From: Mike Hackett, Amber Manfree, Susanne von Rosenberg, and Chris Sauer

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Attn: Groundwater Sustainability Agency Directors Brad Wagenknecht, Ryan Gregory, Diane Dillon, Alfredo Pedroza, and Belia Ramos
% David Morrison, Planning Director
Cc: David Graves, Scott McCreary at CONCUR Inc., Jamison Crosby, Minh Tran, Joelle Gallagher, Dave Whitmer, Anne Cottrell, Andrew Mazotti, Megan Dameron, Napa Register
Napa County
1195 Third Street, 2nd Floor
Napa, CA 94559

RE: Napa Groundwater Sustainability Plan Comments in advance of recommendation to DWR

Dear Directors of the Napa County Groundwater Sustainability Agency:

Four Groundwater Sustainability Advisory Committee (GSPAC) members whose core constituency was environmental users of water were not in support of recommending the current draft of the Groundwater Sustainability Plan (GSP) to the Groundwater Sustainability Agency (GSA). We share a unifying concern: the draft GSP fails to adequately protect environmental users of groundwater from adverse impacts due to groundwater extraction. We urge you to revisit sections discussed below and amend the text to provide protection for environmental users. We are also unified in our support of a Technical Working Group (TWG), as discussed below.

Regulators are looking for meaningful policy that hastens action. Regarding four GSPs recently rejected because they failed to adequately address harm to domestic well owners and the impacts of subsidence, Paul Gosselin, deputy director for the California Department of Water Resources (DWR), Sustainable Groundwater Management Office said:

> "We're not going to accept a plan to do a plan. We're looking for very concrete, measurable changes to address these deficiencies."

We expect that DWR and the California State Water Resources Board (SWRCB) will hold GSPs to the same standard for environmental users of water. The Napa GSA can meet this standard by incorporating the following suggestions into the current draft of the GSP:

1. **Consider climate impacts realistically and strengthen links to PMAs**

   Problem: The current draft GSP leaves Napa Valley Subbasin unprepared for the continuation of *present-day conditions*, and at-risk for experiencing undesirable results and failing to achieve sustainability by 2042.

The severity of changes likely to occur because of climate change, both anthropogenic and not, are inadequately discussed and planned for. While the GSP meets minimum standards for groundwater availability modeling, the standards are outdated. Failing to consider the best available science today will put Napa behind on achieving groundwater sustainability by 2042.

Over the past 10,000 years, there has been gradual warming and drying in the western US, which is now rapidly accelerating due to anthropogenic climate change. Anticipated impacts of climate change in Napa include overall less groundwater recharge due to increased drought, heat, and more intense precipitation events which provide less opportunity for infiltration.

Climate change is not the only climate factor relevant to groundwater availability forecasts, however. California's long-term climate features a pattern of long periods (decades to centuries) of drier conditions (megadroughts) with intervening periods of wetter conditions. In 2020, scientists declared that California has shifted into its next megadrought. This means that we should be planning for the possibility of significantly warmer, drier conditions than are anticipated by the current draft GSP.

SGMA legally requires the use of climate model parameters provided by DWR, which appeared pragmatic in 2014 when the law was adopted. Observed drought conditions have since exceeded anything anticipated at that time - including DWRs worst-case SGMA scenarios.

While Luhdorff and Scalmanini (LSCE) explored model settings that were somewhat drier than DWR-mandated scenarios at the request of committee members, the driest scenario included in the GSP text was twice as wet (25 inches of annual precipitation) as observed drought conditions over the past two years (~10 to 12 inches annually). The modeled scenario of 25 inches of precipitation represents a decrease of less than 7% from the historical average of 26.6 inches, and is clearly not a reasonable worst case, as real-world conditions recently exceeded it. Climate models predict a dry 2021-22 winter, so the current severe drought is likely to continue into 2022.

Recommendation: Current information on climate and weather, including long-term climate history and megadrought, should be incorporated throughout the GSP. Climate history and the most current climate assessments should be explained in Section 1 (Introduction). Possible impacts to groundwater recharge and availability should be included in sections 4 (Basin Setting), 6 (Groundwater and Surface Water Conditions), and 7 (Historical, Current, and Projected Water Supply and Demand). In Section 8 (Water Budget), climate scenarios modeled and discussed in the main body of the text should include droughts that last longer and are more severe. In Section 11 (Projects and Management Actions), responses to extended drought should be explicitly linked to individual PMAs.

2. **Accurately estimate sustainable yield and future demand**

   Problem: In Section 7, the GSP fails to clearly explain that projections show a net increase in groundwater demand of close to 2,000 AFY (~13%) in the future due to a combination of greater irrigation needs from higher temps, drier air, and reduced precipitation infiltration. Combining the anticipated increase in demand with the current water balance results in a projected deficit in groundwater storage even in the absence of model uncertainties.

   Uncertainty is compounded by the failure to include the best available science on climate change, as described above. Reduced availability of water from the North Bay Aqueduct will increase demand on municipal wells, which are likely dewatering the Napa River already (per LSCE 2014). Groundwater demands may exceed model assumptions in a warmer, drier future.

   Predicted demands on groundwater from anticipated development trends were not realistically represented. Conversion of wildlands to vineyards in tributary watersheds is occurring at a rate of about 200 acres per year, which means an average increased demand of 100 acre-feet of groundwater annually, with most withdrawals occurring in the dry season. This is likely to impact dry season inputs, as mountain creeks are fed by groundwater year-round. Urbanization within the agricultural preserve, which largely overlaps the Napa Valley Subbasin and where businesses and residents are likely to rely on wells, has occurred at a rate of 30 acres per year since 1990. Uses are water-intensive, including wineries, large estates, and tourist facilities. Increases in wine production permit volumes for existing wineries are granted frequently. Wine making requires about six gallons of water per gallon of finished wine, so cumulative impacts may be in the realm of an additional acre-foot of demand per year, increasing indefinitely (assuming 50,000 gal/year increase in production).

   Methods and model results related to yield and future demand were contentious throughout the GSP review process. Members of GSPAC who raised concerns were repeatedly assured that the model results indicated that these factors were insignificant. At public meetings, numerous residents raised similar concerns, and cited anecdotal observations such as well levels dropping lower than they have ever been, drying wells, water being trucked throughout the Napa Valley Subbasin to irrigate vineyards, creeks drying in places they have never dried before, and water levels in creeks dropping at rates visible to the naked eye after adjacent pumps were switched on. Copious comments from credible observers on water yield and increases in demand were dismissed as irrelevant in meetings and are not reflected in the text of GSP.

Recommendation: The GSP should clearly disclose the potential magnitude and range of future demand in one location in the document. The discussion should be prominent in the Plan, and should be clearly informed by the various uncertainties in modeling and available data. The GSP should also, either in a separate section or as subsections of sections 4 through 8, clearly articulate uncertainties associated with modeling and data, including the limitations of the historical baseline, and implications for projections for future groundwater availability and demand. In Section 10 (Data Management and Reporting), the GSP should commit to reporting on progress toward resolution of these uncertainties as part of each Annual Report.

Data needed to resolve or substantially reduce uncertainties should be clearly defined. These data gaps would then naturally lead to monitoring and other recommendations for action in Section 11. As the data gaps would be linked back to specific uncertainties, changes in monitoring and other actions could easily be prioritized based on the potential impacts associated with each of the uncertainties/resolution of the uncertainties.

Public comments related to yield and demand should be acknowledged in sections 5 and 7 of the GSP along with a plan to gather relevant information from residents, and verify it. Appropriate actions might include follow-up meetings to discuss monitoring methods and locations and requests for additional documentation of their observations, such as well logs, photos, or narrative accounts. Data gaps should be analyzed and recommendations for work should be made by the end of March, 2022, in preparation for next summer, as drought is expected to continue.

3. **Establish adequate monitoring of GDEs**

Problem: Groundwater Dependent Ecosystem (GDE) health is not monitored, and is not linked to PMAs.

The Nature Conservancy (TNC) lists 150 species found in the Napa Valley Subbasin as dependent on freshwater for at least one stage of their life cycle. The dataset was created specifically to support SGMA. Napa's GSP instead uses the California Natural Diversity Database (CNDDB) as its reference for species presence, which reduces the number of species considered to 20. This CNDDB was designed to support CEQA and is not intended to supplant comprehensive field surveys, as it relies largely on voluntary expert field observations limited by property access. The CNDDB is a presence-only dataset, meaning that the absence of an observation record cannot be interpreted as the absence of a species.

For assessment of GDE health, the GSP relies entirely on rotary screw trap and redd surveys conducted by the Napa Resource Conservation District (NRCD) annually or less frequently, and does not suggest any mechanism for reporting these data to the GSA. These studies are designed to assess salmonid recruitment and have poor temporal and spatial coverage. Thus the NRCD studies are not appropriate to serve as stand-alone indicators of GDE health for the SGMA framework.

Notably, in 2021, zero fishes were caught in NRCDs rotary screw trap because mainstem Napa River flows were too low to operate equipment. If this extreme real-world scenario were to occur again, there is nothing in the GSP to ensure that the GSA or TWG would be notified and, even if they were, there is no linkage to undesirable results or PMAs. Also of concern, the most recent publicly available NRCD fish survey data are from 2016.

Other “monitoring” mentioned in Section 3.3.9 (Groundwater Dependent Ecosystems, Habitat, and Biological Monitoring) does not assess GDE health, rather it forms the basis for delineating GDEs and estimating their water use or storage.

Essentially, there is no monitoring mechanism in place to inform the GSA on the health of GDEs, on impacts to species other than salmonids, or to alert managers to threats as they arise. As the 2021 NRCD fish survey illustrates, even if policy linkage existed, by the time data are available it will be too late to take meaningful action.

Monitoring outlined in Section 5.9 (Interconnected Surface Water) relies on a well network that appears to be placed in areas where groundwater levels are closer to the surface, overall, and it will serve more as a late warning system rather than an early warning system.

Recommendation: include all species identified by TNC in the GSP. Identify species of interest and/or umbrella species and design monitoring programs that address needs throughout their life histories. Consider habitat requirements, stress tolerance, and population dynamics at local and regional scales for freshwater-dependent species. Related factors should trigger PMAs to avoid adverse impacts.

Identify key environmental processes and locations that support species of interest, such as low-flow refugia and hyporheic flows, and monitor them. Monitoring programs must have adequate spatial resolution to ensure that conditions in GDEs throughout the basin (Section 6.8.2) are known and enough temporal resolution to allow a timely response. Describe how these data will be made available in Section 10, and link to PMAs in Section 11.

Monitor GDEs and species of interest, and include a plan for this work in Section 5 (Monitoring Network and Programs). Field work should begin no later than June 2022. We encourage the County to hire several educated, knowledgeable biologists - perhaps from the TWG - to annually undertake dry season stream/river investigations, monitor current riparian conditions and, if they are problematic, alert the TWG and GSA so that PMAs can be initiated.

Initiate a program to collect data from private wells, stratified by Township and Range sections, to improve knowledge of groundwater supplies overall, and allow responses to localized conditions. We recommend prioritizing high-value GDEs and adding such a program to Section 5.

4. **Consider environmental users of water at multiple spatial scales**

Problem: the GSP does not consider the role of the Napa River in sustaining regional populations of species of interest. Groundwater management within a basin necessarily looks inward at local supply and demand. However, at the population level, environmental users of groundwater are best managed at both local and regional scales.

The promise of the Napa River is evident, as CalTrout says "...because it historically supported the greatest [salmonid] runs of any tributary to San Francisco Bay." Today, it is the last best watershed that anadromous salmonids can access via the Golden Gate. It is larger and less urban than other SF Bay tributaries, and fishes avoid a perilous journey through the Sacramento-San Joaquin Delta when they come to Napa.

Local habitat quality matters, and should be considered. For example, within the Napa Valley Subbasin, some creeks are far more productive for salmonids than others. It is appropriate to leverage this key management insight.

Recommendation: The GSP should assess the unique importance of Napa River watershed for species that depend on groundwater, as identified by TNC. Brief life histories for each species on federal or state special status lists should be included. Their habitat requirements should be linked to monitoring practices in Section 3 (Monitoring and Management Programs), and linked to PMAs in Section 11. The TNC list should be included in appendices. Additional special status native fishes from Table 1 (attached) should also be included as they have been observed in NRCD studies.

Regional recovery efforts for special status species such as steelhead, Chinook, sturgeon, Western pond turtle, California freshwater shrimp, bank swallow, Sebastopol meadowfoam, and Contra Costa goldfields should be explained and related to PMAs.

The most productive and valuable habitats should be identified, prioritized for early monitoring, and monitored intensively.

5. **Undesirable results criterion and associated minimum thresholds and triggers for depletions of interconnected surface water**

   Problem: linkage between ambient conditions, monitoring, triggers, and PMAs for environmental users of water and surface water-groundwater connections are not adequate to avoid adverse impacts.

   SGMA requires definition of undesirable results, minimum thresholds, and measurable objectives for each of seven potential groundwater-related problems. The sixth potential undesirable result is depletion of interconnected surface waters. Depletion of surface water in the Napa Valley Subbasin waterways is an immediate concern, as evidenced by drying of extensive sections of river bed over the last two years, including the mainstem Napa River.

   Research shows that extirpation and extinction tend to occur episodically, with sudden population declines due to acute environmental stresses. Populations then fail to recover between dying events unless environmental conditions improve enough to support population booms, a scenario which is increasingly unlikely due to habitat degradation and climate change. The Pelagic Organism Decline in the San Francisco Bay-Delta region is an example of this mechanism.

   Aquatic species require minimum flows and/or periods of inundation, and have limited temperature tolerances (Table 1). When sections of waterways dry for longer periods, drop below critical low flow levels, and/or become too warm because of surface water depletion, these species cannot survive and reproduce.

   The Napa GSP requires three subsequent years of failing to meet the minimum threshold for interconnected surface water before an undesirable result is reached. However, failing to meet the minimum threshold in any one year, even for a short span of time, could be devastating for interconnected surface water-dependent species. We are currently two years into a severe drought, which means GDEs and special species may already be experiencing significant adverse effects.

   Three consecutive years of such damage could lead to extirpation of anadromous salmonids, as there would be no smolts that would survive to out migrate during this three-year period, and these species typically only have a 2 to 3 year lifespan. Repopulation from other regional locations may have been possible following critical low flow years in the past, however, given the extreme stress on salmonids throughout the region, the potential for repopulation is considerably lower than it was historically.

In addition to an excessively long time frame for determination of an undesirable result (akin to determining that a patient is suffering from a severe illness after s/he has died), the linkage between ambient conditions, monitoring, triggers, and PMAs are not adequate to ensure sustainable management. This inadequate linkage is exacerbated by the absence of a targeted, appropriate monitoring system for groundwater dependent ecosystems, as described in Section 3 above, and by an inadequate monitoring system for groundwater-surface water connections.

Current low-flow gaging is essentially non-existent at this time, and Section 5 obfuscates this fact by providing a detailed description of a flood gaging system. Section 5.10.6 (Proposed Actions to Address Data Gaps) proposes upgrading 10 existing flood gages to include low-flow monitoring and says that the GSA will follow the lead of DWR and SWRCB in choosing any additional sites. There are no timeframes associated with this work.

Recommendation: Section 9 (Sustainable Management Criteria) for depletions in interconnected surface waters should be better-supported by monitoring. The GSA should revise the definition of an undesirable result for depletion of interconnected surface waters as being no more than two years of exceedance of the minimum thresholds.

Section 11 should include triggers that relate to species requirements.

Acknowledge the current severe drought conditions, and increase the pace of implementation for monitoring programs and management responses, especially in high quality habitats.

We recognize that there are numerous demands on surface waters. If SGMA is to be effective for protecting environmental users of water, monitoring networks must be robust enough to enable differentiation of causes for surface water depletion. In the absence of such networks, the precautionary principle should be applied.

> "In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."
>
> - Rio Declaration, 1992

It is feasible to design and implement a flow monitoring system locally that will meet the requirements of SGMA and allow targeted management. Placing stream gages in a stream's upper reach, just above the transition from canyon to valley, and before the confluence with the mainstem Napa River would allow managers to determine what the inputs are to the Napa Valley Subbasin and whether Napa Valley Subbasin stream reaches are gaining or losing. We recommend choosing a pilot location (possibly Redwood, York, or Ritchey Creek) and setting a target of mid-summer 2022 for system installation. From there, it should be possible to set reasonable completion dates for additional monitoring.

6. **Diversity and inclusion**

Problem: While not strictly environmental, the lack of diversity and inclusion in the GSPAC was notable, and we hope that a statement here will improve similar or related efforts in the future. This is a key failure of the GSP process and Napa County must ensure that improved representation is a priority going forward.

Disadvantaged communities exist at Census Tract and Block Group scales in the Napa Valley Subbasin, however no targeted outreach occurred. Members of these communities were not represented in the GSPAC and were poorly represented in the planning process. People of color, including local indigenous people, were not represented. About 44% of Napa County's population is Latinx, and this was not reflected in the composition of the GSPAC.

Applications for the GSPAC were generic, and did not include check boxes or prompts to assist applicants in identifying qualifying characteristics that would have helped the GSA select a committee that better reflected community composition.

Recommendation: Prioritize diversity and inclusion going forward. Committee applications should be designed to aid prospective members in identifying criteria to qualify them as representatives for diverse groups.

People of color and members of disadvantaged communities: Engage in proactive outreach and offer financial and logistical support (e.g., targeted recruitment, childcare and transportation; pay for time away from work).

Tribes: Mentioned for inclusion in the first draft outreach plan, but not mentioned in subsequent drafts, and not included in the process. While there are no federally recognized tribes in Napa County, there are indigenous Wappo/Onasatis people and indigenous people from throughout the Americas to include going forward.

Well drillers: Missed opportunity; they have key insights into where and how groundwater use is changing, and are highly knowledgeable about localized groundwater productivity. Engage well drillers in future SGMA public outreach.

Technical Working Group Support

We wish to express our strong support for the establishment of a TWG that follows good science on technical issues. To be both effective and thorough, this group should include only experts in relevant fields whose independence is beyond reproach. They must be allowed to operate without political interference or special interest representation (e.g., government representatives, commercial entities, and private consultants).

The TWG should be a true science-based, officially sanctioned entity whose determinations directly affect implementation of GSP elements. Membership should be limited to a workable size, seven preferred, nine maximum, supported by staff hired for and reporting directly to the TWG. To enable target members to participate, the County must allocate funding to pay members' organizations for staff time and related costs (e.g., travel for site visits).

Members should include:

> **Academics:** Ecologists, hydrologists, biologists, social scientists, climate scientists, statisticians, and scientists who study regional change are all appropriate for a TWG whose objective is to implement a GSP.
>
> **Natural resources agency representatives:** USGS, NOAA-Fisheries (National Marine Fisheries Service), the State Water Quality Control Board, DWR, CDFW, and possibly other entities operating under the umbrella of the California Natural Resources Agency.

There are several possible structures for the TWG, all of which have been used successfully for other environmental matters in California. Whatever is chosen, a high level of autonomy is key. Some options include:

> **Advisory Council** - can be a nonprofit organization established by the County; board comprised of well-connected experts plus additional advisors and research fellows (e.g., CA Council on Science and Technology).
>
> **Committee or Commission** - such as GSPAC; the California Air Resources Board's Research Screening Committee provides an example of composition and function that may be relevant to a TWG supporting SGMA.
>
> **Independent Special District** - formed through LAFCO; a county or group of agencies can apply to form such a district under the authority of the state. Most often, a board elected by constituents oversees operations. The pros of this structure are that it is highly independent and durable, however the set-up and governance are complex. The district would need to be financially self-sufficient, have a website, adopt annual budgets, prepare financial audits, hold elections for board members, respond to public records requests, etc.

.**Joint Powers Authority/Agency** - an entity which allows two or more public authorities (e.g., local governments) to jointly exercise common power. Has a board of directors, agreements on purview, may employ staff, and establish policy. Falls under local control, not state.

In conclusion

There is nothing stopping the Napa GSA from exceeding the minimum standards of SGMA. The price for "aiming low" and meeting only the minimum requirements of SGMA is likely to be high, in the long term - perhaps even jeopardizing compliance.

The most important question to representatives of environmental users of water is, "Are we doing enough to ensure long-term sustainable yields that serve both human and environmental uses of groundwater in this unique system?" We have reviewed the GSP and found that the current version of the document leaves environmental users exposed to unacceptable levels of risk, to the short-term benefit of human users of groundwater.

As four of 25 GSPAC representatives, our votes were not enough to push meaningful environmental protections forward, though we endeavoured to do so throughout the process. Our concerns and recommendations, outlined above, acknowledge that the GSA has an opportunity to meaningfully protect biological resources in the Napa River Watershed, and provide a roadmap for that process.

Every year that our aquifer is operated unsustainably, the likelihood of adverse impacts increases, as does the harshness of restrictions required to meet 2042 targets. A proactive approach is the best way to achieve sustainability because it allows a longer window for groundwater users to adopt PMAs, leaves more room for error, and improves conditions for GDE-dependent species sooner.

We have served as representatives on GSPAC in good faith and have serious concerns about the content of the GSP. We sincerely hope that the GSA takes this opportunity to revise the document, and that our recommendations will be reflected in the draft submitted to DWR. Our goal is for the Napa Valley Subbasin to achieve groundwater sustainability in a timely manner for the benefit of both human and environmental users of groundwater.

Respectfully,

Mike Hackett
Amber Manfree
Susanne von Rosenberg
Chris Sauer

Table 1. Special Status Aquatic Animals in the Napa River Watershed

Species	Habitat requirements	Status
California freshwater shrimp *Syncaris pacifica*	Freshwater resident; low-gradient streams; live roots, undercut banks; thermal tolerance unknown	ESA: FE CESA: SE IUCN: EN
Pacific lamprey *Entosphenus tridentatus*	Anadromous; variable and pulse flows; ammocoetes prefer 10°C-18°C with adverse impacts at >22°C	AFS:VU BLM:S CDFW:SSC USFS:S
Western river lamprey *Lampetra ayresi*	Anadromous; gravel, sand, silt; variable and pulse flows; ammocoetes thermal tolerance unstudied; adverse	AFS: VU CDFW: SSC
Western brook lamprey *Lampetra richardsoni*	Freshwater; variable and pulse flows; ammocoetes prefer 10°C-18°C with adverse impacts at >22°C	CDFW: SSC USFS:S
Hitch *Lavinia exilicauda exilicauda*	Freshwater; salt tolerant to 9ppt; low-gradient streams; prefer 27°C-29°C with major nortality >38°C	CDFW: SSC
Southern coastal roach *Hesperoleucus venustus subditus*	Freshwater; variable flows; low-gradient streams at <1,000 ft elevation; adults tolerate temps to 35°C	Under review
Sacramento splittail *Pogonichthys macrolepidotus*	Freshwater; floodplains; adults salt tolerant to 29ppt; prefer 5°C-24°C with mortality at >24°C	AFS:VU CDFW:SSC IUCN:EN
Hardhead *Mylopharodon conocephalus*	Freshwater; spawn Apr-May in pools; mid- and low-elevation streams; prefer 24°C-28°C	CDFW:SSC USFS:S
Chinook salmon* *Oncorhynchus tshawytscha*	Anadromous; variable and pulse flows; gravel; fry prefer 13°C-18°C with major mortality at >22°C	ESA: SSC
Steelhead** *Onchoryncus mykiss irideus*	Anadromous; variable and pulse flows; gravel; fry prefer 15°C-18°C with major mortality at >23°C	ESA: FT AFS: TH
California giant salamander *Dicamptodon ensatus*	Freshwater; variable flows; thermal tolerance not well studied; prefers cool, shaded, flowing waterways	CDFW:SSC IUCN:NT
Foothill yellow-legged frog *Rana Boylii*	Freshwater; variable flows; cobble; tadpoles prefer 16.5°C–22.2°C; mortality at <16°C and >24°C	CESA: SE BLM:S CDFW:SSC IUCN:NT
Northwestern pond turtle *Actinemys marmorata*	Freshwater and brackish perennial wetlands with pools; requires basking areas; terrestrial nests; thermal tolerance pending (R. Peek, in press)	BLM:S CDFW: SSC IUCN: VU USFS: S

Key: Status codes designated by Federal Endangered Species Act (ESA): Federally Endangered (FE), Federally Threatened (FT), Species of Special Concern (SSC); California Endangered Species Act (CESA): State Endangered (SE); American Fisheries Society (AFS): Threatened (TH), Vulnerable (VU); Bureau of Land Management (BLM): Sensitive (S); California Department of Fish and Wildlife: Species of Special Concern (SSC); International Union for Conservation of Nature (IUCN): Endangered (EN), Near Threatened (NT), Vulnerable (VU); United States Forest Service (USFS): Sensitive (S).

*Central Valley fall run ESU
**Central California Coast DPS