufficient fiscal reserves to address other potential costs for the twenty-year implementation horizon.

Implementation of the GSP over the 20-year planning horizon is projected to cost between $120,000 and $210,000 per year. Table 33 summarizes the breakdown of these costs by implementation element. These costs are based on the best available estimates at the time of Plan development and may vary throughout the period of Plan implementation. Grant awards may offset some costs. If the GSA develops additional projects or management actions during the GSP implementation period, the cost estimates will be refined and reported to DWR through the annual reports or five-year periodic assessments.

Development of this GSP was funded largely through a Proposition 1 Groundwater Grant Program and Proposition 68 Grant. The GSA will pursue additional grant funding for GSP implementation as it is available. In the following analysis, it is assumed that the GSA will identify other sources of funding to cover GSP implementation costs.

Financial Reserves and Contingencies

To mitigate financial risks associated with expense overruns due to unanticipated expenditures and actual expenses exceeding estimated costs, the GSAs may carry a general reserve with no restrictions on the types of expenses for which it can be used. Adoption of a financial reserves policy is authorized by SGMA Sections 10730(a) and 10730.2(a)(1). A reserve for operations usually targets a specific percentage of annual operating costs and may consider factors such as billing frequency and the recurrence of expenses to address cash flow constraints.

Total Implementation Costs Through 2042

The total annual cost is estimated at $135,000 to $230,000 based on the best available information at the time of Plan preparation and submittal. These costs include a grant writing component in addition to the costs of GSP implementation, discussed above and presented by major budget category in Table 33.

Table 33: Summary of Annual GSP Operation and Implementation Costs.

GSP Implementation Tasks	Recurring Annual Costs
GSA Management, Administration, Legal and Day-to-Day Operations	**$10,000-$25,000**
Administrative Staff Support /Accounting	TBD
GSA management and staff support	TBD
Legal support	TBD
Data management	TBD
Monitoring and Technical Support	
Technical Work: SVIHM maintenance	$40,000-$80,000
Monitoring, data analysis and management	$45,000-$60,000
GSP Reporting	
Annual Reports	$10,000-$15,000
5-Year GSP Assessments	$10,000
GSP Management Actions	
Management Action - Coordination activities	TBD
Ongoing Outreach Activities to Stakeholders	
Outreach & Education	$10,000-$20,000Â
Contingency	
Contingency (10%)	
Total	**$120,000-$210,000**

5.3 Schedule for Implementation

The final GSP will be presented to the GSA Board for adoption in November or December 2021 and will be submitted to DWR no later than January 31, 2022. The preliminary schedule for agency administration, management, and coordination activities, GSP reporting, and community outreach and education are provided in Figure 61. While most activities are continuous during GSP implementation, annual reports will be submitted to DWR by April 1st of each year and periodic five-year assessment reports will be submitted to DWR by April 1st every 5 years after the initiation of Plan implementation in 2022 (i.e., assessment report submittal in 2027, 2032, 2037, and 2042).

	Start	2022-2042																				
		2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Data Management and Reporting																						
Milestones																						
GSP Submitted to DWR	January 2022	●																				
Groundwater Sustainability Goal Attained	January 2042																					●
Reporting																						
Annual Reporting	April 2022	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
5-Year Evaluations	April 2027						●					●					●					
Monitoring																						
Monitoring: Groundwater (all)	Continuous																					
Monitoring: Streamflow	Continuous																					
Monitoring: stream transects	Continuous																					
Groundwater Quality Monitoring Network Expansion	January 2022																					
Data Management	Continuous																					
Outreach and Education																						
Stakeholder Outreach and Education	Continuous																					
Projects and Management Actions																						
Tier I PMAs: ongoing	January 2022																					
Tier II PMAs feasibility study and prioritization upon funding availability	January 2022	●																				
Tier II PMAs: Implementation of highly prioritized PMAs (based on funding availability)	January 2023		●																			
Tier III PMAs Feasibility Study (based on funding availability)	January 2023			●																		

Figure 61: GSP implementation schedule.

5.4 Funding Sources and Mechanisms

SGMA authorizes GSAs to charge fees, such as pumping and permitting fees, to fund the costs of groundwater management and sustainability programs.

The GSA will pursue various funding opportunities from state and federal sources for GSP implementation. As the GSP implementation proceeds, the GSA will further evaluate funding mechanisms and fee criteria and may perform a cost-benefit analysis of fee collection to support consideration of potential refinements. A analysis of funding options was conducted by SCI Consulting Group and the results of this analysis are presented as technical memorandum in Appendix 5-C. This technical memorandum summarizes the estimated costs for implementation, the recommended path to identify and prioritize funding during GSP implementation, and general funding recommendations. The recommended approach to funding is summarized in the “game plan”, included on page 31 of Appendix 5-C, and shown below.

Game Plan: 1. Conduct community outreach regarding the Plan and its implementation. 2. Pursue use of existing revenue sources to fund implementation. 3. Pursue Grants and Loan Opportunities to fund implementation 4. Implement Regulatory Fees to offset eligible implementation costs.

If additional revenue is needed:

5. Conduct a survey and stakeholder outreach to better evaluate

    a. Community priorities and associated messaging.
    b. Optimal rate.
    c. Preference of non-balloted property related fee versus special tax.

6. Use results of surveys, stakeholder input and other analyses to develop a community outreach plan.
7. Implement community outreach
8. Implement a property related fee or special tax balloting:

    a. Include a cost escalator schedule or mechanism
    b. Include the use of rate zones or other distinguishing factors.
    c. Do not include a rate expiration date (also known as a “Sunset Clause”).
    d. Include a Discount Program to encourage better groundwater management by well owners.

Table 3 presents examples of potential financing options and the degree of certainty associated with each funding option. The “game plan” reflects an approach and order of priority given to seeking funding sources. The GSA is the lead in developing these funding sources, in partnership with other entities and agencies where appropriate. A working group will be convened in the first year of GSP implementation to identify and evaluate these funding sources.

Table 34: Potential Funding Sources for GSP Implementation.

Funding Source	Certainty
Feepayers (1)	High - User fees pay for operation and maintenance (O&M) of a utility's system. Depends upon rate structure adopted by the project proponent and the Proposition 218 rate approval process. Can be used for project implementation as well as project O&M.
General Funds or Capital Improvement Funds (of Project Proponents)	High - General or capital improvement funds are set aside by agencies to fund general operations and construction of facility improvements. Depends upon agency approval.
Special taxes, assessments, and user fees (within Project Proponent service area or area of project benefit)	High - Monthly user fees, special taxes, and assessments can be assessed by some agencies should new facilities directly benefit existing customers. Depends upon the rate structure adopted by the project proponent and the Proposition 218 rate approval process.
Bonds	Low - Revenue bonds can be issued to pay for capital costs of projects allowing for repayment of debt service over 20 to 30-year timeframe. Depends on the bond market and the existing debt of project proponents. Not anticipated in the Basin.
Integrated Regional Water Management (IRWM) implementation grants administered by the California Department of Water Resources (DWR)	Medium - Proposition 1, IRWM Implementation Grants.
Proposition 68 grant programs administered by various state agencies	Medium - Grant programs funded through Proposition 68, which was passed by California voters in June 2018, administered by various state agencies are expected to be applicable to fund GSP implementation activities. These grant programs are expected to be competitive, where $74 million has been set aside for Groundwater Sustainability statewide.
Disadvantaged Community (DAC) Involvement Program	Medium - DWR's DAC Involvement Program This program is not guaranteed to be funded in the future.

[a] Feepayers can be well-owners or property owners depending on the selected approach.

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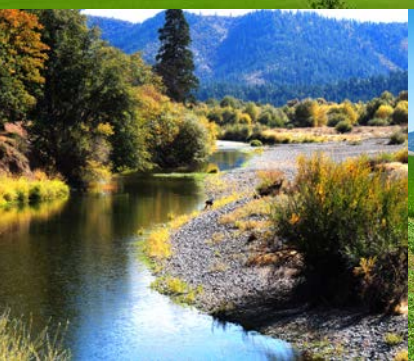
Appendix 1-A Scott River Valley Communication and Engagement Plan

Scott Valley Groundwater Basin Stakeholder Communication and Engagement Plan




Scott Valley Groundwater Basin

Stakeholder Communication and Engagement Plan

Siskiyou County Groundwater Sustainability Agency.
2020. Scott Valley Groundwater Basin - Stakeholder Communication and Engagement Plan.
Siskiyou County, California. 16 pp.

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Main cover, tractor and cows: Mel Fields; Scott river: Crystal Robinson; Coho salmon: NOAA Fisheries.

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Overview of the Sustainable Groundwater Management Act

The purpose of the Sustainable Groundwater Management Act (SGMA), signed into law by former California Governor Jerry Brown in 2014, is to ensure local sustainable groundwater management in basins throughout California, including in places like Scott Valley.

SGMA required eligible local agencies in over-drafted and medium/high priority basins to form Groundwater Sustainability Agencies (GSAs) by June 2017. Once formed, GSAs must prepare and submit Groundwater Sustainability Plans (GSPs) by January 2022 for evaluation by the Department of Water Resources (DWR), and then demonstrate sustainability within 20 years. Shasta Valley is a medium priority basin and therefore must comply with SGMA.

SGMA defines six undesirable results for groundwater basins to avoid, includes a statutory framework and timelines for achieving sustainability, and identifies requirements GSAs must follow to engage the beneficial uses and users of groundwater within a basin. Moreover, regulations developed by DWR following the passage of SGMA specify needed documentation and evaluation of groundwater conditions within a basin, as well as the requirements for development and implementation of GSPs designed to achieve or maintain sustainability.[1]

In May, 2016, the California Water Commission unanimously adopted Final GSP Emergency Regulations to guide the GSP development process (California Water Code Section 10733.2). These regulations describe, among other things, the required contents of a GSP, including administrative information, an overview of the basin setting and water budget, sustainable management criteria, description of the groundwater monitoring network, and projects and management actions.

SGMA requires local GSAs to conduct broad stakeholder identification, communication and engagement during GSP development and implementation:

- "The groundwater sustainability agency shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the groundwater basin prior to and during the development and implementation of the groundwater sustainability plan." (California Water Code Section 10727.8(a))
- "The groundwater sustainability agency shall consider the interests of all beneficial uses and users of groundwater." (California Water Code Section 10723.2)

To help guide the process of identifying and engaging local stakeholders, SGMA lists all the beneficial users of groundwater whose interests the GSA must consider:

- Agricultural users of water
- Domestic well owners
- Municipal well operators
- Public water systems
- Land use planning agencies
- Environmental users of groundwater
- Surface water users

[1] California Department of Water Resources. 2017. Draft – Best Management Practices for the Sustainable Management of Groundwater: Sustainable Management Criteria BMP.

- The federal government
- California Native American Tribes
- Disadvantaged communities (including those served by private domestic wells or small community water systems)
- Entities listed in Section 10927[2] that are monitoring and reporting groundwater elevations in all or part of a groundwater basin managed by the groundwater sustainability agency

DWR will evaluate and approve or disapprove GSPs within two years of submission. Once approved, GSPs will be re-evaluated by DWR for progress every five years. Local GSAs have 20 years to demonstrate full sustainability.

Plan Goals and Objectives

As a tool to assist the Siskiyou County GSA in meeting SGMA's stakeholder communication and engagement requirements, this plan will:

- Provide the GSA, Advisory Committee, community leaders and other beneficial users a roadmap to ensure broad understanding and consistent messaging of SGMA requirements
- Foster information sharing, communication and collaboration, and opportunities for stakeholders to have meaningful input on the GSA decision-making process
- Provide reasonable opportunities for interested stakeholders to receive and understand the technical groundwater information developed as part of the GSP process
- Ensure a collaborative GSP development and implementation process that is widely seen in the community as fair and respectful to the range of interested or affected stakeholders
- Assist the GSA in meeting all SGMA communication and engagement requirements

Specific objectives that will help the GSA achieve these overarching goals include the following:

- Educate stakeholders on:
  - Important SGMA requirements, events and milestones
  - The role, authorities and responsibilities of the local GSA in Siskiyou County
  - The Advisory Committee's role and how the public can stay informed or involved
  - The benefits of having a technically robust and broadly supported GSP
  - Potential changes to groundwater monitoring and management under SGMA
  - How the interests of beneficial uses and users will be considered under SGMA
- Develop strategies and communication mechanisms for obtaining broad stakeholder input and feedback that informs GSP development
- Coordinate outreach and engagement activities that foster information sharing, raise awareness and encourage public engagement in SGMA
- Ensure the needs, interests and perspectives of all beneficial uses and users are identified, documented and considered by the District Board
- Support local beneficial users to identify, preempt or otherwise proactively address and resolve different perspectives or conflicts over groundwater use and management
- Track all input received by beneficial users during the GSP development process and document District Board (GSA Board) responses as input is considered
- Develop strategies and communication mechanisms for long-term GSP implementation

[2] Entities that may assume responsibility for monitoring and reporting groundwater elevations in all or a part of a basin or subbasin in accordance with this section are listed here.

SGMA Implementation in Siskiyou County

In Siskiyou County SGMA implementation began with the formation of a local GSA and continues through a collaborative process that provides regular opportunities for public input.

Groundwater Sustainability Agency Formation

The Groundwater Sustainability Agency (GSA) for the Scott Valley Groundwater Basin is the Siskiyou County Flood Control and Water Conservation District (District). The Siskiyou County Board of Supervisors sits as the District Board and holds their District meetings during the regularly scheduled County Board of Supervisors meetings. The District is the only eligible local agency with jurisdiction over the entirety of the Butte, Scott and Shasta Valley groundwater basins. Early in the SGMA implementation process, District staff conducted countywide stakeholder workshops and garnered support to serve as the GSA for all three of these groundwater basins in the county, each of which must comply with SGMA. In its capacity as the GSA, the District will solicit and consider feedback on SGMA related issues from the public, and serve as the final decision maker in the GSP development and implementation process. The Siskiyou County Board of Supervisors also serves as a member of the Tulelake GSA, along with Tulelake Irrigation District, Modoc County, and the City of Tulelake.

Technical Support

Preparation of a GSP is a complex process that requires considerable research, discussion and deliberation before adoption. The GSA secured a DWR Sustainable Groundwater Management Grant Program Proposition 1[3] grant to support this collaborative SGMA effort[4]. This grant enabled contracting of a technical consulting team, Larry Walker Associates, to draft the GSP, conduct scientific studies, and build a groundwater monitoring network in each basin to inform GSP development and implementation. The technical consulting team will work with GSA staff and Advisory Committee members to outreach, network, and discuss with stakeholders in the basin regarding available technical information, studies and data gathering that would be beneficial for GSP development and implementation. Interaction between stakeholders and the technical consulting team will be valuable for substantive and extensive input into the GSP.

Facilitation Support

The GSA also leveraged funds from DWR's Facilitation Support Services Program to secure impartial facilitation services of the Sacramento State University Consensus and Collaboration Program (CCP). CCP initially conducted a countywide situation assessment in order to gain insight and understanding of the range of issues, perspectives and interests on groundwater planning held by different stakeholders across Siskiyou County. As the GSP is developed, CCP will continue to support the District's efforts to engage stakeholders, tribes and the wider public at advisory, public and, as needed, special meetings. Continuation of facilitation support post-GSP submittal to DWR is contingent on available funding and if the use of impartial facilitation services are still considered necessary or warranted by District Board and staff, Advisory Committees and other interested parties.

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[3] Proposition 1 (Prop 1) or the Water Quality, Supply, and Infrastructure Improvement Act of 2014 authorized $7.545 billion in general obligation bonds for water projects including surface and groundwater storage, ecosystem and watershed protection and restoration, and drinking water protection.

[4] At a later date, additional grant sources may be added (e.g. Proposition 68 funds).

GSA Decision-Making

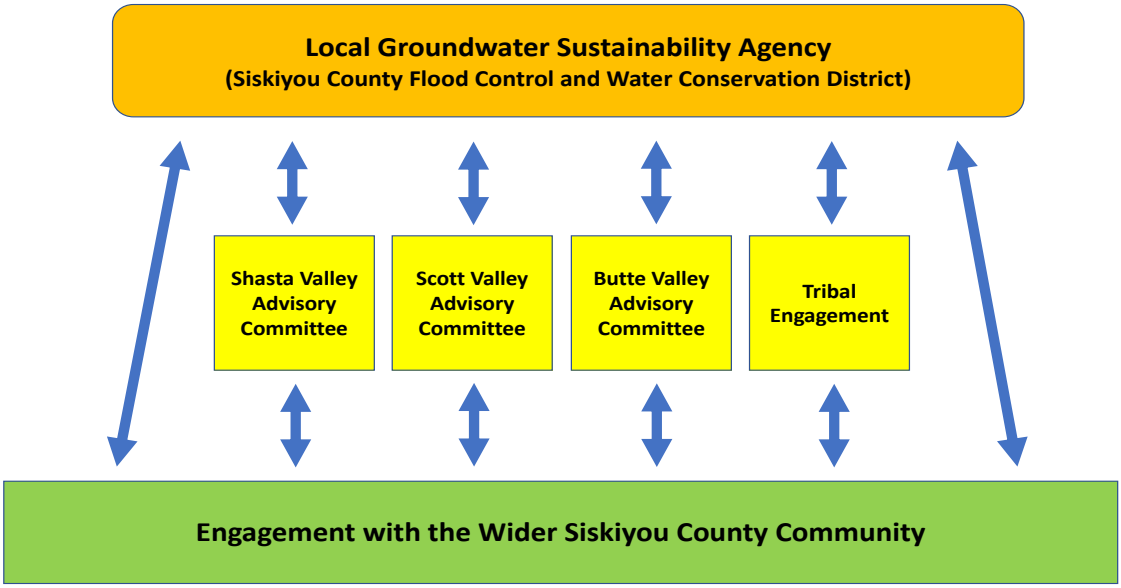
The District Board, in its capacity as the final decision-maker in the GSP process, will:

- Review and offer feedback on technical data, documentation, presentations, and other appropriate items as it pertains to SGMA and development of the GSP
- Review and make recommendations on appropriate studies, models, projects, and other technical needs that provide additional GSP-related information
- Identify and make recommendations on proposed groundwater management goals, objectives and strategies specific to the GSP
- Provide comments, recommendations, or suggestions on professional consultants, or technical experts, being considered to support local SGMA implementation
- Identify and review grant or funding opportunities that would provide financial support for GSP development and implementation
- Hear and offer feedback on GSP-related presentations by organizations, companies, consultants, or other necessary individuals or entities

GSA staff, with support from its technical and facilitation consultants, maintains a schedule that guides the collaborative GSP development and implementation process (see 'Phases of Groundwater Sustainability Development' below). The schedule is designed to integrate the social and technical elements of groundwater management planning, facilitate an open and transparent stakeholder engagement process, and provide a wide range of useful information that informs GSA decision-making.

The District Board will consider recommendations from a formally established Advisory Committee (described below) of diverse stakeholder interests when making SGMA decisions. If the District Board does not agree with committee recommendations or other input, it shall, as part of the process of tracking and responding to input received during the GSP development process, state the reasons for its decision.

Figure 1. Framework for Stakeholder Communication and Engagement



Stakeholder Advisory Committee

The District Board established the Scott Valley Groundwater Basin Advisory Committee (Advisory Committee) as a mechanism to secure local knowledge and insights as the GSP is developed. In its advisory role, the committee will review draft and final documents prepared by the SGMA technical team and provide the GSA with input and recommendations. Consensus building is a foundational principle of all committee discussions, and the group's membership is intended to reflect the diversity of beneficial groundwater users of Scott Valley (See Appendix I – Advisory Committee membership; see also Scott Valley Advisory Committee Charter).

Advisory Committee Goals

- Work collaboratively and transparently with other members to identify common goals, foster mutual understanding, and provide consensus recommendations to the District Board that help the District develop a locally informed and broadly supported GSP
- Develop a common understanding of all existing groundwater resources and groundwater/surface water interaction in the Scott Valley groundwater basin
- Solicit and incorporate community and stakeholder interests into committee discussions and emerging committee recommendations
- Consider and integrate science, as guided and with support from the District's qualified scientific consultants, when reviewing and commenting on GSP development and implementation
- Collaborate in good faith to achieve consensus recommendations; and to the extent consensus cannot be achieved, share with the District Board minority viewpoints as well
- Provide support to the GSA regarding implementation actions set forth in the GSP

Committee Member Roles

- Review and offer feedback on technical data, documentation, presentations, and other appropriate items as it pertains to SGMA and the development of the GSP
- Review and make recommendations on appropriate studies, models, projects, and other technical needs that will aid in developing additional information in relation to the GSP
- Identify and make recommendations on proposed groundwater management goals, objectives and strategies specific to the GSP
- Provide comments, recommendations, or suggestions on professional consultants, or technical experts, being considered by the District Board
- Identify and review grant or funding opportunities that would provide financial support for GSP development and implementation
- Hear and offer feedback on presentations by organizations, companies, consultants, or other necessary individuals or entities regarding the GSP

Tribal Engagement

To foster meaningful engagement with Native American Tribes, the GSA will maintain a government-to-government relationship with any tribe in Siskiyou County or the larger Klamath River watershed which expresses interest in SGMA. In addition, the GSA has appointed a tribal representative to the Advisory Committees for the Shasta Valley, Scott Valley and Butte Valley groundwater basins. Tribal representation on these committees is based on multiple factors, including cultural relationship to the area, ancestral territory and land held in trust or reservation within a given basin. The GSA has begun developing communication protocols and coordination

agreements with tribes who have voiced interest in SGMA. Individual tribes are recognized as sovereign tribal nations; no one tribe represents another. In Scott Valley, the Quartz Valley Tribe is represented on the local SGMA Advisory Committee.

Community Involvement

To ensure broad public awareness and involvement as the GSP is developed, the GSA has tasked Advisory Committee members to act as liaisons to educate, inform and solicit input from the wider local community throughout the collaborative process. Key meetings and milestones during the process in which the general public is encouraged to attend and provide feedback on draft GSP content or other SGMA related issues include, but are not necessarily limited to:

- Bi-monthly Advisory Committee meetings when draft GSP sections are introduced, discussed or evaluated by members
- Advisory Committee engagement with constituents, with support as needed from GSA staff, during related meetings, events, and discussions by members,
- Stakeholder meetings led by GSA staff with participation from Advisory Committee members, Technical Consulting Team members and/or Facilitation Support Services
- Public comment periods when draft GSP sections are made available for review
- Regularly scheduled District Board meetings
- Special meetings that are scheduled, noticed in advance and open to the public

At key intervals during GSP development, the GSA will hold public meetings in order to share information, respond to questions or concerns about SGMA, and solicit input from the wider community. Interested parties can also reach out to District staff at any time to share and discuss specific elements of the GSP or SGMA in general.

Brown Act Compliance

All District Board and Advisory Committee meetings will operate in compliance with the Ralph M. Brown Act[5] (Brown Act). Each will be noticed and agendas posted in advance. Meetings are open to the public and allow public comment. The GSA will announce all meetings on its website and through regular communication channels, including a SGMA interested parties list.

Target Audiences

DWR created a stakeholder engagement chart to help GSAs identify and engage the range of beneficial groundwater users in a local basin that must comply with SGMA.[6] Table 1 below is a modified version which lists identified stakeholder groups in the Scott Valley community. Originally developed by GSA staff, the table has been reviewed and improved by the Scott Valley Advisory Committee. Interested parties may also assist the GSA in identifying all stakeholders who have an interest in or may be affected by SGMA. The table may be improved and updated at any time during the GSP development or implementation process. Listed groups represent a priority target audience for SGMA related communication and engagement.

[5] The Ralph M. Brown Act, located at California Government Code 54950 *et seq.*, is an act of the California State Legislature, authored by Assemblymember Ralph M. Brown and passed in 1953, that guarantees the public's right to attend and participate in meetings of local legislative bodies.

[6] *DWR Guidance Document for Groundwater Sustainability Plan: Stakeholder Communication and Engagement*.

Table 1. Scott Valley Stakeholder Groups

Interest Group	Engagement Purpose	Scott Valley Groups
General Public	Inform to improve public awareness of sustainable groundwater management	All beneficial users of groundwater
Land Use	Consult and involve to ensure land use policies are supporting GSPs	Siskiyou County Planning Commission
Private Users	Inform and involve to avoid negative impact to these users	Private Pumpers Domestic/Residential users
Urban/Ag Users	Collaborate to ensure sustainable management of groundwater	All local school districts; nurseries; surface water adjudicated irrigators; Scott Valley Irrigation District; Farmers Ditch; Siskiyou County Cattlemen's Association; Siskiyou County Farm Bureau; Siskiyou RCD
Industrial Users	Inform and involve to avoid negative impact to other users	None at this time
Environmental /Ecosystem	Inform and involve to sustain a vital ecosystem	CalTrout; North Groups Sierra Club; Klamath Riverkeepers; Scott River Watershed Council; Scott River Water Trust; Pacific Coast Federation of Fisherman's Association
Economic Development	Inform and involve to support a stable economy	Siskiyou County Board of Supervisors; Siskiyou County Flood Control and Water Conservation District (acts as local GSA); Siskiyou Economic Development; Chamber of Commerce's
Human Right to Water	Inform and involve to provide safe and secure groundwater supplies to disadvantages communities	City of Etna; City of Ft Jones; Greenview; Callahan
NGOS, Local Associations, Clubs	Inform, involve and collaborate to ensure basin sustainability	Siskiyou County Realtor's Association; Siskiyou County Water Users; Lions Club; Rotary Club of Scott Valley; Local Granges
Native American Tribes	Inform, involve and consult with tribal governments (See DWR Engagement with Tribal	Quartz Valley Tribe; Karuk Tribe; Yurok Tribe; Shasta Indian Nation

	Governments Guidance Document[7])	
State Land Management or Agencies	Inform, involve and collaborate to ensure basin sustainability	California Department of Fish and Wildlife; State Water Resources Control Board; North Coast Regional Water Quality Control Board
Federal Lands or Agencies	Inform, involve and collaborate to ensure basin sustainability	US Forest Service Bureau of Land Management California Department of Fish and Wildlife; National Marine Fisheries Service; USDA/NRCS; US Fish and Wildlife Service
Integrated Water Management	Inform, involve and collaborate to improve regional sustainability	Shasta Valley/Scott Valley Watermaster District, North Coast Resource Partnership (DWR IRWM region)

Phases of Groundwater Sustainability Plan Development

GSP development in the Scott Valley groundwater basin will occur in three major phases, with each phase offering significant opportunities for the public to provide input on draft material developed and presented by the GSA's technical consultants. Each phase will be linked to core elements of the GSP, including: 1) Introduction and Groundwater Basin Setting; 2) Sustainable Management Criteria; and 3) Project and Management Actions. Draft elements of the GSP will be developed and shared in a way that enables broad stakeholder input, fosters consensus building, and addresses the needs and interests of beneficial users throughout the basin.

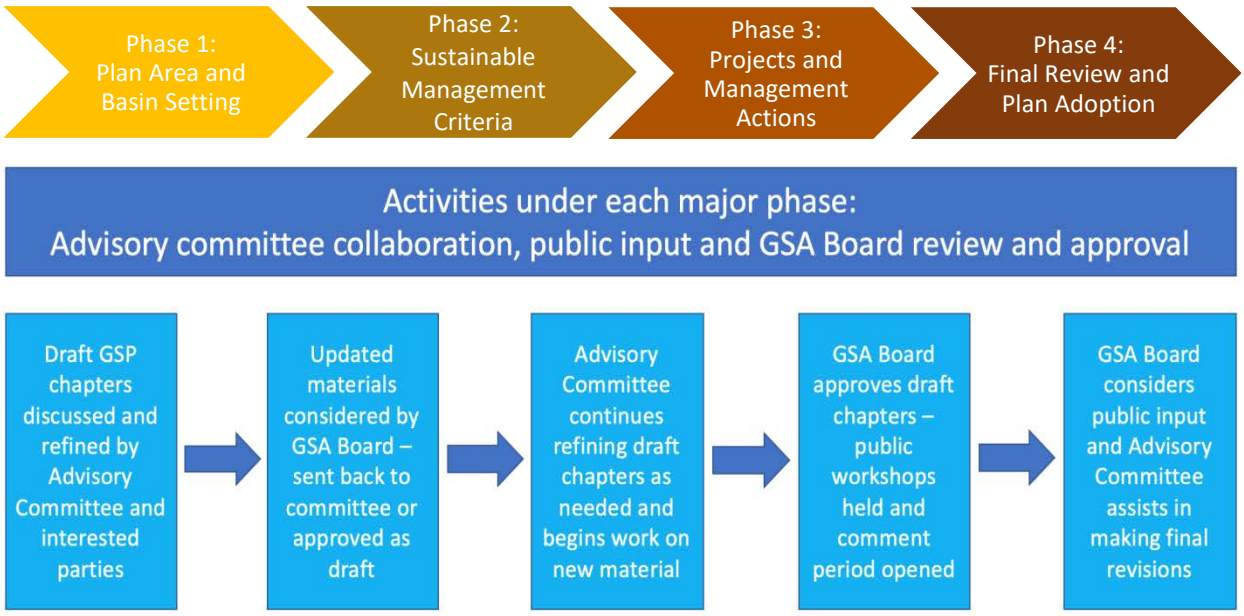
The Advisory Committee will serve as the central forum where draft GSP sections will be presented and discussed. Committee members will regularly provide input and help the GSA and its technical team to refine and improve draft materials. Interested parties are also encouraged to attend and provide input at these meetings. GSP chapters with a broad level or even consensus support among committee members, including input from tribes and interested parties, will be presented to the District Board for consideration and approval. At this stage, the District Board may either approve draft GSP chapters or identify issues which require additional information from the technical consultants and more input from the Advisory Committee. A full draft of the GSP will be presented to all the aforementioned parties for final consideration prior to submittal of the document for evaluation by DWR.

At key stages during each phase of GSP development, draft materials that have been reviewed and refined by both the Advisory Committee and District Board will be made available on the county's website for public comment. Public workshops will also be held at this time with the purpose of sharing key messages associated with draft GSP material, soliciting input and communicating next steps in the GSP development process. A central goal of this collaborative

[7] *DWR Guidance Document for the Sustainable Management of Groundwater: Engagement with Tribal Governments*.

process is to achieve the highest level of agreement possible on the contents of the GSP by interested and affected parties. Viewed in this context, all three elements of stakeholder engagment represent important steps in the collaboration: Advisory Committee, tribal and interested party input; public comments, and District Board review and approval. Finally, SGMA requires the GSA to post a public notice of proposed adoption and hold a public hearing prior to formally adopting the GSP.

Figure 2: Iterative Process of GSP Development



A schedule has been developed which will guide the iterative process of developing and presenting draft sections of the GSP, and then securing input from committee members, the GSA Board and the public. The primary sections of the GSP—the basin setting, sustainable management criteria, and projects and management actions—will be developed and refined sequentially by phase. Following improvement of these sections through collaborative stakeholder engagement, the final sections, including the introduction to the GSP and view towards implementation, will be developed and shared for feedback. Finally, the full GSP will be assembled, then shared for final review by the committee, the GSA Board and the public.

Primary actitivies and associated milestones by phase will include:

Phase 1: GSP Introduction and Basin Setting (September, 2019 – January, 2020)

Primary Activities

- 3-4 Advisory Committee meetings
- GSP draft section 2 (Basin Setting) introduced, reviewed and refined
- Basin setting, water budget and hydrologic model introduced, discussed and refined
- GSP draft chapter 2 prepared for Advisory Committee and GSA Board review
- Special meetings scheduled as needed to further discuss and improve draft materials
- 30-45 day public comment period on all draft materials developed under this phase

Key Milestones
Development and initial feedback secured on draft GSP section 2.0 (Plan Area and Basin Setting), including the following:

- 2.1 Description of the Plan Area (Reg. § 354.8)
- 2.11 Summary of Jurisditional Areas and Other Features (Reg. § 354.8 b)
    - 2.1.2 Water Resources Monitoring and Management Programs (Reg. § 354.8 c, d, e)
    - 2.1.3 Land Use Elements of Topic Categories of Applicable General Plans (Reg. § 354.8 f)
    - 2.1.4 Additional GSP Elements (Reg. § 354.8 g)
    - Notice and Communication (Reg. § 354.10)
- 2.2 Basin Setting
    - 2.2.1 Hydrogeologic Conceptual Model (Reg. § 354.14)
    - 2.2.2 Current and Historical Groundwater Conditions (Reg. § 354.16)
    - 2.2.3 Water Budget Information (Reg. § 354.18)
    - 2.2.4 Management Areas (as applicable) (Reg. § 354.20)

Phase 2: Sustainable Management Criteria (January – December 2020)

Primary Activities

- 7-8 Advisory Committee meetings; 2-3 GSA Board meetings and 1 public meeting
- GSP section 3 (Sustainable Management Criteria) introduced, discussed and refined
- Sustainability goal, measurable objectives and minimim thresholds, undesirable results and monitoring network introduced, discussed and refined
- Special meetings scheduled as needed to further discuss and improve draft materials
- 30-45 day public comment period on all draft materials developed under this phase
- Evaluate and, as needed, update stakeholder communication and engagement plan

Key Milestones
Development and initial feedback secured on draft GSP section 3.0 (Sustainable Management Criteria), including the following:

- 3.0 Sustainable Management Criteria (Reg. § 354.22)
    - 3.1 Sustainability Goal (Reg. § 354.24)
    - 3.2 Measurable Objectives (Reg. § 354.30)
    - 3.3 Minimum Thresholds (Reg. § 354.28)
    - 3.4 Undesirable Results (Reg. § 354.26)
    - 3.5 Monitoring Network (Reg. § 354.38)

Phase 3: Projects and Management Actions (September, 2020 – January, 2021)

Primary Activities

- Project and management actions, initially introduced and discussed during Sustainable Management Criteria (SMC) development, reviewed and refined
- 4 Advisory Committee meetings; 1-2 GSA Board meetings and 1 public meeting

- GSP draft section 4 (Projects and Management Actions) introduced, reviewed and refined
- Economical evaluation of the different management scenarios suggested
- Special meetings scheduled as needed to further discuss and improve draft materials
- 30-45 day public comment period on all draft materials developed under this phase

Key Milestones
Development and initial feedback secured on draft GSP section 4.0 (Projects and Management Actions to Achieve Sustainability Goal), including the following:

- 4.0 Projects and Management Actions
    - Project descriptions and discussion of possible project implementation
    - 4.1 Development of scenarios to be simulated with the groundwater model

Phase 4: Final Review, Implementation Steps Ahead and Local Plan Adoption (March, 2021 – December, 2021)

Primary Activities

- 3-6 Advisory Committee meetings, 2-4 GSA Board meetings, and 1-2 public meetings
- GSP draft section 5 (Plan Implementation) introduced, reviewed and refined
- Full GSP assembled, reviewed and refined/improved as needed, and made ready for public review
- Estimate of GSP implementation costs, schedule for implementation and annual reporting introduced, discussed and refined
- Special meetings scheduled as needed to further discuss and improve full draft GSP
- Evaluate and, as needed, update stakeholder communication and engagement plan
- 30-45 public comment period on all full draft GSP
- Public hearing held in advance of GSA Board adoption of GSP

Key Milestones

- Presentation, review and feedback on GSP introduction section and future implementation steps ahead:
    - Development and feedback secured on GSP introduction section
    - Development and feedback secured on draft GSP section 5.0 (Plan Implementation), including the following:
        - 5.1 Project descriptions and discussion of possible project implementation
- Presentation and, as needed, final refinements/improvements to full GSP
- GSA Board formally adopts GSP

Outreach Strategies, Forums and Tools

SGMA gives local GSAs wide discretion in how to conduct stakeholder communication and engagement. The Siskiyou County GSA will utilize the following outreach strategies, forums and tools to successfully meet all SGMA stakeholder engagement requirements:

Advisory Committee Meetings: The Scott Valley Groundwater Advisory Committee will gather for six regularly scheduled meetings each year in 2019 and 2020 along with additional "Special Meetings" should such meetings be warranted, and on an as needed basis in 2021. The

purpose of these meetings is for committee members to provide local insights, advice and recommendations during the GSP development process. The meetings also provide an important forum that enables interested parties to stay informed of SGMA activities and contribute to GSP development. Interested members of the public are encouraged to attend Advisory Committee meetings. GSA staff will keep a record of attendance, and track the various constituencies and interested parties which attend and contribute to GSP development.

Constituent Briefings: Advisory Committee members, and, as needed, GSA staff, will provide updates for, and solicit feedback from, their local constituent groups regarding ongoing SGMA activities. Briefings should inform key constituents about SGMA implementation, major milestones and achievements, and opportunities for voluntary participation in the groundwater monitoring program. Committee members will report back constituent input received at briefings to the full Advisory Committee for discussion and consideration.

Local Organizations: At times District Board members and staff, as well as Advisory Committee members, will share information and coordinate with established community organizations such as NGO's, irrigation districts, or localized interested parties by attending standing meetings and utilizing known communication channels. Additional coordination may occur through non-SGMA related forums, monthly information pieces in newsletters, or by disseminating information in any other manner that reaches the desired target audience.

Tribal Engagement: In addition to the role that tribal representatives will play on Advisory Committees, the GSA will, as noted, maintain a government-to-government relationship with any tribe in the Siskiyou County/Klamath River watershed region that expresses interest in participating in SGMA activities. The GSA will seek to foster trust building, provide the opportunity for tribes to have meaningful involvement, and create a forum by which sovereign tribes can communicate their respective needs and interests around SGMA. As noted earlier, the GSA has utilized DWR Facilitation Support Services to help develop and maintain positive relationships with interested tribes.

Public Meetings and Workshops: Public meetings and workshops will be held as needed at key milestones or as required by SGMA. These events can target specific geographic areas or be designed to welcome constituents from across the basin. At times, public meetings may be held in different locations across Siskiyou County. GSA staff, as well as the GSA's technical and facilitation consultants, will help plan and facilitate these events. Advisory Committee members and the District Board may play a support role.

District Board Meetings: GSA staff, with support from its technical and facilitation consultants, will provide regular updates to the District Board during the GSP development and implementation process. In turn, the District Board will provide guidance and direction to the overall SGMA implementation process. At times, Advisory Committee members, tribes or other interested parties may address the District Board regarding issues linked to SGMA. The District Board will provide a notice of intent and public hearing prior to formal adoption of the GSP.

Coordination with State and Federal Agencies: In order to ensure effective integration of distinct, yet oftentimes overlapping, water management and policy programs, the GSA will

coordinate and share information, as needed, with state and federal agencies such as the California Department of Fish and Wildlife, Department of Water Resources, State Water Resources Control Board, US Fish and Wildlife Service and National Marine Fisheries Service.

Interested Parties List: GSA staff will maintain a interested parties email list that includes anyone interested in receiving information on SGMA in Siskiyou County during GSP development and implementation. Notification for public meetings and comment periods on draft GSP materials will be distributed through the interested parties list.

Integration of Relevant Studies/Materials: At times committee members or the public may be aware of useful studies, data or other information that can help inform the GSP development and implementation process. Committee members and others are encouraged to share relevant material with the local SGMA program coordinator, who in turn can bring these materials to the attention of the technical consultants and the Advisory Committee, and post documents for reference on the county's SGMA webpage.

Advisory Committee Meeting Announcements: Meeting agendas and handouts will be distributed to committee members and the interested parties list 72 hours prior to each meeting.

Social Media: Although not currently used, Facebook, Twitter, YouTube and other emerging social media technologies may be utilized to provide SGMA updates to interested parties.

Informational Materials: GSA staff, with support from both its consultants and Advisory Committee members, will jointly develop and utilize an array of informational materials to educate the public. These materials may include, but not necessarily be limited to, the following:

- Local SGMA brochures and key talking points
- Frequently asked questions about SGMA, the local GSA and the local GSP
- Existing and new educational materials
- Publicly available groundwater elevation or other related data
- Press releases, newspaper editorials and newsletter articles

Website: The GSA will regularly post and archive SGMA affiliated meeting materials on the county's established SGMA website (e.g. meeting agendas, presentations, summaries). The website will also serve as a repository for groundwater related reports, studies and other topical information discussed by the GSA or its Advisory Committees.

Media: Production of public service announcements, press releases or featured articles will expand awareness of SGMA and how interested parties can get involved. At important milestones advertisements or other announcements in local newspapers will provide information about public meetings, workshops and public comment periods on draft GSP materials.

Plan Evaluation and Adaptation

The Siskiyou County GSA will evaluate the effectiveness and efficacy of its stakeholder communication and engagement plan on, at minimum, an annual basis. Evaluations will likely occur at or near key milestones, such as the completion of a major phase of work, as described above. Overarching questions that may guide the evaluation will include:

- Have all beneficial users been identified and effectively engaged?
- What has worked well and how can success be built on?
- What has not worked as planned and needs to change?
- What lessons learned will guide future stakeholder communication and engagement?

Appendix I – GSA Board, Staff and Advisory Committee Members

District Board of Directors

- Supervisor Brandon Criss, District 1
- Supervisor Ed Valenzuela, District 2
- Supervisor Michael Kobseff, District 3
- Supervisor Lisa Nixon, District 4
- Supervisor Ray Haupt, District 5

GSA Staff

- Elizabeth Nielsen, Project Coordinator
- Matt Parker, Natural Resources Specialist

Advisory Committee Members

- Bill Beckwith, City/Municipal
- Andrew Braugh, Environmental/Conservation
- Brandon Fawaz, Private Pumper
- Jason Finley, Private Pumper
- Tom Jopson, Private Pumper
- Tom Menne, Scott Valley Irrigation District
- Crystal Robinson, Quartz Valley Tribe
- Michael Stapleton, Residential
- Paul Sweezey, Member-at-Large

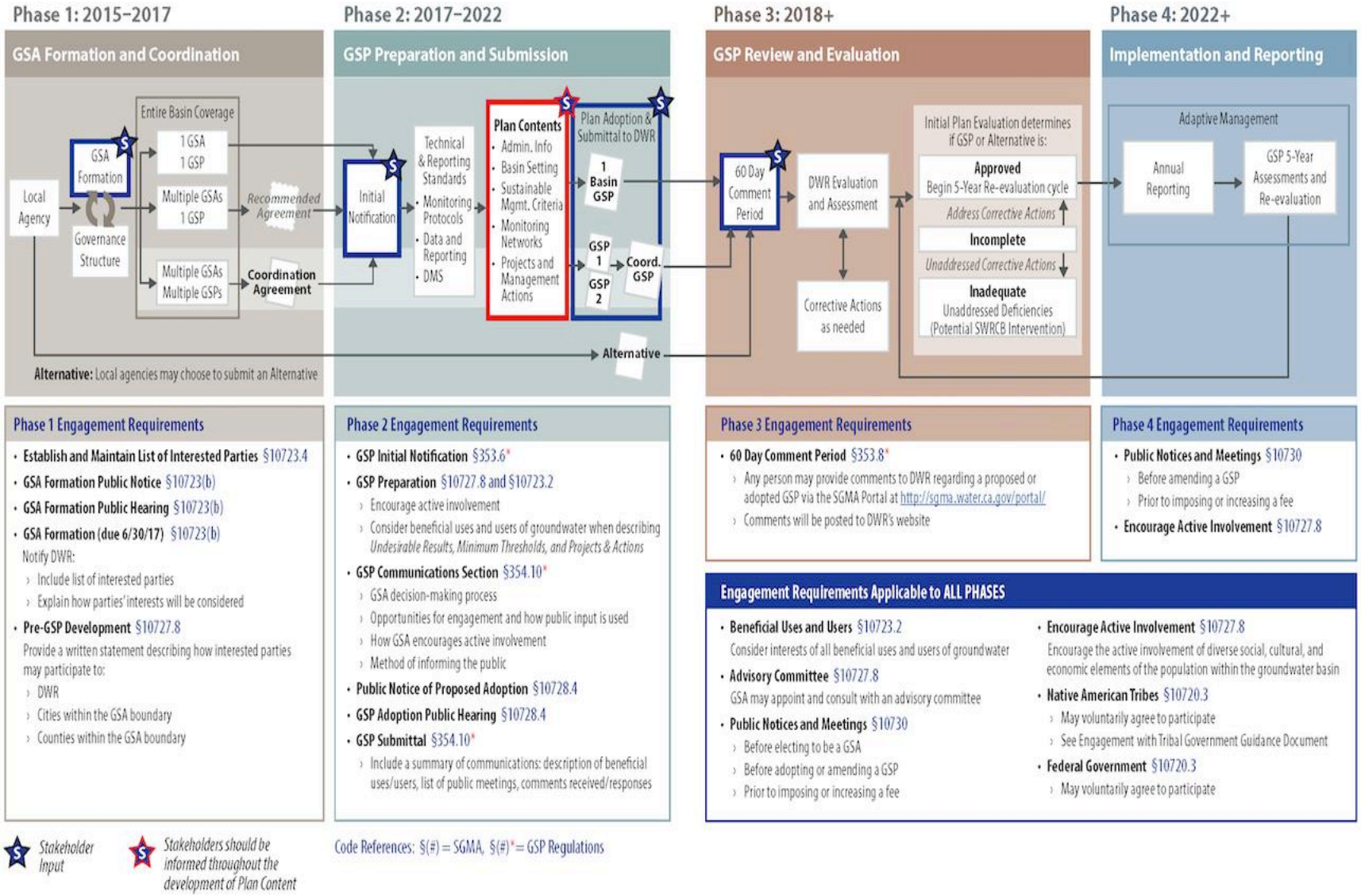
Appendix II – SGMA Educational Materials and References

DWR, and its many partners in academia and civil society, have developed a wide array of educational materials to assist GSAs, Advisory Committees and communities with SGMA implementation. Although not an exhaustive list, interested parties may educate themselves about SGMA with some of the following resources.

Table 2. SGMA Educational Resources

Educational Resource/Weblink	Publisher	Year
The 2014 Sustainable Groundwater Management Act: A Handbook to Understanding and Implementing the Law	Water Education Foundation	2015
Collaborating for Success: Stakeholder Engagement for Sustainable Groundwater Management Act Implementation	Community Water Center Clean Water Fund Union of Concerned Scientists	2015
Groundwater Sustainability Agency – Frequently Asked Questions	Department of Water Resources	2016
Groundwater Sustainability Plan Emergency Regulations (GSP Regulations)	Department of Water Resources	2016
Guidance Document for the Sustainable Management of Groundwater: Engagement With Tribal Governments	Department of Water Resources	2018
Guidance Document for Groundwater Sustainability Plan Stakeholder Communication and Engagement	Department of Water Resources	2018
TNC Groundwater Resource Hub	The Nature Conservancy	2018

Appendix III – SGMA Educational Materials and References



Source: Department of Water Resources (Updated June, 2017)

June 2020

Visit the Siskiyou County SGMA website for more information

OFFICIAL BUSINESS
Siskiyou County Administration
1312 Fairlane rd.
Yreka, California 96097

Appendix 1-B Record of Public Meetings

A list of official public meetings where the Scott Valley GSP was discussed is included below. Individual communication with agencies and other interested parties are not included in this list, though entities involved in targeted outreach or specific topic discussions are listed in Chapter 1. Additionally, the GSA held a tribal outreach meeting on November 9, 2021, with the Karuk tribe representatives.

Date	Meeting
7/20/18	Special Meeting
12/13/18	Advisory Committee
1/22/19	Advisory Committee
4/24/19	Advisory Committee
5/28/19	Advisory Committee
9/24/19	Advisory Committee
11/5/19	Advisory Committee
1/28/20	Advisory Committee
3/3/20	Advisory Committee
4/14/20	Advisory Committee
5/26/20	Advisory Committee
9/16/20	Advisory Committee
10/13/20	Scott Valley SGMA Virtual Public Workshop
10/27/20	Advisory Committee
11/17/20	Advisory Committee
1/26/21	Advisory Committee
2/23/21	Advisory Committee
3/16/21	Advisory Committee
4/27/21	Advisory Committee
5/25/21	Advisory Committee
6/22/21	Advisory Committee
10/31/19	Chapter 2.1 Public Review Version
2/26/21	Chapter 3 Public Review Version (Water Quality and Subsidence)
4/23/21	Chapters 2, 3, 4, with appendices Public Review Version
11/6/21	Scott Valley Irrigator Ad hoc Committee Meeting
12/15/20	Scott Valley Surface Water Ad hoc Committee Meeting
2/18/21	Scott Valley Irrigator Ad hoc Committee Meeting
3/9/21	Scott Valley Irrigator Ad hoc Committee Meeting
6/7/21	Scott Valley Irrigator Ad hoc Committee Meeting
6/16/21	Scott Valley Irrigator Ad hoc Committee Meeting
6/17/21	Scott Valley Surface Water Ad hoc Committee
9/15/21	Scott & Shasta Valley GSP Open House and Public Comment Session

A record of all emails sent to the interested parties list is included below. These mostly represent meeting notices, informational notices, and other outreach materials.

2/2/18	Email
3/5/18	Email
3/16/18	Email
4/13/18	Email
4/17/18	Email
6/15/18	Email
7/3/18	Email
8/17/18	Email
10/16/18	Email
10/19/18	Email
1/7/19	Email
2/5/19	Email
3/22/19	Email
4/30/19	Email
5/7/19	Email
7/25/19	Email
11/8/19	Email
11/27/19	Email
12/11/19	Email
12/30/19	Email
1/14/20	Email
1/23/20	Email
1/27/20	Email
2/27/20	Email
4/9/20	Email
4/10/20	Email
5/5/20	Email
5/21/20	Email
6/19/20	Email
6/25/20	Email
8/31/20	Email
9/11/20	Email
9/21/20	Email
9/22/20	Email
10/6/20	Email
10/12/20	Email
10/15/20	Email
10/16/20	Email

10/22/20	Email
11/12/20	Email
11/17/20	Email
1/21/21	Email
2/18/21	Email
2/23/21	Email
2/25/21	Email
2/26/21	Email
3/2/21	Email
3/11/21	Email
3/12/21	Email
4/14/21	Email
4/22/21	Email
4/23/21	Email
4/26/21	Email
4/27/21	Email
5/5/21	Email
5/13/21	Email
5/17/21	Email
5/20/21	Email
5/24/21	Email
5/27/21	Email
5/28/21	Email
6/3/21	Email
6/17/21	Email
6/18/21	Email
7/9/21	Email
7/15/21	Email
7/19/21	Email
8/6/21	Email
8/11/21	Email
8/13/21	Email
8/20/21	Email
8/27/21	Email
9/1/21	Email
9/13/21	Email
9/20/21	Email
10/1/21	Email
10/21/21	Email
10/22/21	Email
10/29/21	Email

Appendix 1-C Scott Valley Comment Response Summary

Scott Valley Groundwater Sustainability Plan Public Comment Summary

FINAL

January 2022

Prepared for:

Siskiyou County Flood Control and Water Conservation District

Prepared by:

Stantec Consulting Services, Inc.

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SCOTT VALLEY GROUNDWATER SUSTAINABILITY PLAN
PUBLIC COMMENT SUMMARY

January 2022

Table of Contents

LIST OF TABLES

ABBREVIATIONS

Advisory Committee	Scott Valley Groundwater Basin Advisory Committee
Board	County of Siskiyou Board of Supervisors
CIN	Comment Identification Number
County	County of Siskiyou
DAC	Disadvantaged Community
District	Siskiyou County Flood Control and Water Conservation District
DWR	California Department of Water Resources
GDE	Groundwater-Dependent Ecosystem
GL	Groundwater Level

GS	Groundwater Storage
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
ISW	Interconnected Surface Waters
Matrix	Comment and Comment Response Matrix
MCR	Multiple Comment Response
SGMA	Sustainable Groundwater Management Act of 2014
SMC	Sustainable Management Criteria
WQ	Water Quality

ATTACHMENTS

Attachment A – Notice to Cities, Counties, and Tribes

Attachment B – Annotated Comment Letters Received on Draft Groundwater Sustainability Plan

Attachment C – Scott Valley Groundwater Sustainability Plan Comment and Comment Response Matrix

SCOTT VALLEY GROUNDWATER SUSTAINABILITY PLAN
PUBLIC COMMENT SUMMARY

January 2022

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SCOTT VALLEY GROUNDWATER SUSTAINABILITY PLAN
PUBLIC COMMENT SUMMARY

January 2022

1.0 INTRODUCTION

This Public Comment Summary (Summary) describes the process and tools used by the Siskiyou County Flood Control and Water Conservation District (District) Groundwater Sustainability Agency (GSA) to solicit, review, and respond to public and stakeholder comments on the Draft Scott Valley Groundwater Sustainability Plan (GSP) and notify cities and counties within the plan area of the District's intent to adopt the GSP. These public review and notification processes were developed pursuant to the Sustainable Groundwater Management Act of 2014 (SGMA) and the California Department of Water Resources' (DWR) Groundwater Sustainability Plan Emergency Regulations, developed in May 2016.

California Code of Regulations (CCR) Title 23 Section (§) 355.4 provides the basis for DWR's determination of a GSP's compliance with SGMA and whether a GSP is likely to achieve the sustainability goal for the basin. As part of this criteria, DWR will consider:

> *(10) Whether the Agency has adequately responded to comments that raise credible technical or policy issues with the Plan. (§ 355.4(b)(10))*

This document reviews the GSA's actions to notify the public and other interested parties of the availability of the Draft GSP and the GSA's approach to soliciting, reviewing, and responding to technical and policy comments submitted by the public and other interested parties.

1.1 DOCUMENT FORMAT

This Summary is comprised of the following four sections:

- Section 1 – Introduction: Section 1 provides an overview of the purpose and structure of the document, as well as the GSP evaluation criteria for addressing comments on the GSP.
- Section 2 – Commenting Process: Section 2 describes the public comment process for the Draft GSP and method by which the GSA notified cities, counties, and Tribes within the plan area of the proposed plan. The notification letters are included as **Attachment A** to this Summary.
- Section 3 – Submitted Comments: Section 3 provides an overview of comment letters received on the Draft GSP during the public comment period. The comment letters in their entirety are included as **Attachment B** to this Summary.
- Section 4 – Comment Management and Review: Section 4 describes how the GSA reviewed and responded to comment letters received during the public comment period, including the processes for identifying and categorizing individual comments and responding to comments that raised credible technical and policy issues. This section also describes the tool used to manage the comments and comment responses. A copy of the final tool is provided as **Attachment C** to this Summary.

2.0 COMMENTING PROCESS

The GSA solicited public comments from individuals, agencies, and organizations representing beneficial uses and users of groundwater described in Water Code § 10723.2 as well as any other interested members of the public. This section describes the Draft GSP notification and public comment process. In addition, it describes the method by which the GSA notified cities and counties of availability of the Draft GSP, pursuant to California Water Code § 10728.4.

2.1 DRAFT GSP RELEASE AND PUBLIC COMMENT PERIOD

The District authorized the release of the Draft GSP on August 10, 2021. The Plan was released for public review and comment on Wednesday August 11, 2021, marking the beginning of a 45-day public comment period which ended on Sunday September 26, 2021. The GSA notified interested parties and members of the public of the release of the Draft GSP and public comment period through posting on the Siskiyou County website and an email sent out through the interested parties list.

Additional technical appendices to the Draft GSP were released during the public review and comment period on September 13, 2021. These appendices, listed below, provided supplemental, technical information only.

- Appendix 2D: Scott Model Documentation

The Draft GSP was available for review on the County of Siskiyou website throughout the public comment period. In addition, hard copies of the documents were made available for review at the following public locations:

- Etna City Hall, 442 Main St, Etna, CA 96027
- Etna Library, 115 Collier Way, Etna, CA 96027
- Fort Jones City Hall & Library, 11960 E St, Ft Jones 96032

Members of the public were provided three methods to submit comment on the Draft GSP:

1. Hard copies of comments could be sent by mail or hand delivered to the GSA mailing address: 1312 Fairlane Rd, Yreka CA 96097 with Attention to SGMA.
2. Electronic copies of comment could be submitted to the GSA email address at SGMA@co.siskiyou.ca.us.
3. Comment cards could be written and returned at the September 15 and 16 GSP Open Houses.

2.2 NOTICE TO CITIES, COUNTIES, AND TRIBES

SGMA (as chaptered in California Water Code § 10728.4) requires that:

> *A groundwater sustainability agency may adopt or amend a groundwater sustainability plan after a public hearing, held at least 90 days after providing notice to a city or county within the area of the proposed plan or amendment. The groundwater sustainability agency shall review and consider comments from any city or county that receives notice pursuant to this section and shall consult with a city or county that requests consultation within 30 days of receipt of the notice. Nothing in this section is intended to preclude an agency and a city or county from otherwise consulting or commenting regarding the adoption or amendment of a plan.*

Pursuant to these regulations, the GSA notified cities and counties within the GSP area of its intention to adopt the GSP at least 90 days before adoption of the Final GSP. This notification included a letter sent to the Cities of Etna and Fort Jones, the Siskiyou County Board of Supervisors, and the Siskiyou County Planning Department on August 13 and 16, 2021. As a courtesy, the GSA also provided notice to the Yurok Tribe, Shasta Indian Nation, and Karuk Tribes, and Quartz Valley Indian Community. In addition to the letter, cities and counties were notified about release of the Draft GSP via postings on the Siskiyou County website. The GSA received an informal request for government-to-government consultation with the Karuk Tribe on September 7. The GSA and Karuk attempted to coordinate a meeting prior to the close of the public comment period; however, they were not able to find a time given the short window of opportunity. Subsequently, the Karuk Tribe submitted a formal request for government-to-government consultation on September 20, pursuant to section III (v.) of the Memorandum of Understanding between the District and the Tribe. The GSA coordinated with the Karuk Tribe to conduct this government-to-government consultation. The requests for consultation as well as an example of the notification letter are included in **Attachment A** to this Summary.

2.3 PUBLIC AND STAKEHOLDER INPUT ON DRAFT GSP CHAPTERS

The GSA solicited input on the Draft GSP from stakeholders and members of the public through public meetings and workshops. The Scott Valley Groundwater Basin Advisory Committee (Advisory Committee) is composed of eleven individuals representing beneficial users of groundwater in the basin. The Advisory Committee includes representation from agricultural groundwater users, residential groundwater users, water and irrigation agencies or districts, environmental/conservation organizations, and Tribal governments. The group provides information and recommendations to the GSA Board. The Advisory Committee was actively involved and provided input in development of the Draft GSP. Draft GSP chapters were brought to the Advisory Committee for their review at regular public meetings and during internal public comment periods. Advisory Committee members also provided input on key GSP topics.

Members of the public had the opportunity to provide comments on Draft GSP chapters during public GSA Board meetings, Advisory Committee meetings, public workshops, and Draft GSP chapter public comment periods. The technical team also solicited comments via emails and phone calls with Advisory Committee members and other key stakeholders in the basin.

January 2022

Draft GSP chapters and meeting materials were included in Advisory Committee and District meeting packets and posted on the District website. Preliminary drafts of GSP Chapters 2, 3, and 4 were made available on the GSA website to the public, Advisory Committee, and GSA Board on April 23, 2021. Draft Chapters 3 and 4 were also presented and discussed at the Board meeting on July 8, 2021.

The GSA also held two public workshops on August 17 and September 15 to inform and solicit input from stakeholders and members of the public about the content of the Draft GSP. The workshops were noticed via emails to the GSA's Interested Parties Database and on the District's website.

3.0 SUBMITTED COMMENTS

The GSA received 17 comment letters on the Draft GSP during the public comment period. Six letter was submitted by an individual contributor. Eleven letters were submitted from organizations representing beneficial uses and users of groundwater in the region, including state and federal agencies, special districts, and organizations representing agricultural, environmental, and domestic users of groundwater. **Table 1,** shown below, provides the list of comments that were received on the Draft GSP, organized alphabetically by name. Copies of the comment letters received are provided in **Attachment B** to this Summary.

Table 1. Submitted Comments

Commenter or Agency Name	Commenter Type	Date Comment was Received
Beverly Dowling	Individual Contributor	9/26/2021
California Department of Fish and Wildlife	State Agency	9/23/2021
California Trout	Non-Governmental Organization	9/24/2021
Karin Newton	Individual Contributor	9/27/2021
Karuk Tribe	Tribe	9/24/2021
Klamath Tribal Water Quality Consortium	Tribes	9/24/2021
Lauren Sweezey	Individual Contributor	9/21/2021
National Marine Fisheries Service	Federal Agency	9/23/2021
NGO Consortium	Non-Governmental Organizations	9/23/2021
Quartz Valley Indian Community	Tribe	9/24/2021
Salmonid Restoration Federation	Non-Governmental Organization	9/24/2021
Sari Sommarstrom	Individual Contributor	9/26/2021
Scott River Watershed Council	Non-Governmental Organization	9/26/2021
Sierra Club (Felice Pace)	Non-Governmental Organization	9/23/2021
Siskiyou Resource Conservation District	Regional Agency	9/26/2021
Theodora Johnson	Individual Contributor	9/26/2021

Warren Farnam	Individual Contributor	9/26/2021

4.0 COMMENT REVIEW AND RESPONSE

This section describes the process and tools the GSA used to review and respond to comments on the Draft GSP. Following the close of the public comment period, the GSA reviewed each comment letter to identify individual comments on the Draft GSP. To organize and manage the review of issue-specific comments, staff created a database, or matrix, that allowed for the categorization, grouping, and response to comments. This comment management approach is described below.

4.1 COMMENT MANAGEMENT

This subsection describes the process the GSA used to categorize each of the comment letters received on the Draft GSP and identify issue-specific comments for review and response. Of the 17 letters received, a total of 771 issue-specific comments applicable to the Draft GSP were identified. Each comment was assigned an individual comment identification number and entered into the database referred to as the Scott Valley GSP Comment and Comment Response Matrix (Matrix), further described below. GSA staff then used the Matrix to group technical or policy issues raised on the GSP, identify potential changes to the GSP to address comments, and develop comment responses.

4.1.1 Comment and Comment Response Matrix

The Matrix is an Excel database developed and used by GSA staff and consultants to categorize and respond to comments submitted on the Draft GSP. **Table 2** describes the types of information included in the Matrix. A copy of the completed Matrix is provided in **Attachment C** to this Summary.

Table 2. Scott Valley Groundwater Sustainability Plan Comment and Comment Response Matrix Columns

Matrix Column	Column Description
Author	Name of agency or organization that signed or submitted the comment letter.
Comment Identification Number (CIN)	Unique identifier assigned to each comment received. A single comment letter may contain multiple individual comments, each with its own comment identification number.
Group	Comment grouping to facilitate structured review by Advisory Committee and GSA staff.
Sub-Category	Topic within the Draft GSP that the comment identifies with, describes, or otherwise raises questions about.
Description	Short description of the main topic or issues raised in the comment.
Code/Regulation	The code or regulation cited in the comment, if referenced.

Chapter, Page, and Line Number	The chapter, page, and line number in the Draft GSP cited in the comment, if referenced.
Comment	Copies of the comment text directly from the comment letter.
Response/Recommended Action	Response or recommended action to address the comment.

Key:
GSA = Groundwater Sustainability Agency
GSP = Groundwater Sustainability Plan

4.1.2 Sub-Categories

To aid the comment management process, GSA staff and consultants assigned all comments a sub-category based on the primary topic or issue the comment raised. The sub-categories were used to review similar comments and assign the appropriate subject-matter expert to develop the comment response. **Table 3** provides a list of these sub-categories.

Table 3. Groundwater Sustainability Plan Comment Sub-Categories

Acronym	Sub-Category
AL	Pumping Allocations/ Metering/ De Minimus Extractors/ Water Marketing/ Extraction – Water Accounting Framework
BR	Broader Regulations (such as: Endangered Species Act, Public Trust Doctrine)
DC	Disadvantaged Communities
DW	Domestic Wells
GA	GSA Organization
GD	Groundwater Dependent Ecosystems/ Environmental Beneficial Users
GE	General
GL	Groundwater Levels
GS	Groundwater Storage
GP	County General Plan
HM	Hydrogeologic Modeling
IS	Interconnected Surface Waters
LS	Land Subsidence
MA	Management Areas
MN	Monitoring Network
MU	Municipal Land/ Water Use
OR	Groundwater Sustainability Plan Organization
PM	Projects and Management Actions
PO	Public Outreach

SB	Subbasin Characteristics
TR	Transparency
WB	Water Budget/ Water Accounting Framework
WI	Well Inventory
WR	Water Resources/ Water Rights
WQ	Water Quality

4.1.3 Comment Groups

After assigning sub-categories and writing brief descriptions of the comments, GSA staff and consultants conducted a detailed evaluation of the scope, relevance, and importance of each individual comment. Through this activity, staff and consultants conducted an initial grouping, or prioritization, of these comments based, in part, on their applicability to 23 CCR § 355.4(b)(10). These groupings are further described below.

- **"Group A":** Comments were assigned to Group A if they raised substantial technical, policy, or legal issues most likely to be subject to 23 CCR § 355.4(b)(10). Of the 771 comments received, 91 were assigned to Group A.
- **"Group B":** Comments were assigned to Group B if they required additional evaluation or significant changes to the GSP and considered valid technical or policy issues for focused review. This included comments that referred to content and themes included throughout the GSP and would require more consideration to address. Of the 771 comments received, 190 comments were assigned to Group B.
- **"Group C":** Comments were assigned to Group C if they primarily raised editorial issues or could be addressed without requiring further technical evaluations or significant changes to the GSP text. For example, if a comment indicated that a certain passage or section of the GSP could be improved through a closer editorial review, it was categorized as Group C. Of the 771 comments, 490 were assigned to Group C and directly addressed by the GSA and consultant staff.

4.2 REVIEW AND RESPONSE

This subsection describes the approach and process GSA and consultant staff used to review, respond to, and address comments received on the Draft GSP and approval of amendments to the Draft GSP. This review and response process included preparation of draft multiple comment responses and a meeting of the Scott Valley Advisory Committee. These meetings, and their focus, are as noted in the following subsections.

4.2.1 Multiple Comment Responses

Comments of a similar nature were assigned a "Multiple Comment Response" or MCR. An MCR is a single response that applies to multiple comments of a similar nature. Draft MCRs pertaining to Group A comments were shared with the Advisory Committee in advance of the Comment Response Workshop. Based on feedback from the Workshop, the MCRs were finalized and are included in **Attachment C** to this Summary.

4.2.2 Comment Response Workshop

On October 27, 2021, the Scott Valley Advisory Committee held a publicly noticed meeting to review and respond to comments GSA staff and consultants had identified as Group A comments. A draft of the Matrix was provided to the Advisory Committee on October 22 and posted on the District website. Copies of the annotated comment letters were also distributed to the Advisory Committee and posted on the website. Committee members were invited to amend the priority designations of Group B and C comments; however, none were revised to Group A status. The Group A comments fell into the following major topics:

- Public Trust Doctrine
- State Water Resource Control Board Emergency Regulations
- Interconnected Surface Waters
- Managing Undesirable Results
- GSP Applicability to the Adjudicated Zone of the Scott Valley Subbasin
- Beneficial Users of Groundwater

Through a facilitated session, the GSA staff, consultants, and the Advisory Committee reviewed and provided staff direction, as appropriate, to approve or amend each of the staff-developed responses. The Advisory Committee, absent quorum, agreed to recommend to the District to adopt the Final GSP at its December 7 meeting, based on the agreed upon revisions to the Draft GSP. The Advisory Committee representative for the Karuk Tribe could not endorse the plan and the GSA is pursuing ongoing coordination with the Karuk Tribe to resolve any outstanding concerns.

4.2.3 Public Hearing

On December 7, 2021, the Siskiyou County Board of Supervisors held a publicly noticed public hearing for adoption of the GSP. **Table 4** provides a summary of comments provided during the public comment period of the public hearing. The table provides the commenter's name and affiliation, the comment provided, and direction provided to staff by the GSA Board (if any). This meeting was recorded and posted to the County's website. Members of the public will be able to further comment and provide feedback on the GSP during DWR's established comment period under California Water Code § 10733.4. The GSA will continue to track written comments provided to DWR.

January 2022

Table 4. Public Comments Received during the Public Hearing to Adopt

Commenter Name	Comment Provided	Direction Provided to Staff by GSA Board
Warren Farnam, agricultural property owner in Scott Valley	Warren Farnam provided a letter in advance of the public hearing, expressing opposition to the adoption of the GSP.	Comments noted.
Scott Murphy, Scott Valley resident	Scott Murphy shared concerns regarding uncertainties related to the future of irrigation water in Scott Valley and spoke in support of 'leaky' irrigation ditches as support for the groundwater supply.	Comments noted.
Theodora Johnson, Scott Valley resident	Theodor Johnson noted that the plan could still have either a positive or negative impact on residents and emphasized the importance of keeping residents in the loop throughout implementation. She also requested clarification about the timeline and costs associated with amending the plan, moving forward.	Matt Parker provided clarifying information about the GSA's plan to continue outreach to stakeholders. He shared information about the five-year update process which will start in a few years.
Director Ray Haupt, Chair of the Board	Director Haupt shared concerns about SGMA with regards to consideration of consumption of groundwater rather than considering impacts associated with the availability of water in the uplands.	Comments noted.

Attachment A – Notice to Cities, Counties, and Tribes

COUNTY OF SISKIYOU

Flood Control and Water Conservation District

P.O. Box 750 □ 1312 Fairlane Rd
Yreka, California 96097
www.co.siskiyou.ca.us

(530) 842-8005
FAX (530) 842-8013
Toll Free: 1-888-854-2000, ext. 8005

August 10, 2021
Attn: [Recipient]

Subject: Notice of Upcoming Hearing for Adoption of Groundwater Sustainability Plans

Dear [Recipient],

This letter is intended to provide the [Recipient] with notice of the Siskiyou County Flood Control and Water Conservation Districts (District) proposed adoption of a Groundwater Sustainability Plan (GSP) pursuant to California Water Code (CWC) section 10728.4. As required by the Sustainable Groundwater Management Act (SGMA) of 2014 (CWC §10720 et seq.), the District, acting as the Groundwater Sustainability Agency, must provide notice to a city or county within the area of the proposed GSP at least 90-days prior to holding a public hearing to adopt the GSP (CWC §10728.4).

The District has scheduled a public hearing to consider adoption of the Butte Valley, Shasta Valley and Scott River Valley GSP on December 7, 2021, at a time to be determined, during a meeting of the District, located in the Siskiyou County Board Chambers, 311 Fourth St, Yreka, CA 96097.

In accordance with CWC §10728.4, your city is eligible to request consultation with the District in advance of the public hearing. If you wish to consult with the District regarding the adoption of its GSP, please provide notice within 30 days of receipt of this letter.

You may also submit comments on the GSP during the scheduled public comment period. All relevant material, including instructions for commenting, can be found in a downloadable pdf format on the District's website at the following link: https://www.co.siskiyou.ca.us/naturalresources/page/sustainable-groundwater-management-act-sgma

If you have any questions, contact Matt Parker, Natural Resources Specialist at (530) 842-8019, or mparker@co.siskiyou.ca.us. This letter was approved by the Siskiyou County Board of Supervisors on August 10, 2021 by the following vote:

AYES: Director Criss, Kobseff, Valenzuela, Ogren and Haupt
NOES: None
ABSENT: None
ABSTAIN: None

Sincerely,

Ray A. Haupt, Chair
Siskiyou County Flood Control and Water Conservation District

Karuk Community Health Clinic
64236 Second Avenue
Post Office Box 316
Happy Camp, CA 96039
Phone: (530) 493-5257
Fax: (530) 493-5270

Karuk Tribe

Karuk Dental Clinic
64236 Second Avenue
Post Office Box 1016
Happy Camp, CA 96039
Phone: (530) 493-2201
Fax: (530) 493-5364

Administrative Office
Phone: (530) 493-1600 • Fax: (530) 493-5322
64236 Second Avenue • Post Office Box 1016 • Happy Camp, CA 96039

September 7th, 2021

Ray Haupt, Chair
P.O. Box 750
1312 Fairlane Road
Yreka, CA 96097

RE: Government to Government Meeting Request; Comments Sustainable Groundwater Management Plan

Ayukîi Supervisor Haupt:

The Karuk Tribe appreciates the efforts of you and the County of Siskiyou to develop Sustainable Groundwater Management Plans for the Scott and Shasta Valleys. Groundwater use impacts stream flows and fisheries habitat critical to the survival of salmon, steelhead, lamprey and other species the Karuk rely on not only for our sustenance but our cultural identity as well. Therefore, we are very interested in the development of a Sustainable Groundwater Management Plan for the Scott and Shasta Valleys.

We are writing to request an informal consultation meeting pursuant to the Memorandum of Understanding (MOU) between the Siskiyou County Flood Control and Water Conservation District and the Karuk Tribe, Section III (v). the purpose of the meeting is to discuss the timeline for comments on the draft Sustainable Groundwater Management Plan and specific concerns with the Plan.

As per the MOU, we would like to convene two elected offices from the County and the Tribe along with pertinent staff. Current COVID protocols are such that an electronic teleconference would be most appropriate.

Barbara Snider is the Tribal Council executive secretary and can work with a designated counterpart from the County to arrange meeting details. Barbara can be contacted either via phone, (530) 493-1600 extension 2036, or email bsnider@karuk.us.

Yootva,

Russell "Buster" Attebery
Chairman

Enclosure: Memorandum of Understanding between the Siskiyou County Flood Control and Water Conservation District and the Karuk Tribe

Karuk Community Health Clinic
64236 Second Avenue
Post Office Box 316
Happy Camp, CA 96039
Phone: (530) 493-5257
Fax: (530) 493-5270

Karuk Tribe

Karuk Dental Clinic
64236 Second Avenue
Post Office Box 1016
Happy Camp, CA 96039
Phone: (530) 493-2201
Fax: (530) 493-5364

Administrative Office
Phone: (530) 493-1600 • Fax: (530) 493-5322
64236 Second Avenue • Post Office Box 1016 • Happy Camp, CA 96039

October 20th, 2021

Ray Haupt, Chair
PO Box 750
1312 Fairlane Road
Yreka, CA 96097

RE: Government to Government Meeting Request

Ayukîi Supervisor Haupt:

On September 7, 2021, pursuant to section III. (v.) of the Memorandum of Understanding (MOU) between the Siskiyou County Flood Control District (District) and the Tribe signed in March of 2020, the Tribe transmitted a request for an informal consultation meeting to discuss "the timeline for comments on the draft [Scott and Shasta] Sustainable Groundwater Management Plans and specific concerns with the Plan."

District staff communicated by email that there were no available meeting times to meet our request prior to the deadline for comments on the draft Plans.

On September 24, 2021 the Tribe received a letter from the District offering to meet with the Karuk Tribe. However, one of our key issues was the deadline for comments. Because the District did not release all of the 600+ pages of technical information used to develop the draft Plans when the draft Plans were released, it was difficult for Tribal staff and consultants to prepare thorough comments. By failing to meet with the Tribe in a timely manner, the District provided no opportunity to resolve issues arising from the development of the Plans.

Because our issue was not addressed or resolved in a timely manner consistent with section III. (v.) of the MOU, the Karuk Tribal Council invites the District to participate in an official Government to Government consultation meeting that would include a majority of the Karuk Council and the District Board and held in accordance with the Ralph M. Brown Act pursuant to section III. (vi.) of the MOU. The meeting will be held virtually due to COVID-19, please have appropriate staff contact Executive Secretary Barbara Snider to schedule at 530-493-1600 ext2036 or bsnider@karuk.us

The agenda of this meeting shall include a discussion of the ground water crisis the Plans are supposed to address, the consequences of failing to address the groundwater crisis, and our specific concerns with the draft Plans. Any unresolved issues in addition to our already filed comments shall be documented and forwarded to the District Board in accordance with Section III (vii.) of the MOU.

Yôotva,

Russell "Buster" Attebery
Karuk Tribe Chairman

Attachment B – Annotated Comment Letters Received on Draft Groundwater Sustainability Plan

COUNTY OF SISKIYOU

Flood Control & Water Conservation District

Reviewer name: Bernard and Beverly Dowling

Submission date: 9/26/2021
GSP sections reviewed: Ch 1-4

Chapter, Page & Line number	Suggested revision	
Comment overview	Please note, we were among 42 farmers and ranchers who submitted comments on the first draft. Our comments were largely ignored in the latest iteration of the GSP. The below comments are largely copied and pasted from the original comments.	BBD-001
	One thing, however, is different in this draft: our name. Scott Valley is called just that—Scott Valley, not "Scott River Valley." Please remove all such references. Renaming our valley is an insult to our residents and an erasure our history.	BBD-002
	A primary goal of this GSP should be to preserve and protect agriculture. The people who live in Scott Valley love it. Why is this place so special? It's beautiful, clean, rural, and safe. We know our neighbors because we've been able to establish deep roots in agriculture. Without agriculture, what would Scott Valley be? We have an obligation to allow our kids the opportunity to pursue the productive and honorable trade of agriculture, just as we have. The importance of agriculture to our nation's health and security need not be explained. Yet we must recognize that, on a local level, agriculture is just as crucial. We must protect it in order to preserve Scott Valley as we know and love it.	BBD-003
	Benefiting agriculture and fish can be done by increasing our water supply—or, more appropriately, holding onto our water supply. **During 7 to 10 days of high spring flows, enough water flows out of the valley to supply all of Scott Valley's farmers and ranchers with the water they need for the whole irrigation season.** We must implement water storage projects, both above- and below-ground, in order to hold onto that water. This will benefit ALL beneficial users in Scott Valley.	BBD-004
	Any project that puts increased regulatory burden on agriculture should not be considered in this plan. SGMA does not require punitive measures; the law simply asks the GSA to address groundwater quality and supply issues. Water storage measures are included in SGMA and therefore are attainable.	BBD-005
	Proposals to turn off pumps and repurpose land away from agriculture will do damage to our economy, culture, and environment. Fallowed fields generally	BBD-006

	make bad neighbors: hotbeds for noxious weeds and fire danger. The more we discourage farmers and ranchers from being productive, the more we invite subdivisions and urban sprawl. Also, by discouraging above-board productivity, we inadvertently encourage below-board, illegal activities such as marijuana cultivation, which is dangerous to our citizens and damaging to our environment--including water quality.	BBD-006, Cont'd
	Furthermore, adding damaging regulations will invite a "snitch" culture where people turn in their neighbors for trying to be productive, care for their land, and provide for their families. Regulations that go against human nature will only cause conflict. We who live in Scott Valley must stand firm against any proposals to divide us and transform our landscape and culture away from agriculture.	BBD-007
	<u>Again, SGMA allows for a wide variety of projects and management actions and does not mandate the use of punitive regulations.</u>	BBD-008
	Please see the attached flyer that has been circulating with Scott Valley residents since mid-April. It encourages water storage, groundwater recharge, fish-friendly structures, and other projects and opposes well metering, fees and fines for water use, and forced pump turn-off dates.	BBD-009
	It's been stated by more than one member of the Advisory Committee that this GSP development process "felt like a runaway train." Productive ideas that have had support from almost the entire committee—if not the entire committee—have been given very little attention by the Tech Team. It's time to put this plan back on track so that it suits the needs of Scott Valley.	BBD-010
Detailed comments:		
Executive Summary p 8	**As noted above, we lose most of our water as flow down the river and to the ocean:** "Annual outflow from the Basin occurs largely as Scott River flow exiting the Basin to the northwest (ranging -689 to -85 TAF, median of -292), though a significant portion leaves as ET (-130 to -90 TAF, median of -112)."	BBD-011
Exec Summ p 11	This GSP relegates our most promising water storage projects to "Tier III" implementation—meaning "Additional PMAs that may be implemented in the future, as necessary 284 (initiation and/or implementation 2027–2042)." Meanwhile, "Tier II" projects have concrete plans to start right away. One of those projects, "voluntary managed land repurposing," is problematic for Scott Valley. Removing ag land from the equation means our kids will have lower chances of continuing our farming and ranching tradition. What will take its place?	BBD-012

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Ch. 4 p 5	"Under the Sustainable Groundwater Management Implementation Grant Program Proposition 68, grants can be awarded for planning activities and for projects with a capital improvement component. As such, state funds for reimbursing landowners for implementation of PMAs, including land fallowing and well-shut offs, currently cannot be obtained under this program." **Comment: This funding issue speaks to the point that productive projects such as water storage should be pursued, while land fallowing and well shut-offs should be avoided.**	BBD-026
Ch 4 p 7	Table I PMA Summary Table. **Comment: Many promising ideas were proposed to the Tech Team to be included as Tier II or Tier III projects, with strong support from a sound majority of the Advisory Committee. Instead of including them in this table, those ideas were relegated to the last page of this report, with the reasoning that they "have not yet been investigated." Those proposals include: a study of the tailings for groundwater storage; recharge weirs; fish-friendly structures to decrease flow rates in Scott River and its tributaries; construction of a clay dam or permeable plug at the lower end of Scott Valley; and direct addition of water to the river during periods of low flow.** **It's hard to believe that none of these proposals have been investigated enough to put in the Tier II or III categories.** **Other PMAs listed in this table are addressed below.**	BBD-027
Ch 4 p 13	"Avoiding Significant Increase of Total Net Groundwater Use from the Basin." **Comment: Although this MA does propose significant regulations on new wells, it may be appropriate to avoid overdrafts in the Valley. It embodies the principle of "first in time, first in right," which has long been used in California water law.**	BBD-028
Ch 4. P 13 line 350	"[No net increase in groundwater use] can be achieved through exchanges, conservation easements, and other voluntary market mechanisms." **The GSA should be mindful of unintended consequences. For example, a market exchange, which is explored in more detail on p 19, could in fact encourage urban development of ag ground.**	BBD-029

Ch 4. P 19 cutout	"Market instruments" cutout. **Comment: This troubling passage seems to encourage the conversion of ag land to urban development, because urban land uses less water. The example in the cutout even goes so far as to allow development of "natural lands" after a city buys out ag land—because now the city has "credits" for using less water than the ag land did. This entire section epitomizes tone-deafness and should be removed.**	BBD-030
Ch. 4 p 21	"Beaver Dam Analogues." **Comment: this section should be expanded to include other fish-friendly structures to slow the flow of the mainstem and tributaries for aquifer recharge. This concept has the support of many landowners along the river. I am told that BDAs (in some form) were used on the mainstem of the Scott several years ago and that the project successfully raised the water table. This is not mentioned in the draft.**	
	Other fish-friendly structures could include inflatable bladders: rubber dams that can quickly be inflated or deflated as needed. Thousands of these are used all over the world, with decades of success. In some cases, aquifer recharge is the sole purpose (e.g., the Santa Ana Inflatable Rubber Dam Project, which supplies 100,000 Orange County residents with water each year.)	BBD-031
	Recharge weirs, while more permanent and potentially damaging to surrounding fields during high water events, are also used around the world to recharge aquifers. They can be designed to allow fish passage.	
Ch 4 p 22	Upslope water yield projects. **The "Green infrastructure" proposal is good and could be expanded. Clearing conifers, juniper, and brush all has potential to do good for the watershed, on both private and public land. By including such projects in this proposal, the GSA can encourage and partake in federal and private projects.**	BBD-032
Ch 4 p 23	"Irrigation Efficiency Improvements". **Comments: As this PMA is fleshed out, the GSA should take care not to punish those who have already upgraded and invested in efficient systems, while antiquated systems get the grants. Perhaps the only fair way to go is a "First come, first serve" application system.**	
	This section merits more attention. While it claims that stream depletion is reversed by 4, 12 and -2 percent based on different scenarios, it doesn't describe what those scenarios are (nor does Appendix 4-A, which is referenced for more info). While irrigation efficiencies could hold potential for depletion reversal, this PMA seems to be glazed over when compared to more punitive options, such as pump turn-offs.	BBD-033

Ch 4 p 28	"Voluntary Land Repurposing". **Comment: This PMA should be used with extreme caution. From the perspective of a cattle producer, set-aside programs restrict the availability of pasture. Some would characterize term contracts, easements, etc. as "private decisions" by landowners. However, when government is offering incentives for such decisions, the concept of "free-market decisions" doesn't apply. Our local economy and culture will be affected in unforeseen ways when productive ag ground is set aside**.	BBD-034
Ch 4 p 28	"Irrigated Margin Reduction." **Comment: This is another example of a program that will require enforcement, and will likely result in citizen-police who turn in their neighbors for following their natural instinct of trying to be productive.**	BBD-035
Ch 4 p 29	"Crop Support: To support crop rotation, particularly for grain crops, access to crop support programs may be important to ensure that this option is economically viable." **Comment: This seems to rely on a federal program over which the GSA has no control. Rather than focusing on such weak possibilities, the GSP should focus on local, on-the-ground supply-side projects to increase the water table.**	BBD-036
Ch 4 p 29 line 841	"For example, a corner of a field may be well suited for wildlife habitat, or solar panels or water storage." **Comment: The concept of pivot corners as reservoirs was brought up by a local rancher and merits attention. "Wildlife habitat" is more likely to be noxious weeds, which farmers will have to try to beat back from encroaching on their crops. Solar panels would require considerable infrastructure at great expense. Ponds, on the other hand, are relatively inexpensive to build and could contribute to groundwater recharge.**	BBD-037
Ch 4 p 30	"Tier III: Potential Future Project and Management Actions". **Comment: Some of these PMAs should not be relegated to Tier III. "Potential future" PMAs sends the clear message that these projects are not priorities, even though they are the least damaging and most promising for actually increasing the water table. Although they may take time to implement, these PMAs should be acted on <u>immediately</u>. (Examples: High mountain lake storage; MAR/ILR; reservoirs)**	BBD-038
Ch 4 p 30	"Alternative, lower ET crops." **This section may have some potential; however, funding dedicated to research on this topic should be minimal. Farmers and ranchers are quite aware of which crops have a market in our region. Assuming grants are in limited supply, we have plenty of other supply-side projects that merit funding.**	BBD-039
Ch 4 p 31	"Floodplain reconnection/expansion." **This section ties in with the concept of slowing the river/tributaries. For willing landowners, this holds potential to slow the flow and increase the water table. Conversations with landowners should be pursued. In this case, limited conservation easements may be appropriate.**	BBD-040

Ch 4 p 32	"High Mountain Lakes - This potential project class supports the restoration or modification of high-altitude lakes…." **Comment: Rather than referring to this PMA as "potential," it should be pursued immediately. Also, is it possible to include what percentage of depletion reversal would be gained from the 3,500 AF of storage? Using the metric used on other PMAs would be helpful.**	BBD-041
Ch 4 p 33	"Reservoirs….Still in the conceptualization phase, details of a reservoir project have not yet been confirmed." **Comment: This sentence insinuates a lack of interest in this PMA on the part of the GSA. This is perhaps the most promising PMA when it comes to benefits to all, and yet the topic is given one-half of one page in this chapter. Meanwhile, there are empty ponds and reservoirs that already exist in the valley, which could be used right away (albeit permitting may be required). As for potential future reservoirs, has anyone asked the landowners in those areas for their opinions? Why has this project been relegated to "Tier III" when all the most damaging options – turning off irrigation and repurposing ag ground—have had reams of research done on them?** **Several landowners have indicated they have ponds available. A survey should be conducted to assess how many existing ponds there are, and how many landowners would be willing to have new ones built on their land. Several locals have talked about using the dredger tailings and ponds to store even more water than they do now.**	BBD-042
Ch 4 p 33	"Strategic Groundwater Pumping Curtailment" **Comment: This section should be removed. This valley is not in an overdraft, and the GSP is on course to prevent that from happening without implementing any pump turn-offs. Including pump shut-offs as a potential future tool will result in pressure to use that tool. The mechanism should be removed entirely.**	BBD-043

COUNTY OF SISKIYOU

Flood Control & Water Conservation District

Reviewer name: Karin Newton

Submission date: 9/26/2021
GSP sections reviewed: Ch 1-4

Chapter, Page & Line number	Suggested revision	
Comment overview	Please note, I was one of 42 farmers and ranchers who submitted comments on the first draft. Our comments were largely ignored in the latest iteration of the GSP. The below comments are largely copied and pasted from the original comments.	KN-001
	One thing, however, is different in this draft: our name. Scott Valley is called just that—Scott Valley, not "Scott River Valley." Please remove all such references. Renaming our valley is an insult to our residents and an erasure our history.	KN-002
	A primary goal of this GSP should be to preserve and protect agriculture. The people who live in Scott Valley love it. Why is this place so special? It's beautiful, clean, rural, and safe. We know our neighbors because we've been able to establish deep roots in agriculture. Without agriculture, what would Scott Valley be? We have an obligation to allow our kids the opportunity to pursue the productive and honorable trade of agriculture, just as we have. The importance of agriculture to our nation's health and security need not be explained. Yet we must recognize that, on a local level, agriculture is just as crucial. We must protect it in order to preserve Scott Valley as we know and love it.	KN-003
	Benefiting agriculture and fish can be done by increasing our water supply—or, more appropriately, holding onto our water supply. **During 7 to 10 days of high spring flows, enough water flows out of the valley to supply all of Scott Valley's farmers and ranchers with the water they need for the whole irrigation season.** We must implement water storage projects, both above- and below-ground, in order to hold onto that water. This will benefit ALL beneficial users in Scott Valley.	KN-004
	Any project that puts increased regulatory burden on agriculture should not be considered in this plan. SGMA does not require punitive measures; the law simply asks the GSA to address groundwater quality and supply issues. Water storage measures are included in SGMA and therefore are attainable.	KN-005
	Proposals to turn off pumps and repurpose land away from agriculture will do damage to our economy, culture, and environment. Fallowed fields generally	KN-006

	make bad neighbors: hotbeds for noxious weeds and fire danger. The more we discourage farmers and ranchers from being productive, the more we invite subdivisions and urban sprawl. Also, by discouraging above-board productivity, we inadvertently encourage below-board, illegal activities such as marijuana cultivation, which is dangerous to our citizens and damaging to our environment--including water quality.	KN-006, Cont'd
	Furthermore, adding damaging regulations will invite a "snitch" culture where people turn in their neighbors for trying to be productive, care for their land, and provide for their families. Regulations that go against human nature will only cause conflict. We who live in Scott Valley must stand firm against any proposals to divide us and transform our landscape and culture away from agriculture.	KN-007
	<u>Again, SGMA allows for a wide variety of projects and management actions and does not mandate the use of punitive regulations.</u>	KN-008
	Please see the attached flyer that has been circulating with Scott Valley residents since mid-April. It encourages water storage, groundwater recharge, fish-friendly structures, and other projects and opposes well metering, fees and fines for water use, and forced pump turn-off dates.	KN-009
	It's been stated by more than one member of the Advisory Committee that this GSP development process "felt like a runaway train." Productive ideas that have had support from almost the entire committee—if not the entire committee—have been given very little attention by the Tech Team. It's time to put this plan back on track so that it suits the needs of Scott Valley.	KN-010
Detailed comments:		
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Ch 3 p 66	"Seasonal pumping restrictions in the non-Adjudicated Zone. • Voluntary pumping restrictions in the Adjudicated Zone. • Conservation easements that would limit irrigation in some or all water years." **Comment: These demand-side "solutions" will likely have undesirable results for Scott Valley's economy and environment and should be removed. Pumping restrictions will result in economic hardship, which could result in the forced sale of farms and ranches. Those properties would be divided into the smallest possible acreages, resulting in a denser population. Pressure would inevitably mount to revise the SV Area Plan to allow prime ag land to be subdivided into smaller pieces.** **Fields that are not watered will be overtaken by invasive weeds (dyer's woad, star thistle, etc). Therefore, ranches with conservation easements for non-irrigation will become bad neighbors: weed factories and fire**	KN-025

	hazards. (Note: language throughout Appendix 4a indicates that non-irrigated land will return to "native vegetation." This is not accurate. Circumstances have changed over the past 100 years: we have more drought and better drainage. "Native" vegetation will not reestablish itself. Without irrigation, invasive weeds will replace crops.)	KN-025, Cont'd
Ch. 4 p 5	"Under the Sustainable Groundwater Management Implementation Grant Program Proposition 68, grants can be awarded for planning activities and for projects with a capital improvement component. As such, state funds for reimbursing landowners for implementation of PMAs, including land fallowing and well-shut offs, currently cannot be obtained under this program." **Comment: This funding issue speaks to the point that productive projects such as water storage should be pursued, while land fallowing and well shut-offs should be avoided.**	KN-026
Ch 4 p 7	Table I PMA Summary Table. **Comment: Many promising ideas were proposed to the Tech Team to be included as Tier II or Tier III projects, with strong support from a sound majority of the Advisory Committee. Instead of including them in this table, those ideas were relegated to the last page of this report, with the reasoning that they "have not yet been investigated." Those proposals include: a study of the tailings for groundwater storage; recharge weirs; fish-friendly structures to decrease flow rates in Scott River and its tributaries; construction of a clay dam or permeable plug at the lower end of Scott Valley; and direct addition of water to the river during periods of low flow.** **It's hard to believe that none of these proposals have been investigated enough to put in the Tier II or III categories.** **Other PMAs listed in this table are addressed below.**	KN-027
Ch 4 p 13	"Avoiding Significant Increase of Total Net Groundwater Use from the Basin." **Comment: Although this MA does propose significant regulations on new wells, it may be appropriate to avoid overdrafts in the Valley. It embodies the principle of "first in time, first in right," which has long been used in California water law.**	KN-028
Ch 4. P 13 line 350	"[No net increase in groundwater use] can be achieved through exchanges, conservation easements, and other voluntary market mechanisms." **The GSA should be mindful of unintended consequences. For example, a market exchange, which is explored in more detail on p 19, could in fact encourage urban development of ag ground.**	KN-029

Ch 4. P 19 cutout	"Market instruments" cutout. **Comment: This troubling passage seems to encourage the conversion of ag land to urban development, because urban land uses less water. The example in the cutout even goes so far as to allow development of "natural lands" after a city buys out ag land—because now the city has "credits" for using less water than the ag land did. This entire section epitomizes tone-deafness and should be removed.**	KN-030
Ch. 4 p 21	"Beaver Dam Analogues." **Comment: this section should be expanded to include other fish-friendly structures to slow the flow of the mainstem and tributaries for aquifer recharge. This concept has the support of many landowners along the river. I am told that BDAs (in some form) were used on the mainstem of the Scott several years ago and that the project successfully raised the water table. This is not mentioned in the draft.** **Other fish-friendly structures could include inflatable bladders: rubber dams that can quickly be inflated or deflated as needed. Thousands of these are used all over the world, with decades of success. In some cases, aquifer recharge is the sole purpose (e.g., the Santa Ana Inflatable Rubber Dam Project, which supplies 100,000 Orange County residents with water each year.)** **Recharge weirs, while more permanent and potentially damaging to surrounding fields during high water events, are also used around the world to recharge aquifers. They can be designed to allow fish passage.**	KN-031
Ch 4 p 22	Upslope water yield projects. **The "Green infrastructure" proposal is good and could be expanded. Clearing conifers, juniper, and brush all has potential to do good for the watershed, on both private and public land. By including such projects in this proposal, the GSA can encourage and partake in federal and private projects.**	KN-032
Ch 4 p 23	"Irrigation Efficiency Improvements". **Comments: As this PMA is fleshed out, the GSA should take care not to punish those who have already upgraded and invested in efficient systems, while antiquated systems get the grants. Perhaps the only fair way to go is a "First come, first serve" application system.** **This section merits more attention. While it claims that stream depletion is reversed by 4, 12 and -2 percent based on different scenarios, it doesn't describe what those scenarios are (nor does Appendix 4-A, which is referenced for more info). While irrigation efficiencies could hold potential for depletion reversal, this PMA seems to be glazed over when compared to more punitive options, such as pump turn-offs.**	KN-033

Ch 4 p 28	"Voluntary Land Repurposing". **Comment: This PMA should be used with extreme caution. From the perspective of a cattle producer, set-aside programs restrict the availability of pasture. Some would characterize term contracts, easements, etc. as "private decisions" by landowners. However, when government is offering incentives for such decisions, the concept of "free-market decisions" doesn't apply. Our local economy and culture will be affected in unforeseen ways when productive ag ground is set aside**.	KN-034
Ch 4 p 28	"Irrigated Margin Reduction." **Comment: This is another example of a program that will require enforcement, and will likely result in citizen-police who turn in their neighbors for following their natural instinct of trying to be productive.**	KN-035
Ch 4 p 29	"Crop Support: To support crop rotation, particularly for grain crops, access to crop support programs may be important to ensure that this option is economically viable." **Comment: This seems to rely on a federal program over which the GSA has no control. Rather than focusing on such weak possibilities, the GSP should focus on local, on-the-ground supply-side projects to increase the water table.**	KN-036
Ch 4 p 29 line 841	"For example, a corner of a field may be well suited for wildlife habitat, or solar panels or water storage." **Comment: The concept of pivot corners as reservoirs was brought up by a local rancher and merits attention. "Wildlife habitat" is more likely to be noxious weeds, which farmers will have to try to beat back from encroaching on their crops. Solar panels would require considerable infrastructure at great expense. Ponds, on the other hand, are relatively inexpensive to build and could contribute to groundwater recharge.**	KN-037
Ch 4 p 30	"Tier III: Potential Future Project and Management Actions". **Comment: Some of these PMAs should not be relegated to Tier III. "Potential future" PMAs sends the clear message that these projects are not priorities, even though they are the least damaging and most promising for actually increasing the water table. Although they may take time to implement, these PMAs should be acted on <u>immediately</u>. (Examples: High mountain lake storage; MAR/ILR; reservoirs)**	KN-038
Ch 4 p 30	"Alternative, lower ET crops." **This section may have some potential; however, funding dedicated to research on this topic should be minimal. Farmers and ranchers are quite aware of which crops have a market in our region. Assuming grants are in limited supply, we have plenty of other supply-side projects that merit funding.**	KN-039
Ch 4 p 31	"Floodplain reconnection/expansion." **This section ties in with the concept of slowing the river/tributaries. For willing landowners, this holds potential to slow the flow and increase the water table. Conversations with landowners should be pursued. In this case, limited conservation easements may be appropriate.**	KN-040

Ch 4 p 32	"High Mountain Lakes - This potential project class supports the restoration or modification of high-altitude lakes…." **Comment: Rather than referring to this PMA as "potential," it should be pursued immediately. Also, is it possible to include what percentage of depletion reversal would be gained from the 3,500 AF of storage? Using the metric used on other PMAs would be helpful.**	KN-041
Ch 4 p 33	"Reservoirs….Still in the conceptualization phase, details of a reservoir project have not yet been confirmed." **Comment: This sentence insinuates a lack of interest in this PMA on the part of the GSA. This is perhaps the most promising PMA when it comes to benefits to all, and yet the topic is given one-half of one page in this chapter. Meanwhile, there are empty ponds and reservoirs that already exist in the valley, which could be used right away (albeit permitting may be required). As for potential future reservoirs, has anyone asked the landowners in those areas for their opinions? Why has this project been relegated to "Tier III" when all the most damaging options – turning off irrigation and repurposing ag ground—have had reams of research done on them?** **Several landowners have indicated they have ponds available. A survey should be conducted to assess how many existing ponds there are, and how many landowners would be willing to have new ones built on their land. Several locals have talked about using the dredger tailings and ponds to store even more water than they do now.**	KN-042
Ch 4 p 33	"Strategic Groundwater Pumping Curtailment" **Comment: This section should be removed. This valley is not in an overdraft, and the GSP is on course to prevent that from happening without implementing any pump turn-offs. Including pump shut-offs as a potential future tool will result in pressure to use that tool. The mechanism should be removed entirely.**	KN-043

COUNTY OF SISKIYOU

Flood Control & Water Conservation District

Review Form

Scott Groundwater Sustainability Plan

Dear Reviewer,

Per SGMA requirements, a Groundwater Sustainability Plan (GSP) has been developed for the Scott Valley groundwater basin. The GSA has released a complete draft GSP and has initiated a 45-day public review and comment period and seeks input from all beneficial users of groundwater.

REVIEWER INSTRUCTIONS:
Given the large number of reviewers, accommodating track changes or other editing options within the original draft sections distributed to all committee members is not possible. Please consider using this reviewer form with the following instructions:

- Use the form below to provide comments. Feel free to add additional lines to the form as needed.
- For suggested text changes, please copy and paste the text you wish to change and place your suggested edits in track changes or strikethrough features in this document. What's important is that technical staff can see *both* the original draft text and your distinct suggestions.
- Note the **Chapter, Page, Section, and line number**—from the ***PDF version*** of the draft GSP section—where your comment, question or suggested text edit begins.
- Examples of how to provide feedback are listed in the review form below. These examples are not actual comments and are made up to show how the table should be used. Feel free to delete these examples with your submission, and only include your feedback.
- To comment on a figure or table, in the line number column on the reviewer form note the figure number *and* the page number and type your comment in the text section to the right.

Please email comments directly to (sgma@co.siskiyou.ca.us). Include in the subject line the basin you are commenting on. If you are making comments on multiple basins, send as separate comments.

Please send your comments no later than end of day September 26, 2021. Comments will not be accepter on or after September 27th, 2021.

Please use the following file nomenclature in saving your review document:
ScottGSP_PublicReviewDRAFT_[Your name]_date

Thanks for contributing to the draft Groundwater Sustainability Plan for the Scott Valley Groundwater Basin

COUNTY OF SISKIYOU

Flood Control & Water Conservation District

Reviewer name: Sari Sommarstrom, Etna, sari@sisqtel.net
Submission date: 9/25/21
GSP sections reviewed:

Chapter	Page	Section	Line/Table/Figure #	Comment (*please delete example text below once you submit*)	
Overview				It's very frustrating to see that many corrections for Ch. 1-3 that I've offered over the past year are still not made in this "final draft" version. These are factual, not opinion, changes that are needed for accuracy.	SS-001
				Please be very careful when using online databases as sources without confirmation of accuracy by locally knowledgeable sources.	
				Citations should use primary references, not secondary, especially for groundwater topics. Example: Cite DWR for changes in well numbers over time, rather than SRWC's plan (which is citing DWR).	SS-002
1	7	1.4.3.1	243-249	RCDs are specifically listed here but are not specifically listed in the C&E Plan, as implied and should be. Please connect the dots also in Ch. 5.	SS-003
1	8	1.4.3.2	271	Add "nurseries" to list under Ag.	SS-004

1	9	1.4.3.3	302-303	Clarify whether the GSP Committee will continue as an advisory body to County. Unclear what "working groups" status will be during implementation, which "may be formed". Implementation phase will need serious opportunities for broad engagement to reach consensus on appropriate actions. PMAs in CH. 4 did not get serious discussion during GSP process, so the difficult lifting has yet to come.	SS-005
1	9	1.4.4	321-324	Clarify that RWB is involved with GSP for the Scott's Temperature TMDL, as the Sediment TMDL is not related to groundwater management.	SS-006
1	9	1.4.4	342	State what year the tour happened.	SS-007
1	10	1.4.4	347-353	This ad hoc group seems to have been quite narrow and informal, and had no public input beyond those invited. **The projects listed here were not all shared or discussed by the GSP Committee, so appear to have been developed outside the official, formal SGMA process!!** Their "wish list" of projects in Ch.4 should not have precedent over a formal, public process where fact-checking could be involved. **This method of "input" to the GSP just**	SS-008

				makes the SGMA process seem irrelevant.	SS-008, Cont'd
2	4	2.1.1	120	State the entire size of the Scott River watershed here (804 sq.mi.), so context of the Basin can be understood, including basin's 15.3% of watershed above the USGS gage (653 sq. mi.). Decree's interconnected zone represents 10% of the total gw basin.	SS-009
2	5	2.1.1	Fig. 1	Legend would be clearer if reworded to: "Scott River Valley Groundwater Basin and Adjudicated Groundwater Zone in Scott River Decree". Cite references for figure's info: DWR 2004 and Superior Court 1980.	SS-010
2	6	2.1.1.1	155-161	The Scott Decree covered the Scott River Stream System (not already adjudicated) and "interconnected groundwater" in a defined zone along the mainstem river was considered part of the stream system. So correct the statement that this was a "groundwater adjudication" (unlike other solely groundwater adjudications in CA). And correct the sentence about the extent of the 1980 decree, as all other tribs were included too.	SS-011
2	8	2.1.1.2	218-226 / Table 1	State clearly that the USFS - Klamath National Forest is the major	SS-012

				landowner in the Scott watershed at 35% of the total, with 63% private. Table needs to have acreage TOTAL on the bottom from the DWR survey, as total only comes to 40,688 acres of the 64,000 acres (100 sq. miles) of the basin. What is the other land use? "native vegetation" perhaps? Please amend this table so totals match.	SS-012, Cont'd
2	9	2.1.1.2	Fig. 3	"Selected roads" cannot be seen, only river and Hwy 3. Eastside and Scott River Road at least should be indicated as lines distinct from river.	SS-013
2	11	2.1.1.3	238	Add an intro sentence to state when well drilling reports became required to submit to DWR, as well as the County. Earlier wells would not be included in OSWCR. Check with Co. Env. Health – was in after 1990?	SS-014
2	13	2.1.2	293-298	Eliminate redundancy about Scott Valley Area Plan	SS-015
2	14-15	2.1.2	340-342	Update public trust court case: In 2018, the California Court of Appeal (Third Appellate District) opinion in *Environmental Law Foundation v. State Water Resources Control Board* case decided that the public trust doctrine applies to California's groundwater resources; and the application of that doctrine has not been displaced and superseded by the	SS-016

				California Legislature's 2014 enactment of SGMA.	SS-016, Cont'd
2	17	2.1.3	Table 2	Caption should state "Groundwater-related Monitoring, Plans, Programs and Tools in Scott Valley" to reflect actual contents of table. DWR is <u>not</u> regulatory for monitoring and other programs. Add CDFW's regulatory 1602 permit process for diversions. Add SWRCB: Monitoring – Required annual measuring and reporting of water use > 10af/y under SB 88 for all diversions. Wells within Decree's interconnected zone required to report annually since 1980 (Cummings 1980).	SS-017
2	18	2.1.3		Monitoring: Add both UCCE and County NR as doing well monitoring, monthly. Data for CASGEM & UCD model.	SS-018
2	20	2.1.3	416-418	Include a new table listing the USFS instream rights in the Scott Decree, which as 1st priority right are equal to other 1st priority rights (such as riparian and well rights). Very important to acknowledge here, and more directly relevant than Table 3's wish list by CDFW (see p. 21). The USFS flows do have a regulatory role.	SS-019

2	22	2.1.3	496-499 510	Add: Chinook salmon adult counts by CDFW (cite Knechtle 2021). CDFW would also be involved in permitting for MAR diversions during winter.	SS-020
2	23	2.1.3	553-561	State how frequently the CASGEM wells are monitored and by whom (UCCE and County NR)	SS-021
2	24	2.1.3	595-597	Who, if anyone, is implementing this monitoring plan? RCD used to get grants for this but not done in years. DATA GAP.	SS-022
2	28	2.1.3	760	DWR served as Watermaster for 5 streams from the 1950s until 2012.	SS-023
2	31	2.1.3	897	UCCE is currently monitoring x number of wells monthly for input into UCD model. Add: Orloff measured applied water use on 7-8 alfalfa farms in Scott Valley, important data for the SVIHM.	SS-024
2	32	2.1.3	925	Add: In 2005-06, the RCD partnered with others to develop the Community Groundwater Measuring Program (see below.)	SS-025
2	33	2.1.3	970 986 993	"The monthly data…". Note that this effort discontinued in 2018(?). Reword: "The diversion dam at Young's Point, east of Etna at river mile 46, has a large fish ladder to provide passage for adult and juvenile salmon and steelhead.	SS-026

				Clarify: "…must avoid impacting the SVID water right, which is a post-1914 appropriate right." Add: In 2015-2016, a groundwater recharge study was done with SVID and UCD on a small piece of property within the district (Dahlke 2016 – her brief report needs to be added to References). It is anticipated that more Managed Aquifer Recharge projects will be performed with SVID during GSP implementation.	SS-026, Cont'd
2	37	2.1.4.2	1162	Add: The Town's water supply is solely dependent upon groundwater, with its primary well located within the Scott River Decree's interconnected zone.	SS-027
2	38	2.1.4.2	1182	Add: The city's water source is solely surface water from a diversion off of Etna Creek above town.	
		2.1.4.4	1194	Add new section: "Siskiyou Land Trust: Conservation Easements": Several large ranches in Scott Valley, primarily on the eastside, have entered into conservation easements with the Siskiyou Land Trust. Primary restrictions pertain to further limits on non-agricultural development beyond existing governmental land use plans, in exchange for financial compensation.	SS-028

2	38	2.1.5.1	1200	Add at end of sentence, "…based on ordinance adopted in 1990."	SS-029
2	42	2.2.1	1325-26	Double check watershed size at 714 sq. mi., as other sources state 804 sq mi.	
			1340	Correct: Highest point in the watershed is China Mountain at 8,551 ft. (in the Scott Mountains), not Boulder Peak.	SS-030
2	44	2.2.1.2	1368	Cite original source for these figures, not secondary source of SRWC.	
			1373	Average (mean) annual rainfall at Callahan since 1943 is 20.5 inches, not 18 inches. Correct this number, to be in agreement with Fig. 7A. The reason the USFS-Fort Jones data has days missing is because they rarely read their gage on weekends or holidays, so daily totals can be skewed though monthly totals are usually accurate. NOTE: Getting accurate daily precipitation data at Fort Jones is a Data Gap to be filled, as a priority.	SS-031
			1384	Give citation for source of snowpack data. Link text to Table 5 for CDEC snow stations.	
2	45	2.2.1.2	Table 4	Fort Jones weather station data did not end on 4-17-20, nor did the Yreka station. You mean that date is	SS-032

				when you last downloaded the data for your analysis of Record Length and No. Missing Days. Correct the Caption to clarify.	SS-032, Cont'd
2	49	2.2.1.2	Table 5	KNF- Ranger District measures Scott Mountain, not BuRec. Also Marble Valley and Log Lake, when feasible. Add Length of Record for these sites, like you did for Table 4, which vary considerably. Describe range and mean of snow depths for each station. For April 1 and May 1 dates, which influence spring runoff flows and groundwater storage. (cite Deas and Tanaka 2006 for earlier data.) Scott River is a snow-rain based hydrology, as opposed to the Shasta's spring-fed hydrology. Important to state clearly someplace.	SS-033
2	62	2.2.1.5	**Missing**	Important to state somewhere the **Total Water Use in Scott Valley**. DWR's Land and Water Use Surveys have that data (2017 most recent?. Need use in acre-feet by type of use.	SS-034
			1691	The ~5 mile Tailings Reach is a significant perturbation in the river system and needs to be clearly identified as such here and elsewhere! The loss of fines means that the soil profile for water storage has been lost and this large reach	

			1704	does not retain water as well as other parts of the alluvium. "Timber harvest", not just "timber".	SS-034, Cont'd
2	63	2.2.1.5	1713-1715	Roads of all types, including USFS, county and residential, on steep and erodible soils created the majority of the sediment impacts, not just "logging" roads (Sommarstrom et al. 1990). The sediment data from our study was cited by the RWB as the basis for listing the Scott River as "impaired" for sediment, resulting in the Sediment TMDL.	SS-035
2	63	2.2.1.5	1746-47	Cite original source for groundwater use changes (i.e., DWR Land and Water Use Surveys), not a secondary reference. **Much more credible source about this very important point related to SGMA!**	SS-036
2	64	2.2.1.5	1756-1758	LESA-type systems can offer significant water savings and are increasing in use. Delete "not common" and get a quote from UCCE crop advisor in Yreka (Giuliano Guida) about their current and potential use, including % water savings. Very important for later PMAs!	SS-037
			1766	Very little irrigation diversions during the fall, after last cutting and	

				1768-1773	when crops go dormant (cite UCCE again, even if pers. comm.). Refer reader back to "Scott River Adjudication" section on pp.26-27 for more information. This description here is too brief for "Water Diversions". State that there is only on permanent diversion dam on the Scott River system, which is SVID's at RM 46. Other diversion structures (gravel push-ups) are temporary and removed at end of the season. You don't need to cite DWR 1991 for the fact about the USFS right, just cite "Superior Court…1980" that you already have used. Go to the direct source whenever you can, PLEASE.
2	64	2.2.1.6	1780		Someplace in this paragraph (and maybe in intro to the GSP), please state that the Scott River is one of the few undammed major rivers left in California. It's a relevant point when talking water management! And most outsiders don't get it.
				1793	Thank you for finally stating that snowpack is an important water source! It took a while for this plan to say it, but snowpack is a distinguishing feature for the Scott's hydrology. Hence, why you need to

SS-037, Cont'd

SS-038

				at least spend more time under Climate on p. 48-9, Table 5, etc.	SS-038, Cont'd
2	65	2.2.1.6	Figure 15	Not cited in text. Gages noted on map are not all active, so legend should distinguish between Current and Historic. Only 1 USGS gage. RCD had pressure transducer gages on Kidder, Patterson, Etna for awhile too, but not on CDEC. This map is misleading unless you correct it. Add a Table with the gage names and numbers and years active, including RCDs, to be helpful. Would be very relevant for Ch. 3 Monitoring later. See below also about gages.	SS-039
2	66	2.2.1.6	1804-1844	These descriptions (all from SRWC 2005) don't really add much to the hydrology discussion but would fit better maybe under Geography 2.2.1.1 as an overview of the watershed.	SS-040
2	67	2.2.1.6	1848-1872	Add a bar graph to show these 5 flow periods, or at least mean flows by month for USGS gage. More graphs would help here. Add citations for data in last 2 paragraphs: just look at USGS Station Description. Error in peak discharge: NOT 39,500 Maximum discharge, 54,600 ft^3/s, Dec. 22, 1964.	SS-041
2	68	2.2.1.6	Figure 16	Top graph is not helpful, especially without text describing what may be	SS-042

				seen, like more extremes since 1980 or so?? Add text to describe why 2nd graph is focusing on just these 4 water years.	SS-042, Cont'd
2	69	2.2.1.6	1878-1888	Refer to Fig. 15 here, though gage info would be better in a table. Correct the "end date" for ongoing, active gages: Shackleford (QVIR)/ French / Sugar / East Fk / South Fk, all operated by DWR. Footnote does not help clarify.	
			1889	There is no "strong" correlation between trib & river flows during summer. Distinguish someplace between perennial and ephemeral streams. Include Figure of 1882 USGS map, showing ephemeral tribs. I can re-send if needed.	SS-043
			1891-1904	Redundant with lines 1845-1857, though here is more detail.	
			1907-1910	Give citation for this finding.	
2	70	2.2.1.6	1911-1918	**This paragraph needs significant rewording**. Again, a good place to talk about naturally perennial and ephemeral streams! The 1882 map helps here. These alluvial fan reaches were called "arroyos" in 1852 (Gibbs). You're giving the strong impression that these alluvial fans would never dry out naturally, which is not accurate. Add that South Fork and East Fork are perennial in all	SS-044

				years. And it's in very dry years, or multiple drought years, when few tribs flow at confluences with Scott, though still contributing sub-surface to groundwater ("cold springs" felt in river). **Upper reaches of all of the westside tribs have continuous flows, even during drought years,** which is where the juvenile coho and steelhead rear in colder waters. Fig. 18 indicates these upper reaches too. Cite SRWT for such flow data, which is where it leases water.	SS-044, Cont'd
2	70	2.2.1.6	1919-1929	What "previous section"? Add graph to depict change in baseflow. Here you're moving beyond just the existing Hydrology of the Basin and into "it would be nice" expectations of others, which are debatable. Cite USFS flow minimums as from Decree, with some legal legitimacy. CDFW flows were from an in-house report that was never publicly reviewed and had a lot of flaws, in my opinion. But not of the same legal standing as the decree's flow for USFS, which is a 1st priority right equal to all other 1st priority rights (i.e., wells and riparian). So please be careful how you depict these. Based on CDFW's flows, the Scott would almost never have received any coho	SS-045

				or Chinook adult spawners in the fall, yet the fish data show that's not true. Scott has had improving coho runs for 20 years, and average Chinook runs when precip is >50%. Again, this paragraph does not objectively describe the hydrology. **This subjective description needs to be moved to a later section, so the fish data can be balanced with the hydrology data**.	SS-045, Cont'd
2	70	2.2.1.6	1936-1941	Here you're talking about precipitation patterns "below average and dry" years, which needs its own graph to depict. Fig. 16 only refers to flows and the top graph is too busy to see well. Overlaying WY type bar graph with line graph of mean annual flows between 2000 and 2020 might help show this pattern, which is really very relevant to GSP. You do conclude that low precip has led to lower baseflows, yet you need to present a graph of precip. Also, much less rainfall during September in past decades. I'll attach a spreadsheet I have of this data. Connecting the dots between precip and flows is helpful here.	SS-046
2	71		Figure 17	As noted above, this graph of "desired flows" misrepresents actual fish passage during the fall months.	SS-047

				So it shouldn't be here in this section, but later when comparing Expected vs Actual vs Fish Access. The Scott's Chinook spawning numbers usually have mimicked the pattern of the entire Klamath River's, with the exception of a few extreme drought years. That indicates access was not usually the barrier (see Knechtle 2021).	SS-047, Cont'd
2	73	2.2.1.7	1960	Fig. 18 as intended is missing, as text does not describe the actual Fig. 18 presented. An important figure to include!	
			1981	Figures 25 and 26 are missing too.	
			Missing	Location and size of wells seems to be an important indicator of stream depletion. Somewhere in this section, it would seem appropriate to cite the USGS report by Barlow & Leake (2012): <u>Streamflow depletion by Wells.</u> "When discussing stream depletion of a well with a cyclic pumping rate (daily or annually) the calculated stream depletion from a well within 300-500 feet of the stream is about 33% of the pumping rate. The further the well is from the stream, the lower the depletion rate. (Page 28). Using a simulation, with a well pumping about 700 gpm and a	SS-048

				distance of about 1,400 feet from the stream, the infiltration rate was zero. (Page 37, Fig 28)"	SS-048, Cont'd
2	74	2.2.1.7	2008	No Figure 4 is included.	SS-049
2	75	2.2.1.7	2038	Unclear what assumption is about Sept-Oct rainfall with these estimates. Please clarify.	SS-050
2	78	2.2.1.8	Table 8	*Populus tricocarpa* or Black Cottonwood is the common species found in Scott Valley, with Fremont found only along Moffett Creek near Hwy 3. There also is no Valley Oak in the valley. Please correct the table. Check with any local botanist, or Tom Jopson, horticulturalist.	SS-051
2	81	2.2.1.8	Figure 19	Dredger Tailings reach, a severely disturbed river bottom area, should be delineated on this map, as its existing riparian locations are not natural.	SS-052
2	82	2.2.1.8	Table 9	Bald Eagle was removed from the ESA in 2007. Delete here and in text. Clarify Status of each species as under State and/or Federal designation.	SS-053
2	84	2.2.1.8	2264-65 2274-76 2277-78 2280-83	"…several species of anadromous fish…" It's home to many species of other fish. Redundant. Add: "…during critical life stages."	SS-054

				Coho and steelhead prefer to spawn in the coldwater tributaries, where their young can rear for one year before returning to the ocean. Steelhead use all tribs, not just those listed. Chinook prefer the larger gravels of the mainstem for spawning in the fall and their juveniles leave the system before summer. Timing is everything! PLEASE use primary sources here – like CDFW - and not SRWC. (i.e., Knechtle 2021; Maria 2006)	SS-054, Cont'd
2	85	2.2.1.8	Missing	Add heading: **Population Trends.** Insert graph of coho adult numbers from 2007-2020 from CDFW's annual report (Knechtle 2020). The Scott's coho population is the highest in the Klamath and one of the highest in the State. An important POINT!! So much emphasis on the Scott's rumored coho "going extinct", that this omission is HUGE here. Ugh.	SS-055
			2292-2299	Describe the 3 different brood years. Coho in the Scott spawn in the cold water, perennial sections of tribs, when accessible, where juveniles can survive the summer. State here under Life Cycle.	
2	86	2.2.1.8	2339	IP reaches were based mainly on GIS evaluation of slope access by	SS-056

		2366 – Table 10	spawners, not perennial flows. No field data were used, unlike RCD. Scott River Water Trust has prioritized trib reaches for leasing of water for coho summer rearing habitat in: French-Miners, Shackleford, Patterson, South Fork (SRWT website). Note which tribs are in canyon below valley in Table.
		missing	"Flow Problems": If the mainstem has sufficient flow to get coho spawners into Scott Valley, as it did in Fall 2013 at 50-60 cfs, there still needs to be flow access into their natal tribs. In 2013, over 2,700 coho adults were stuck spawning in the mainstem Scott due to lack of rain creating runoff into tribs. Precipitation came as snowfall in the higher elevations but rain in the valley, and this large brood year was stuck. They spawned on top of Chinook redds previously laid. With an extreme drought year, flow conditions in 2014 demanded a cooperative effort to rescue and relocate 160,000 juvenile coho from the mainstem into the upper tribs where cold water habitat was available. Cite: Magranet, 2015, RCD (I can send to you. Excellent data and analysis.)

SS-056, Cont'd

2	87	2.2.1.8	2375-76 2378 Missing	Provide citation for statement that spring-run Chinook were historically found in Scott River. I've never found any credible source. If none, please delete or say "rumored". Chinook may enter the mouth of the Scott River in late September, but CDFW video weir data shows they do not move up until October. Outmigrant timing can also be found in CDFW's annual salmon report (Knechtle 2021). Add that outmigrants then need to navigate the Klamath River's habitat for 143 miles before reaching the ocean. "**Population Trends":** add Heading. Include graphs from CDFW (Knechtle 2021). Add text.	SS-057
2	88	2.2.1.8	2390-2391 Missing	Cite RCD & USFS Chinook spawning surveys. Cite Knechtle for concerns about flow access during spawning. "Population Trends" for Steelhead: Here you can see there's too little data to conclude. Outmigrant data can be found in Knechtle and other CDFW reports.	SS-058
2	89	2.2.1.8	2423 2431	Lamprey habitat is VERY different from salmonids, as the young need lots of sand and mud to burrow.	SS-059

			2452	State that much more habitat and population data have been collected since 2005 (CDFW, RCD, SRWC). Note that no water quality trend data has been collected for many years on sediment and temperature, due to lack of funding. Delete bald eagle. Bank swallow's use of river banks is seasonal: only during spring nesting.	SS-059, Cont'd
2	90		Table 11	Delete bald eagle.	SS-060
2	91	2.2.2.1	2488	Identify source of data. Need text for Fig. 21 and relevance.	
			2494-98	Cite primary, credible source for this critical fact: DWR, not SRWC (and I wrote that section for SRWC, citing DWR's Land and Water Use Surveys).	SS-061
			2518-2520	Valuable observation but would benefit from graph of rainfall for this time period here or earlier. Connect to Fig. 22 someplace?	
2	94	2.2.2.2	Missing	Add a map here of these 6 areas from Harter & Hines (2008) to be helpful.	SS-062
2	115	2.2.3.2	3148	Pertinent Figure 22 missing here, and previous Fig. 22 not relevant.	SS-063
2	131	2.2.5	2574	Figure on groundwater use amount at 42,000 ac-ft. But where did that figure come from? How does it compare to current use, as estimated by DWR's Land & Water Surveys (based on AW by crop type acreage)?	SS-064

				Text Box	Text is fine until you get to specific examples of PMAs, which may or may not be deemed cost-effective if evaluated seriously. It seems that climate change is the Big Gorilla in the room about Input of water, yet that's not mentioned here.
2	133-141	References	Missing / errors	Combine DWR refs with CDWR. Add the following: **exact titles & pdfs will be sent soon.* *Dahlke. 2016. (Recharge study results with SVID). Lee. 2016. (see line 1299) Siskiyou Land Trust – website. Barlow, P.M and Leake, S.A. 2012. Streamflow depletion by wells – Understanding and managing the effects of groundwater pumping on streamflow.USGS Circular1376.84 p. Knechtle, M. 2021. "2020 Scott River Salmon Studies". CDFW, Yreka. *Maria, Dennis. 2006. "Juvenile Steelhead Surveys in French Creek: 1990-2005" CDFG, Redding. *Magranet, Lindsay. 2015. "Juvenile Coho Salmon Rescue and Relocation Cooperative Effort in 2014, Scott River". Siskiyou RCD, Etna.
3	3	3.1	99	SGMA has a baseline date of 2015 conditions for groundwater – please clarify here or soon for this chapter.

SS-064, Cont'd

SS-065

SS-066

3	4	3.2	171	"not allowed to worsen" beyond what baseline?	SS-067
3	6	3.3	Table 1- Levels	DWR is going to start doing airborne electromagnetic technology from helicopters to survey groundwater basins in high and medium priority SGMA basins. Data creates an image of the subsurface down to depth of 1,000 feet. See DWR's website under SGMA/AEM.	SS-068
3	7	3.3	290-296	Need to add: "**Well Activity",** as inactive wells are much more useful than active wells due to drawdown effect on data. Our Community Well Program had this as one of its selection criteria, so their data for UCD would be useful. However, current well monitoring for CASGEM and maybe by UCCE does not appear to indicate whether the well is active at time of measurement, making data interpretation problematic. Is intent to be manually measured monthly or continually via data logger?	SS-069
3	8	3.3		Distinguish between TREND and PROJECT monitoring purposes.	SS-070
3	10-11	3.3.1.1	391-394/Table 2	My husband and I own 2 wells as RMPs: P0002M and G31. The 1st well is actively used most days at our	SS-071

			411-415	nursery, more so in recent years during the May-Sept period. Due to drawdown effect while being pumped, we're not sure the data will be as useful as you hope. County and UCCE collected data for this well need to be compared for accuracy. Monthly data seems optimum versus bi-annual (too little) and daily (too much) frequencies. Please recommend what is best for GSP monitoring.	SS-071, Cont'd
3	29	3.3.5.2	1065-1071 / Table 4	DWR gages already exist on East & South Fk, French & Shackleford! Data source of % trib inflows?	SS-072
4	7-8	4.1	**Table 1**	These PMAs are quite a mish-mash and laundry list of ongoing and potential projects. "Habitat Improvement" does not belong on this list as not directly relevant to Demand & Supply needs, with funding available elsewhere, or put in a separate table as "Indirect PMAs". Much better strategy is to use **App. 5-A PMA Prioritization & Scoring System** sooner than later, as many now listed will not be cost-effective. Add MONITORING as a Category, or your proposed Ch.3 actions will not be funded without attention here.	SS-073
	23			Move **Irrigation Efficiency** to Tier 1	SS-074

	as a High Priority and expand description based on UCCE Crop Advisor's input. Costs are known. Benefits are being quantified by UCCE and others. Orloff measured water use and crop yield with different center pivot emitter styles, and ongoing studies now by Yreka office. Add Measurable Objective based on well meter records, with incentive for metering (already required on Decree's wells). Incentives are there for well owners and irrigators, saving pumping costs too. Up to 30% reduction in use seems credible with best center pivot design, along with using soil moisture probes and fallowing corners.	SS-074, Cont'd
WHAT's MISSING MOST	This GSP is lacking a key component of all effective plans – **POLICIES**. These come after Goals/Objectives and before Actions, as they direct how actions will be taken. Just because DWR's template didn't require them doesn't mean they're not needed. The County's General Plan has policies, for example. What about "Well Drilling Permits" as a PMA, for example, as an improved direction by County? Is the status	SS-075

quo fine, or are changes needed? I think most observers will say improvements are needed. Possible Policy: "*County will work to improve the quality of its well permitting program, including data storage and retrieval, identifying abandoned wells, and meeting legal requirements of the Scott River Decree and the Public Trust Doctrine."* Might be a tough pill to swallow, but it is what is needed.

SS-075, Cont'd

COUNTY OF SISKIYOU

Flood Control & Water Conservation District

To: Siskiyou County Board of Supervisors
From:
Theodora Johnson, Paul Sweezey, Lauren Sweezey, Dave Johnson, Paul Dowling, Taylor Dowling, Karin Newton, Everett Dowling, Allen Dowling, Sam Thackeray, Jennifer Thackeray, Doug Jenner, Gail Jenner, Shelene Johnson, Lynda Beverlin, Mark Johnson, Roy Johnson, Tom Hayden, Alan Piersall, Melissa Johnson, Clara Johnson, Jim Johnson, Matt Johnson, John Burrone, Charles Martin, Charlie Hayden, Frank Hayden, Connor Martin, Rick Hayden, Cheryl Hayden, Bernard Dowling, Beverly Dowling, Tim Johnson, Michele Johnson, Carl Hammond, Jr., Robert Bartnek, Curtis Sweezey, Brittney Sweezey, Jaclyn Boyce, Carolyn Pimentel, Tim McNames, Judy McNames

Submission date: 9-21-2021
GSP sections reviewed: We are Scott Valley residents and are asking for these changes to the Scott Valley SGMA Plan

Last week's SGMA Public comment meeting in Fort Jones CA. was successful in discussing several of these changes. It was stated by Dr. Thomas Harter and Matt Parker that the name Scott Valley will be the name used in the plan and not Scott River Valley. Also was clarified and changed was water storage will be in the first tier of the plan not the third. This may seem like a small change for some but for us as farmers and ranchers this is a huge change for the better. Thank you to all the Board Supervisors and the SGMA Planning Committee that listen to our needs. Let's keep working as a Team!
Lauren Sweezey

Chapter, Page & Line number	Suggested revision	
Comment overview	Please note, comments were submitted on the first draft of the GSP by the abovementioned 42 commentors. Most of these individuals are Scott Valley farmers and ranchers who will be directly affected by this GSP. Yet, our comments were largely ignored in the latest iteration of the GSP. The below comments are largely copied and pasted from the original comments.	LS-001
	One thing, however, is different in this draft: our name. Scott Valley is called just that—Scott Valley, not "Scott River Valley." Please remove all such references. Renaming our valley is an insult to our residents and an erasure our history.	LS-002
	A primary goal of this GSP should be to preserve and protect agriculture. The people who live in Scott Valley love it. Why is this place so special? It's beautiful, clean, rural, and safe. We know our neighbors because we've been able to establish deep roots in agriculture. Without agriculture, what would	LS-003

Scott Valley be? We have an obligation to allow our kids the opportunity to pursue the productive and honorable trade of agriculture, just as we have. The importance of agriculture to our nation's health and security need not be explained. Yet we must recognize that, on a local level, agriculture is just as crucial. We must protect it in order to preserve Scott Valley as we know and love it. LS-003, Cont'd

Benefiting agriculture and fish can be done by increasing our water supply—or, more appropriately, holding onto our water supply. **During 7 to 10 days of high spring flows, enough water flows out of the valley to supply all of Scott Valley's farmers and ranchers with the water they need for the whole irrigation season.** We must implement water storage projects, both above- and below-ground, in order to hold onto that water. This will benefit ALL beneficial users in Scott Valley. LS-004

Any project that puts increased regulatory burden on agriculture should not be considered in this plan. SGMA does not require punitive measures; the law simply asks the GSA to address groundwater quality and supply issues. Water storage measures are included in SGMA and therefore are attainable. LS-005

Proposals to turn off pumps and repurpose land away from agriculture will do damage to our economy, culture, and environment. Fallowed fields generally make bad neighbors: hotbeds for noxious weeds and fire danger. The more we discourage farmers and ranchers from being productive, the more we invite subdivisions and urban sprawl. Also, by discouraging above-board productivity, we inadvertently encourage below-board, illegal activities such as marijuana cultivation, which is dangerous to our citizens and damaging to our environment--including water quality. LS-006

Furthermore, adding damaging regulations will invite a "snitch" culture where people turn in their neighbors for trying to be productive, care for their land, and provide for their families. Regulations that go against human nature will only cause conflict. We who live in Scott Valley must stand firm against any proposals to divide us and transform our landscape and culture away from agriculture. LS-007

Again, SGMA allows for a wide variety of projects and management actions and does not mandate the use of punitive regulations. LS-008

Please see the attached flyer that has been circulating with Scott Valley residents since mid-April. It encourages water storage, groundwater recharge, fish-friendly structures, and other projects and opposes well metering, fees and fines for water use, and forced pump turn-off dates. LS-009

	It's been stated by more than one member of the Advisory Committee that this GSP development process "felt like a runaway train." Productive ideas that have had support from almost the entire committee—if not the entire committee—have been given very little attention by the Tech Team. It's time to put this plan back on track so that it suits the needs of Scott Valley.	LS-010
Detailed comments:		
Executive Summary p 8	**As noted above, we lose most of our water as flow down the river and to the ocean:** "Annual outflow from the Basin occurs largely as Scott River flow exiting the Basin to the northwest (ranging -689 to -85 TAF, median of -292), though a significant portion leaves as ET (-130 to -90 TAF, median of -112)."	LS-011
Exec Summ p 11	This GSP relegates our most promising water storage projects to "Tier III" implementation—meaning "Additional PMAs that may be implemented in the future, as necessary 284 (initiation and/or implementation 2027–2042)." Meanwhile, "Tier II" projects have concrete plans to start right away. One of those projects, "voluntary managed land repurposing," is problematic for Scott Valley. Removing ag land from the equation means our kids will have lower chances of continuing our farming and ranching tradition. What will take its place?	LS-012
Ch 1 p 6	"Consensus building is a foundational principle of all committee discussions, and membership is intended to reflect the diversity of beneficial groundwater uses and users in Scott Valley." **Comment: It can't be said that every PMA listed has consensus among AC members. On numerous occasions, members of the irrigation ad hoc committee have voiced their disapproval of proposals to turn off pumps, yet that option remains in the plan.** **Furthermore, the Tech Team held separate "ad hoc" committee meetings but never provided the full AC with an opportunity to meet in-person to find common ground. The subcommittees seemed to be working in silos.** **To the question of whether the AC represents the diversity of Scott Valley, it should be noted that cattle producers are not represented on the Committee, even though they represent a sizeable portion of the valley's economy, affected land area, and culture.**	LS-013
Ch 1 p 7	"The final section of the C&E Plan describes outreach strategies which the local GSA employs to effectively advance SGMA implementation. Specific tools and forums include the following: • Advisory committee meetings • Constituent briefings with local organizations • Tribal engagement • Public meetings and workshops • GSA Board meetings • Coordination with local resource conservation districts • Coordination with state and federal agencies •	LS-014

	Integration of relevant studies and materials • Interested parties list • Informational materials • County SGMA website • Local media and public service announcements" **Comment: The listed public outreach goals have, unfortunately, not been met. A very important group of stakeholders—landowners who use enough water to be affected by SGMA regulations—has been largely unaware of the GSA's activities to date, and until very recently has not been educated about SGMA. "Broad stakeholder input and feedback" has not been happening, at least among Scott Valley's farmers and ranchers.** **The excuse of "COVID" should not prevent our affected stakeholders from having meaningful engagement in this process. Zoom meetings led by the Tech Team do not constitute an open, accessible forum for most farmers and ranchers. Most of the "meetings" were held in the middle of the work day. In-person meetings should be held, at times convenient for farmers and ranchers.**
Ch 2 p 37	"The [Scott Valley Area Plan] includes multiple goals and policies that align with those in the GSP. Specifically, the focus on managing growth in a sustainable way while protecting priority agricultural lands and natural resources is an overarching theme in both the SVAP and the GSP." **Comment: The SVAP is explicit about protecting agricultural land. The GSP draft should explicitly protect ag, as well. (This comment was also made in the first draft, which means "agriculture" was deliberately left out. Why?)**
Ch 2 p 42	"The Valley and headwater tributaries of the mountains surrounding Scott Valley provide key spawning and rearing habitat for native anadromous fish species, including Oncorhynchus tschawytscha (Chinook salmon), Oncorhynchus kisutch (coho salmon) and Oncorhynchus mykiss (steelhead trout). Coho salmon in the Southern Oregon Northern California Coast Evolutionary Significant Unit (SONCC ESU) are listed as threatened at both the federal and state levels (NCRWQCB 2005)." **Comment: It should be noted that the Scott has never been prime habitat for coho. We are at the very bottom of the coho's natural range. Coho are harvested in great numbers off the coast of Alaska. This assertion is supported by the Shasta Indian tribe, which has stated that the Klamath (and by extension the Scott) is, "since time immemorial," historically unfit for coho. Additionally, a CDFW publication from 2007 refers to coho as a coastal fish that doesn't like to spawn farther than 20 miles inland (California Finfish and Shellfish Identification Book - a**

LS-014, Cont'd

LS-015

LS-016

companion guide to the California Fishing Passport, California Department of Fish and Game, 2007).

It should further be noted that the Chinook is also harvested commercially in the northern Pacific.

Both Coho and Chinook populations are affected by many factors, such as gill netting (some Yuroks say they "don't know how a single fish gets up the river"); predation at the mouth of the Klamath; oceanic decadal oscillation; and more. This SGMA process must not be used as a weapon to target groundwater pumping when in fact many variables affect these species.

LS-016, Cont'd

Ch 2 p 76

"Identification of Groundwater Dependent Ecosystems". This section is troubling. No agricultural members of the Advisory Committee were invited to join the "Surface Water" subcommittee that helped create this section. Nor were ag members given a very clear picture of what the Surface Water subcommittee was doing.

Meanwhile, the Surface Water subcommittee was doing some pretty major things: "The group was created to assist with the identification of high-priority habitat, define a healthy hydrologic system in the Basin, and define metrics indicative of ecosystem health to assist in the definition of measurable objectives, undesirable results, and associated monitoring activities." Clearly, these important aspects should have had the entire Advisory Committee's consultation. This does not appear to have been the case.

It seems the drafters of the GSP expected some blowback on this. On page 81, the GSP states, "A total of seven meetings [of the Surface Water subcommittee] were held between February 2020 and March 2021." No other subcommittee meetings were documented this way in the GSP. This seems to be an attempt to legitimize the somewhat cover-of-darkness process by which this section was developed.

LS-017

Some details about GDEs that should be addressed are:

- Maps: Presence of a GDE on one's property seems as though it could have real ramifications. The GDE map on p 81 lacks any detail. Landowners should be able to see whether they are a target of extra scrutiny.
- In two instances (western pond turtle and yellow-legged frog, p 85), the language points explicitly to "groundwater pumping" as potentially damaging. This is inappropriate. The main threat is drought. Placing blame on pumping implies the GSA's intent to curtail

	pumping. This is not necessary; we should pursue supply-side projects, which would alleviate the potential threats to these species.	LS-017, Cont'd
Ch 2 p 131	"For the Scott Valley, the sustainable yield is equal to the 28 year average groundwater pumping of 42 thousand acre-feet per year minus any future reduction in groundwater pumping resulting from the implementation of project and management actions (see Chapter 4)…" **This should be removed. Reductions of groundwater pumping should not be part of the GSP. As noted in numerous instances, there is no overdraft of water in Scott Valley, unlike some other basins developing GSPs. (Example: "Historical water levels indicate that there is no overdraft and no long-term decline in water levels" in Scott Valley (Ch 3 p 41).)**	LS-018
Ch 3 p. 25	"The GSA plans to collaborate with other entities to add monitoring locations to fill data gaps." **Comment: The GSA should make clear that it will only accept verifiable data. Trust could become an issue for the public with the GSA accepting data from third parties.**	LS-019
Chr. 3 p 59	"that is, what is an "unreasonable" amount of streamflow depletion, which could be reframed as: what is a "reasonable" amount of avoided groundwater use?" **Comment: The latter question is flawed. Streamflow depletion reversal should be achieved by <u>adding water</u> to the equation, not by cutting back on current use (unless voluntary irrigation efficiencies are made).**	LS-020
Ch. 3 p. 60	"The MAR-ILR scenarios, once fully implemented, provide a relative streamflow depletion reversal that averages 19% during September–November…" **Comment: I support this PMA but I am concerned 19% may be a high estimate. How many of the landowners in the proposed areas have been contacted to see if it will work for them? Also, more detailed maps than what's available in Appendix 4a would be helpful.**	LS-021
Ch. 3 p. 61	"The average relative stream depletion reversal of the implemented PMAs during September–November must exceed 15% of the depletion caused by groundwater pumping from outside the adjudicated zone in 2042 and thereafter." **Comment: Since this self-imposed percentage is in bold and is so specific, the GSP should give a brief explanation of how it was arrived at.**	LS-022
Ch 3 p 61	**These five-year goals for stream depletion reversal (5% by 2027, 10% by 2032, 15% by 2037) may need to be revised in order to accommodate the less expedient but more beneficial supply-side projects, such as reservoir-building and MAR/ILR.**	LS-023

Ch. 3 p 64	"This explicit linkage between the measurable objective with the aspirational watershed goal also provides flexibility for compliance with potential future regulations or actions, in an integrated water management approach." **Comment: Agreed. As such, we should be proposing projects related to water storage, groundwater recharge, and instream structures to slow the flow. Regulatory hurdles, while inevitable, should not be used as a reason not to pursue these worthy projects. They are they only projects that will help achieve our groundwater goals without doing economic harm to a large swath of Scott Valley's farmers and ranchers.**	LS-024
Ch 3 p 66	"Seasonal pumping restrictions in the non-Adjudicated Zone. • Voluntary pumping restrictions in the Adjudicated Zone. • Conservation easements that would limit irrigation in some or all water years." **Comment: These demand-side "solutions" will likely have undesirable results for Scott Valley's economy and environment and should be removed. Pumping restrictions will result in economic hardship, which could result in the forced sale of farms and ranches. Those properties would be divided into the smallest possible acreages, resulting in a denser population. Pressure would inevitably mount to revise the SV Area Plan to allow prime ag land to be subdivided into smaller pieces.** **Fields that are not watered will be overtaken by invasive weeds (dyer's woad, star thistle, etc). Therefore, ranches with conservation easements for non-irrigation will become bad neighbors: weed factories and fire hazards. (Note: language throughout Appendix 4a indicates that non-irrigated land will return to "native vegetation." This is not accurate. Circumstances have changed over the past 100 years: we have more drought and better drainage. "Native" vegetation will not reestablish itself. Without irrigation, invasive weeds will replace crops.)**	LS-025
Ch. 4 p 5	"Under the Sustainable Groundwater Management Implementation Grant Program Proposition 68, grants can be awarded for planning activities and for projects with a capital improvement component. As such, state funds for reimbursing landowners for implementation of PMAs, including land fallowing and well-shut offs, currently cannot be obtained under this program." **Comment: This funding issue speaks to the point that productive projects such as water storage should be pursued, while land fallowing and well shut-offs should be avoided.**	LS-026
Ch 4 p 7	Table I PMA Summary Table. **Comment: Many promising ideas were proposed to the Tech Team to be included as Tier II or Tier III projects, with strong support from a sound majority of the Advisory Committee. Instead of including them in this table, those ideas were relegated to the last page of this report, with the reasoning that they "have not yet been investigated." Those proposals**	LS-027

	include: a study of the tailings for groundwater storage; recharge weirs; fish-friendly structures to decrease flow rates in Scott River and its tributaries; construction of a clay dam or permeable plug at the lower end of Scott Valley; and direct addition of water to the river during periods of low flow. **It's hard to believe that none of these proposals have been investigated enough to put in the Tier II or III categories.** **Other PMAs listed in this table are addressed below.**	LS-027, Cont'd
Ch 4 p 13	"Avoiding Significant Increase of Total Net Groundwater Use from the Basin." **Comment: Although this MA does propose significant regulations on new wells, it may be appropriate to avoid overdrafts in the Valley. It embodies the principle of "first in time, first in right," which has long been used in California water law.**	LS-028
Ch 4. P 13 line 350	"[No net increase in groundwater use] can be achieved through exchanges, conservation easements, and other voluntary market mechanisms." **The GSA should be mindful of unintended consequences. For example, a market exchange, which is explored in more detail on p 19, could in fact encourage urban development of ag ground.**	LS-029
Ch 4. P 19 cutout	"Market instruments" cutout. **Comment: This troubling passage seems to encourage the conversion of ag land to urban development, because urban land uses less water. The example in the cutout even goes so far as to allow development of "natural lands" after a city buys out ag land—because now the city has "credits" for using less water than the ag land did. This entire section epitomizes tone-deafness and should be removed.**	LS-030
Ch. 4 p 21	"Beaver Dam Analogues." **Comment: this section should be expanded to include other fish-friendly structures to slow the flow of the mainstem and tributaries for aquifer recharge. This concept has the support of many landowners along the river. I am told that BDAs (in some form) were used on the mainstem of the Scott several years ago and that the project successfully raised the water table. This is not mentioned in the draft.** **Other fish-friendly structures could include inflatable bladders: rubber dams that can quickly be inflated or deflated as needed. Thousands of these are used all over the world, with decades of success. In some cases, aquifer recharge is the sole purpose (e.g., the Santa Ana Inflatable**	LS-031

	Rubber Dam Project, which supplies 100,000 Orange County residents with water each year.) **Recharge weirs, while more permanent and potentially damaging to surrounding fields during high water events, are also used around the world to recharge aquifers. They can be designed to allow fish passage.**	LS-031, Cont'd
Ch 4 p 22	Upslope water yield projects. **The "Green infrastructure" proposal is good and could be expanded. Clearing conifers, juniper, and brush all has potential to do good for the watershed, on both private and public land. By including such projects in this proposal, the GSA can encourage and partake in federal and private projects.**	LS-032
Ch 4 p 23	"Irrigation Efficiency Improvements". **Comments: As this PMA is fleshed out, the GSA should take care not to punish those who have already upgraded and invested in efficient systems, while antiquated systems get the grants. Perhaps the only fair way to go is a "First come, first serve" application system.** **This section merits more attention. While it claims that stream depletion is reversed by 4, 12 and -2 percent based on different scenarios, it doesn't describe what those scenarios are (nor does Appendix 4-A, which is referenced for more info). While irrigation efficiencies could hold potential for depletion reversal, this PMA seems to be glazed over when compared to more punitive options, such as pump turn-offs.**	LS-033
Ch 4 p 28	"Voluntary Land Repurposing". **Comment: This PMA should be used with extreme caution. From the perspective of a cattle producer, set-aside programs restrict the availability of pasture. Some would characterize term contracts, easements, etc. as "private decisions" by landowners. However, when government is offering incentives for such decisions, the concept of "free-market decisions" doesn't apply. Our local economy and culture will be affected in unforeseen ways when productive ag ground is set aside**.	LS-034
Ch 4 p 28	"Irrigated Margin Reduction." **Comment: This is another example of a program that will require enforcement, and will likely result in citizen-police who turn in their neighbors for following their natural instinct of trying to be productive.**	LS-035
Ch 4 p 29	"Crop Support: To support crop rotation, particularly for grain crops, access to crop support programs may be important to ensure that this option is economically viable." **Comment: This seems to rely on a federal program over which the GSA has no control. Rather than focusing on such weak possibilities, the GSP should focus on local, on-the-ground supply-side projects to increase the water table.**	LS-036
Ch 4 p 29 line 841	"For example, a corner of a field may be well suited for wildlife habitat, or solar panels or water storage." **Comment: The concept of pivot corners as**	LS-037

	reservoirs was brought up by a local rancher and merits attention. "Wildlife habitat" is more likely to be noxious weeds, which farmers will have to try to beat back from encroaching on their crops. Solar panels would require considerable infrastructure at great expense. Ponds, on the other hand, are relatively inexpensive to build and could contribute to groundwater recharge.	LS-037, Cont'd
Ch 4 p 30	"Tier III: Potential Future Project and Management Actions". **Comment: Some of these PMAs should not be relegated to Tier III. "Potential future" PMAs sends the clear message that these projects are not priorities, even though they are the least damaging and most promising for actually increasing the water table. Although they may take time to implement, these PMAs should be acted on <u>immediately</u>. (Examples: High mountain lake storage; MAR/ILR; reservoirs)**	LS-038
Ch 4 p 30	"Alternative, lower ET crops." **This section may have some potential; however, funding dedicated to research on this topic should be minimal. Farmers and ranchers are quite aware of which crops have a market in our region. Assuming grants are in limited supply, we have plenty of other supply-side projects that merit funding.**	LS-039
Ch 4 p 31	"Floodplain reconnection/expansion." **This section ties in with the concept of slowing the river/tributaries. For willing landowners, this holds potential to slow the flow and increase the water table. Conversations with landowners should be pursued. In this case, limited conservation easements may be appropriate.**	LS-040
Ch 4 p 32	"High Mountain Lakes - This potential project class supports the restoration or modification of high-altitude lakes…." **Comment: Rather than referring to this PMA as "potential," it should be pursued immediately. Also, is it possible to include what percentage of depletion reversal would be gained from the 3,500 AF of storage? Using the metric used on other PMAs would be helpful.**	LS-041
Ch 4 p 33	"Reservoirs….Still in the conceptualization phase, details of a reservoir project have not yet been confirmed." **Comment: This sentence insinuates a lack of interest in this PMA on the part of the GSA. This is perhaps the most promising PMA when it comes to benefits to all, and yet the topic is given one-half of one page in this chapter. Meanwhile, there are empty ponds and reservoirs that already exist in the valley, which could be used right away (albeit permitting may be required). As for potential future reservoirs, has anyone asked the landowners in those areas for their opinions? Why has this project been relegated to "Tier III" when all the most damaging options – turning off irrigation and repurposing ag ground—have had reams of research done on them?**	LS-042

	Several landowners have indicated they have ponds available. A survey should be conducted to assess how many existing ponds there are, and how many landowners would be willing to have new ones built on their land. Several locals have talked about using the dredger tailings and ponds to store even more water than they do now.	LS-042, Cont'd
Ch 4 p 33	"Strategic Groundwater Pumping Curtailment" **Comment: This section should be removed. This valley is not in an overdraft, and the GSP is on course to prevent that from happening without implementing any pump turn-offs. Including pump shut-offs as a potential future tool will result in pressure to use that tool. The mechanism should be removed entirely.**	LS-043

SISKIYOU RESOURCE CONSERVATION DISTRICT
P.O. Box 268, Etna, CA 96027
PHONE (530) 467-3975 FAX (530) 467-5617
sisqrcd@sisqtel.net

Siskiyou County Flood Control & Water Conservation District
1312 Fairlane Rd.
Yreka, CA 96097

September 25, 2021
Re: Scott Valley Groundwater Sustainability Plan: public comments

Dear Members of the Flood Control and Water Conservation District Board,

The Board of the Siskiyou Resource Conservation District is providing you our overall comments on the public draft report of the Scott Valley Groundwater Sustainability Plan, in addition to detailed comments (submitted separately). One of our directors, Tom Jopson, has also participated as a member of the GSP committee since its beginning.

The Plan specifically mentions "coordination with local resource conservation districts" as a means to "effectively advance SGMA implementation" (Ch. 1, p. 7). We agree, but such coordination did not seem to occur during the development of GSP implementation ideas. SRCD-001

Our ongoing and proposed RCD projects that are related, directly or indirectly, to groundwater management were not included in Chapter 4's table of Projects & Management Actions (PMAs). We have tried correcting that omission in our detailed comments. Outreach by your District, county staff, and consultants to our RCD staff would be appreciated in the development and implementation of PMAs.

As you are aware, the Siskiyou RCD also has extensive experience with surface water, groundwater, and fisheries monitoring in our watershed, but grant funding has not been consistently available to sustain continued data collection, leaving gaps in everyone's understanding of their interrelationships. The UCD Integrated Hydrologic Model for Scott Valley will benefit in its accuracy from such additional data. Adding "Monitoring" as a category to Ch. 4's Table 1 and listing needed monitoring efforts will help focus funding attention to this critical need. SRCD-002

In addition to the above issues, Chapter 4's Table 1 currently appears to be a laundry list of ongoing and potential projects, with no ranking of "cost-effectiveness". Buried in Appendix 5-A is a draft "PMA Prioritization and Scoring System", which offers an initial method to help sort out good projects from ineffective ones. Working through these criteria and scoring options with the GSP Committee before final adoption of the plan, or shortly thereafter, by your Board would provide a more useful list of PMAs that could pursue immediate funding. SRCD-003

Thank you for this opportunity to better involve our RCD in the Scott Valley GSP.

Sincerely,

DocuSigned by:
Caroline Luiz
3FE780A7DE764D7...

Caroline Luiz
RCD Board Chair

COUNTY OF SISKIYOU

Flood Control & Water ConservationDistrict

Review Form

Scott Groundwater Sustainability Plan

Dear Reviewer,

Per SGMA requirements, a Groundwater Sustainability Plan (GSP) has been developed for the Scott Valley groundwater basin. The GSA has released a complete draft GSP and has initiated a 45-day public review and comment period and seeks input from all beneficial users of groundwater.

REVIEWER INSTRUCTIONS:
Given the large number of reviewers, accommodating track changes or other editing options within the original draft sections distributed to all committee members is not possible. Please consider using this reviewer form with the following instructions:

- Use the form below to provide comments. Feel free to add additional lines tothe form as needed.
- For suggested text changes, please copy and paste the text you wish to change and place your suggested edits in track changes or strikethrough features in this document. What's important is that technical staff can see *both* the original draft text and your distinct suggestions.
- Note the **Chapter, Page, Section, and line number**—from the ***PDF version*** of the draft GSP section—where your comment, question or suggested text edit begins.
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Please email comments directly to (sgma@co.siskiyou.ca.us). Include in the subject line the basin you are commenting on. If you are making comments on multiple basins, send as separate comments.

Please send your comments no later than end of day September 26, 2021. Comments will not be accepter on or after September 27th, 2021.

Please use the following file nomenclature in saving your review document:
ScottGSP_PublicReviewDRAFT_[Your name]_date

Thanks for contributing tothe draft Groundwater Sustainability Plan for theScott Valley Groundwater Basin

COUNTY OF SISKIYOU

Flood Control & Water ConservationDistrict

Reviewer name: Lindsay Cummings – Siskiyou Resource Conservation District
Submission date: 9/26/2021
GSP sections reviewed: Chapter 4

Chapter	Page	Section	Line/Table/Figure #	Comment
4	7	4.1	**Line:** 224 **Table:** 1	The following projects fits within the PMA framework **Tier:** I **Title:** South Fork Scott River Floodplain Connectivity Project **Description:** This three-phase project reconnects historical floodplains in the South Fork of the Scott River that were disconnected as a result of historical mining activity. In addition to reconnecting floodplains, the project creates habitat improvements through engineered log jams and wood loading in a mile-long stretch of the South Fork of the Scott River. **Lead Agency:** Siskiyou Resource Conservation District **Category:** Supply augmentation, Habitat Improvement **Status:** Existing/ Ongoing **Anticipated Time Frame:** Phase I and II complete. Phase III completion by 2021-2022 **Targeted Sustainability Indicator(s)/ beneficiaries:**

SRCD-004

				Increased groundwater levels, interconnected surface water, instream habitat improvement, improved habitat for GDEs (coho salmon)	SRCD-004, Cont'd
4	7	4.1	**Line:** 224 **Table:** 1	**Tier:**I **Title:** Lower Scott River Side Channel Connectivity and Habitat Enhancement project **Description:**As a continuation of the recently constructed off-channel pond (2020), SRCD will complete restoration efforts within the mainstem and oxbow side-channel area to improve channel function and enhance access to slow water habitat. This project will incorporate side channel activation, BDA (beaver dam analogs) and engineered log jams. **Lead Agency:** Siskiyou Resource Conservation District **Category:** Habitat Improvement **Status:** Existing / Ongoing **Anticipated Time Frame:** Off channel pond complete in 2020. Channel connectivity and instream habitat improvements completion by 2022. **Target Sustainability Indicator(s)/ beneficiaries:** Increased groundwater levels, interconnected surface water with off-channel pond, instream	SRCD-005

				habitat improvement, improved habitat for salmonids	SRCD-005, Cont'd
4	8	4.1	**Line:** 224 **Table:** 1	**Tier:** II **Title:** Instream Habitat Improvement on the East Fork Scott River. **Description:** Improve stream flow, create scour pools, and increase habitat for spawning and over summering salmonids in the E Fork of the Scott River on the Beaver Valley Headwater Preserve. **Lead Agency:** Siskiyou Resource Conservation District **Category:** Habitat improvement **Status:** Planning Phase **Anticipated Time Frame:** Planning Phase **Target Sustainability Indicator(s)/ beneficiaries:** increased surface water connectivity, habitat improvement for GDE (coho salmon)	SRCD-006
4	8	4.1	**Line:** 224 **Table:** 1	**As a tier II PMA, the SRCD would like to include a section for trend line monitoring of water levels, temperature, and water quality in the tributaries of the Scott River. Earlier in the 2000s, the RCD maintained a network of monitoring wells. Such activities are no longer supported. However, this network could be revived and**	SRCD-007

expanded and fulfill needs laid out in Section 4.5, lines 1116-1123
Tier: II
Title: Scott River Basin Stream Flow Monitoring
Description: Reinstate historic stream flow monitoring activated throughout the watershed to improve knowledge of stream flow response in relation to existing and modified conditions. The SRCD will reinstall instream monitoring devices and monitoring wells to measure water levels, temperature, and water quality across all tributaries to the Scott River. This network will assess surface water contributions to groundwater and will augment and inform the SVIHM (as laid out in Chapter 3, Section 3.3, lines 238-246). This network will also be used to inform agencies involved with protecting and conserving GDEs in the system.
Lead Agency: Siskiyou Resource Conservation District
Status: Planning Phase
Anticipated Time Frame: Current, TBA
Targeted Sustainability Indicator(s)/ benefits: Realtime data available to developers of the

SRCD-007, Cont'd

					SVIHM, water users, and various conservation organizations in the Scott Valley.
4	7		4.1	**Line:** 224 **Table:** 1	**Tier:** I **Title:** Scott River Groundwater Monitoring **Description:** This project will provide monitoring services related to groundwater enhancement and recharge projects. During the 2020 drought, the SRCD will be involved with groundwater transactions in Reach 9 of the Scott River (between Highway 3 and the National Forest Land). This includes daily monitoring of the groundwater response to curtailments in irrigation in both Scott River and in adjacent fields through temporary wells and established wells. **Lead Agency:**Siskiyou Resource Conservation District **Category:** Supply augmentation, recharge **Status:** Ongoing and in development **Anticipated Time Frame:** Current, TBA **Targeted Sustainability Indicator(s)/ benefits:** Increased groundwater levels, interconnected surface water, improved water

SRCD-007, Cont'd

SRCD-008

				temperature, improved habitat for GDEs (coho salmon)	SRCD-008, Cont'd
4	7	4.1	**Line:** 224 **Table:** 1	***T****his project is complementary to and in conjunction with other projects mentioned in Chapter 4 namely:* "MAR&ILR -NFWF Scott Recharge Project*" and "*MAR & ILR*"* **Tier:** II **Title:** Scott Valley Managed Aquifer Recharge Projects **Description:** The SRCD continues to work with landowners, water districts, and ditch companies to develop potential managed aquifer recharge projects within critical areas of the Scott River Basin. Project implementation will improve groundwater to surface water interactions via recharge efforts and enhance stream quantity during periods of low flow. **Lead Agency:** Siskiyou Resource Conservation District **Category:** Supply augmentation, recharge **Status:** In development **Anticipated Time Frame:** TBA **Targeted Sustainability Indicator(s)/ beneficiaries:** Increased groundwater levels, interconnected surface water,	SRCD-009

	improved water temperature, improved habitat for GDEs (coho salmon)	SRCD-009, Cont'd

COUNTY OF SISKIYOU

Flood Control & Water ConservationDistrict

COUNTY OF SISKIYOU

Flood Control & Water Conservation District

Review Form

Scott Groundwater Sustainability Plan

Dear Reviewer,

Per SGMA requirements, a Groundwater Sustainability Plan (GSP) has been developed for the Scott Valley groundwater basin. The GSA has released a complete draft GSP and has initiated a 45-day public review and comment period and seeks input from all beneficial users of groundwater.

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Please email comments directly to (sgma@co.siskiyou.ca.us). Include in the subject line the basin you are commenting on. If you are making comments on multiple basins, send as separate comments.

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Please use the following file nomenclature in saving your review document:
ScottGSP_PublicReviewDRAFT_[Your name]_date

Thanks for contributing to the draft Groundwater Sustainability Plan for the Scott Valley Groundwater Basin

COUNTY OF SISKIYOU

Flood Control & Water Conservation District

Reviewer name: Charnna Gilmore, Scott River Watershed Council
Submission date: September 26, 2021
GSP sections reviewed: Chapter 2 and 4

Chapter	Page	Section	Line/Table /Figure #	Comment (*please delete example text below once you submit*)	
2	6	2.1.1.1	153	The Scott River Decree, Schedule C "Acreages irrigated by claimants from Groundwater Interconnected with the Scott River" states 12,975 acres and not 10,015 acres	SRWC-001
2	8	2.1.1.2	221	Table 1 does not address the upland land use and therefore is not the "Acreage and percent of total Basin area" so either needs to be relabeled or data on the total basin land use needs to be added which includes all upland acreage.	SRWC-002
2	12	2.1.1.3	244	There are no public wells that lie above the City of Etna.	SRWC-003
2	17	2.1.3	396	Please add Scott River Watershed Council to Table 2. **Activity Type** **Management** **Name of Organization**: Scott River Watershed Council Plan/Program: Riparian and habitat protection and restoration, instream and groundwater enhancement projects. **Year(s):** 2014 – present **Regulatory:** No	SRWC-004
2	18	2.1.3	396	Please change date Scott River Watershed Council to Table 2. **Activity Type** **Monitoring** **Name of Organization**: Scott River Watershed Council **Year(s):** 2014 – present	SRWC-005
2	25	2.1.3	613-616	The description in this section of the rights set forth in the Scott River Decree are misleading. The Decree clearly states (1) all surface water, spelling out exceptions (2) all rights to supporting underflow and (3) all rights to ground water in the interconnected zone. Please restate to include the underflow rights.	SRWC-006
4	5	4.1	182	Habitat Improvement: Please add Scott River Watershed (website) to list	SRWC-007

4	11	4.2	241	Please revise statement to "Implementation of completed in 2018, 2019 and **2021**, additional work is ongoing."	SRWC-008
4	12	4.2	250	Please remove "with a second phase scheduled to begin late summer of 2021"	SRWC-009
4	20	4.3	481	This is an extremely misleading statement. Please either remove or qualify this statement to reflect the seasonal and many times, annual overdraft that occurs which results in a dewatering of the Scott River surface flows.	SRWC-010
4	22	4.3	560-574	Please add Scott River Watershed Council's efforts to bring prescribed fire by the development of the Siskiyou Prescribed Fire Burn Association which resulted in several burns in 2021.	SRWC-011

Salmonid Restoration Federation

September 24, 2021

Ray Haupt, Chair
Siskiyou County Flood Control & Water Conservation District
P.O. Box 750
1312 Fairlane Rd.
Yreka, CA 96097

Submitted by email to: SGMA@co.siskiyou.ca.us

RE: Comments on Public Draft of Scott Valley and Shasta Valley Groundwater Sustainability Plans

Dear Chairman Haupt:

The mission of Salmonid Restoration Federation (SRF) is to promote restoration and stewardship of California's native salmon, steelhead, and trout populations and their habitat. We appreciate the opportunity to comment on the public drafts of the Groundwater Sustainability Plans (GSPs) for Scott Valley and Shasta Valley. We have briefly reviewed the GSPs and comments submitted by other entities.

We appreciate the County stepping up to lead development of the GSPs, and the tremendous amount of effort put into GSP development; however, we are disappointed by the contents of the GSPs. Our concerns fall primarily into two categories: 1) failure to properly characterize the adverse impacts on beneficial uses of the surface water caused by groundwater pumping, including a failure to propose actions that adequately address these adverse impacts, and 2) a lack of transparency which will severely impair the effectiveness of groundwater management.

The rivers and streams in the Scott and Shasta watersheds are severely depleted of water throughout large portions of each year. Due in large part to this flow depletion, salmon populations are in these two watersheds have declined precipitously from historical abundance over the past century and have continued their decline in recent decades and years. There are multiple factors contributing to this water depletion, including excessive diversion of surface water, excessive extraction of groundwater, and a warming climate that is diminishing snowpack and increasing the prevalence of droughts. Groundwater extraction from areas where wells can be regulated under SGMA are just one of these causes of flow depletion. Therefore, GSPs are not

SRF-001

SRF-002

responsible for reversing the streamflow depletion caused by surface diversions or groundwater outside SGMA jurisdiction (e.g., wells near the mainstem Scott River, in the zone subject to surface water adjudication). However, the draft GSPs do not meet the SGMA requirements for addressing the impacts of groundwater extraction from wells inside SGMA jurisdiction.

SRF-002, Cont'd

SGMA requires that a GSP define minimum thresholds for streamflow depletion that cause adverse impacts on beneficial uses of the surface water, and then propose actions to ensure that such thresholds are avoided. Instead, the Scott Valley GSP does that process backwards, first defining actions that are easily achievable by groundwater users and then setting the minimum thresholds based on that. There is no consideration of the actual effects of streamflow depletion on surface water beneficial uses. This approach does not meet SGMA requirements.

SRF-003

The lack of transparency in the GSPs is troubling. Effective water management requires reliable data upon which to develop scientific understanding of how the hydrologic system operates, how the system is likely to respond to potential management actions, and ongoing monitoring to track progress in meeting goals. The methods and data used must be transparent and verifiable. There is currently a lack of basic information such as the amount of groundwater extracted. Neither the Scott or Shasta GSP require metering of groundwater extraction, nor public sharing of groundwater elevation data in a form that is transparent and verifiable (i.e., sharing the actual raw data rather than summaries). Without metering and data sharing, GSP policies such as "Avoiding Significant Increase of Total Net Groundwater Use from the Basin" are illusory and easy to game. In the absence of universal metering, the only other way to ensure avoiding increases in net groundwater use would be to not allow new well construction and not allow irrigation in areas not currently irrigated; however, the GSPs contain no such prohibition.

SRF-004

SRF-005

SRF-006

Thank you for your consideration of these comments.

Sincerely,

Dana Stolzman

Dana Stolzman, Executive Director
Salmonid Restoration Federation

CALIFORNIA TROUT

FOR 50 YEARS. FOREVER.

September 24, 2021
Via E-mail
Elizabeth Nielson, Project Manager
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Laura Foglia
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Facilitator
Katie.Duncan@stantec.com

RE: California Trout Comments on Scott Valley Groundwater Sustainability Plan

Dear Ms. Nielsen, Mr. Parker, Ms. Foglia, and Ms. Duncan,

Thank you for the opportunity to comment on the draft Groundwater Sustainability Plan (GSP) for the Scott Valley. We acknowledge the considerable effort that went into producing this document.

This letter is intended to supplement California Trout (CalTrout)'s Comment Reviewer Form (above). Specifically, we would like to highlight our concerns that the Siskiyou County Flood Control and Water Conservation District, acting as the groundwater sustainability agency (GSA) for the Scott Valley Basin, is not complying with the Public Trust Doctrine because it has failed to develop a GSP that adequately protects the Scott River, a public trust resource. CalTrout-001

I. Background

A. Existing Watershed Conditions

The Scott River and its tributaries are hydrologically connected to groundwater in the Scott Valley Basin, and because of this interconnectedness, groundwater pumping in the Scott Valley contributes significantly to streamflow depletion in these watercourses during the dry season. GSP Ch. 2 at 123, 124; Ch. 3 at 54. Since the 1970s, groundwater pumping in the Scott Valley has increased despite the watershed experiencing more frequent and more severe drought conditions due to low-precipitation years, GSP Ch. 2 at 91, leading to late summer baseflows in the Scott River that, on average, are more than 40% less than they were historically– often falling to below 10 cfs in critically dry years. *See* California Department of Fish and Wildlife, *Interim Instream Flow criteria for the Protection of Fishery Resources in the Scott River Watershed*, Siskiyou County (2017) ("CDFW Flow Criteria Study) at 5-6.

These insufficient streamflow conditions, caused in large part by streamflow depletion due to groundwater pumping for agricultural irrigation, have caused significant ecological stress to the Scott River and its tributaries. GSP Ch. 3 at 54. Notably, streamflow depletion in the Scott River has adversely impacted the migration, spawning, and reproduction of anadromous fish, including coho salmon coho salmon (*Oncorhynchus kitsutch*), Chinook salmon (*O. tshawytscha*), and steelhead trout (*O. mykiss*),[5] since the 1970s. GSP Ch. 2 at 25; GSP Ch. 3 at 54; CDFW Flow Criteria Study at 5. Low streamflow during the beginning of fall hinders adult in-migration, while low flow conditions during the summer hinders access to crucial rearing habitat for juvenile fish. CDFW Flow Criteria Study at 6. Significantly increased instream flows in the Scott River are essential to the recovery of the basin's anadromous fish species.[6]

B. The Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act ("SGMA"), Cal. Water Code § 10720 *et seq*., requires GSAs (here, the Siskiyou County Flood Control and Water Conservation District) to develop and implement GSPs that will allow for the sustainable management of groundwater within high and medium priority groundwater basins. These GSPs must contain "measurable objectives" and "minimum thresholds" that enable the achievement of defined groundwater sustainability goals. Cal. Water Code § 10727.2(b)(1); 23 C.C.R. § 354.28. Additionally, GSPs must prevent "undesirable results" caused by groundwater conditions, including "[d]epletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water." Cal. Water Code § 10721(x)(6); 23 C.C.R. § 354.26. The GSP may also address existing "undesirable results" already present in the basin prior to 2015. Cal. Water Code § 10727.2(b)(4). In the Scott Valley, existing streamflow depletion in the basin's interconnected surface waters adversely impacts beneficial uses and is an "undesirable result" under SGMA. GSP Ch. 3 at 55.

Besides meeting SGMA's requirements, a GSP must also comply with other legal obligations relating to groundwater management, including the common-law public trust doctrine, as explained below. SGMA does not displace the public trust doctrine, which imposes additional duties on state and county water management agencies independently of SGMA. *Environmental Law Foundation v. State Water Resources Control Board*, (2018) 26 Cal.App.5th 844, 866-868 ("*ELF v. SWRCB*"). Thus, a GSP's compliance with SGMA does not mean that it is sufficient to satisfy a GSA's public trust obligations.

---

[5] Coho salmon in this watershed are listed as threatened under the federal Endangered Species Act and the California Endangered Species Act, while Chinook salmon and steelhead trout are listed by CDFW as species of special concern (GSP Ch. 2 at 84; GSP Ch. 3 at 56).

[6] The National Marine Fisheries Service's recovery plan for coho salmon identifies an "increase [in] instream flows" as one of the highest-priority recovery actions in the Scott River watershed. *See* NOO Fisheries, *Final Recovery Plan for the Southern Oregon/Northern California Coast Evolutionarily Significant Unit of Coho Salmon*; CDFW Flow Criteria Study at 3. That recovery plan calls for reduced water consumption by landowners and re-assessment of water allocation to provide adequate instream flows. *Id*., *see* CDFW Flow Criteria Study at 4. CSFW has calculated the instream, flow needed to sustain coho and Chinook salmon and steelhead trout in the Scott River watershed. *See* CDFW Flow Criteria Study. To protect these species, CDFW recommends instream flows of at least 77 cfs in August and 62 cfs in September, more than double the levels often recorded in the Scott River during that period. CDFW Flow Criteria Study at 26.

II. The public trust doctrine requires the GSA to protect public trust uses in the Scott River, whenever "feasible", when developing and implementing the Scott Valley GSP

The Public Trust Doctrine is a common law doctrine that "imposes an affirmative duty on the state to act on behalf of the people to protect their interest in navigable water." *ELF v.* SWRCB, 26 Cal.App.5th at 857. This interest includes "the preservation of trust lands in their natural state . . . as environments which provide food and habitat" for fish and wildlife. *Id*. (quoting *National Audubon Society v. Superior Court*, (1983) 33 Cal.3d 418, 441("*National Audubon*")). The doctrine is expansive and covers any activity that has an impact on a public trust resource, even if that activity involves non-navigable waters.[7] As such, the public trust doctrine applies to an agency's management of groundwater resources if management of those resources affects a navigable waterway. Here, the public trust doctrine requires the GSA to protect the public's interest in the Scott River (a navigable waterway and public trust resource) and its fish species when making groundwater management decisions, which include the development and implementation of the Scott Valley GSP. CalTrout-002

Moreover, the California Supreme Court has made clear that water allocation decisions may harm public trust uses only in very limited circumstances, and then only to the extent that the harm is necessarily and unavoidably compelled by the public interest:

> The state has an affirmative duty to take the public trust into account in the planning and allocation of water resources, and to protect public trust uses *whenever feasible*. Just as the history of this state shows that appropriation may be necessary for efficient use of water despite *unavoidable* harm to public trust values, it demonstrates that an appropriative water rights system administered without consideration of the public trust may cause *unnecessary and unjustified* harm to trust interests [Citations.] As a matter of practical *necessity* the state may have to approve appropriations despite foreseeable harm to public trust uses. In doing so, however, the state must bear in mind its duty as trustee to consider the effect of taking on the public trust [citation], and to preserve, *so far as consistent with the public interest*, the uses protected by the trust.

National Audubon, 33 Cal.3d at 446-447 (emphasis added); *see also ELF v. SWRCB*, 26 Cal.App.5th at 862, 865. Therefore, the GSA must protect public trust resources "whenever feasible" and "so far as consistent with the public interest," and any harm to public trust resources must be justified by "practical necessity." *Id*.

III. The draft Scott Valley GSP does not comply with the GSA's public trust obligations.

As discussed above, the public trust doctrine requires the GSA to protect the Scott River, a public trust resource, "whenever feasible." *See National Audubon*, 33 Cal.3d at 446-447; *ELF v. SWRCB*, 26 Cal.App.5th at 862,865. Because implementation of the GSP may impact the Scott River due to the interconnected nature of the Basin's groundwater and surface water systems, the GSP may not permit management actions (such as allowing groundwater withdrawals) that harm public trust

[7] *ELF v SWRCB*, 26 Cal.App.5th at 859 ("the determinative fact is the impact of the activity on the public trust resource"); *see National Audubon*, 33 Cal.3d 418 holding that the PTD applied to the diversion of water from tributaries to Mono Lake–a public trust resource–even though the tributaries themselves were not navigable.

uses in the Scott River, including fish and wildlife habitat, unless the GSA shows that the harm cannot be feasibly avoided, and that the harm is necessary and justified to further the public interest. *See National Audubon*, 33 Cal.3d at 441, 446-447; *ELF v. SWRCB*, 26 Cal.App.5th at 857,862. The draft Scott Valley GSP fails to meet this standard because it does not adequately protect against harm to public trust resources due to groundwater withdrawals, nor does it explain why this inadequacy should be allowed considering the public interest. Therefore, the GSP does not comply with the GSA's public trust obligations. CalTrout-003

A. The GSP's minimum threshold for the depletion of interconnected surface waters must avoid harm to public trust uses.

Although the GSP proposes to avoid additional streamflow depletion due to groundwater pumping in the Scott River–beyond 2015 depletion levels, as required by SGMA– it would reverse or mitigate only a small fraction of existing streamflow depletion levels. GSP Ch. 3 at 60. Based on the recommendations of an advisory committee, the GSP aims to reverse existing streamflow depletion by a minimum threshold of 15%, so that streamflow depletion would remain at 85% of what it would be under a "business as usual" scenario. *Id.* Beyond this minimum threshold, there would be a nonbinding 20% reversal target (a "measurable objective" under SGMA) for streamflow depletion. GSP Ch. 3 at 57-58.

The GSP acknowledges that the public trust doctrine requires the GSA to at least partially reverse stream depletion due to groundwater pumping, but incorrectly asserts that the public trust doctrine gives no target or threshold required for compliance. GSP Ch. 3 at 57, 59, 64. Under the public trust doctrine, the minimum threshold for the depletion of interconnected surface waters must be whatever level of reduction in streamflow depletion that will prevent harm to public trust uses in the Scott River, including impacted fish species. Nothing less is acceptable, unless the GSA can show that it is infeasible to avoid harm public trust uses in the Scott River, and that such harm is necessary and justified to further the public interest. *See National Audubon*, 33 Cal.3d at 446-447; *ELF v. SWRCB*, 26 Cal.App.5th at 862, 865. The draft GSP fails to make this showing because it proposes to reduce streamflow depletion by only 15% below existing "business as usual" levels without analyzing whether that standard is sufficient to eliminate the existing harm to public trust uses. Further, the GSP does not explain how the GSA concluded that this minimum threshold would be sufficient to meet its public trust obligation, and there is no discussion of the biological effects that would result from the proposed minimum threshold, or of whether a 15% reduction would avoid adverse impacts to fish species in the river. CalTrout-004

The GSA must set a minimum threshold for depletion of interconnected surface waters that will ensure the continued viability of the Scott River for the migration and spawning of anadromous fish, which is an essential public trust use of the Scott River. That these fish species were already impacted by streamflow depletions prior to SGMA's 2015 benchmark is irrelevant under the public trust doctrine. The fact that groundwater extraction is not the only cause of streamflow depletion in the Scott Valley does not affect the GSA's obligation to reduce groundwater pumping until harm to public trust resources is avoided. Rather, the public trust requires that groundwater extraction not harm public trust uses, regardless of when the harm began or whether there are other contributing factors. CalTrout-005

B. The GSP must base its minimum thresholds on feasibility in light of the public interest and not on economic cost.

The draft GSP incorrectly asserts that the GSA may consider the "economic cost" of mitigation measures and other balancing factors when setting minimum thresholds that are compliant with the public trust doctrine. GSP at 56, 59. In setting the minimum threshold for the depletion of interconnected surface waters, the GSA purports to apply "a balancing test between economic cost and environmental improvement" when defining what is an "unreasonable amount of streamflow depletion" or a "reasonable amount of avoided groundwater use." GSP Ch. 3 at 59. However, the public trust doctrine does not permit such a test where harm to trust uses is "balanced" against "economic costs." Instead, as discussed above, public trust uses must be protected from harm unless the public interest renders such protection *infeasible*. *See National Audubon*, 33 Cal.3d at 446-447; *ELF v. SWRCB*, 26 Cal.App.5th at 862, 865. This means that the GSP must fully eliminate harm to public trust uses unless the GSA can demonstrate with substantial evidence that the public interest demands otherwise. Here, the GSA has failed to meet this standard because the GSP offers nothing more than an arbitrary determination that its proposed minimum threshold for the depletion of interconnected surface waters constitutes a "reasonable" amount of avoided groundwater use, with no explanation of how this determination was made or substantial evidence to support this claim. CalTrout-006

C. The GSP's delayed timeline for meeting streamflow reduction targets is inadequate to meet public trust obligations.

Although consistent with SGMA, the GSP's proposed timeframe for meeting the 15% minimum threshold for depletion of interconnected surface waters is insufficient to meet the GSA's public trust obligations because delaying enforcement of GSP thresholds for decades risks irreparable harm to public trust uses in the Scott River.[8] As the GSP acknowledges, public trust fisheries in the Scott River are already adversely impacted by streamflow depletion. GSP Ch. 3 at 54-57. Urgent short-term action is needed to mitigate impacts to anadromous fish species–including threatened coho salmon, Chinook salmon, and steelhead trout–by significantly increasing instream flows as soon as possible. However, instead of making minimum thresholds enforceable sooner to meet this need, the GSP instead uses the SGMA deadline of 2042 for compliance. CalTrout-007

As discussed above, the GSA's public trust obligations are not limited by SGMA, but rather are additional to and independent of SGMA's statutory scheme. As such, public trust uses impacted by groundwater extraction must be protected immediately, unless such a timeline is demonstrably inconsistent with the public interest (in which case measures must be implemented as expeditiously as can be feasibly undertaken). Here, the GSA has not demonstrated why it would be infeasible to achieve minimum thresholds on a more expeditious timeframe than that allowed under SGMA to ensure the trust uses are not irreparably harmed. CalTrout-008

[8] The GSP's proposed 15% minimum threshold for reduction of existing streamflow depletion would not become enforceable until 2042. GSP Ch. 3 at 61-62. Instead, the GSA would gradually ramp up to this level with a series of intermediate milestones (e.g., a 5% reduction by 2027 and a 10% reduction by 2032). *Id.*

D. The GSP does not demonstrate that its proposed mitigation measures to reduce the depletion of interconnected surface waters are adequate to meet the GSA's public trust obligations.

The GSP does not meet public trust doctrine requirements because it does not evaluate whether its proposed mitigation measures would be sufficient to eliminate harm to the Scott River's public trust uses, including coho, Chinook, and steelhead fisheries impacted by streamflow depletion. The GSA proposes a variety of mitigation measures to reduce streamflow depletion, including groundwater demand management, groundwater recharge, green infrastructure, increased irrigation efficiency, conservation easements, stream habitat improvement, and crop changes. GSP Ch. 4 at 7-10. However, most of these measures are voluntary or incentive-based, and reductions in groundwater extraction are not proposed until 2027 at the earliest.[9] This is unacceptable given that current groundwater extraction is contributing to streamflow depletions that harm public trust fisheries. Therefore, the GSA must limit current groundwater pumping until it can provide substantial evidence that the other proposed mitigation measures are enough to protect public trust uses in the Scott River.

CalTrout-009

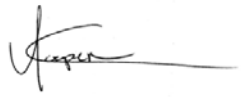
CalTrout-010

IV. Conclusion

For the foregoing reasons, the draft Scott Valley GSP is not sufficient to comply with the GSA's public trust obligations. To remedy this deficiency, the Siskiyou County Flood Control and Water Conservation District must revise the GSP to set a minimum threshold for the depletion of interconnected surface water that is sufficient to eliminate adverse impact to the Scott River's public trust resources, including fisheries. Additionally, that minimum threshold must be based on feasibility considering the public interest, and not on economic cost, and must be implemented expeditiously. Finally, the GSP's mitigation measures must include reductions in current groundwater extraction until harm to public trust uses is avoided.

Thank you for your consideration of these comments. Please do not hesitate to contact me if I can provide any further information or clarification.

Sincerely,



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[9] One near-term mitigation measure calls for the GSA to avoid increased groundwater use via zoning and well permitting (GSP Ch. 4 at 12), but this would not require existing water users to reduce groundwater pumping.

COUNTY OF SISKIYOU

Flood Control & Water Conservation District

Review Form

Scott Groundwater Sustainability Plan

Dear Reviewer,

Per SGMA requirements, a Groundwater Sustainability Plan (GSP) has been developed for the Scott Valley groundwater basin. The GSA has released a complete draft GSP and has initiated a 45-day public review and comment period and seeks input from all beneficial users of groundwater.

REVIEWER INSTRUCTIONS:
Given the large number of reviewers, accommodating track changes or other editing options within the original draft sections distributed to all committee members is not possible. Please consider using this reviewer form with the following instructions:

- Use the form below to provide comments. Feel free to add additional lines to the form as needed.
- For suggested text changes, please copy and paste the text you wish to change and place your suggested edits in track changes or strikethrough features in this document. What's important is that technical staff can see *both* the original draft text and your distinct suggestions.
- Note the **Chapter, Page, Section, and line number**—from the ***PDF version*** of the draft GSP section—where your comment, question or suggested text edit begins.
- Examples of how to provide feedback are listed in the review form below. These examples are not actual comments and are made up to show how the table should be used. Feel free to delete these examples with your submission, and only include your feedback.
- To comment on a figure or table, in the line number column on the reviewer form note the figure number *and* the page number and type your comment in the text section to the right.

Please email comments directly to (sgma@co.siskiyou.ca.us). Include in the subject line the basin you are commenting on. If you are making comments on multiple basins, send as separate comments.

Please send your comments no later than end of day September 26, 2021. Comments will not be accepter on or after September 27th, 2021.

Please use the following file nomenclature in saving your review document:
ScottGSP_PublicReviewDRAFT_[Your name]_date

Thanks for contributing to the draft Groundwater Sustainability Plan for the Scott Valley Groundwater Basin

CALIFORNIA TROUT

FOR 50 YEARS. FOREVER.

Reviewer name: Amanda Cooper
Submission date: September 24, 2021
GSP sections reviewed: Draft Scott Valley GSP

Chapter	Page	Section	Line/Table/Figure #	Comment (*please delete example text below once you submit*)	
ES	3	ES-2	102-105	SGMA mandates an assessment of the location, timing, and magnitude of ISW depletions, and to demonstrate that projected ISW depletions will not lead to significant and unreasonable results for beneficial uses and users of surface water. The standard for determining undesirable results due to depletions of ISW is whether those depletions have adverse effects on the users of the ISW, *not* on users of groundwater, per the definition of undesirable results under SGMA, Cal. Water Code §10721(x)(6): "Depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the *surface water*" (emphasis added).	CalTrout-011
ES	6	ES-2	129-130	Citations would be helpful when quoting statutory or regulatory language. Here, SGMA is quoted, but the language comes from the regulations, 23 C.C.R. § 351(m).	CalTrout-012
2	7	2.1.1.1	Figure 2	Why is SVID shown on a map of jurisdictional areas that also includes the Quartz Valley Indian Reservation and National Forest? Is SVID responsible for groundwater management? Also, a demarcation of the Adjudicated Zone should be included on this figure.	CalTrout-013
2	14	2.1.2	340-341	Litigation proceeds regarding Siskiyou County's duty to consider the Public Trust when taking action that affects groundwater that is interconnected with the Scott River (a public trust resource). The original wording confuses the issue of the case, which was not what the impacts of well permits were on surface water, but rather (a) whether the County had a duty to consider the Public Trust before issuing such permits; and (b) whether SGMA absorbed this duty (the court found that it	CalTrout-014

				did not). *See Environmental Law Foundation v. State Water Resources Control Board*, 26 Cal.App.5th 844, 859-870 (2018) (ELF).	CalTrout-014, Cont'd
2	29	2.1.3	786	The GSP states that "[t]he public trust doctrine [PTD] was considered throughout development of the GSP." Clarification about how the GSA considered the PTD is necessary. What specific actions did the GSA take in considering the Public Trust?	CalTrout-015
2	33, 37, 41	2.1.3. 2.14, 2.15	994, 1137, 1305, 1307	Is this feedback still needed? If so, why haven't these questions been answered during the GSP development process?	CalTrout-016
2	39	2.1.5.2	1245	Appendix [ ] → Which Appendix does this refer to?	CalTrout-017
2	73	2.2.1.6	1960-1971	The figure described in this paragraph–Figure 18–does not match the Figure 18 provided on page 72.	CalTrout-018
2	75	2.2.1.7	2038	Why is only the date range modeled from September-October? Why not include the entire irrigation season?	CalTrout-019
2	76	2.2.1.8	2088	The GSP acknowledges that "identifying [environmental] users and uses of surface water is the first step to address undesirable results due to surface water depletions," yet fails to identify/discuss these users. The plan discusses groundwater dependent ecosystems (GDEs) and groundwater dependent species; what about environmental users such as Tribes, anglers, birdwatchers, and other recreators? i.e., (*See* Cal. Water Code § 1243(a): "The use of water for recreation . . . is a beneficial use of water;" *see also* SWRCB's definition of beneficial use, which includes both water contact recreation and non-water contact recreation. [1]	CalTrout-020
2	77	2.2.1.8	2097	Is this the correct citation? 23 C.C.R. §354.8(a)(3) describes requirements for maps that are included in the Description of the Plan Area.	CalTrout-021
2	113	2.2.3.1	3090-3091	"Agricultural irrigation is calculated based on daily crop demand. Perfect farmer foresight is assumed."	CalTrout-022

[1] Available at https://www.waterboards.ca.gov/about_us/performance_report_1314/plan_assess/docs/bu_definitions_012114.pdf

				Does the model assume that the amount of water used for irrigation is limited to the amount of water that the plants need? How does the water budget account for irrigators that over-irrigate?	CalTrout-022, Cont'd
2	113	2.2.3.1	3091-3093	"The water volume is attributed to *either* diverted surface water . . . or pumped groundwater."→ Are any irrigators using a combination of the two?	CalTrout-023
2	115	2.2.3.2	3148	Figure 25 shows the water budgets of each of those three subsystems.	CalTrout-024
2	118	2.2.3.2	3275-3277	"[I]n fields with access to both surface and groundwater, it is assumed that irrigators will use surface water whenever it is available." → Why is this assumption made?	CalTrout-025
2	118	2.2.3.2	3278-3279	Some clarification would be helpful to understand why "surface water diversion for irrigation is considered an inflow to the Basin, not a diversion from the streams within the Basin," especially since not all applied irrigation water makes it into the Land (Soil) Zone.	CalTrout-026
3	3	3.1	111	Is this the correct citation? 23 C.C.R. §354.28(c)(1)-(6) provides minimum threshold requirements. 23 C.C.R. §354.26 addresses Undesirable Results, which are defined under Cal. Water Code §10721(x) (SGMA).	CalTrout-027
3	7	3.3	253	Per 23 C.C.R. Section 351(l)	CalTrout-028
3	10	3.3.1.1	393-394	"The remaining wells are privately owned and data gathered to date from these wells have been provided voluntarily." → Are there access agreements in place to assure continued access to these wells/data?	CalTrout-029
3	15	3.3.3.1	541	The footnote for Table 3 references monitoring schedules from EPA's Safe Drinking Water Information System but does not provide a link to this specific data. Instead, only a link to the SDWIS search engine is provided. Citation to the referenced Fort Jones monitoring schedule would be helpful.	CalTrout-030
3	31	3.4.1.1	1102	"Chronic lowering of groundwater levels is considered significant and unreasonable when a significant number of private, agricultural, industrial, or municipal production wells can no longer pump enough groundwater to supply beneficial uses." → What about environmental concerns related to groundwater levels? Line 1123 refers to groundwater-dependent ecosystems, but these are not considered when defining "significant and unreasonable" for this Undesirable Result.	CalTrout-031

3	32	3.4.1.1	1117-1124	Lines 1117-1124 refer to different scenarios as potential "undesirable results," which is inappropriate given that here "undesirable result" is a term of art meaning the "chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply if continued over the planning and implementation horizon." Cal. Water Code §10721(x)(1). Were these scenarios instead used to define what is a "significant and unreasonable depletion of supply?"	CalTrout-032
3	35	3.4.1.2	1219-1222	How does having a minimum threshold below current historic lows prevent an undesirable result? Further explanation/clarification would be helpful.	CalTrout-033
3	38	3.4.1.4	1279	Figure 9	CalTrout-034
3	38	3.4.1.4	1289-1290	Where the cause of groundwater level decline is unknown, the GSA will conduct additional or more frequent monitoring or initiate additional modeling. → What use is a GSP if the GSA *may* (but is not required to) act in a situation that could lead to an undesirable result?	CalTrout-035
3	40-41	3.4.1.6	1355-1362	23 C.C.R. §354.28(b)(2) states that "the description of minimum thresholds shall include . . . the relationship between the minimum thresholds for each sustainability indicator, including an explanation of how the Agency has determined that basin conditions at each minimum threshold *will avoid undesirable results for each of the sustainability indicators* (emphasis added)" The GSP's discussion of the groundwater level MT's relation to Depletions of Interconnected Surface Water does not meet the required standard. Instead of explaining the relationship between groundwater level and the chosen MT for ISW, the plan merely states that groundwater levels are not a suitable proxy for surface water depletion and says that "additional analysis during GSP update will be used to determine if the current groundwater level minimum thresholds would have a negative impact on depletions of interconnected surface water." Given that the MT	CalTrout-036

				for interconnected surface water is obtained using the SVIHM, why can't this be determined now?	CalTrout-036, Cont'd
3	43	3.4.3.1	1487-1488	"Groundwater quality changes that occur independent of SGMA activities do not constitute an undesirable result."→ Clarification of what constitute "SGMA activities" is needed. Does this mean that there are instances in which groundwater can be significantly degraded without being considered an undesirable result? If so, how does this affect the GSP's compliance with other applicable laws as required by SGMA?	CalTrout-037
3	57	1977	1977	*Environmental Law Foundation v. State Water Resources Control Board*, 26 Cal.App.5th 844 (2018) (ELF)identifies the County of Siskiyou as a subdivision of the State of California with responsibilities for protecting the public trust when taking action that could impact public trust resources.. The current language of the GSP understates the County's responsibilities under the public trust doctrine, as the court's ruling on the County's public trust duties was not limited to the issuance of well permits. Rather, "the dispositive issue is not the source of the activity, or whether the water that is diverted or extracted is itself subject to the public trust, but whether the challenged activity allegedly harms a navigable waterway." (*ELF* at 860). Therefore, the County has a duty to consider the public trust whenever taking an action that could adversely impact a public trust resource, like the Scott River. Interestingly, the language about issuing groundwater well permits was not included in previous draft versions of chapter 3 (*see* GSP Chapter 3 Draft – April 23 public comment Draft, line 1776[2]).	CalTrout-038
3	57	3.4.5.1	2014-2017	"The undesirable result that is relevant to SGMA is the stream depletion that can be attributed to groundwater pumping *outside of the adjudicated*	CalTrout-039

[2] Available at https://www.co.siskiyou.ca.us/sites/default/files/fileattachments/natural_resources/page/27332/scottvalleygsp_chapter_3_publicreviewdraft_4-23-21.pdf

				zone to the degree it leads to significant and unreasonable impacts on beneficial uses of surface water" (emphasis added). Limiting the definition of undesirable results to the proportion of depletion attributable to groundwater extraction outside of the adjudicated zone is inconsistent with the requirements of SGMA, which define undesirable results as "effects caused by groundwater conditions throughout the *basin*." Cal. Water Code §10721(x) (emphasis added). Here, the "basin," as defined by Bulletin 118, includes the entire Scott Valley Basin, including the adjudicated zone. (GSP, Chapter 2 at p.5). Although the GSA does not have direct regulatory control over the adjudicated zone, nothing in SGMA permits the GSP to ignore the effects of pumping within the adjudicated zone when defining an undesirable result (*see* 23 CCR § 354.26(a): "[u]ndesirable results occur when significant and unreasonable effects for any of the sustainability indicators are caused by groundwater conditions *throughout the basin*" (emphasis added)). To be consistent with SGMA, the undesirable result for the depletion of interconnected surface water must consider depletions caused by groundwater pumping in both the adjudicated and non-adjudicated zones. For the GSA to do otherwise is in direct violation of the law.	CalTrout-039, Cont'd
re3	58	3.4.5.1	2025-2034	Neither the referenced section of the California Constitution nor the cited cases are on point. Article 10, section 2 applies to the diversion of water and water rights. Likewise, all the cited cases pertain to controversies between water rights holders, and what amounts and/or water diversion practices are considered reasonable.[3]	CalTrout-040

[3] *Gin Chow v. Santa Barbara*, 217.Cal. 673, 705-706 (1933) determined that the doctrine of Reasonable Use as it applied to riparian rights was also applicable in controversies between a riparian right holder and an appropriator.
Peabody v. City of Vallejo, 2 Cal.2d 351 (1935) (in bank) affirmed the ruling in *Gin Chow*, interpreting Article 10 § 2 of the California Constitution to require the application of the reasonable use doctrine to all water rights.
City of Lodi v. East Bay Mun. Utility Dist., 67 Cal.2d 316, 339-341(1936) involved a controversy between appropriative rights holders: the City of Lodi, which held a senior right to groundwater supplied by the Mokelumne River, and the East Bay Municipal Utility District, a junior appropriative right holder that sought

3	58	3.4.5.1	2032	Line 2032 discusses the "reasonableness of groundwater use that may contribute to stream depletion." However, the reasonableness of groundwater use is not what SGMA tasks the GSA with defining for this undesirable result. Rather, the GSA must determine what is constitutes significant and unreasonable adverse impacts on beneficial uses of surface water; or put otherwise, what is the amount of depletion that can occur before these significant and unreasonable impacts occur (*see* Cal. Water Code § 10721(x)(6)).	CalTrout-041
3	59	3.4.5.1	2076-2077	What is meant by substantial streamflow depletion reversal? The GSP sets a goal of 15% by 2037, which does not seem adequate to avoid undesirable results.	CalTrout-042
3	59	3.4.5.1	2087-2097	This discussion about the "reasonableness" as it relates to the ISW undesirable result is convoluted at best. First, the GSP states that the "exact quantification of stream depletion that constitutes the Undesirable Result depends on a balancing test between public interest considerations and environmental improvements;" where does this test come from? If the GSA is using this test to determine what constitutes a significant and unreasonable adverse impact, then the GSP should contain a description of the public interest and environmental factors that were balanced. Further, what about the environmental improvements that are *in* the public interest? Second, the GSP reframes the question of "what is an 'unreasonable' amount of stream depletion?" as "what is a 'reasonable' amount of avoided groundwater use?" (Lines 2089-2090). Given that these two questions are not equivalent, does this mean that the GSA is defining	CalTrout-043 CalTrout-044

to impound and divert water from the Mokelumne. The case was remanded back to the lower court to determine the levels that the City of Lodi's supply wells could be lowered without substantial danger to the city's water supply.
Josin v. Marin Mun. Water Dist., 67 Cal.2d 132, 141 (1967) settled a dispute between riparian landowners (plaintiff) claiming a property interest in rock and gravel deposits and an appropriative rights holder (defendant) operating a dam upstream of the riparian landowners. The plaintiff claimed that defendant had no right to collect and store the flood water that transported and deposited rock and gravel onto plaintiff's property (which the plaintiffs then sold). The court found that the plaintiff had no property interest in the rocks and gravel, and therefore using flood flows to transport sediment was not a reasonable use.
Erikson v. Queen Valley Ranch Co., 22 Cal.App.3d 578, 585-586 (1971) concerned the forfeiture of appropriative water rights.

"reasonableness" in terms of the economic impact to groundwater users instead of environmental impact on the river system? While the GSA is permitted to consider the cost of compliance when defining what is "reasonable," it must also account for the costs to the public, tribes, and commercial fisheries for the loss of fish populations resulting from depletion of streamflow.

CalTrout-044, Cont'd

Third, line 2092 states that "the only way to answer these questions was to simultaneously evaluate the flow benefits and public interest impacts of various PMAs." This statement is confusing as PMAs are intended to prevent undesirable results, not define them.

CalTrout-045

Lastly, the discussion concludes with "it would be *reasonable* to undertake some combination of PMAs to reduce stream depletion while exposing stakeholders to reasonable economic costs." Admittedly, this statement is true because *it is what SGMA requires*. Implementing PMAs to avoid undesirable results is not discretionary under the law, and it is curious that the Advisory Committee spent any time debating the reasonableness of doing so.

CalTrout-046

Ultimately, this GSP fails to explain what is considered a significant and unreasonable adverse impact on beneficial uses of surface water, which is inconsistent with the law (*see* 23 C.C.R. §354.26(b)(2) ("the description of undesirable results shall include . . . the criteria used to define when and where the effects of the groundwater conditions cause undesirable results for each . . . sustainability indicator")).

CalTrout-047

In contrast, the Shasta Valley Draft GSP–developed by the same GSA–clearly states that "the depletion of interconnected surface water is considered significant and unreasonable when there is a significant impact to environmental and agricultural uses of surface water in the Basin. Potential impacts and the extent to which they are considered significant and unreasonable include inadequate flows to support riparian health and

CalTrout-048

				ecosystems; [and] diminished agricultural surface water diversion, beyond typical reductions for any given water year type." (Shasta Valley Draft GSP, Ch.3, pg. 41 at lines 751-756)[4]	CalTrout-048, Cont'd
3	60	3.4.5.1	2107-2215	The GSP once again fails to comply with the law by setting an inadequate Minimum Threshold (MT) for the depletion of interconnected surface waters. After an incoherent discussion, the GSP defines this minimum threshold as "any portfolio of PMAs that achieves an individual monthly stream depletion reversal similar to, but not necessarily identical to, the stream depletion reversal achieved by the specific MAR-ILR scenario presented to the Advisory Committee. The average stream depletion reversal of the implemented PMAs during September-November must exceed 15% of the depletion caused by groundwater pumping from outside the adjudicated zone in 2042 and thereafter" – whatever that means.	CalTrout-049
				This definition for the MT is problematic: (1) The regulations require minimum thresholds to be numeric values that "represent a point in the basin that, if exceeded, my cause undesirable results." 23 C.C.R. § 354.28(a). Instead of providing such a numerical value, the GSA has chosen to provide a narrative description of what it claims to be a MT. (2) The 15% of stream depletion reversal proposed as a MT violates the regulations, which clearly state that the minimum threshold for the depletion of interconnected surface water "shall be *the rate or volume* of surface water depletions caused by groundwater use that has adverse impacts on beneficial uses of the surface water and may lead to undesirable results." 23 CCR § 354.28(c)(6)(emphasis	CalTrout-050

[4] Available at https://www.co.siskiyou.ca.us/sites/default/files/fileattachments/natural_resources/page/27336/shasta_gsp_draft_chapter_3.pdf

				added). Understandably, setting a numeric MT for the depletion of interconnected surface waters is not an easy task, as conditions in the watershed are constantly changing. However, this is exactly what the GSA has been tasked with doing. (3) Even if a percentage of streamflow depletion reversal was an acceptable metric for the MT, without defining an amount of depletion that can occur without causing an adverse impact (or put another way, without setting a minimum streamflow necessary to avoid undesirable results), this percentage is meaningless as a metric for achieving sustainability. What if the overall amount of depletion is so great that significant and unreasonable adverse impacts to beneficial uses of the surface water will still occur despite achieving a 15% depletion reversal rate? (4) Again, the GSA defines a standard for sustainability in terms of PMAs. How does making the MT dependent on the implementation of the very PMAs for which it is supposed to act as a trigger for ensure sustainable management of the basin's groundwater? Some of the confusion surrounding this MT may be alleviated if the GSP did a better job of discussing the process and considerations used to select this MT (why percentage of reversal was chosen over defining quantities of depletion, feasibility of achieving certain levels of reversal, economic factors, etc.).	CalTrout-050, Cont'd CalTrout-051
3	60	2110-2111	3.4.5.1	The GSP incorrectly states that PTD requirements would be met with "some reversal of existing undesirable results" The PTD demands more, requiring harm to public trust resources to be avoided "whenever feasible." (*See National Audubon*, 33 Cal. 3d at 446-447; *ELF v. SWRCB*, 26 Cal.App.5th at 862, 865).	CalTrout-052
3	60	2113-2117	3.4.5.1	The GSA attempts to justify the use of an insufficient Minimum Threshold for the depletion of ISW by referencing 23 C.C.R. §354.28(c)(6): " This	CalTrout-053

				framework for the minimum threshold is consistent with [the regulation] which (A) specifies the use of models to measure stream depletion, (B) implies that consideration of impacts on beneficial uses and surface water flows is necessary, but (C) does not require that streamflow itself is used to set the minimum threshold, triggers, or interim targets." However, this refence is a misleading and inaccurate statement of the law. 23 C.C.R. §354.28(c)(6) states that "[t]he minimum threshold for depletions of interconnected surface water *shall be the rate or volume of surface water depletion caused by groundwater use that has adverse impacts on beneficial uses of the surface water* and may lead to undesirable results." (Emphasis added). Therefore, while a model can be used to "measure" streamflow depletion, the regulation *requires* that the GSA consider impacts on beneficial uses of surface water when setting a MT that is, in turn, a quantifiable rate or volume of surface water depletion.	CalTrout-053, Cont'd
3	63-64	2217-2265	3.4.5.2	The same issues that exist with the GSP's proposed Minimum Threshold exist with its Measurable Objective, which is similarly insufficient and inconsistent with the law.	CalTrout-054
4	3	107-109	4.1	"[P]riorities for consideration include effectiveness toward maintaining the sustainability of the Basin (including the amount of environmental benefit to be gained through implementation of the PMA); minimizing impacts to the Basin's economy; seeking cost-effective solutions for external funding; and prioritizing voluntary and incentive-based programs over mandatory ones."	CalTrout-055
4	4	143-144	4.1	The GSA has more than an "obligation to oversee progress towards groundwater sustainability." Rather, the GSA is responsible for implementing the plan and achieving sustainability within 20 years of its adoption. (*See* Cal. Water Code § 10721(j) defining "groundwater sustainability agency" as "one or more local agencies that *implement* the provisions of this part (emphasis added)."	CalTrout-056
4	7-10	224	Table 1	Many of the Project and Management actions are contingent on other groups–primarily environmental conservation groups–acting. What	CalTrout-057

				happens if these groups cannot/will not continue their efforts? Will the GSA step in to implement the necessary projects? Where will the funding for such implementation come from? Also, the actions put a lot of emphasis on increasing the amount of water available through environmental improvements, rather than on regulating the users of groundwater–regulating the use of/curtailment of groundwater is only mentioned once, as a tier 3 action. This seems to put the burden of sustainability on environmental users of water, rather than sharing the responsibility between all the watershed's interest groups.	CalTrout-057, Cont'd
5	10	5.1.2	299-305	The only management actions that the GSA commits to taking are "coordination" and "outreach." What are the other actions the GSA is going to take to ensure that the basin reaches its sustainability goal?	CalTrout-058

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
1655 Heindon Road
Arcata, California 95521-4573

Refer to NMFS No: AR#10012WCR2021AR00040

September 23, 2021

Matt Parker, Natural Resources Specialist
Siskiyou County Flood Control and Water Conservation District GSA - Scott River
1312 Fairlane Drive
Yreka, California 96097

Re: NOAA's National Marine Fisheries Service comments on the Scott River Valley Groundwater Basin Groundwater Sustainability Plan -- draft Chapters 2, 3, and 4

Dear Mr. Parker:

NOAA's National Marine Fisheries Service (NMFS) is the federal agency responsible for managing, conserving, and protecting living marine resources in inland, coastal, and offshore waters of the United States. We derive our mandates from numerous statutes, including the Federal Endangered Species Act (ESA). The purpose of the ESA is to conserve threatened and endangered species and their ecosystems.

On August 11, 2021, the Siskiyou County Flood Control and Water Conservation District GSA - Scott River (SR GSA) released their draft final version of the Scott River Valley Basin Groundwater Sustainability Plan (SR GSP). Waterways that overlie portions of the Scott River Valley Basin (*e.g.,* Scott River and tributaries) support federally threatened Southern Oregon/Northern California Coasts coho salmon (*Oncorhynchus kisutch*), as well as Chinook salmon (*O. tshawytscha*) and steelhead (*O. mykiss*). This letter transmits our comments on the SR GSP.

We previously commented on draft Chapters 2, 3, and 4 of the SR GSP (Attachment 1). However, many of those comments do not appear to have been considered by the SR GSA, so we have reiterated them to begin our comments. In the future, we recommend the SR GSA compile a publicly available summary of comments received on the SR GSP, along with the GSA's response to each comment.

Chapter 2

Page 67, line 1719: Under "Stream Flow Status in Baseflow Conditions", the draft chapter states ..."*Reaches of some major tributaries in the Scott Valley only flow during wet or average winters.*" The authors should clarify whether this flow pattern is a natural process without anthropogenic cause, or a result of groundwater pumping impacts in the basin. If the latter, then the inter-annual variability in surface flow may be a streamflow depletion impact that should be investigated as such. NMFS-001

Page 71, line 1765: The draft chapter states…"GDEs consisting of perennial flowing streams (aquatic ecosystems) are mapped under Interconnected Surface Waters (see previous section)." No maps of GDEs consisting of perennial flowing streams appear to be included within the SR GSP chapters. Furthermore, perennial flow is not a requirement for interconnected surface waters under SGMA. Streams with intermittent flow contain seasonal habitat important to juvenile salmonid survival (reference). NMFS-002

Page 120, line 3180: The author should clarify what argument is being made here. The conclusion presented is that no apparent trend indicating long-term groundwater depletion in the Scott River Valley exists, with the reasoning presented as a comparison between fall storage between 2018 and 1991. However, the storage difference shows a 23 thousand acre-foot drop in groundwater storage between the two years, which would seem to suggest a long-term decline in storage. Also, the reasoning also alludes to 2018 being a dry year, as if implying that the two years are not an "apples to apples" comparison. However, 1991 also appears to have been a dry year (see Figure 22). NMFS-003

Page 121, line 3225: While discussing potential future changes to the water table slope resulting from future precipitation change, the author appears to suggest that a significant long-term decrease in precipitation is unlikely to lead to groundwater overdraft. This suggestion seems implausible if groundwater use is constant or increasing into the future. We suggest the author clarify the intended message of the paragraph. NMFS-004

Chapter 3

Page 22, line 786: The draft chapter states that "existing biological monitoring that will be used to assess the condition of aquatic and other groundwater-dependent ecosystems includes the CDFW camera trap program and biological surveys conducted by the Siskiyou County RCD (RCD)." Both the CDFW camera trap program and the adult redd surveys by the RCD only inform adult migration and spawning behavior, and thus have no probative value for discerning streamflow depletion impacts on juvenile salmonids and their habitat. NMFS suggests the SR GSA identify streamflow depletion impacts on juvenile salmonids as a data gap, and develop and propose specific studies and monitoring that will provide the necessary data within the first several years of the SR GSP. NMFS-005

Page 25, line 884: As an example of future field monitoring data used to assess and improve SVIHM, the draft chapter lists the "last date on which certain flow triggers are exceeded in the spring recession (e.g., date at which flow at the Fort Jones gauge falls below 40 cfs)." The reference to 40 cfs is not explained, and the significance of that flow level is not apparent. The author should clarify what the significance is of 40 cfs at the Fort Jones gauge. NMFS-006

Page29, Line 995: The draft Chapter 3 states that basin groundwater pumping currently does not exceed the sustainable yield of the Basin. However, as described in the draft Chapter 2, sustainable yield as defined under SGMA means "the maximum quantity of water, calculated over a base period representative of long-term conditions in the basin and including any temporary surplus, that can be withdrawn annually from a groundwater supply without causing NMFS-007

an undesirable result." (California Water Code Section 10721). The draft Chapter 3 does not demonstrate that the Scott Valley subbasin is sustainable at this point (i.e., avoids all undesirable results), so any sustainable yields presented are hypothetical and pending further refinement after all undesirable results, including streamflow depletion, are proven avoided.

NMFS-007, Cont'd

Page 34, line 1134-1136: The passage states that water levels have remained steady over the last 40 years and no overdraft or long term decline has occurred. NMFS disputes this fact as Scott Valley has been identified as a critically over drafted basin, hence it's inclusion in the SGMA program. Additionally, in NMFS' SONCC Coho Salmon Recovery Plan, we identify "Altered Hydrologic Function" as a key limiting stress for the Scott River coho salmon population. The limiting threats are identified as "Agricultural Practices" and "Diversions." In the recent past the date of reconnection within the mainstem and at tributary mouths has been increasing into the winter. In some years, this prevents Chinook salmon from entering the Valley and has recently restricted coho salmon from reaching key spawning grounds in tributaries. We believe this delay in reconnection is a product of over drafting groundwater during the summer, which impacts the designated beneficial uses of salmonid migration, spawning and early life development, and cold water habitat[1]. The groundwater first must recharge in the fall before surface flows are reconnected, often too late to support critical fisheries needs. Thus, undesirable results, such as streamflow depletion, can occur even within a groundwater basin that may fully recharge each winter. NMFS recommends the SR GSP take a seasonal perspective when describing surface flow rates and relate those to key fisheries life history requirements – a beneficial use of interconnected surface waters. For example, how many contiguous days do mainstem passage barriers exist during fall migration? Or when does tributary reconnection occur at prime spawning locations?

NMFS-008

Page 52, line 1797: The SR GSP proposes an aspirational "Watershed Goal" that forms the basis for the streamflow depletion measurable objective. NMFS agrees a larger effort outside the SGMA process will be required to solve streamflow degradation in the Scott River watershed, but disagrees that an aspirational "Watershed Goal" proposed by the SR GSA is not appropriate per SGMA regulations. At line 1852, the document acknowledges the streamflow depletion undesirable result is "smaller in scope" than the existing challenges in the Scott River stream network, and proposes meeting SGMA requirements (i.e., avoiding undesirable results) through aspirational sustainable management criteria that addresses all streamflow threats in the basin. However, the aspirational goal is just that – an aspiration that requires a level of cooperation and funding that is hardly certain to occur. The draft Chapter 3 acknowledges this point at line 1880. Many groups have been trying to implement aspirational flow restoration goals within the Scott River watershed for decades, and current instream flows continue to harm ESA-listed salmonids and their habitat. On the other hand, SGMA contains clear goals, requirements, and deadlines that will ensure that streamflow depletion impacts from wells subject to SGMA (i.e., outside the adjudicated zone) are avoided by 2042. This type of certainty is what is missing from the proposed "aspirational" goal. Instead of, or in addition to, the aspirational goal, the SR GSA should develop sustainable management criteria that can be used to clearly discern whether SGMA requirements (i.e., avoiding streamflow depletion impacts from groundwater extraction in the un-adjudicated area) are ultimately met. In summary, wrapping the SGMA-mandated

NMFS-009

[1]

requirement within a larger "aspirational" watershed goal inappropriately obfuscates the required mandates of SGMA, and is not appropriate. NMFS-009, Cont'd

Page 50, line 1747: The draft chapters do not provide an adequate description of the impact to surface waters as a result of groundwater extraction, specifically the impact to coho and Chinook salmon species and their habitat. The SR GSP sets a baseline condition looking at groundwater conditions in the years of 2014/2015. Chapter 3 states undesirable conditions in the interconnected surface water already existing for over 30 years prior to 2015 and those conditions have not worsened since 2015. NMFS does not believe this approach is appropriate when addressing ESA-listed species likely impacted by groundwater pumping within the Scott River basin. During the 2014/2015 period, California was at the peak of the worst drought in 1,200 years (Griffin and Anchukaitis 2014). In the Scott Valley, tributaries were disconnected from the mainstem river and coho salmon were forced to spawn in undesirable locations, which led to a rescue-relocation efforts that were unsuccessful in maintaining survival through outmigration. The SR GSP must set a baseline condition above and beyond the conditions experienced during a significant drought if it intends to avoid undesirable results to interconnected surface waters. NMFS-010

Page 53, line 1862: NMFS is not aware of SGMA existing regulations requiring a "balancing test between economic cost and environmental improvement." Instead, SGMA ultimately requires that GSAs achieve groundwater sustainability (i.e., the management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results). Hopefully sustainable groundwater management in the Scott River Valley can be achieved in an economical fashion, which is an obvious goal for all parties involved. However, economical achievement, aside from being a nebulous term, is ultimately a goal and not a requirement under SGMA. NMFS-011

Page 54, line 1887: The narrative states that the minimum threshold is set to address public trust resources, but the only reference to what this would entail is the reference to "some reversal of undesirable results." Given the earlier described issues with the "aspirational" sustainable management criteria proposed, the draft document should further clarify how those criteria are likely to adequately address public trust resources. NMFS-012

Page 54, line 1890: The draft Chapter 3 seems to identify a backwards process for defining minimum thresholds for surface flow objectives. These objectives were identified based on what PMA's the agriculture community was willing to do. Since the landowners agreed to conduct managed aquifer recharge (MAR) and in lieu recharge (ILR) actions, the model was run to show only the changed depletion with this scenario in place. This implementation of this scenario provided the minimum thresholds. NMFS recommends the model be run in a reverse fashion. First, interconnected surface water objectives (minimum flows) should be identified. Then the model should be run using a series of various PMAs to describe methods to meet those objectives. In this approach, seasonal objectives would be important to support fisheries life history needs. Ideas include seasonal min flows at Fort Jones gauge, number of days of mainstem disconnection, timely seasonal tributary connection, etc. NMFS-013

Page 54, line 1898 describes that the minimum thresholds identified under the MAR-ILR scenario will result in a 19% depletion reversal. What exactly does this depletion reversal do in the context of beneficial uses? NMFS suggests that you show how this amount of depletion reversal will impact interconnected surface waters and the beneficial use to salmonids in critical times of year that support their life history needs. NMFS-014

Page 55, line 1957: Measurable objectives represent a threshold that achieves the sustainability goal for the basin within 20 years of Plan implementation. Therefore, the SR GSP must achieve the sustainability goal by 2042, not just show progress toward meeting it as is stated by the draft Chapter 3. NMFS-015

New Comments

Chapter 2

Page 75, Table 7: "Average Stream Depletion" is meaningless for analyzing streamflow depletion impacts to beneficial uses of surface water. This concept also appears in Chapter 3, where there is a reliance upon "average" stream depletion reversal as part of the minimum threshold definition (page 61, line 2152). Fish and other aquatic organisms survive or perish based upon instantaneous conditions at a point in time, especially within a compromised system like the Scott River watershed where anthropogenic surface and groundwater withdrawal can dewater whole stream reaches (reference?). NMFS-016

Chapter 2, page 89, line 2441: the water quality component should also consider temperature and dissolved oxygen, since these parameters can be degraded by the impairment of groundwater accretion to the stream and can lead to salmonid mortality. NMFS-017

Chapter 3

Page 59, line 2089: The SR GSP misinterprets the depletion of interconnected surface water undesirable result as "what is a 'reasonable' amount of avoided groundwater use?" There are a few problems with this approach. First, the undesirable result in question is defined as *"depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water"* (Water Code Section 10721(x)). There are other undesirable results that pertain to minimizing impacts on groundwater pumpers, namely the undesirable result of "significant and unreasonable reduction of groundwater storage." Nowhere within the SGMA regulations or Best Management Practices (2017) does it acknowledge or recommend considering impacts to groundwater pumpers as part of sustainable management criteria development for the streamflow depletion undesirable result, and thus to do so is inappropriate. NMFS-018

Page 60, line 2108: NMFS finds it notable that the SR GSA includes a goal of satisfying the ESA with the measurable objective (page 59, line 2074), but not for the minimum threshold (page 60, line 2108). NMFS reminds the SR GSA that it must comply with the ESA (23 CCR § 354.28(b)(5)), and that compliance must occur at all times and not just at the end of the 20 year GSP implementation period. For reasons outlined above, NMFS believes a minimum threshold based upon historically high streamflow depletion rates is not consistent with the ESA, despite the SR GSA's assertion to the contrary (page 57, line 1976). If the SR GSA wishes to maintain this position in the final GSP, we recommend they thoroughly explain what instream habitat conditions will result under the minimum threshold, and how those conditions will avoid adversely affecting ESA-listed coho salmon. Any explanation should avoid the generalized, qualitative reasoning currently found within the SR GSP, but instead be supported by quantitative analysis linking groundwater elevations, surface flow depletion, and resultant impacts to instream habitat variables important to coho salmon. NMFS-019

Page 60, line 2113: The SR GSP states the following regarding minimum threshold development for the undesirable result of streamflow depletion:

> *"This framework for the minimum threshold is consistent with 23 CCR 354.28(c)(6), which (A) specifies the use of models to measure stream depletion, (B) implies that consideration of impacts on beneficial uses and surface flows is necessary, but (C) does not require that streamflow itself is used to set the minimum threshold, triggers, or interim targets."*

The above passage mischaracterizes the SGMA regulations in a couple significant ways. First off, the required consideration is for "beneficial uses *of the* surface water", not "beneficial uses *and surface flows*" as the SR GSP contends. As noted earlier, identified beneficial uses in the Scott River include migration of aquatic organisms, fish spawning and early development, and cold water habitat, and these beneficial uses must be considered (and significant and unreasonable impact to them avoided) when crafting minimum thresholds. Also, while the regulations do not require streamflow be used to set minimum thresholds, triggers, or interim targets, they do require the minimum threshold for streamflow depletion be either the "rate or volume of surface water depletion caused by groundwater use that has adverse impacts on beneficial uses of the surface water, and may lead to undesirable results." If the SR GSA wishes to use groundwater elevation as a proxy for streamflow depletion rate or volume, it must "demonstrate that the representative value is a reasonable proxy for multiple individual minimum thresholds as supported by adequate evidence." (23 CCR 354.28(d) NMFS-020

We hope these comments effectively clarify important concerns we have concerning potential significant impacts to SONCC coho salmon, Chinook salmon, and steelhead likely to result from the SR GSP. If you have any questions, please do not hesitate to contact Rick Rogers (707-578-8552, or Rick.Rogers@noaa.gov) for further assistance.

Sincerely,

Jim Simondet
Klamath Branch Supervisor
California Coastal Office

cc: Janae Scruggs, CDFW Senior Environmental Scientist Specialist (janae.scruggs@wildlife.ca.gov)

Joe Croteau, CDFW, Supervisor

Pat Vellines, SGMA Point of Contact Scott Rive Valley Basin (Patricia.Vellines@water.ca.gov)

Natalie Stork, SWRCB Chief -- Groundwater Management Program (Natalie.Stork@waterboards.ca.gov)

Craig Altare, DWR Chief, GSP Review Section (craig.altare@water.ca.gov)

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State of California – Natural Resources Agency
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GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director

September 23, 2021

Via Electronic Mail

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SUBJECT: CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE COMMENTS ON THE SCOTT RIVER VALLEY BASIN DRAFT GROUNDWATER SUSTAINABLITY PLAN

Dear Matt Parker:

The California Department of Fish and Wildlife (Department) appreciates the opportunity to provide additional comments on the Draft Groundwater Sustainability Plan (GSP) for Scott River Valley Basin (Basin) prepared by the Siskiyou County Flood Control and Water Conservation District, designated as the Groundwater Sustainability Agency (GSA).

Since the Basin is designated as medium priority under the Sustainable Groundwater Management Act (SGMA), it must be managed under a Groundwater Sustainability Plan (GSP) by January 31, 2022. In addition to the comments herein, the Department has provided other input into the proposed Draft GSP. On March 26, 2020, the Department provided comments in advance of the preparation of the Draft GSP which outlined general guidance, basin information, and recommended tools available to the GSA. The Department's March 26, 2020, comments focused on the Department's role as a trustee agency. In that role, the Department has an interest in the sustainable management of groundwater, as many sensitive ecosystems and species depend on groundwater and interconnected surface waters (ISWs). Specifically, the Department is concerned with the decline of salmonid populations due to the lack of quality aquatic habitat. The Department provided its Interim Instream Flow Criteria for the Protection of Fishery Resources in the Scott River Watershed, Siskiyou County (2017) as guidance when developing an interim target flow to avoid extirpation of salmonids. The Department recognizes a more thorough

watershed wide study is required to achieve the needs of all sensitive ecosystems and species dependent on groundwater and ISW in the Basin.

Background

The GSA appointed an Advisory Committee, composed of members of the Basin community, to work with a group of consultants to develop the Draft GSP. The Advisory Committee requested comments from any stakeholder as it developed the Draft GSP. The Department previously provided comments during Advisory Committee meetings, and on certain draft Chapters as they were made available. During Committee meetings, the Department provided comments on issues including the following: use of the best available science and information to develop the model; the water budget; identification and consideration of beneficial users and groundwater-dependent ecosystems (GDEs); and sustainable management criteria. The Draft GSP does not fully address all comments the Department provided during the Advisory Committee meetings. After its review of the Draft GSP, the Department also has additional comments that it had not raised previously. Therefore, the Department is commenting again at this point in time to ensure all of these comments are fully considered in the development of the Draft GSP.

Organization of Comments

The Department has organized its comments below into several key areas of concern: (1) the Department's trustee agency role; (2) SGMA requirements relevant to beneficial users and GDEs; (3) SGMA hydrogeologic conceptual model requirements; (4) sustainable management criteria and water budget requirements; (5) SGMA considerations requiring basin-wide planning and management; (6) monitoring network and well information; (7) data gaps and use of the best available science; (8) implementing projects and management actions (PMAs); (9) Public Trust Doctrine and California Endangered Species Act (CESA) requirements; and (10) SWRCB emergency regulations. This letter highlights key comments and is not inclusive of all comments provided to the Advisory Committee during meetings and/or communication with County staff. In addition, model documentation was not provided until September 13, 2021. Since the completed Draft GSP was not publicly available since the beginning of the public review period, limited time was available for review and comment of certain sections of the Draft GSP.

Department's Trustee Role

As the trustee agency for the State's fish and wildlife resources, the Department has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and the habitat necessary for biologically sustainable populations of such species. (Fish & G. Code §§ 711.7 & 1802.) The Scott River watershed (included in the Klamath River watershed) provides aquatic habitat for four species of anadromous fish: Chinook Salmon, Southern Oregon/Northern California Coast (SONCC) Coho Salmon (CESA and Endangered Species Act (ESA) threatened), Steelhead Trout, and Pacific Lamprey (State species of special concern). The Scott River watershed also supports populations of bank swallow (CESA threatened), western pond turtle (State species of special concern), foothill yellow-legged frog (State species of special concern), greater sandhill crane (CESA threatened), willow flycatcher (CESA and ESA endangered), Roosevelt elk, black-tailed deer, and other fish and wildlife species that rely on habitats supported and supplemented by groundwater.

The Draft GSP raises significant concerns about potential impacts of groundwater pumping on GDEs, ISWs, and species within its jurisdiction. The Department urges the GSA to plan for and engage in responsible groundwater management that minimizes or avoids these impacts to the maximum extent feasible as required under applicable provisions of SGMA and the Public Trust Doctrine. CDFW-001

SGMA Requirements Relevant to Beneficial Users and GDEs

In addition to other requirements that will be discussed later in this letter, SGMA and its implementing regulations afford beneficial users and GDEs specific consideration, including the following as pertinent to GSPs:

Considerations of Beneficial Uses and Users

GSPs must consider the interests of all beneficial uses and users of groundwater, including environmental users of groundwater. (Water Code § 10723.2.) GSPs must also **identify and consider potential effects on all beneficial uses and users of groundwater**. (23 CCR §§ 354.10(a), 354.26(b)(3), 354.28(b)(4), 354.34(b)(2), and 354.34(f)(3).) The Draft GSP does not adequately identify all the environmental users in the Basin, their locations, the groundwater dependent habitat they depend on at certain life stages, and how the Draft GSP will meet their needs. In Table 11 of Chapter 2, the Draft GSP identifies species prioritized for management in the first column, and other species that depend on the same ecosystems as the species prioritized for management in the second CDFW-002 CDFW-003

column. However, the Draft GSP does not indicate where these species are found in the Basin and how these individual species could be impacted by groundwater. The Draft GSP also does not include consideration of other special status species (such as fully protected raptor species) or species of greatest conservation need found within the Basin and how they might be dependent upon or impacted by groundwater.

CDFW-003, Cont'd

Identification and Consideration of GDEs

GSPs must **consider impacts to GDEs**. (Water Code § 10727.4(l); *see also* 23 CCR § 354.16(g).) The Department is uncertain whether the Draft GSP accurately identifies all GDEs in the Basin. Specifically, the Draft GSP does not provide sufficient detail when describing the methods used for GDE classification and mapping included in the Draft GSP and the rationale for the methods used. The Draft GSP mentions an evaluation, inventory, and mapping exercise (Section 2.2.1.8, lines 2136-2137) but does not provide any information on methods, types of remote sensing used, field data collection, field verification, or quality assurance/quality control measures employed. Without these means of verification, the Department cannot evaluate or comment on the accuracy of the GSP's GDE classification or mapping. However, the Department recommends that GDE mapping be informed by science-based vegetation classification or similar methods, such as the Department's *Survey of California Vegetation Classification and Mapping Standards.*[1] The Draft GSP's classification and mapping should be revised if necessary after utilizing these methods. Classification and mapping methods should be thoroughly described so that GDE classification and mapping can be verified by stakeholders or repeated during future GSP updates and effectiveness monitoring.

CDFW-004

Table 8 of the Draft GSP illustrates another significant concern with the GDE inventory. Fremont cottonwood (*Populus fremontii*) is characterized as occurring in the Basin. However, a review of available location and herbarium information indicates that Fremont cottonwood is likely to be rare or possibly non-native to the Basin. (Fremont cottonwood is a popular landscaping tree around ranches and homesteads). The Draft GSP cites the restoration analysis for Scott River riparian vegetation (Siskiyou RCD, 2009) as an information source. However, the RCD analysis does not include Fremont cottonwood and instead lists a very different species, black cottonwood (*Populus trichocarpa*). Although Calflora.org lists a single record of Fremont cottonwood in the Scott River

CDFW-005

[1] https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=102342&inline

Watershed (Moffett Creek), the Department recommends that the Draft GSP use more commonly occurring groundwater dependent species for its analysis, such as black cottonwood, western (water) birch, white alder, or other species known to occur in the basin. Valley oak (*Quercus lobata*) also appears in Table 8. According to Calflora.org, there are zero occurrences of valley oak in the Basin and none in Siskiyou County. This species should be removed from the GDE discussion and replaced with a native species in the Basin. The GSA should also note that vegetation types are not listed pursuant to CESA (Section 2.2.1.8, line 2121), but sensitive natural communities are classified by the Department.[2] The Department recommends removing the reference to CESA in the context of vegetation communities.

CDFW-005, Cont'd

CDFW-006

CDFW-007

Hydrogeologic Conceptual Model Requirements

SGMA regulations require each GSP to include a descriptive hydrogeologic conceptual model (HCM) of the basin based on technical studies and qualified maps that characterizes the physical components and interaction of the surface water and groundwater systems in the basin. (23 CCR § 354.14.) The HCM must include a description of data gaps and uncertainty within the HCM. (*Id*. at § 354.14(b)(4)(5).)

CDFW-008

While the Draft GSP includes an HCM, it is not clear that the HCM accurately characterizes the physical components and surface water-groundwater interactions in the Basin. For example, the HCM in the Draft GSP does not properly identify and characterize the principal aquifers and aquitards within the Basin as required by applicable SGMA regulations. (23 CCR §354.14(b)(4)(B) and (C).) The Draft GSP provides a regional description of the aquifer system(s) within the Basin without specifying the principal aquifer system is collectively within the Basin. The Draft GSP indicates, "The predominant water-bearing strata units in Scott Valley are the Quaternary stream channel, floodplain, and alluvial deposits…" but does not classify them as the principal aquifer system within the Basin and does not characterize the vertical and lateral extent of these assemblages in relation to one another. Additionally, the Draft GSP does not adequately characterize associated aquifer parameters (i.e., hydraulic connectivity, specific yield and storativity of the unconfined aquifer system) of each of the forementioned aquifer assemblages. The Draft GSP should characterize or define the lateral and vertical extent of existing

CDFW-009

CDFW-010

[2] https://wildlife.ca.gov/Data/VegCAMP/Natural-Communities#sensitive%20natural%20communities

aquitards/confining layers within the basin. In Figures 12 and 13 in Chapter 2 of the Draft GSP it provides two geologic cross sections that only show a generalized visualization of the aquifer system within the basin but does not clearly indicate the depths and lateral extents at which the aforementioned aquifer assemblages are located. Additionally, the included cross sections do not clearly identify the depths and lateral extents of the other geologic assemblages listed within the HCM (i.e., older alluvial deposits). In addition, the Draft GSP does not clearly identify a definable bottom of the basin as required by applicable SGMA regulations. (23 CCR §354.14(b)(3).) The Draft GSP provides a discussion of the geologic units from oldest to youngest within the Basin but does not identify a definable base between the alluvial material and deeper hard rock material in the basin.

CDFW-010, Cont'd

CDFW-011

SGMA requires that the Draft GSP describe historic and current water level trends within the Basin. Pursuant to that requirement, the Draft GSP needs to provide groundwater level elevation contour maps depicting the groundwater table or potentiometric surface associated with current seasonal highs and seasonal lows and hydraulic gradients between principal aquifers. The Draft GSP only provides groundwater elevation contour maps for the spring and fall of 2015 but does not provide any additional groundwater contour maps in compliance with SGMA regulations requiring characterization of current seasonal highs and lows of the principal aquifer within the Basin. (23 CCR §354.16 (a)(1).)

CDFW-012

Sustainable Management Criteria and Water Budget Requirements

GSPs must **establish sustainable management criteria that avoid undesirable results** within 20 years of the applicable statutory deadline, including **depletions of ISW that have significant and unreasonable adverse impacts on beneficial uses of the surface water.** (23 CCR § 354.22 et seq. and Water Code §§ 10721(x)(6) and 10727.2(b).) The Draft GSP concludes that sustainability will be achieved by 2042 and undesirable results will be avoided, but the underlying analysis and data do not fully support these conclusions. The goal of sustainability cannot be achieved by 2042 without an accurate water budget and clearly-defined sustainable management criteria, including minimum thresholds, measurable objectives, and interim milestones that meet requirements including the following.

CDFW-013

Interim Milestones

The GSP must describe "a reasonable path to achieve and maintain the sustainability goal", including a description of interim milestones for each

CDFW-014

relevant sustainability indicator, which must be provided at increments of five years (i.e., at 5, 10, 15, and 20 years from GSP adoption). (23 CCR § 354.30(e).) While the Draft GSP provides interim milestones are provided, it is unclear how these milestones will provide a "reasonable path" to achieving sustainability because they are framed in terms of equations and percentages without relation to a specific value to ensure sustainability.

CDFW-014, Cont'd

Measurable Objectives and Minimum Thresholds for ISW Depletions

For each relevant sustainability indicator, the GSP must describe quantitative measurable objectives to achieve the sustainability goal for the basin by 2042 and maintain sustainable management thereafter. (23 CCR § 354.30(a).) SGMA regulations also require the GSP to include numeric minimum thresholds to define and avoid undesirable results, which must be explained and justified based on basin-specific information and other data or models as appropriate, with appropriate accounting for any uncertainty in the understanding of the basin setting. (*Id*. at § 354.28(a)-(b).) The GSP must explain the relationship between the minimum thresholds and the relevant sustainability indicator, how the minimum thresholds will avoid causing undesirable results, how the minimum thresholds may affect the interests of beneficial uses and users of groundwater, and how each minimum threshold will be quantitatively measured consistent with SGMA monitoring network requirements. (*Id*.)

CDFW-015

SGMA regulations require minimum thresholds related to depletions of interconnected surface water to be "the rate or volume of surface water depletions caused by groundwater use that has adverse impacts on beneficial uses of the surface water and may lead to undesirable results." (23 CCR § 354.28(c)(6).) These minimum thresholds must be supported by the "location, quantity, and timing of depletions of interconnected surface water" and "a description of the groundwater and surface water model used to quantify surface water depletion." (*Id*. at § 354.28(c)(6).) If a numerical groundwater-surface water model is not used to quantify surface water depletion, the GSP must identify and describe an equally effective method, tool, or analytical model to be used for this purpose. The Draft GSP does not meet these requirements because it does not set minimum thresholds based on the rate or volume of surface water depletions caused by groundwater use, and it does not utilize a basin-wide groundwater-surface water model or equally effective method, tool, or model to quantify such depletions. Instead, the Draft GSP states that its analysis has considered measured groundwater contributions and the protection of GDEs through equations and numbers identifying the minimum thresholds and measurable objectives. The Draft GSP's limited explanation and justification do not demonstrate how the equations and numbers will ensure

CDFW-016

adequate protection of fish and wildlife resources and habitat. More specifically, these equations and general numbers do not clearly articulate how they will affect beneficial users' needs. The numbers and equations do not relate to flows needed to support species and habitat, and the equations do not appear to produce specific quantitative metrics protective of resource needs.

CDFW-016, Cont'd

In addition, the GSA's assumptions regarding surface flows may be unrealistic. The State Water Resources Control Board (SWRCB) has declared Scott River a fully appropriated stream system (FASS) during part of the year, meaning insufficient supply is available for new water right applications at this time (Water Right Order 98-08). The FASS determination was based on numerous water rights decisions and orders that determined that allocated water likely exceeds available supplies from April 1 to November 30 each year (i.e., supplies are likely over-allocated at this time). SWRCB's determination was made based on multiple judgments of the Siskiyou County Superior Court, including Decree No. 13775 for Shackleford Creek and its tributaries (1950), Judgment No. 14478 for French Creek (1958), and Decree No. 30662 for the Scott River Stream System (1980) related to surface water rights. Scott River Decree No. 30662 also included provisions governing rights to certain groundwater recognized to be interconnected with the mainstem Scott River as delineated in that Decree. The Draft GSP anticipates that surface water users, the Scott Valley and Shasta Valley Watermaster District (SSWD), and SWRCB will be able to maintain sufficient flows instream. Thus, the GSA does not analyze issues regarding likely over-allocation of supplies and potential surface water depletions from groundwater pumping.

CDFW-017

Furthermore, the Draft GSP fails to incorporate best available science that could be used to inform appropriate criteria for instream flows. In Chapter 2, the draft GSP states that the interim instream flow recommendations presented by the Department "have not been reviewed and adopted by the State Water Resources Control Board and do not constitute a regulatory instream flow requirement at the time when this Plan was adopted." The Draft GSP provides an equation to describe the sustainable management criteria for interconnected surface waters. The equation without the context of instream flow values at a location like the Fort Jones gage makes it difficult to assess if aquatic resources needs are being met by the minimum thresholds. During Advisory Committee meetings, the Department's interim flow recommendations have been categorized as an "aspirational watershed goal" provided in Chapter 5. The GSA should utilize the best available science in determining and implementing sufficient instream flows. The Department has provided best

CDFW-018

CDFW-019

available science that should be used to answer this question now rather than referring to an "aspirational watershed goal." Please see the Department's previous March 26, 2020, letter for details on this best available science and the needs of other special-status species that require attention beyond salmonids. On August 17, 2021, SWRCB also adopted emergency instream flow requirements (discussed more fully below) that inform the minimum flow needs for survival of Chinook Salmon and Coho Salmon in the present drought emergency. This information and any further information that becomes available regarding the needs of beneficial users should be considered when developing and implementing the Draft GSP. The Department recommends that the GSA establish sustainable management criteria based on the best available science that meets the needs of all beneficial users.

CDFW-019, Cont'd

CDFW-020

Water Budget Requirements

Per SGMA regulations, each GSP "shall rely on the best available information and best available science to quantify the water budget for the basin in order to provide an understanding of historical and projected hydrology, water demand, water supply, land use, population, climate change, sea level rise, groundwater and surface water interaction, and subsurface groundwater flow." (23 CCR § 354.18 (e).) The water budget is a product of the Scott Valley Integrated Hydrologic Model (SVIHM). CDFW acknowledges that Department of Water Resources (DWR) allows the use of models to prepare Water Budget in Basins; however, DWR also stresses the importance of using reliable data sets when available to increase the accuracy of the models output. The GSP identifies no extraction information was available for wells within the Basin at the time of preparing the model. As a result, the Draft GSP provides a discussion on utilizing evapotranspiration (ET) estimates to determine rates of aquifer pumping specific to crop type to quantify groundwater extraction values for development of the water budget. CDFW understands that this method may be the best available science at present but suggests the GSA considers remedying the issues regarding lack of accurate well information and groundwater usage data sets needed to adequately characterize groundwater levels and groundwater in storage within the Basin.

CDFW-021

Chapter 2 of the Draft GSP discusses the estimated specific yield and storativity of the unconfined aquifer system using the SVIHM. The Draft GSP additionally states that seasonal changes in observed water levels were used to calibrate specific yield and storativity in the Basin. This statement raises some concerns with regard to specific yield and storativity estimates of the unconfined aquifer system and wells used to calibrate these values within the Basin. Specific yield is generally defined as the volume of water released from storage by the

unconfined aquifer per unit surface area of aquifer per unit decline of the water table. The storativity of a confined aquifer is defined as the volume of water released from storage per unit surface of the aquifer or aquitard per unit decline in hydraulic head. The geologic descriptions presented within the HCM section of the Draft GSP, and information presented within the SVIHM description and Appendix 2C indicates that there is no regional definable confining layer within the Basin. However, as previously mentioned it does indicate that there may be local clay layers or clay lenses that are relatively broad in extent. In areas within the model domain, where suspected confinement exist, correct calculations should be considered to estimate the storativity of the confined assemblages described within the geologic facies analysis. The locations and vertical extents of these confining units need to be described and characterized within the HCM section of the document and if applicable, should be used to refine storativity estimates in areas where confined aquifer assemblages are present. Additionally, discussions related to the observed seasonal water levels used to calibrate specific yield and storativity estimates modeled by the SVIHM would be helpful to the Reader and should be included in the Draft GSP. Potentially this information might be found in well logs that contain lithologic data sets that indicate the occurrence of these confining units. If well data exists that indicates the presence of confining layers in the Basin, or well construction information exists that validates groundwater level information specific to these zones under confinement, this information should be added to the HCM section of the Draft GSP. The GSA should also conduct more detailed investigations to more accurately describe the hydrogeologic setting within the Basin. Once the GSA clarifies its understanding of these issues, the water budget should be adjusted accordingly and the Draft GSP should identify sustainable management criteria that prevent adverse impacts to beneficial users, such as dewatering of GDEs, and strive for long term groundwater sustainability with PMAs. The GSA should consider developing PMAs that promote more efficient water use through water conservation where feasible.

CDFW-022

CDFW-023

CDFW-024

SGMA Considerations Requiring Basin-Wide Planning and Management

The Draft GSP improperly excludes the adjudicated areas of the Basin in the Scott River Stream System (Adjudicated Zone) from its water budget and definition of undesirable results. The Draft GSP states that Water Code section 10720.8 provides that the Adjudicated Zone is exempt from SGMA. Section 10720.8(a) merely states that the adjudicated basins set forth in this subdivision (including the Adjudicated Zone) are not subject to Part 2.74 of SGMA, which includes requirements to develop a GSP. These adjudicated basins are still

CDFW-025

subject to other requirements under SGMA, including annual reporting requirements under Water Code section 10720.8(f).

CDFW-025, Cont'd

Furthermore, SGMA's exemption of adjudicated basins from GSP requirements does not override other SGMA provisions indicating that where a GSP is required, it must account for the *entire basin*, including impacts to adjudicated areas. For purposes of SGMA, "basins" are defined as basins or subbasins identified in DWR's Bulletin 118. (23 CCR § 341(g).) In Bulletin 118, DWR defines the Scott Valley basin to include the Adjudicated Zone. (*see* Scott River Valley Groundwater Basin Description, DWR 2003.)

SGMA statutes require a GSP to be developed and implemented for each DWR-designated medium- and high-priority basin, and requires those GSPs to be either "a single plan covering the *entire basin*" or "multiple plans...coordinated pursuant to a single coordination agreement that covers the *entire basin*." (Water Code § 10727.) In addition, SGMA statutes and regulations are clear that a GSP's water budget and sustainability criteria must be developed to account for the *entire basin*:

- **Water Budgets**: SGMA regulations require each GSP to include a water budget that accounts for "the total annual volume of groundwater and surface water entering and leaving the *basin*, including historical, current and projected water budget conditions, and the change in the volume of water stored." (23 CCR § 354.18(a), emphasis added.) The water budget must also include "[a]n estimate of sustainable yield for the *basin*." (*Id*. at (b)(7), emphasis added.)
- **Sustainability Criteria**: SGMA regulations indicate that sustainable management criteria are "criteria by which [a GSA] defines conditions in its [GSP] that constitute sustainable groundwater management for the *basin*." (23 CCR § 354.22.) GSPs must establish "a sustainability goal for the *basin* that culminates in the absence of undesirable results within 20 years of the applicable statutory deadline", including measures that will be implemented to "ensure that the *basin* will be operated within its sustainable yield." (*Id*. at § 354.24, emphasis added.)
- **Undesirable Results**: Undesirable results are defined as effects "caused by groundwater conditions *throughout the basin*." (Water Code § 10721, subd. (x), emphasis added; *see also* 23 CCR § 354.26(a).)

CDFW-026

Monitoring Network and Well Information

GSPs must describe monitoring networks that can identify adverse impacts to beneficial uses of ISWs. (23 CCR § 354.34(c)(6)(D).) The GSA should clarify how it plans to develop a monitoring network capable of collecting sufficient data to demonstrate short-term, seasonal, and long-term trends in groundwater and related surface water conditions as required by SGMA regulations. (23 CCR §354.34.) The Draft GSP references Appendix 3A, Table 1, which includes a list of wells that were reviewed for potential use in the Basin's evaluation. However, the Draft GSP does not clearly identify the wells used for monitoring, the locations of these wells, or specific well construction information for the wells used. Within Appendix 2, the Draft GSP provides Hydrographs for 85 wells but only provides a small map of the well location at the top of the hydrograph, which is illegible and uninformative. These hydrographs do not indicate or clarify what aquifer unit is being monitored. The Draft GSP only provides minimal well construction information (i.e., well completion depth) for a few wells. In Chapter 3, Table 2 identifies wells designated for potential inclusion in the groundwater level monitoring and storage monitoring network as Representative Monitoring Points (RMPs). However, the map provided for these wells does not provide any designation (well identification) for the points shown on the map. The Draft GSP should include the well ID and associated information needed to assist in evaluating the proposed observation point for its potential to accurately characterize groundwater occurrence at that location. The data set should include the ground surface elevations for each well, reference point elevations for water level measurements, or important well construction information (i.e., well screen perforation intervals).

CDFW-027

CDFW-028

CDFW-029

CDFW-030

Data Gaps and Use of the Best Available Science

Per SGMA regulations, the Draft GSP must identify reasonable measures and schedules to eliminate data gaps. (23 CCR § 355.4(b)(2).) The Draft GSP does not contain a basin-wide groundwater-surface water model, analysis of the surface water depletion rate, or basin-wide groundwater monitoring, all of which are necessary to assess potential surface water depletions and impacts to beneficial surface water users, including Chinook Salmon, Coho Salmon, and Pacific Lamprey. The Draft GSP also lacks quantitative criteria for instream flows (discussed more fully below), which are needed to assess compliance with SGMA and avoid significant and unreasonable depletions of ISW. The Department acknowledges data gaps may initially exist and may make development of certain criteria more challenging. However, the Draft GSP must set forth a reasonable pathway and timeline for addressing these data gaps

CDFW-031

CDFW-032

and developing sustainable management criteria as required under SGMA, supplementing with models and other data if needed to address uncertainties in basin-specific data. CDFW-032, Cont'd

After conducting the necessary analysis and establishing appropriate criteria, the Draft GSP should be updated to consider and avoid any unreasonable adverse impacts to beneficial users anticipated to result from ISW depletions. The Draft GSP characterizes instream flows as "aspirational watershed goals" within sustainable management criteria. This characterization ignores the plain language of SGMA, which clearly indicates sustainable management criteria and objectives must be developed to avoid undesirable results within the planning and implementation horizon. (23 CCR §§ 354.24, 354.26, and 354.28.) In addition, SGMA requires the assumptions, criteria, findings, and objectives of a GSP to be reasonable and supported by the best available information and best available science. (23 CCR § 355.4(b)(1).) The Department is aware of available information not being utilized to the fullest for the development of each sustainable management criteria and the water budget in the Draft GSP. Specifically, the GSP lacks consideration of current versus historic surface water extractions, agriculture ditch losses and gains, agricultural use of stockwater, new or improved wells in the interconnected zone, and the stream annually disconnecting. These deficiencies in the analysis suggests the model may not be considering all relevant groundwater pumping and related impacts in the Basin. Since SGMA requires sustainable management of the entire Basin, the sustainable management criteria must take a basin-wide approach. The GSA must identify reasonable measures and schedules to address these data gaps and set or revise basin-wide sustainable management criteria as its understanding of the Basin improves. CDFW-033 CDFW-034

Implementing Projects and Management Actions (PMAs)

GSPs must include projects and management actions that are feasible and likely to prevent undesirable results and ensure that the basin is operated within its sustainable yield. (23 CCR § 355.4(b)(5).) The Department encourages and will make best efforts to support PMAs anticipated to address both immediate- and long-term fish and wildlife resource needs. Not recognizing the role of the GSA to ensure sustainable management and deferring nearly all PMAs through an "integrative and collaborative approach" will make it difficult to achieve sustainability even by 2042 as contemplated under SGMA. The Department encourages the GSA to start working on PMAs like the high mountain lake storage sooner than described. CDFW-035

Public Trust Doctrine and California Endangered Species Act

The Department urges the GSA to consider its duties under the Public Trust Doctrine while developing its Draft GSP. While the SGMA sustainability requirements must be met within the 20-year planning and implementation horizon, Public Trust Doctrine requirements apply independently of SGMA, are not preempted by SGMA, and are applicable at all times. Under the Public Trust Doctrine, the GSA has the responsibility to consider potential impacts of its groundwater planning decisions on navigable interconnected surface waters and their tributaries, and ISWs that support fisheries and ecological uses, including the level of groundwater contribution to those waters.[3] The GSA has "an affirmative duty to take the public trust into account in the planning and allocation of water resources, and to protect public trust uses whenever feasible." (*National Audubon Society v. Alpine County Superior Court* (1983) 33 Cal. 3d 419, 446.) CDFW-036

Chapter 3 of the Draft GSP states that Public Trust Doctrine case law allows the GSA to balance public trust resource needs against public interest concerns. The GSA also states that appropriate protections for public trust resources depend on many factors, including public interest concerns about PMAs. It is not clear that the GSA has undertaken the analysis and consideration required under the Public Trust Doctrine to support its proposed PMAs and management criteria. Under *Audubon* and *Environmental Law Foundation*, the GSA must conduct a robust analysis that considers the needs of public trust resources and impacts to those resources due to the proposed groundwater management practices, and that clearly explains why protection of public trust resources is infeasible due to inconsistency with the public interest. As explained above, the GSA has yet to resolve significant data gaps relevant to the surface water depletion rate, basin-wide groundwater levels, and the presence and needs of GDEs and beneficial users of interconnected surface waters. These issues must be addressed to ensure appropriate consideration of the needs of public trust resources as required under the Public Trust Doctrine. CDFW-037 CDFW-038

Based on an accurate understanding of public trust resource needs and impacts, the GSA will need to assess a range of potential protective measures to address impacts of groundwater extractions. These measures may need to go CDFW-039

[3] See, e.g., *People v. Truckee Lumber Co.* (1897) 116 Cal. 397, *National Audubon Society v. Alpine County Superior Court* (1983) 33 Cal. 3d 419, and *Environmental Law Foundation v. State Water Resources Control Board* (2018) 26 Cal. App. 5th 844.

beyond the PMAs identified in the Draft GSP and may include pumping limits or alternative supply options to address existing, new, and expanded extractions. Given overallocation and ongoing drought, it is critical to plan for such eventualities in the Draft GSP. Before rejecting such measures, the GSA will need to engage in a balancing of competing interests that shows that protecting species and habitat though contingent pumping limits, use of supply alternatives, or equivalent protective measures would be infeasible.

CDFW-039, Cont'd

Most critically, the GSA should consider the implications of its GSP development and implementation on species listed under the California Endangered Species Act (CESA). As previously identified in our March 26, 2020, letter, the highest priority recovery actions for protection of CESA threatened Coho Salmon include increasing instream flows and reducing overall water temperatures. It is unclear whether the current Draft GSP will support all beneficial users including aquatic species like salmonids since its sustainable management criteria do not appear to account for the needs of these species and its PMAs are deferred to a future date. In addition to the Department, the North Coast Regional Water Quality Control Board (Regional Water Board) identified groundwater inflows as a primary driver of stream temperatures in the Scott River. The Total Maximum Daily Load (TMDL) indicates groundwater drives temperature through the direct contribution of cold groundwater to surface flows, changing stream volume, and changing transit time. (Regional Water Board, 2005. Staff Report for the Action Plan for the Scott River Watershed Sediment and Temperature Total maximum Daily Loads. Chapter 4. Temperature.) Additionally, the TMDL indicates that groundwater elevation affects the ability of riparian tree species to thrive and reproduce, which indirectly affects stream temperatures by impacting exposure of surface water to solar radiation. Both of these groundwater-supported processes are critical for temperature TMDL compliance and for supporting the most sensitive beneficial uses the Regional Water Board identified in their analysis, which include cold freshwater habitat, reproduction, and/or early development of aquatic species. The TMDL analysis provides clear evidence that these beneficial uses depend on supporting conditions provided by groundwater dependent ecosystems which are currently threatened by unsustainable groundwater use. Actions may need to go beyond SGMA minimum requirements to meet Public Trust Doctrine requirements.

CDFW-040

CDFW-041

The GSA suggests that implementation of PMAs to protect public trust resources can be deferred, "developed as part of program implementation", in the future. (Chapter 3, p. 57.) For example, the GSP sets a first milestone for minimum thresholds for surface water depletions in 2027, targeting only a 5% reversal of

CDFW-042

stream water depletions by this date. Without further analysis as described above, it is not clear that this proposal would be consistent with the Public Trust Doctrine. The GSA has an obligation to consider the impacts of groundwater pumping on public trust resources and ensure adequate protections in the immediate term. Deferring implementation of PMAs for five years after GSP adoption is not likely to be an effective way to ensure protection of public trust resources, particularly since ongoing groundwater pumping is causing significant adverse impacts to those resources. The GSA's proposal to spend the next 5 years increasing monitoring and fleshing out the outstanding sections of the GSP unduly delays tangible actions needed in the immediate term for protection of public trust resources.

CDFW-042, Cont'd

SWRCB Emergency Regulations

Per SGMA regulations, GSP minimum thresholds must be consistent with existing regulatory standards absent clear justification for differences. (23 CCR § 354.28(b)(5).) Emergency regulations approved by SWRCB on August 17, 2021, and effective on August 30, 2021, set forth minimum instream flows needed to avoid extirpation of certain fish species in the Scott and Shasta rivers during the current drought emergency. Per the SWRCB's Informative Digest, these emergency regulations are intended to preserve minimum instream flows for migration, rearing, and spawning of fall-run Chinook and SONCC coho salmon in the Scott and Shasta rivers during the current drought emergency. (pp. 21-22.) These regulations must be accounted for in the draft GSPs for the Scott and Shasta basins.

CDFW-043

However, the minimum instream flows set forth in the SWRCB emergency regulations are not intended to preserve all aquatic species in the Scott and Shasta rivers during all life stages, seasons, and water year types. The regulations merely set forth minimum instream flows that are needed to avoid extirpation of certain fish species to survive during the current drought emergency. The Public Trust Doctrine requires the GSA to manage groundwater pumping in the basin to ensure instream flows in interconnected surface waters (e.g., the Scott and Shasta rivers) are maintained at levels that fully support all life stages of all fish species during all seasons and water year types when feasible. In certain seasons and water year types, this may require maintenance of additional flow beyond the minimum instream flows set forth in the SWRCB emergency regulations.

CDFW-044

The Department appreciates the opportunity to provide initial comments on the Draft GSP. For questions, please contact Region 1 SGMA Coordinator, Brad

Henderson, at Brad.Henderson@wildlife.ca.gov . Additionally, you can contact the Klamath Watershed Coordinator, Janae Scruggs, at Janae.Scruggs@wildlife.ca.gov.

Sincerely,

DocuSigned by:
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MEMORANDUM REPORT

To: Klamath Tribal Water Quality Consortium
From: Eli Asarian, Riverbend Sciences
Date: September 21, 2021
Re: Review and comments on *Public Draft Scott Valley Groundwater Sustainability Plan*

The public draft of the "Scott Valley Groundwater Sustainability Plan" was circulated for public comment by the Siskiyou County Flood Control & Water Conservation District in August, 2021. To assist the member Tribes of the Klamath Tribal Water Quality Consortium in the preparation of their comments, Riverbend Sciences and subcontractors have reviewed the document and prepared the comments provided here for the Tribes' use.

A) COMMENT OVERVIEW

We have reviewed the public draft of the Scott Valley Groundwater Sustainability Plan (GSP) and wish to provide the following comments. Our comments are arranged into three sections: A) Comment overview in which we provide a summary of our most important big-picture comments, B) Suggestions for improving the Scott Valley Integrated Hydrologic Model (SVIHM), and C) comments on specific sections of the GSP chapters using the comment form provided.

A summary of our big-picture comments is provided in the following bullets, which are then discussed in the paragraphs below:

- The GSP falls far short of what is needed to avoid adverse impacts to interconnected surface water
- The GSP ignores adverse impacts caused by streamflow depletion outside the September–November period
- The GSP's primary management actions (managed aquifer recharge and in lieu recharge) do not work well in critical drought years
- The GSP lacks transparency
- Many GSP actions and goals sound great but are loosely defined so do not actually achieve much
- The GSP does not deal appropriately with climate change
- The Scott Valley Integrated Hydrologic Model (SVIHM) is a valuable tool but has some shortcomings that need to be addressed in future model updates

The GSP falls far short of what is needed to avoid adverse impacts to interconnected surface water

The GSP proposed to set the Minimum Threshold (MT) for the Interconnected Surface Water (ISW) Sustainable Management Criterion (SMC) based on a percent of the streamflow depletion caused by

groundwater pumping from the area not covered by the Scott River adjudication. We agree that groundwater users outside the adjudicated zone are not responsible for solving all the water issues in the Scott River (i.e., they are not responsible for impacts caused by surface water users or groundwater users inside the adjudicated zone).

ISW MT should not be defined based on a proportion or partial contribution to an undesirable result. SGMA requires that an MT define the minimum threshold for a full undesirable result. The whole concept of defining the ISW MT on what the PMA can achieve is putting the cart before the horse. The MT is a numeric value used to define an undesirable result (this may be why the GSP spends so much time confusing and twisting the definition of undesirable result). The MT, if exceeded, may cause an undesirable result. PMAs are a means to avoid exceeding an MT, not a mechanism to define an MT. TC-001

The approach taken in the GSP is backwards. Rather than first defining an arbitrary endpoint based on what groundwater users can relatively easily tolerate (i.e., the approach outlined the GSP), the first step should be to determine the instream flows needed by fish, then calculate the difference between those needed flows and current flows, and then assign the same percent reductions needed by all water users (surface, adjudicated groundwater, and unadjudicated groundwater) to meet that difference. This approach should be applied to all parts of the year that have flows that are not meeting fish needs, not just September through November. To use a hypothetical example (we have not actually done the calculations), if overall water use needs to be reduced by 40% to meet instream flow targets, then surface water users, adjudicated groundwater users, and unadjudicated groundwater users should each be responsible for reducing their water use (or coming up with projects that produce an equivalent amount of seasonal supply) by that same 40%. TC-002

The paltry 15% streamflow reversal proposed is far short of the non-adjudicated groundwater users' responsibility meeting existing laws and regulations such as the Public Trust Doctrine, Total Maximum Daily Loads (TMDLs), and the Endangered Species Act. TC-003

The GSP ignores adverse impacts caused by streamflow depletion outside the September–November period

The GSP proposes an MT for streamflow depletion only for the September–November period. The September–November this period is the time of year with the lowest flows and is very important for migration and spawning of adult salmon, but streamflow depletion also has adverse impacts at other times of year, such as during winter when salmon eggs are incubating, during spring when fish are rearing and outmigrating, and during summer when low flows can exacerbate high water temperatures. TC-004

The GSP's primary management actions (managed aquifer recharge and in lieu recharge) do not work well in critical drought years

The primary management actions proposed by the GSP to partially remedy streamflow depletion are managed aquifer recharge (MAR), in which extra surface water is diverted during January through March and infiltrated into the ground to recharge groundwater, and in lieu recharge (ILR), in which surface water is used for early season irrigation so that groundwater can be preserved (rather than solely relying on pumped groundwater to fulfill all irrigation needs). Both of MAR and IRL only work if there is "excess" surface water available. In critical drought years, there is very little excess water and thus MAR and IRL do not provide much benefit to instream flows. This is unfortunately because reversing streamflow depletion is arguable more important in critical drought years that in normal and wet years. The GSP should have proposed management strategies that are tailored to water year type, so that streamflow depletion could be substantially reversed in all water year types. TC-005

The GSP lacks transparency

Collaborative management and transparency and core tenants of SGMA. How will transparency and public access to data be incorporated into reporting and data sharing agreements? All data that is paid for with public money should be accessible to the public. All GSP reporting (i.e., annual and five-year review reports) should include electronic appendices with easily accessible data, so others could run their own analyses on the data. TC-006

We understand the political sensitivity of well metering, but how can groundwater be managed at a basinwide scale without metering? At least some subset of the wells should be mandated to be metered. Examples could include the largest wells, or new wells drilled after the passage of the SGMA legislation or after adoption of the Scott Valley GSP. How can existing ordinances, such as the prohibition on the use of groundwater for cannabis production or the requirement for permits being needed for inter-basin transfers of groundwater, be enforced without the well metering? How can the effects of efficiency projects be verified without metering? The lack of metering requirements suggests a lack of transparency, which further suggests a lack of will to actually manage groundwater extraction. TC-007

We also have serious concerns with the lack of transparency with the current Scott Valley and Shasta Valley Watermaster District program. Watermastering should be returned to the State of California, implemented basinwide, with well-organized publicly accessible records of diversions. TC-008

Many GSP actions and goals sound great but are loosely defined so do not actually achieve much

The GSP full of things like that sound great like the "Avoiding Significant Increase of Total Net Groundwater Use from the Basin" project and management action (PMA), but when we look closely at the details we see that the wording is loosely defined so that it does not actually guarantee anything. Since all well metering is voluntary, how is it possible to verify this?

If the GSP is to actually achieve the stated objectives, it needs more things that can actually be readily verified. Examples that we recommend include: TC-009

- No additional wells for new land use or additional cropping will be permitted in the basin. Only new wells intended to replace old wells and existing crops will be permitted, and these replacement wells will be metered. The intent here is to avoid net increase in groundwater use.
- Wells intended to replace stream diversions will not be permitted, even if there will be no additional net water usage (i.e., pumped groundwater will be used to replace surface water irrigation of existing crops). The intent here is to allow the SWRCB to ascertain and regulate surface water rights and stream and spring flows. The use of groundwater wells in place of stream or spring diversions simply moves the point of diversion and lessens the ability of the SWRCB to carry out its mission.

The GSP does not deal appropriately with climate change

The GSP appears to treat climate change as a check-the-box exercise rather than seriously grappling with what it will mean for groundwater management. The GSP does include model runs for future climate change, these results are not presented in a coherent way that highlights the major challenges that climate change will pose to water management. A warming climate will cause a shift in precipitation form (less snow, more rain) that will in turn shift the seasonal timing of tributary surface flows into the valley. Regardless of what happens to total precipitation or total runoff, this change in precipitation form and runoff timing is a huge issue that water management is going to need to recon with. Perhaps we missed it TC-010

(and if so, we apologize), but we did not see evidence that the GSP recognizes the severity of the coming changes to climate, nor presents a coherent plan to adapt to it.

The Scott Valley Integrated Hydrologic Model (SVIHM) is a valuable tool but has some shortcomings that need to be addressed in future model updates

We agree with the SVIHM's overall approach and appreciate the many years of work that the modeling team has invested in developing and refining the model. While the model has been peer-reviewed, we have some concerns that we think should be addressed in future updates (i.e., the five-year review). Details regarding the following suggestions are provided in the modeling section of comments: 1) need for a sensitivity analysis to quantify how sensitive SVIHM modeled outflows are to tributary inputs (especially during September and October); 2) need to incorporate fall/winter stockwater diversions into SVIHM; 3) need to reduce the MODFLOW model timestep to something shorter than a month; and, 4) need to use a better method for filling the large gaps in tributary inflows (e.g., considering other model types beyond linear regression, and using Salmon River gage as an alternative to the Scott River gage for filling tributary data gaps at least for some months and/or sites). While data are generally lacking for the fall/winter stockwater diversions, in our comments below we use data from the State of California's eWRIMS database to calculate that during the October 2020 drought when mainstem Scott River flows averaged 7.2 cfs and salmon could not reach their spawning grounds, the Scott Valley Irrigation District (SVID) reported diverting 4.2 cfs (2.7 million gallons/day) for stockwater, which is equivalent is 100 times more water than the 2,700 gallons/day that the livestock were actually consuming (assuming an estimate of 15 gallons/day).

TC-011

B) SUGGESTIONS FOR IMPROVING THE SCOTT VALLEY INTEGRATED HYDROLOGIC MODEL

As part of our review of the Scott GSP, we reviewed the documentation for the Scott Valley Integrated Hydrologic Model (SVIHM) including the Scott GPS appendices 2-C and 2-D. We agree with the SVIHM's overall approach and appreciate the many years of work that the modeling team has invested in developing and refining the model. It is important to understand the limitations of the data and methods. While the model has been peer-reviewed (Foglia et al. 2013, Tolley et al. 2019), we have some concerns that we think should be addressed . We recommend some specific suggestions that that would likely increase the accuracy of SVIHM's predicted late summer and fall flows, but we recognize that implementing these suggestions would take time and may trigger a cascade of additional work including re-calibration and re-running of all model scenarios. Given that this level of effort is likely not feasible at present given the SGMA timelines, we recommend that these improvements be evaluated and incorporated whenever the next time the model will be re-calibrated (five-year evaluation?).

Details on our suggestions are provided in the remainder of these comments, but we begin here with a brief summarized list:

- Need for a sensitivity analysis to quantify how sensitive SVIHM modeled outflows are to tributary inputs (especially during September and October)
- Need to incorporate fall/winter stockwater diversions into SVIHM;
- Need to reduce the MODFLOW model stress period to something shorter than a month; and
- Need to use a better method for filling the large gaps in tributary inflows (e.g., considering other model types beyond linear regression, and using Salmon River gage as an alternative to the Scott River gage for filling tributary data gaps at least for some months and/or sites).

Some of the following comments are repeated from the comment form.

Need for a sensitivity analysis to quantify how sensitive SVIHM modeled outflows are to tributary inputs (especially during September and October)

Given that tributary inputs are largely estimated rather than measured, we would like to see a sensitivity analysis to quantify how sensitive modeled outflows are to tributary inputs, especially during September and October when the correlation between measured outflows and measured inflows is extremely weak (i.e., explains less than 25% of the variability). Modeled streamflow depletion during September and October is a key management endpoint upon which the GSP evaluated management actions (PMAs), yet we currently have no idea how well the model actually predicts flow differences between scenarios in these months. The modeled outflows for the base case scenario match the observed outflows decently well in these months (i.e., see Figure 2 in Appendix 2-D). However, without a sensitivity analysis we cannot know how much of this apparent success is an artifact of setting the inflows based on observed outflows (i.e., is the model a circular self-fulfilling prophecy?).

Need to incorporate fall and winter stockwater diversions into SVIHM

If we understand correctly, the SVIHM assumes that no surface water diversions occur outside of the irrigation season (i.e., after September 30? or is it weather driven?). In reality, there are substantial diversions for stockwater, with many diversions remaining in place after the end of irrigation season. In years when there is not much fall rain (i.e., 2009, 2020), these stockwater diversions can divert the flow of entire creeks and leave downstream reaches dry during salmon spawning season. Not including these diversions is a considerable deficiency of the SVIHM. The effect of these winter stockwater diversions on fall/winter flows is an important management question that we need tools like the SVIHM to answer. Incorporating these stockwater diversions into the model would be difficult because these diversions are unreported and unmetered. One approach would be to bookend the estimates in a sensitivity analysis with low and high scenarios. The low scenario could assume that the diversions match demand including transmission losses (i.e., recent State Water Boards emergency regulations set maximum diversion rates based on the number of animals and assumed 90% conveyance losses, see https://www.waterboards.ca.gov/drought/scott_shasta_rivers/docs/surface_water_stockwater_diverters_090121.pdf). The high scenario could assume that the diversions match the irrigation season right (i.e., from the adjudication), since the stockwater diversions utilize the same ditches as the irrigation diversions. We are not very familiar with the day-to-day operation of these stockwater diversions and thus are unclear if they are pulsed (i.e., on for a few days, off for a few days, etc.) or continuous, but hopefully local farmers and ranchers could provide information on that as well as advise on the volume of the diversions.

One exception to the data gaps on winter stockwater diversions is that the Scott Valley Irrigation District (SVID) diversions are reported monthly for the years 2010–2020 in the State of California's eWRIMS database. For example, SVID diversions for the October 2019 for "1000-1800 cattle-sheep-horses" were reported as 260.4 AF (https://rms.waterboards.ca.gov/LicensePrint_2019.aspx?FORM_ID=476977). This equates to 4.2 cfs during a month when flows at the USGS gaged average 7.1 cfs. Assuming that each head of livestock needs 15 gallons per day (cattle value from https://www.waterboards.ca.gov/drought/scott_shasta_rivers/docs/surface_water_stockwater_diverters_090121.pdf), then 1800 cattle would need 27,000 gallons/day. In comparison the 260.4 AF diversion equates to 8.4 AF/day, or 2.7 million gallons/day, which is 100x greater than the amount of water actually needed to sustain the livestock. Is this a "reasonable" use of water at a time when mainstem river flows were so low that salmon could not access their spawning grounds?

Conversion of winter stockwater diversions to stock tanks fed by small wells could be the lowest-hanging fruit for achieving meaningful increases in fall river flows while having little or no economic cost to

agriculture (assuming the conversions are paid for with public money). We recognize that the GSP cannot dictate management of surface flows; however, the analyses and models used in the GSP should consider the real-world water budget and not ignore important drivers of key groundwater management endpoints (i.e., fall flows).

Need to reduce the MODFLOW model stress period to something shorter than a month

The MODFLOW model, the groundwater simulation component of the SVIHM, the "stress period" over which fluxes such as pumping and recharge change is monthly, although the model runs at a daily "time step" within each period. This seems like an un-necessary coarsening of the data, given that the most computationally intensive part is the daily time step of the daily model, right? Why do that? The surface water budget is calculated on a daily basis. Flow data could be estimated on a daily basis. The model is used for purposes such as predicting the date when flows in the fall first increase to above 20 cfs, so a monthly model seems less than desirable for those purposes. Foglia et al. 2013 wrote: "However, if warranted, the budget model described here can also be applied to an integrated hydrologic modeling scenario with weekly or bi-weekly varying stress periods or to stress periods of varying period length." This issue is particularly pertinent in the fall, when the model does not do well at representing the timing and magnitude of flow increases (i.e., as discussed in Appendix 2-D). We recommend exploring the use of a shorter stress period such as a week or two weeks to see if that improves performance in the fall period.

Need to use a better method for filling the large gaps in tributary inflows

Overview

The primary boundary conditions for the Scott Valley Integrated Hydrologic Model (SVIHM) are monthly inflows from 12 tributaries. The SVIHM uses a linear regression model to fill the substantial gaps in the flow records for these tributaries (Figure 1a). To assess the quality of the gap-filling method and potential effects on SVIHM results, we have reviewed the available documentation including Foglia et al.'s (2013) supplementary material and Tolley et al.'s (2019) compiled data for water years (WY) 1942–2016 and data processing code written in the R language and available at https://github.com/UCDavisHydro/SVIHM. During this evaluation, we modified the R code to explore the data and test alternative approaches. We are happy to share our R code if that would facilitate refinements.

The SVIHM method consists of compiling the available daily flow data for the USGS Scott River at Fort Jones gage (11519500) and ten tributaries, summarizing data to a monthly time step, converting data to normalized log-transformed units (i.e., taking base 10 logarithm, subtracting the mean, and dividing by the standard deviation), developing a linear regression model to predict the tributary flow from the USGS gage data (Figure 2a). Two additional small tributaries (Johnson and Crystal creeks) are assigned flows based on a percentage of estimated Patterson Creek flows.

Scott River summer flows appear to have decreased significantly since the 1977 drought, so the data were split and separate regressions were developed for the WY 1957–1972 and WY 1973–2016 study periods (Figure 1a). For those tributaries that do not have any measured data during the WY 1973–2016 period, the WY 1957–1972 regression is used. Given that there is extremely strong evidence that the relationship between tributary flows and Scott River flows changed between the WY 1957–1972 and WY 1973–2016 periods (i.e., Figure 1a), it does not make sense to apply the WY 1957–1972 regressions without adjusting for that difference. Rather than doing two separate regression models (i.e., one for each period), it would make more sense to just have a single regression model covering all years, but include "Period" as a categorical variable (to account for the difference in intercept between the periods), and an interaction of

"Period" and Fort Jones (to account for the difference in slope between the periods). In contrast, the current approach does not take maximum use of the available data, ignoring factors that are known to be important (i.e., the difference between the periods).

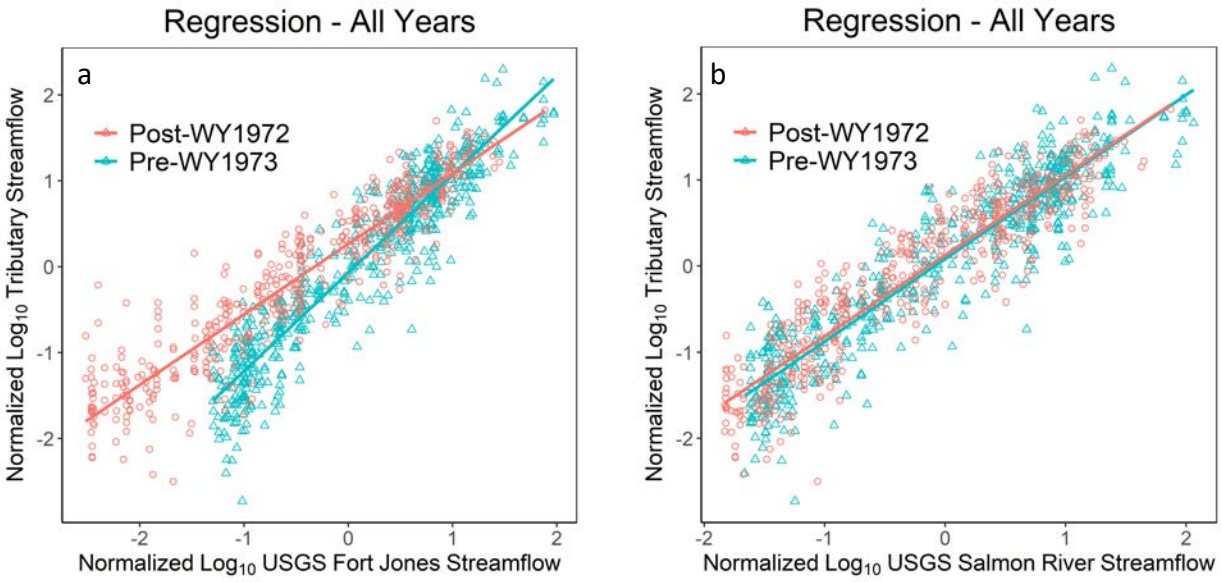

Figure 1. Scatterplot with linear regressions between gaged monthly flows in Scott River tributaries and gaged monthly flows in (a) Scott River USGS gage currently used in SVIHM, and (b) Salmon River at Somes Bar USGS gage which we recommend using for some sites and months. Colors differentiates the older WY 1957–1972 period from the more recent WY 1973–2016 period.

Using an *outlet* gage to define tributary *inflows* is problematic, especially with so many data gaps

The first thing to recognize about the gap-filling is that gaps are substantial (Figure 2a), so the methods for filling them matters. For the current SGMA GSP, the SVIHM was run for WY1991–2018. Prior to WY 2002, all (100%) of tributaries were estimated using regression against the USGS gage. Since WY 2002, additional gages have been installed but most were operated in only a subset of recent years and now only Sugar Creek and French Creek are still operational (Figure 2). The version of SVIHM used for SGAM did not use any tributary data for 2017-2018. The percent of total estimated inflows in a month that are based on measurements (i.e., gages) only sporadically exceeds 50% (Figure 2b, 2c). The USGS 11519500 gage that is the source for all the regression-based estimates is located at the outlet of Scott Valley. It is problematic to use a gage that is the surface water output of a groundwater basin to estimate the surface water inputs to the same basin, because that groundwater basin exerts profound natural and human influences on hydrology, including water diversions, groundwater pumping, evapotranspiration, groundwater recharge, and leakage of groundwater to streams. In reality, these influences vary not only seasonally (e.g., spring vs. fall) but also inter-annually (i.e., wet years vs. dry years), but using linear regression assumes a constant relationship between the input and output. For example, long-term management changes can affect the relationship between inflows and outflows (i.e., see Figure 1a showing effects of increased groundwater extraction). This gage is also used for calibration and verification of the SVIHM. Given that inflows are an important driver of groundwater dynamics, using the outflow to estimate inflows may artificially inflate the apparent accuracy of the SVIHM (because estimated inflows are automatically scaled based on measured outflows).

Salmon River gage as an alternative to the Scott River gage (at least for some months and/or sites)

We explored using the USGS gage in the Salmon River at Somes Bar as an alternative to the USGS Scott River at Fort Jones. The Salmon River has several characteristics that make it worth of evaluation for filling gaps in Scott River tributary flows, including: long-term data records, close proximity (i.e., immediately to west) to the Scott River sub-basin, lack of dam regulation, lack of major diversions, and does not contain a large alluvial groundwater basin with intensive groundwater extraction. The Salmon River's relative lack of diversions and groundwater extraction may make it a better choice than the Scott River during the low-flow season. While overall fit for the WY 1973–2016 period is similar for Scott River gage model ($R^2 = 0.87$) and Salmon River gage model ($R^2 = 0.86$), fit varies by month with the Scott River performing better (i.e., higher R^2, Figure 3b) in January–August and the Salmon River model performing better in September–November (i.e., $R^2 = 0.20$, 0.70, and 0.71 compared to $R^2 = 0.14$, 0.25, and 0.56)(Figure 3). Differences are especially strong in October, with $R^2 = 0.70$ for the Salmon River model compared to $R^2 = 0.25$ for Scott River model (Figure 3). Based on this evaluation, we recommend using the Salmon River model to fill tributary flow gaps in the months of September–November, which is the period when the groundwater basin begins filling and flows begin rising in response to increased precipitation and decreased evapotranspiration following the hot dry summer and year's lowest flows. This period is biologically important because it coincides with the start of chinook salmon spawning season. We are unclear on the how the poor fit of the Scott River regression model during this period (Figure 3a) affects the simulation of groundwater dynamics and outflows in the SVIHM. Have any sensitivity analyses been conducted to see how sensitive outflows are to inflows during this period?

In contrast to the major differences in the relationships between tributaries flows and Scott River flows for the WY 1957–1972 and WY 1973–2016 periods (Figure 1a), there appears to be no difference between the periods when the Salmon River gage is used instead (Figure 1b). The lack of difference between these periods in the Salmon River models suggests that for tributaries that have no post-1972 flow data (i.e., Shackelford, Patterson, Moffett, and Etna creeks)(Figure 2a), it is likely better to use of Salmon River models for gap-filling additional months (i.e., maybe June–December for these tributaries, instead of the September–November we are recommending for the other tributaries?). The recommendation for June–December is based on the observation that the between-period divergence occurs at normalized $\log_{10}$ Scott River flows less than zero (Figure 1a) and in the WY 1973–2016 period such flows tend to occur more frequently in June–December than other months (Figure 4a).

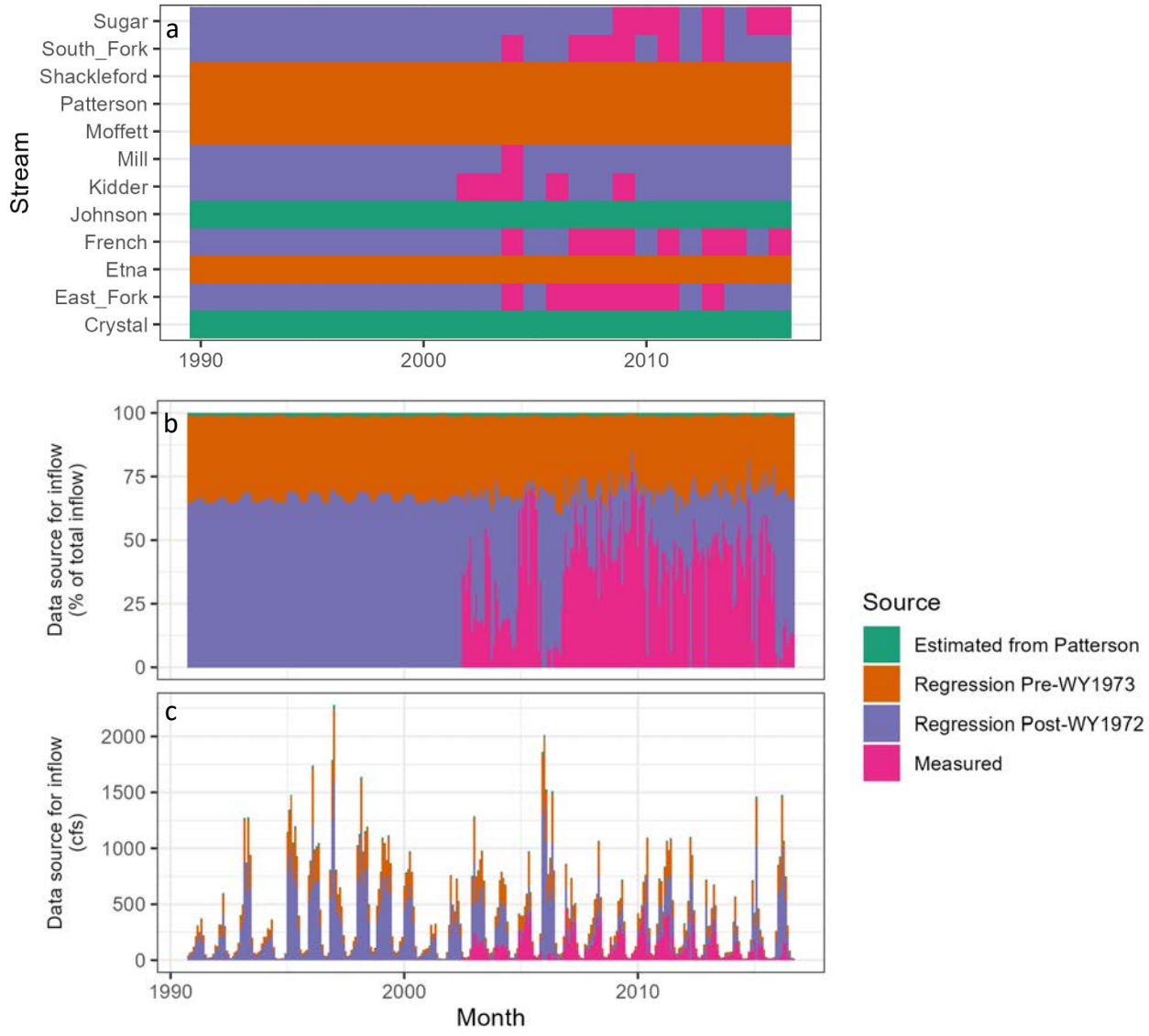

Figure 2. Monthly time series for hydrologic years 1991–2016 for the existing SVIHM's (a) data sources for flow data at twelve tributaries, (b) percent of total inflows from each data source method, (c) total inflows for inflows from each data source method. We generated this time series by adapting the Tolley et al. (2019) data processing codes.

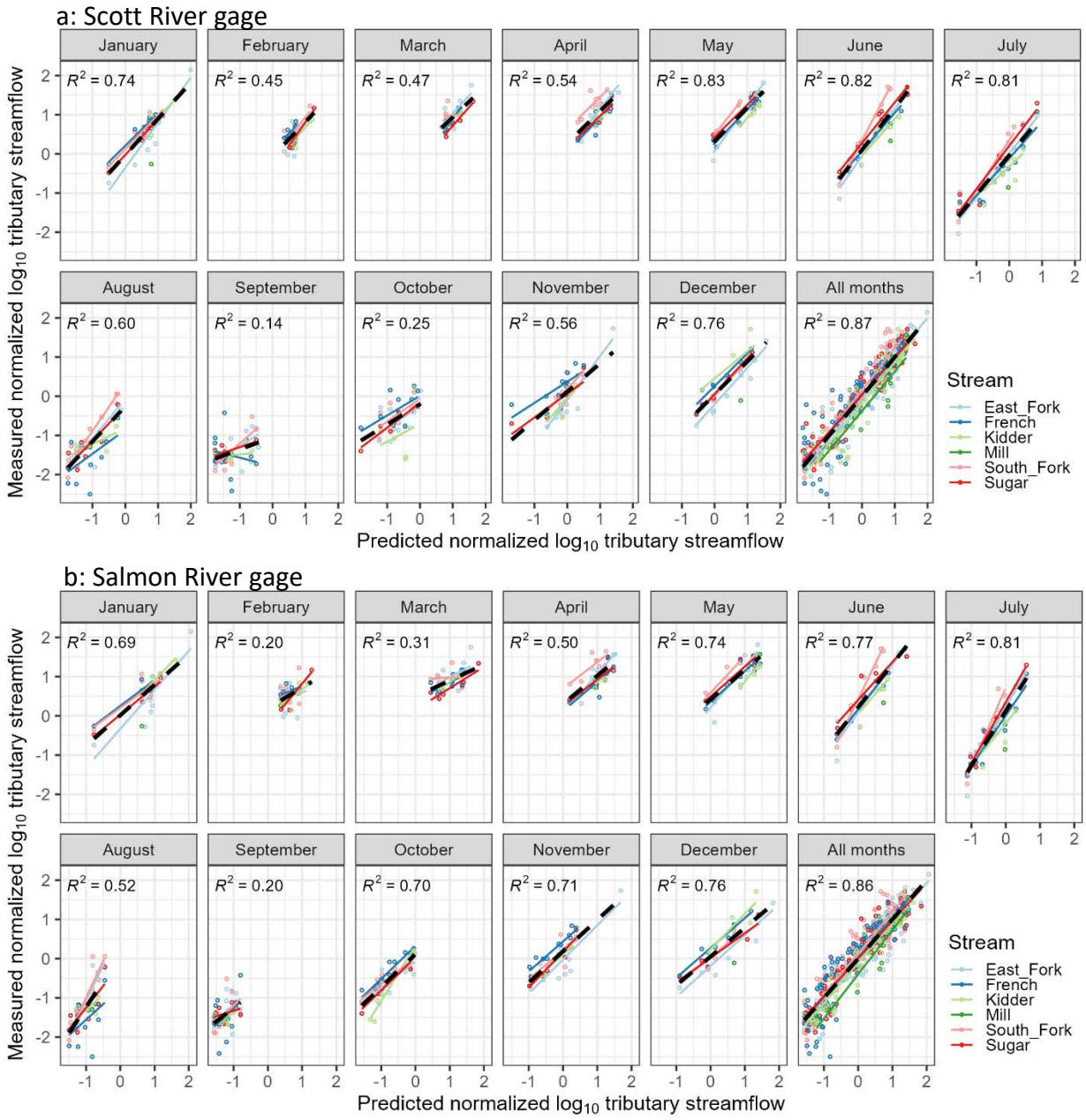

Figure 3. Scatterplot comparing measured monthly Scott River tributary flows with regression predictions based on gaged monthly flows for the WY 1973–2016 period in (a) Scott River USGS gage, and (b) Salmon River at Somes Bar USGS gage. Black linear trendlines are for all sites combined, with R^2 labeled in the upper left corner of each panel. Colored linear trendlines are for individual sites. R^2 indicates the fraction of variation explained by the model (value of 1 would indicate a perfect correlation with predictors explaining 100% of variation in the response variable while a value of 0 indicates none of the variation is explained).

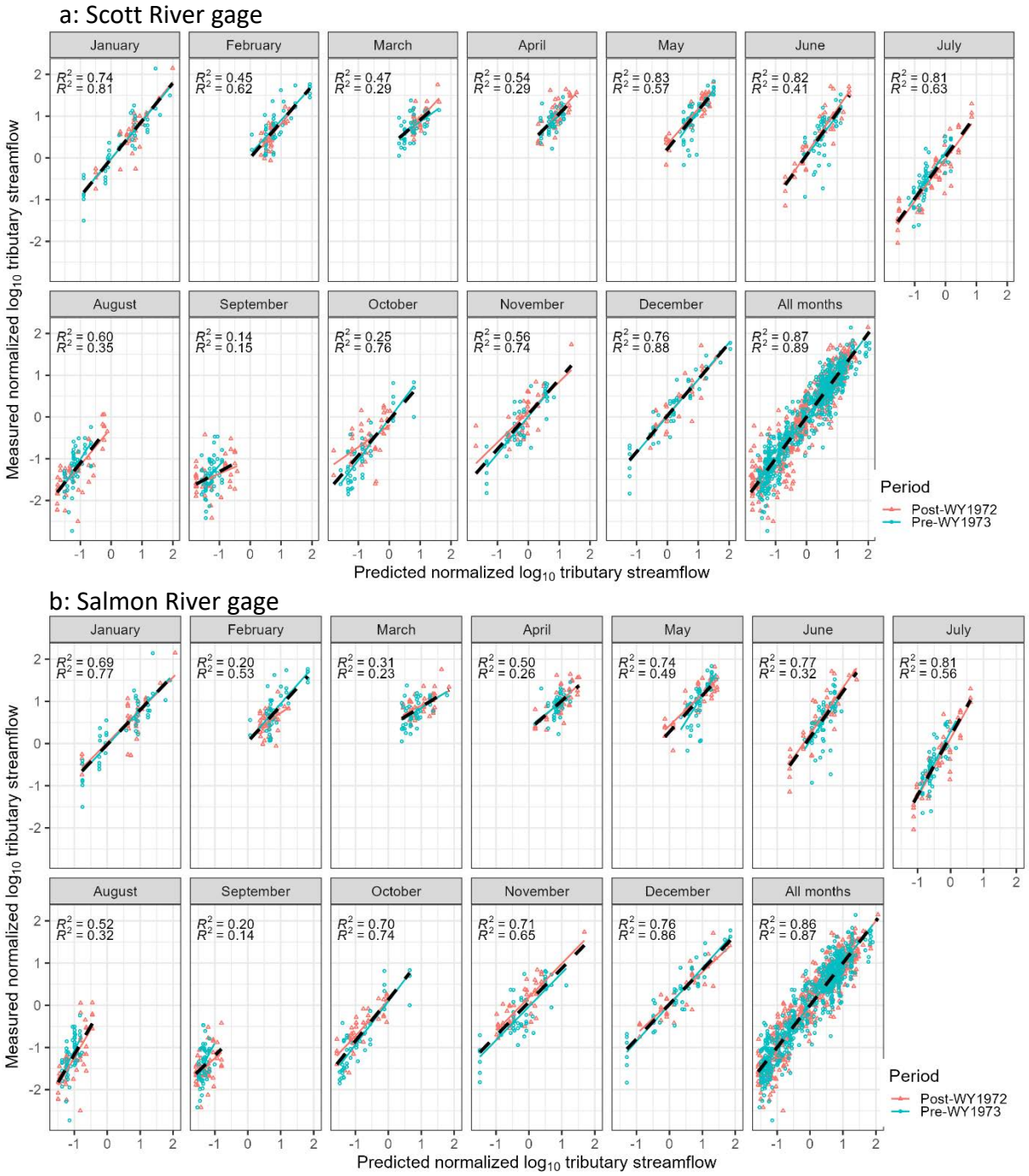

Figure 4. Scatterplot comparing measured monthly Scott River tributary flows with regression predictions based on gaged monthly flows in (a) Scott River USGS gage, and (b) Salmon River at Somes Bar USGS gage, with separate regressions for the WY 1957–1972 and WY 1973–2016 periods. Black linear trendlines are for combined periods whereas colored linear trendlines are for individual periods. R^2 values in each panel match legend order (top is post-WY1972, bottom is pre-WY1973).

Consideration of model types beyond linear regression

One additional suggestion for potential additional refinements to the methods for filling data gaps that we do not currently not have time to test, but want to mention here so it could potentially be followed up on later, it to use hierarchical models and account for watershed area. The SVIHM's normalization (a.k.a. "standardizing", our preferred term) of the flow data (subtracting the mean and dividing by standard deviation, with the mean and standard deviation calculated individually for each site based on that site's period of record) is intended to allow all tributaries to be included together in the same regression model. However, we have some concerns that for sites with short records (e.g., 11 months at Mill Creek, 6 months at Etna and Patterson creeks), there are far too few data points for the mean and standard deviation to be representative of long-term patterns, which could lead to artifacts in the regression outputs. A possibly more robust alternative would be to instead be to convert the flow data to specific discharge (i.e., flow per watershed area in units of cfs/mi^2 or its metric areal equivalent mm/d), then standardizing by subtracting the mean and dividing by standard deviation (with the mean and standard deviation calculated from the entire pool of specific discharges from all sites, rather than calculating the mean and standard deviation only from each site's period of record). From these standardized specific discharges, a single hierarchical model (a.k.a. mixed effects model) could be constructed with appropriate random effects to explicitly account for inter-site differences. R packages available for implementing such models include 'mgcv', 'lme4', and 'nlme'. A hierarchical model could help account for inter-site differences. For example, not surprisingly given its the relatively low elevation watershed, Moffett Creek appears to have a greater percent of its annual flow occur during January–March than other tributaries and then a lesser percent of its annual flow occurs during May–June snowmelt runoff (not shown here). There are clear, albeit relatively small, seasonal patterns in the residuals (calculated as measured minus modeled) in both the Scott River and Salmon River regression models, with both models under-predicting tributary flows in May–June and October–November underpredicting tributary flows in January–March and August–September (Figure 5). A hierarchical model would likely help remove the seasonal patterns in model residuals.

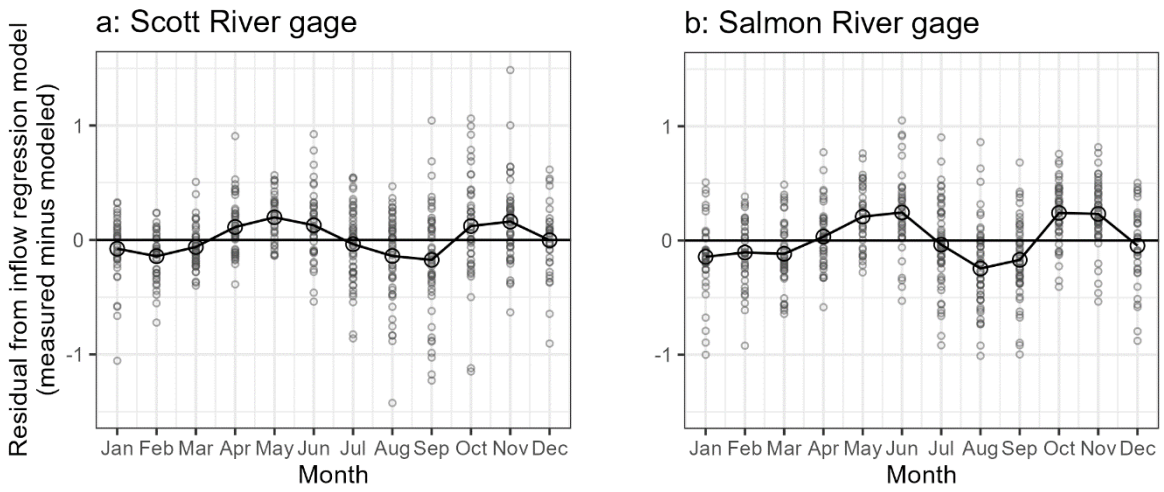

Figure 5. Monthly distribution of residuals from regression models that predict monthly Scott River tributary flows for the WY 1973–2016 period using (a) Scott River USGS gage, or (b) Salmon River at Somes Bar USGS gage. Small gray points are individual site-month-year combinations while large black circles are the mean of all points within a month. Values above zero indicate model is under-predicting flow while values below zero indicate the model is over-predicting flow.

C) COMMENTS ON SPECIFIC GSP SECTIONS USING THE COMMENT FORM PROVIDED

Chapter	Page	Section	Line/Table/ Figure #	Comment	
ES	8	ES-2	214-215	"…lateral flux of Mountain Front Recharge (MFR) is assumed constant at <18 TAF." Seems odd that this would be assumed constant between years. See comment below regarding Chapter 2, page 117, section 2.2.3.2.	TC-012
2	13-15	2.1.2	259-369	It would be very helpful to provide citations for most (or all) of the documents listed on these pages, rather than the current few. The top of the sections says "This chronology was provided by Sari Sommarstrom (2019), with additional details from select sources", but Sommarstrom (2019) is not listed in the references at the end of this chapter.	TC-013
2	15	2.1.3	378	Should Karuk Tribe be added to the list of monitoring entities because they monitor water quality at the mouth of the Scott River, or is this list only for monitoring within and upstream of the Scott Valley? Even though the Karuk Tribe monitoring is downstream, it is informative to conditions within the basin.	TC-014
2	18	2.1.3	Table 2	For Quartz Valley Indian Reservation Environmental Department, Plan/Program columns should be updated to: "Flow monitoring, groundwater elevation, and ~~Annual~~ surface and groundwater quality monitoring". Also, "Regulatory?" column should be changed to "Yes" and "What is regulated?" column should be changed to "Surface and groundwater quality", because QVIR has been approved by U.S. EPA for Treatment as a State status for regulating those with tribal trust lands.	TC-015
2	19	2.1.3	Table 2	In the "Tool" section of the table, a row should be added for "Quartz Valley Indian Reservation Environmental Department", with "Plan/Program" of "Statistical model to predict water temperature at Scott River USGS gage"	TC-016
2	30	2.1.3	839	Add new sentence to end of paragraph: "QVIR was approved by U.S. EPA for Treatment as a State status for regulating water quality within the tribal trust lands."	TC-017

Chapter	Page	Section	Line/Table/ Figure #	Comment	
2	30	2.1.3	840	Add new paragraph: "QVIR and Riverbend Sciences have developed a statistical model to predict daily water temperatures at Scott River USGS gage using flow and air temperature data. The model was calibrated with 24 years of data is currently undergoing peer review (Asarian and Robinson 2021). It is freely available from an online repository." In addition, we recommend the first sentence on line 840 be revised to: "The QVIR Environmental Department has made this water quality and water level monitoring data and statistical model available for use in GSP development." Citation to add to references section: "Asarian, J. E., & Robinson, C. (2021). Modeling Seasonal Effects of River Flow on Water Temperatures in an Agriculturally Dominated California River [Preprint]. Earth and Space Science Open Archive; Earth and Space Science Open Archive. https://doi.org/10.1002/essoar.10506606.1" We are hopeful that the final peer-reviewed version of the article will be complete in late 2021 or early 2022.	TC-018
2	39	2.1.5.2	1241-1245	"The Advisory Committee discussed modeled scenarios using the Siskiyou County Sheriff Department's estimate of 2 million illicit cannabis plants and a consumptive use of 4-10 gallons of water per plant per day, to consider the potential impacts to groundwater resources from this activity under current and future conditions. This information can be found at Appendix [ ]." What appendix is this referring to? Also, it would be good to clarify if the estimate of 2 million plants is regarding the whole county or just the Scott basin.	TC-019
2	41	2.1.5.2	1299	The Lee 2016 document cited here is not included in the references at the end of the chapter.	TC-020
2	44	2.2.1.2	1379-1391	This paragraph discusses trends at 9 snow stations. The up-to-date data are appreciated, but it would also would be good to cite previous analyses of regional snowpack data, something like "Since the 1940s, the percent of precipitation falling as snow has decreased in the region (Lynn et al. 2020) and April 1 snowpack has decreased, especially at lower elevations (Van Kirk and Naman 2008)." Citation: "Lynn, E., Cuthbertson, A., He, M., Vasquez, J. P., Anderson, M. L., Coombe, P., Abatzoglou, J. T., & Hatchett, B. J. (2020). Technical note: Precipitation-phase partitioning at landscape scales to regional scales. Hydrology and Earth System Sciences, 24(11), 5317–5328. https://doi.org/10.5194/hess-24-5317-2020"	TC-021
2	69	2.2.1.6	1878	"Some of these flow gauges (notably French Creek and Sugar Creek) have later end dates than the years listed…"	TC-022

Chapter	Page	Section	Line/Table/ Figure #	Comment	
2	70	2.2.1.6	1934-1936	In contrast, lower baseflow in September and October since the 1970s has been attributed to climate change as the dominant factor (ibid. Figure 6; Drake et al., 2000), although Asarian and Walker (2016) found that flow declines in August, September, and October were much larger than could be explained by precipitation alone." Suggested language is based on Figure 8 from Asarian and Walker (2016) which shows declines in precipitation-adjusted flow. Citation: Asarian, J. E., & Walker, J. D. (2016). Long-Term Trends in Streamflow and Precipitation in Northwest California and Southwest Oregon, 1953-2012. Journal of the American Water Resources Association, 52(1), 241–261. https://doi.org/10.1111/1752-1688.12381	TC-023
2	70	2.2.1.6	1936-1939	"Over the past 22 years, the relative frequency of below average and dry years has been much higher than during any period in the 20th century during which Scott River flows at Fort Jones have been measured (Figure 16). This has resulted in more frequent occurrence of baseflow conditions of less than 20 cfs, although low flows measured in recent years have not been lower than low flows measured prior to 2015 (Figure 16)." These sentences are unclear and should be re-worded. The phrase "below average and dry years" implies precipitation, but Figure 16 shows flows not precipitation, so should probably be re-worded as "years with low-flows". Are water year types (and methods used to derive water years types) explicitly defined somewhere in the GSP (i.e., see comment on Chapter 2, Section 2.2.3, page 108, line 2991)? The purpose of the statement "although low flows measured in recent years have not been lower than low flows measured prior to 2015" is unclear and should either be deleted or explain why that is notable. Minimum flows have clearly declined over the period of record (e.g., see Figure 16, or the statistical analyses in Asarian and Walker 2016). Looking at Figure 7 on page 26 which shows precipitation, the period 2000-2021 does not look obviously drier than 1977-1999.	TC-024
2	73	2.2.1.7	1960-1963	"Figure 18 illustrates the monthly variations in the amount and direction of water exchange between groundwater and surface water. Losing sections are indicated by red colors and the positive value of the logarithm of the rate of stream leakage to groundwater. Gaining stream sections are indicated by blue colors…" The Figure 18 on page 72 (a map of dry and wet river/stream reaches from SRWC 2018) does not match the description on page 73. Page 73 appears to instead describe Figure 5 from Tolley et al. (2019) which we do not see in the GSP document.	TC-025
2	73	2.2.1.7	1975	Tributary names should be labeled on subject Figure.	TC-026
2	75	2.2.1.7	2040	When talking about summer baseflow period depletion, what is the rationale for only presenting estimates for the Sept.-Oct. period? What is going on earlier in the summer and in the late fall?	TC-027

Chapter	Page	Section	Line/Table/ Figure #	Comment	
2	75	2.2.1.7	2026-2051	Table 7 provides summaries of stream depletion. Values are presented as ranges (e.g., 43-65 cfs). Please clarify what these ranges are (e.g., is the minimum and maximum of the seasonal averages observed across all years?) and briefly discuss in the text if there are any apparent patterns driving the variation between years (e.g., is stream depletion generally greater in low-snowpack/flow years?).	TC-028
2	76	2.2.1.8	2063-2065	"For purposes of this section, 'GDE' is used to refer to a spatial area covered by vegetation that is observably distinct from dry-land terrestrial vegetation." What about areas that historically had groundwater-dependent riparian vegetation but do not current support this vegetation because of groundwater depletion. For example, the valley reach of Moffett Creek used to have large riparian trees but they are nearly all dead now, with a few standing skeletons remaining. Moffett Creek is not mapped as GDE in Figure 19, should it be?	TC-029
2	80	2.2.1.8	2172-2174	What depth to groundwater mapping analysis performed? What seasonal (winter vs. summer) groundwater level information used to inform the DTW determination?	TC-030
2	80	2.2.1.8	2179-2180	The GDE mapping appears to be based solely on visual or aerial map inspection. Were all iGDEs assumed to be GW dependent or were some removed due to excessive DTW? What iGDEs dropped and why, if any?	TC-031
2	82	2.2.1.8	Table 1	Shouldn't cascade frogs and willow flycatchers be added to Table 1 (or related text), even they were not listed by the Nature Conservancy?	TC-032
2	108	2.2.3	2991	It is unclear how water year types were defined. Tolley et al. (2019) used the "Sacramento Valley water year hydrologic classification" (though no citation is provided so it is unclear what that is) while Foglia et al. (2013) used an analysis of Fort Jones and Callahan precipitation data. Please clarify here how water year types were defined.	TC-033
2	112	2.2.3	3030-3050	In Table 15, the SW Irrigation values do not add up to the Farmers and SVID Div. values presented in Table 14. Where do the SW Irrigation values in Table 15 come from? Similarly, the GW Irrigation values in Table 15 don't equal the "Wells" values presented in Table 16 – where do the GW Irrigation values come from and why do they differ from the Wells values?	TC-034
2	112	2.2.3	3030-3050	The Median SW budget values indicates a 10 TAF deficit in stream flow. This suggests a long-term chronic condition of stream outflows exceeding inflows during most years. It would also be helpful to present the Average values on Tables 14-16 for comparison.	TC-035

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2	113	2.2.3	3079-3081	"The streamflow regression model is a statistical tool used to estimate tributary inflows at the valley margins when upper watershed flow data are unavailable ('streamflow regression model') (Foglia et al. 2013)." While true, this statement is somewhat misleading. During the 1992-2018 model period, most tributary inflows are estimated not measured. It would probably be more accurate to revise this to: "…used to estimate tributary inflows at the valley margins, supplemented by gaged upper watershed flows when data are available ('streamflow regression model') (Foglia et al. 2013)."	TC-036
2	113	2.2.3.1	3090	"Agricultural irrigation is calculated based on daily crop demand." should be revised to "Agricultural irrigation is calculated based on daily crop demand, with an efficiency assigned to each field based on source of irrigation water and type of irrigation." Efficiency is an important component of the model that merits brief explanation here even if the details are explained in Appendix 2-C.	TC-037
2	114	2.2.3.1	3096-3097	All precipitation falling on cultivated fields and native vegetation is assumed to infiltrate completely and "runoff is neglected". Yet, the SW budget indicates runoff (overland flow). So, are the water budget models double accounting for runoff? (i.e., ppt. runoff contributing to SW flow and ppt. runoff being infiltrated into soil budget and possibly being transferred to GW recharge).	TC-038
2	114	2.2.3.1	3121	What does "weakly coupled" mean?	TC-039
2	114	2.2.3.1	3130-3134	"However, for the MODFLOW model, daily values of stream inflow from the upper watershed, pumping, and recharge, including canal and mountain front recharge, are aggregated (averaged) to each calendar month and held constant within a calendar month. In MODFLOW, the calendar month is referred to as a 'stress period'". This seems like an un-necessary coarsening of the data, given that the computationally intensive part is the daily time step of the daily model, right? Why do that? The surface water budget is calculated on a daily basis. Flow data could be estimated on a daily basis. The model is used for purposes such as predicting the date when flows in the fall first increase to above 20 cfs, so a monthly model seems less than desirable for those purposes. Foglia et al. 2013 wrote: "However, if warranted, the budget model described here can also be applied to an integrated hydrologic modeling scenario with weekly or bi-weekly varying stress periods or to stress periods of varying period length." This issue is particularly pertinent in the fall, when the model does not do well at representing the timing and magnitude of flow increases (i.e., as discussed in Appendix 2-D).	TC-040

2	116	2.2.3.2	3197	"Surface water irrigation diversions are computed as a function of irrigation demand. Fall/winter diversions for stockwater are not included in the current version of SVIHM, but will be added in the future." If we understand correctly, the SVIHM assumes that no surface water diversions occur outside of the irrigation season (i.e., after September 30? or is it weather driven?). In reality, there are substantial diversions for stockwater, with many diversions remaining in place after the end of irrigation season. In years when there is not much fall rain (i.e., 2009, 2020), these stockwater diversions can divert the flow of entire creeks and leave downstream reaches dry during salmon spawning season. Not including these diversions is a considerable deficiency of the SVIHM. The effect of these winter stockwater diversions on fall/winter flows is an important management question that we need tools like the SVIHM to answer. These diversions inadvertently (from a water rights perspective, though we cannot rule out that recharge might be part of diverters' motivation) provide some amount of beneficial aquifer recharge in late winter or spring once surface flows are reconnected throughout the valley. On the other hand, during fall these diversions likely extend the period of low river flow by some unknown number of days because they take water from the channel and recharge the aquifer in locations far from the river where the water may take weeks or months to return. Stockwater diversions in the fall cause recharge during the worst possible time of year (managed aquifer recharge should occur in the late winter and spring, not the summer and fall!). Incorporating these stockwater diversions into the model would be difficult because these diversions are unreported and unmetered. One approach for dealing with the data gaps would be to bookend the estimates in a sensitivity analysis with low and high scenarios. The low scenario could assume that the diversions match demand including transmission losses (i.e., recent State Water Boards emergency regulations set maximum diversion rates based on the number of animals and assumed 90% conveyance losses, see https://www.waterboards.ca.gov/drought/scott_shasta_rivers/docs/surface_water_stockwater_diverters_090121.pdf). The high scenario could assume that the diversions match the irrigation season right (i.e., from the adjudication), since the stockwater diversions utilize the same ditches as the irrigation diversions. We are not very familiar with the day-to-day operation of these stockwater diversions and thus are unclear if they are pulsed (i.e., on for a few days, off for a few days, etc.) or continuous, but hopefully local farmers and ranchers could provide information on that as well as advise on the volume of the diversions. One exception to the data gaps on winter stockwater diversions is that the Scott Valley Irrigation District (SVID) diversions are reported monthly for the years 2010–2020 in the State of California's eWRIMS database. For example, SVID diversions for the October 2019 for "1000-1800 cattle-sheep-horses" were reported as 260.4 AF	TC-041

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				(https://rms.waterboards.ca.gov/LicensePrint_2019.aspx?FORM_ID=476977). This equates to 4.2 cfs during a month when flows at the USGS gaged average 7.1 cfs. Assuming that each head of livestock needs 15 gallons per day (cattle value from https://www.waterboards.ca.gov/drought/scott_shasta_rivers/docs/surface_water_stockwater_diverters_090121.pdf), then 1800 cattle would need 27,000 gallons/day. In comparison the 260.4 AF diversion equates to 8.4 AF/day, or 2.7 million gallons/day, which is 100x greater than the amount of water actually needed to sustain the livestock. Is this a "reasonable" use of water at a time when mainstem river flows were so low that salmon could not access their spawning grounds? Conversion of winter stockwater diversions to stock tanks fed by small wells could be the lowest-hanging fruit for achieving meaningful increases in fall river flows while having little or no economic cost to agriculture (assuming the conversions are paid for with public money). We recognize that the GSP cannot dictate management of surface flows; however, the analyses and models used in the GSP should consider the real-world water budget and not ignore important drivers of key groundwater management endpoints (i.e., fall flows).	TC-041, Cont'd
2	116	2.2.3.2	3197-3200	"Surface water diversions are computed as a function of irrigation demand. The conceptual diversion points from tributary flows are just outside the Basin boundary, except for two internal diversions (6 TAF, see below), which is consistent with most diversions occurring near the Basin margin." Due to data constraints, the approach of estimating diversions based on irrigation demand (i.e., deduct diversion from gages surface inflows) makes sense. However, since some tributary flow gages are located downstream of substantial diversions (e.g., French Creek), it seems like the flows at these gages should be treated differently than gages that are upstream of diversions, but we do not see this mentioned anywhere in the documentation. For fields irrigated with water diverted upstream of flow gages, shouldn't the water demand not be deducted from the gaged flows? Deducting the demand seems like double-counting the diversion (first it is already implicitly deducted prior to the gage measurement because the water is not physically there, then it is explicitly deducted during data processing).	TC-042

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2	117	2.2.3.2	3209-3214	"Mountain Front Recharge, the phenomenon of diffuse water flow through mountain soil or fractured bedrock into the alluvial sediments of an aquifer along a valley margin, is simulated along the western edge of the model domain. It is estimated to be a volume that changes month-to-month (i.e., greater recharge during the wet season) but which is identical year over year (see Appendix 2-C for more details)." We have reviewed the Appendix 2-C documents as well as the S.S. Papadopulos (2012) report that is cited for the original estimate. Mountain Front Recharge is estimated at <18 TAF (thousand acre-ft), so is quite small relative to other inputs (i.e., it is <5% of the other inflows [stream inflow and precipitation] on average). While we sympathize with the difficulty of estimating this parameter, we do not understand why it should be constant between years, given that it is derived from a water balance of terms that vary considerably between years (i.e., precipitation minus evapotranspiration minus surface flows). Seems like it would make more sense to scale it to be larger in wet years than dry years?	TC-043
2	120	2.2.3.2	3330-3331	"Recharge from the land surface occurs primarily in winter months but is limited – except under flood irrigation – during the summer months." This ignores fall/winter stockwater diversions, which are substantial but not included in the SVIHM. See comments above regarding chapter 2, page 116, section 2.2.3.2, line 3197.	TC-044
2	125-126	2.2.4	3437-3515	The "Future Water Budget" section is lacking discussion of some key factors. For example, what changes are expected to snowpack and tributary inflow hydrographs (i.e., runoff timing) of the four climate change scenarios evaluated? What are the greenhouse gas emissions trajectories associated with the climate scenarios (i.e., does it assume "business as usual" or that aggressive efforts are made to reduce greenhouse gas emissions, or something intermediate?). Listing the degrees Celsius (or Fahrenheit) of air temperature increase associated with each scenario would be helpful for context.	TC-045
2	125	2.2.4	3473	DWR 2018 citation is not included in the references cited at the end of the chapter.	TC-046
2	126	2.2.4	3499-3502	Figure citation should be fixed: "Importantly for sustainable groundwater management, none of the future climate scenarios indicate that the lowest groundwater storage points decrease over repeated drought occurrence (Figure 31~~28~~)." Also, please explain the significance/implications of this. Does it mean that long-term overdraft and subsidence are unlikely? Or that late summer streamflows will not be lower with climate change?	TC-047

Chapter	Page	Section	Line/Table/ Figure #	Comment	
2	130	2.2.4	Figure 32	"Figure 32. Projected flow at the Fort Jones Gauge, in difference (cfs) from Basecase, for four future projected climate change scenarios. Near and Far scenarios show minimal differences from historical basecase flow conditions." Perhaps we are mis-understanding what these scenarios are, but are extremely skeptical of any claims that the temperature-driven changes in precipitation form due to climate change (i.e., more rain and less snow) are not going to substantially decrease river flows in summer and fall, regardless of what happens to total annual amount of precipitation. The GSP should acknowledge these realities and then describe how the model predicts that this will seasonally change river flow and groundwater. The format of the graph makes it very difficult to see meaningful seasonal patterns. The y-axis scale that ranges from -2,000 to +12,000 cfs makes it impossible to see what is happening during low flows. Can you add a second panel that to graph so that the low-flow period is legible (maybe -100 to +100 cfs?)? Or maybe limit the months to just show April through October?	TC-048
2	137	References	3775-3777	Langridge, Ruth, Abigail Brown, Kirsten Rudestam, and Esther Conrad. 2016. "An Evaluation of California's Adjudicated Groundwater Basins." https://www.waterboards.ca.gov/water_issues/programs/gmp/docs/resources/swrcb_012816.pdf ~~https://doi.org/10.1038/nmicrobiol.2016.214~~	TC-049
3	9	3.3	351-353	"Where it is necessary, the GSA will coordinate with existing programs to develop an agreement for data collection responsibilities, monitoring protocols and data reporting and sharing." How will transparency and public access to data be incorporated into these data reporting and sharing agreements? All data that is paid for with public money should be accessible to the public.	TC-050
3	21	3.3.5.1	748+	Surface water flow estimates in SVIHM appear to only be calibrated to the Ft. Jones gauge. Comparing simulated stream flow against only one calibration point for such a large river system calls into question how well the model is at simulating stream flow in other reaches that may be experiencing different management and hydrogeologic conditions. The proposed monitoring plan does not call for any additional river flow monitoring along the mainstem river. We recommend adding additional stream flow monitoring gauges along the mainstem river to better calibrate/validate the stream flow estimates along the entire reach, not just at the downstream Ft. Jones outflow point. Given the need for additional tributary gages as model inputs, we are not sure how we would rank the priority of additional mainstem gages. Perhaps these additional mainstem gages should just be operated for a few years, long enough to capture different water year types. Or perhaps there are discrete flow measurements collected during other sampling or special projects (i.e., in the early/mid 2000s in preparation of the TMDLs) that could be used for calibration and verification?	TC-051

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3	26	3.3.5.2	935-972	In this "Assessing and Improving SVIHM" section, we recommend several additional tasks. These model refinements are described in more detail in a separate comment document (not in this comment form), but are briefly summarized here: 1) use a better method for filling the large gaps in tributary inflows (e.g., considering other model types beyond linear regression, and using Salmon River gage as an alternative to the Scott River gage for filling tributary data gaps at least for some months and/or sites), 2) incorporate fall/winter stockwater diversions, 3) shorten the MODFLOW model timestep to something shorter than a month, 4) do a sensitivity analysis to quantify how sensitive modeled outflows are to tributary inputs (especially during September and October).	TC-052
3	30	3.4.1	Figure 5	The definition of Minimum Threshold in Figure 5 is confusing: "Minimum Threshold: historic low – (10 % of max historical depth to water or 10 ft, whichever is less)" Maybe revise to "Minimum Threshold: historic low minus either 10% of max historical depth to water or 10 ft, whichever is less"	TC-053
3	30-38	3.4.1	1088-1265	As currently proposed, the Actions Trigger occurs if water levels at a well fall below the historic level for two consecutive years and the Minimum Threshold occurs if a well falls more than 10% (or 10 ft, whichever is less) of the historic level. We have not actually tried an experiment with hypothetical or real well data, but it seems possible that well levels could have long-term declines but not ever violate the Actions Trigger and Minimum Threshold if the decline is "bumpy", meaning there are not consecutive drought years. For example, well levels could alternate between moderate/high levels in wet or normal years, followed by a severe drought year in which well levels drop to historically low levels (but not exceeding the 10 ft or 10%), followed by moderate/high levels in wet or normal years, followed by a severe drought year in which well levels drop to historically low levels (but not exceeding the 10 ft or 10%), etc. This seems very problematic because conditions could progressively deteriorate but never violate the AT or MT.	TC-054
3	34	3.4.1.1	1173-1183	This paragraph of the GSP, similar to other sections of the GSP, does not mention one of the key elements of climate change for which there is high certainty- there will be a shift in precipitation form (less snow and more rain) that will shift the seasonal timing of tributary surface flows into the valley. Regardless of what happens to total precipitation or total runoff, this change in precipitation form and runoff timing is a huge issue that water management is going to need to deal with.	TC-055
3	35	3.4.1.2	1236-1237	As these are depth to groundwater values in Table 5, shouldn't the MO values have less-than signs, not greater than signs?	TC-056

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3	35-36	3.4.1.2	1227-1245	Is “primary trigger (PT)” here the same as “Action Trigger” in Figure 5 (on page 30)? If the meaning is the same, then it would be better (i.e., easier to understand) to use the same phrase/abbreviation rather than have two separate terms that mean the same thing. On the other hand, if they are different, then shouldn’t Figure 5 also show the PT in addition the Action Trigger?	TC-057
3	44	3.4.1.3	1495-1531	The water quality triggers are all based on the 75th percentile of wells, so it is conceivable that water quality conditions could deteriorate horribly at 20% of wells and that would not violate any triggers. Seems like it might make sense to also have some metric that would reflect conditions in the wells with the worst water quality?	TC-058
3	46	3.4.3.1	1591-1593	Same comment from March Draft: Irrigating with water containing moderate to high nitrate levels may also increase nitrate concentrations in underlying groundwater.	TC-059
3	46	3.4.3.2	1618-1621	Same comment from review of draft in May: This language is very confusing and unclear how it translates to concentrations. One way it reads suggests that a 14% annual increase per year over a 10 year period in no more than 25% of wells is acceptable. However, compounding a 14% increase over a 10 year period results in a 370% increase in concentration. Perhaps the intent of the statement is, "Monitoring well concentrations shall not exceed the Maximum threshold by 15% in more than 25% of wells during any given year". One could also argue that it isn't warranted - a Maximum threshold should be treated as a just that - a Maximum threshold. Why are exceptions warranted? Theoretically, reaching/exceeding the trigger concentrations should trigger corrective actions. Perhaps the 15% annual exceedance in 25% of wells exception should be applied to trigger values, not Maximum thresholds.	TC-060
3	54	3.4.5.1	1868-1870	Asarian and Robinson (2021) would be a good citation for this sentence: “Excessive stream temperatures are also related to earlier completion of the snowmelt/spring flow recession…” Full reference is: Asarian, J. E., & Robinson, C. (2021). Modeling Seasonal Effects of River Flow on Water Temperatures in an Agriculturally Dominated California River [Preprint]. Earth and Space Science Open Archive; Earth and Space Science Open Archive. https://doi.org/10.1002/essoar.10506606.1	TC-061