



GUIDE TO COMPLIANCE WITH CALIFORNIA'S SUSTAINABLE GROUNDWATER MANAGEMENT ACT

How to avoid the “undesirable result” of “significant and unreasonable adverse impacts on beneficial uses of surface waters.”

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Disclaimer

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INTRODUCTION

In enacting the Sustainable Groundwater Management Act (SGMA) the California Legislature, for the first time ever, expressly linked the two historically distinct legal regimes governing water in the state that previously had been entirely separate: one governing surface water use and the other groundwater use.¹ SGMA requires Groundwater Sustainability Agencies (GSAs) and their Groundwater Sustainability Plans (GSPs or Plans) to consider and address the groundwater-surface water interaction, and specifically the impacts of groundwater pumping on surface water beneficial uses.

SGMA defines sustainable groundwater management as the avoidance of six “undesirable results” identified in the law.² The purpose of this guide is to help GSAs and other stakeholders understand and comply with the requirement of SGMA that groundwater withdrawals must not cause “significant and unreasonable adverse impacts on beneficial uses³ of the surface water,” known as “undesirable result no. 6.”⁴ This guide is based on the principle that existing legal frameworks (laws, regulations, court decisions, etc.) provide the clearest and most pertinent guidance on what constitutes undesirable result no. 6.

This guide addresses only the explicit legal aspects of this statutory mandate. It does not address technical and scientific aspects of SGMA compliance and offers no advice on the steps GSAs must take to get an adequate technical understanding of the groundwater-surface water connections under their purview. GSAs may look to other sources for guidance on that front.⁵ In addition, “Navigating Groundwater-Surface Water Interactions under the Sustainable Groundwater Management Act,” authored by experts at the University of California Berkeley provides a helpful overview of the steps involved in implementing SGMA provisions relating to groundwater-surface water interactions.⁶

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- 1 While groundwater and surface water rights are generally treated as separate and distinct legal arenas in California, even prior to SGMA's enactment, there were a number of situations where courts and legislators acknowledged the hydrological connections between the two regimes. See, e.g., Aladjem, “California's Other ‘Dual System’: Coordinated Management of Groundwater and Surface Water,” 49th Annual Rocky Mountain Mineral Law Institute Conference (2003).
 - 2 See Cal. Water Code §§ 10721(u), (w) and (x).
 - 3 Beneficial uses of water, for purposes of water rights, are defined in the California Code of Regulations to include, among other things: domestic; irrigation; power; municipal; mining; industrial; fish and wildlife preservation and enhancement; aquaculture; recreational; stock watering; water quality; frost protection; and heat control. 23 CCR §§ 659-672. The term “beneficial uses” is defined somewhat differently in the context of water quality regulation, where beneficial uses are considered the same as “designated uses” under state and federal water quality laws. See Cal. Water Code § 13050(f); 40 C.F.R. § 131.3(e). A list of beneficial uses recognized by the California State Water Resources Control Board is included as Appendix E to California's Groundwater: Bulletin 118 – Update 2003 (Bulletin 118).
 - 4 Cal. Water Code § 10721(x)(6).
 - 5 See, e.g., Maurice Hall and Christina Babbitt, Addressing Regional Surface Water Depletion under California's Sustainable Groundwater Management Act: A Proposed Approach for Compliance. Additional resources include the following:
 - (1) S. Parsons, R. Evans, and M. Hoban M. (2008), Surface-groundwater connectivity assessment. A report to the Australian Government by the CSIRO Murry-Darling Basin Sustainable Yields Project. CSIRO, Australia. Available at: <http://www.clw.csiro.au/publications/waterforahealthycountry/mdbsy/technical/R-SW-GW-Connectivity.pdf>
 - (2) P.M. Barlow and S.A. Leake, Streamflow depletion by wells--Understanding and managing the effects of groundwater pumping on streamflow, USGS Circular 1376 (2012). Available at: <https://pubs.er.usgs.gov/publication/cir1376>
 - (3) S.J. Stanton, S.M. Peterson, and M.N. Fienen, Simulation of groundwater flow and effects of groundwater irrigation on steam base flow in the Elkhon and Loup River Basins, Nebraska, 1895-2055-Phase Two: U.S. Geological Survey Scientific Investigations Report 2010-5149 (2010), 78 p. Available at: <https://pubs.usgs.gov/sir/2010/5149/>
 - (4) J.H. Fleckenstein, R.G. Niswonger, and G.E. Fogg, River-Aquifer Interactions, Geologic Heterogeneity, and Low-Flow Management. Ground Water (2006), 44(6), 837–852. Available at: <http://doi.org/10.1111/j.1745-6584.2006.00190.x>
 - (5) From The Nature Conservancy: (a) Groundwater Dependent Ecosystems Under the Sustainable Groundwater Management Act (2018), available at https://groundwaterresourcehub.org/public/uploads/pdfs/GWR_Hub_GDE_Guidance_Doc_2-1-18.pdf; (b) Groundwater and Stream Interaction in California's Central Valley: Insights for Sustainable Groundwater Management, (2014). Available at: https://www.scienceforconservation.org/assets/downloads/GroundwaterStreamInteraction_2016.pdf; (c) Groundwater Resource Hub, available at: <https://groundwaterresourcehub.org/>.
 - 6 Alida Cantor, Dave Owen, Thomas Harter, Nell Green Nylen, and Michael Kiparsky, Navigating Groundwater-Surface Water Interactions under the Sustainable Groundwater Management Act (March 2018).

Groundwater-Surface Water Interactions Under the Sustainable Groundwater Management Act

The goal of SGMA is to achieve “sustainable management of groundwater basins” in California.⁷ Sustainable management is defined, with one important proviso, as management that avoids six specified circumstances that constitute undesirable results.⁸ That proviso is that any undesirable results that occurred prior to January 1, 2015, need not be addressed.⁹ SGMA requires GSAs to develop and implement Groundwater Sustainability Plans that include objectives and measures for groundwater management that will avoid causing undesirable results.

SGMA’s requirement that GSAs develop plans that will avoid undesirable result no. 6 by implication places two major responsibilities on GSAs, responsibilities that historically have not been a part of California groundwater management. First, GSAs must take the technical steps necessary, using best available science and information, to determine the nature and extent of the impacts of groundwater depletions on beneficial uses of surface water and determine the groundwater–surface water connections within the Plan boundaries. Second, GSAs must understand the legal protections for beneficial uses of surface water within the Plan area in order to make sound and supportable determinations as to whether impacts on them from groundwater use are significant and unreasonable.

While SGMA itself provides no explicit guidance on what might constitute significant and unreasonable impacts on surface water uses, the SGMA Emergency Regulations adopted by the State Department of Water Resources (DWR) direct GSAs to describe in their plans “[h]ow state, federal or local standards relate to the sustainability indicator[s]” for each of the applicable undesirable results.¹⁰ Although the phrase “significant and unreasonable” is subject to interpretation, the premise of this guide, consistent with the state’s Emergency Regulations, is that other state and federal laws, regulations and legal doctrines pertaining to beneficial uses of surface water provide guidance regarding what impacts constitute significant and unreasonable adverse impacts that are impermissible under SGMA.¹¹

In carrying out the mandates of SGMA, GSAs must also ensure compliance with all other applicable legal requirements. If groundwater use is causing a violation of a law or regulation relating to surface water uses, it is almost certainly causing significant and unreasonable adverse impacts on beneficial uses of surface water,¹² thereby preventing the GSP from achieving the sustainability goal as required by SGMA. Even where there is no explicit legal violation, laws, regulations and requirements that protect specific beneficial uses of surface water provide GSAs with guideposts on what might be considered significant and unreasonable adverse impacts on beneficial uses of surface water.¹³

7 Cal. Water Code § 10720.1(a).

8 See Cal. Water Code §§ 10720.1, 10721, 10727.2.

9 Cal. Water Code § 10727.2(b)(4).

10 23 CCR § 354.28(b)(5).

11 See Brian E. Gray, *The Reasonable Use Doctrine in California Water Law and Policy*, in Allison Lassiter (ed.), *Sustainable Water: Challenges and Solutions from California* (2015), pp. 100-102 (noting that federal and state laws “take precedence over water rights in the event of conflict,” and that “uses of water that violate state and federal environmental laws – or the water quality and streamflow standards, effluent limits, biological opinions, incidental take limits, and other regulations that implement those laws – should be presumptively unreasonable and a substantial burden placed on the water right holder to prove otherwise.”)

12 As explained below under Red Light no. 3, in some instances the State Water Resources Control Board has assigned responsibility for meeting instream flow requirements to specific entities, in which case the GSA may not be responsible for addressing the problem.

13 For example, under the federal Endangered Species Act, federal agencies must ensure their actions are not “likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat.” 16 U.S.C. § 1536(a)(2). While this requirement does not apply to GSAs or other non-federal agencies, it provides good guidance on what should be considered “significant and unreasonable adverse effects” under SGMA.

Where legally protected surface water uses are being harmed by a combination of both groundwater and surface water uses, GSAs should make a reasonable effort to estimate the extent to which groundwater diversions contribute to the problem. **GSAs are not responsible for mitigating impacts caused by other surface water uses.** While allocating responsibilities between contributing groundwater and surface water uses is likely to be a challenging exercise, it is part of the technical work to be done by GSAs as they acquire the best available science and information for development of GSPs.

Beneficial Uses of Surface Water

The State Water Resources Control Board (SWRCB) formally recognizes 23 beneficial uses of water – both surface water and groundwater,¹⁴ and regional water quality control plans may specify additional beneficial uses.¹⁵ In addition to agricultural, domestic, and municipal water uses, some examples of beneficial uses of surface water that are likely to be the basis of concerns regarding undesirable result no. 6 include the following:

- Supporting “habitats necessary, at least in part, for the survival and successful maintenance of plant or animal species established under state or federal law as rare, threatened or endangered;”
- Supporting “designated areas or habitats, such as established refuges, parks, sanctuaries, ecological reserves or Areas of Special Biological Significance, where the preservation or enhancement of natural resources requires special protection;”
- Supporting “cold water ecosystems, including but not limited to, preservation or enhancement of . . . vegetation, fish, or wildlife, including invertebrates;”
- Supporting “warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates;”
- Supporting “high quality aquatic habitats suitable for reproduction and early development of fish;”
- Supporting “habitats necessary for migration or other temporary activities by aquatic organisms, such as anadromous fish;”
- Supporting “estuarine ecosystems including, but not limited to, preservation or enhancement of estuarine habitats, vegetation, fish, shellfish, or wildlife (e.g., estuarine mammals, waterfowl, shorebirds);”
- Supporting “terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.”¹⁶

Plans must also be consistent with the laws and doctrines governing California’s water rights system.¹⁷ To that end GSAs must consider the possibility that there may be rights to use surface waters that have priority over groundwater uses. Federal reserved water rights associated with Indian reservations and other specially protected federal lands such as national parks, and federal tribal treaty or fishing rights are in this category, as are California state-based “pueblo” water rights.¹⁸

14 See Bulletin 118, *supra*, App. E. See also Cal. Water Code § 10723.2 (identifying all groundwater beneficial uses considered by SGMA, which include “[s]urface water users, if there is a hydrological connection between surface and groundwater bodies”).

15 See, e.g., Water Quality Control Plan for the North Coast Region (May 2011), pp. 2-1.00-2-4.00 (including, *inter alia*, “Native American Culture,” “Wetland Habitat,” and “Subsistence Fishing” as beneficial uses, none of which are included in SWRCB’s Bulletin 118, App. E).

16 See Bulletin 118, *supra*, App. E.

17 See Cal. Water Code § 10720.5(b).

18 See, e.g., *City of Los Angeles v. Pomeroy*, 124 Cal. 597, 649-50 (1899); *City of San Diego v. Cuyamaca Water Co.*, 209 Cal. 152, 164-65 (1930).

Reasonable Use and Public Trust Doctrines

In evaluating the applicability of the various laws, regulations and requirements set forth below, GSAs must also be mindful of two overarching legal doctrines that govern beneficial use of surface water in California: the reasonable use doctrine and the public trust doctrine. Each of these is summarized very briefly in Box 2. The term “unreasonable” used in SGMA’s definition of “undesirable results” is not defined in either the statute or the Emergency Regulations. Nevertheless, because undesirable result no. 6 relates to conflicts between groundwater beneficial uses and surface water beneficial uses, it is appropriate to consider the reasonable use doctrine as well as the public trust doctrine in determining whether an effect is “unreasonable” under this provision of SGMA.

The Reasonable Use Doctrine¹⁹

California law requires that all water use must be reasonable and beneficial regardless of the type of underlying water right.²⁰ No one has an enforceable property interest in the unreasonable use, unreasonable method of use or unreasonable method of diversion of water.²¹ While appropriative water rights – as opposed to landowners’ correlative water rights – are based on a priority system, priorities may not be enforced when that would lead to unreasonable or wasteful use of water or harm to values protected by the public trust.²² What is considered reasonable can change over time. What was reasonable a century ago may well be found to be unreasonable now, and what is reasonable now might not be reasonable ten or twenty years from now due to ever-increasing water needs and uses. As the California Supreme Court has stated, “[w]hen the supply is limited public interest requires that there be the greatest number of beneficial uses which the supply can yield.”²³

The Public Trust Doctrine²⁴

The public trust doctrine requires the state to hold in trust and protect designated resources for the benefit of the people. The protected resources include navigation, commerce, fishing, ecological resources and recreation.²⁵ The public trust doctrine applies to navigable waters and tributaries thereto, and its protections of ecological resources and associated fish and wildlife can also extend into non-navigable waters and associated habitats that are directly connected to navigable waters.²⁶ The public trust doctrine does not require protection of trust resources in all circumstances. Rather, it calls for balancing public trust uses against other uses, and holds that trust uses should be protected “wherever feasible.”²⁷ Protecting public trust resources has been found, after applying the legally required balancing, to place substantial limits on state-permitted water rights.²⁸ Recently a superior court held that the doctrine extends to interconnected groundwater to the extent that use of the groundwater affects public uses in navigable surface waters.²⁹

19 See, e.g., Brian E. Gray, *The Reasonable Use Doctrine in California Water Law and Policy*, supra; “Wasted Water: Reasonable Use Law in 21st Century California, Session 1: The Long View on Reasonable Use Law in California” (2015), *Environmental Law Symposia*, Paper 5.

20 SGMA expressly requires compliance with California Constitution Article X, Section 2, which expresses the reasonable use doctrine.

21 California Constitution Article X, Section 2; Cal. Water Code §§ 100, 275, 1050, 10720.

22 See *National Audubon Society v. Superior Court*, 33 Cal. 3d 419, 443 (1983) (*National Audubon*); *El Dorado Irrigation District v. State Water Resources Control Board*, 142 Cal. App. 4th 937, 965-66 (2006).

23 *Peabody v. City of Vallejo*, 2 Cal. 3d 351, 368 (1935).

24 See, e.g., Joseph L. Sax, *The Public Trust Doctrine in Natural Resources Law: Effective Judicial Intervention*, 68 Mich. L. Rev. 471 (1970); Richard Frank, *The Public Trust Doctrine: Assessing Its Recent Past & Charting Its Future*, 45 U.C. Davis L. Rev. 665 (2012); Brian E. Gray, *Ensuring the Public Trust*, 45 U.C. Davis L. Rev. 973 (2012); Barton H. Thompson Jr., *The Public Trust Doctrine: A Conservative Reconstruction & Defense*, 15 Se. Envtl. L.J. 47 (2006).

25 See, e.g., *National Audubon*, supra, 33 Cal.3d at 433-444; *City of Berkeley v. Superior Court*, 26 Cal.3d 515, 519 (1980).

26 See *Environmental Law Foundation v. SWRCB*, Case No. 34-2010-80000583 (Sacramento Super. Ct. Aug. 22, 2016) (appeal pending).

27 *National Audubon*, supra, 33 Cal. 3d at 446.

28 See, e.g., *National Audubon*, supra, 33 Cal. 3d at 426. See also cases cited in Brian E. Gray, *Ensuring the Public Trust*, supra, pp. 987-997.

29 *Environmental Law Foundation v. SWRCB*, supra.

“Significant Effects” under the California Environmental Quality Act

One other law deserves special consideration because it sheds light on the meaning of “significant” as used in SGMA to describe undesirable results. This is the California Environmental Quality Act (CEQA), which requires public agencies to prepare an environmental impact report on any discretionary project which “may have a significant effect on the environment,” and to mitigate those significant effects whenever it is feasible to do so.³⁰ CEQA Guidelines §§ 15064-65 provide guidance on “significant effects” under CEQA. Many public agencies use the factors listed in Appendix G to the Guidelines as “significance thresholds,” presuming that a project would have a significant effect on the environment if it would have any of the impacts listed in Appendix G. These impacts include the following:

- violation of water quality standards;
- substantial degradation of water quality;
- substantial effect (direct or indirect) on species listed as candidate, sensitive, or special status species;
- substantial effect on federally protected wetlands as defined by Clean Water Act section 404;
- substantial interference with movement of any native resident or migratory fish or wildlife species;
- conflict with the provisions of a Habitat Conservation Plan, Natural Community Conservation Plan or other approved habitat conservation plan.³¹

Furthermore, a finding of significance is mandatory where:

- the project has the potential to: substantially degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; substantially reduce the number or restrict the range of an endangered, rare or threatened species;
- the project has possible environmental effects that are individually limited, but cumulatively considerable. “Cumulatively considerable” means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.”³²

Also of note, a California Court of Appeal has found that reduction in streamflow was a “potentially significant impact” under CEQA even though it was not expressly listed in Appendix G.³³

Specific SGMA Requirements

GSAs are charged with implementing SGMA, and specifically Parts 1-8 of Chapter 2.4 of SGMA, entitled Sustainable Groundwater Management.³⁴ GSAs must complete their first Plans no later than the 2020 and 2022 deadlines set forth in Water Code § 10720.7. Each Plan must include “a sustainability goal for the basin that culminates in the absence of undesirable results within 20 years of the applicable statutory deadline,” and a discussion of how the sustainability goal is likely to be achieved by the deadline and maintained thereafter.³⁵ The Plan must describe “[t]he criteria used to define when and where the effects of the groundwater conditions cause undesirable results for each applicable sustainability indicator.”³⁶

30 Cal. Pub. Res. Code §§ 21002.1(b), 21080(d).

31 Guidelines for Implementation of the California Environmental Quality Act (CEQA Guidelines), Appendix G.

32 CEQA Guidelines § 15065.

33 *Protect the Historic Amador Waterways v. County of Amador*, 116 Cal. App. 4th 1099 (2004).

34 Cal. Water Code §§ 10720-10732.2; see also 23 CCR §§ 350-358.4.

35 23 CCR § 354.24.

36 23 CCR § 354.26(b). “Sustainability indicators” are the six factors that, when found to be significant and unreasonable, cause undesirable results. Cal. Water Code § 10721(x); 23 CCR § 354.26(b).

To do that, for each of the six sustainability indicators (otherwise known as undesirable results) the GSP must establish “measurable objectives”³⁷ to achieve the sustainability goal within 20 years, and “minimum thresholds” that “represent a point in the basin that, if exceeded, may cause undesirable results.”³⁸ The description of minimum thresholds must include, among other things, “[h]ow state, federal, or local standards relate to the relevant sustainability indicator. If the minimum threshold differs from other regulatory standards, the [GSA] shall explain the nature of and basis for the difference [emphasis added].”³⁹

The minimum threshold for depletions of interconnected surface water shall be supported by the following:

- (A) The location, quantity, and timing of depletions of interconnected surface water.
- (B) A description of the groundwater and surface water model used to quantify surface water depletion. If a numerical groundwater and surface water model is not used to quantify surface water depletion, the Plan shall identify and describe an equally effective method, tool, or analytical model to accomplish the requirements of this Paragraph.⁴⁰

DWR is required to review Plans at least every five years⁴¹ to determine, among other things, whether each Plan has the required elements and “is likely to achieve the sustainability goal” for the Basin.⁴² DWR will, as part of its review, determine whether any undesirable results are present that are not being adequately addressed in the Plan.

In the sections below, this guide reviews the state and federal legal standards that are most pertinent to avoidance of undesirable result no. 6.

Red Light-Yellow Light-Green Light Guide

The factors identified below for GSAs to consider are intended as guideposts rather than rigid rules for complying with these requirements with respect to undesirable result no. 6. The Red Light category below identifies situations which GSAs must look closely at as they are most likely to require additional action to ensure legal compliance. The Yellow Light category signals that there may be problems concerning impacts from groundwater pumping on surface water beneficial uses, and that GSAs should further investigate the matter. The Green Light category describes generally the problems that need to be avoided or addressed in order to confirm the absence of undesirable result no. 6.

While SGMA clearly intends that GSAs need not fix undesirable results that occurred prior to 2015, it does not exempt GSAs from new legal or regulatory requirements that go into effect after 2014.⁴³

The specific requirements and laws listed below must be considered within the context of both the public trust doctrine and the reasonable use doctrine. Where surface water uses are protected by the public trust doctrine, the likelihood that adverse impacts to surface water uses is significant and unreasonable is increased. At the same time, the reasonable use doctrine calls for consideration of a wide range of economic, environmental, social and other interests of the public in evaluating potentially conflicting water uses, which could lead to the conclusion that a groundwater diversion that harms a public trust surface water use is reasonable under the reasonable use doctrine and thus more likely to be permissible under SGMA.

37 Cal. Water Code § 10727.2(b)(1); 23 CCR §§ 354.30(a) & (b).

38 23 CCR § 354.28.

39 23 CCR § 354.28(b)(5).

40 23 CCR § 354.28(c)(6).

41 Cal. Water Code §§ 10733 – 10733.8

42 Cal. Water Code § 10733(a); 23 CCR §§ 355 – 355.6.

43 An interpretation that SGMA immunizes GSAs from enforcement of all post-2014 legal requirements would, for example, essentially exempt GSAs from water quality regulation under the Porter-Cologne Act, from avoiding unlawful “take” of species newly listed by the State, and from future enforcement of all the state laws addressed in this Guide. Interpreting SGMA as precluding tighter standards or regulations would make SGMA a ceiling rather than a floor, contrary to SGMA’s intent “to establish **minimum** [emphasis added] standards for sustainable groundwater management.” Cal. Water Code § 10720.1(c).

Finally, the Red Light and Yellow Light categories listed below include only those situations where specific laws or legal doctrines expressly call for protection of particular beneficial uses of surface water. These are the most clearly defined circumstances expected to result in significant and unreasonable adverse impacts on beneficial uses of surface water.




There will, however, inevitably be other situations not addressed below that would constitute undesirable result no. 6 even though there are no obvious bright lines defining them. Indeed, SGMA itself acknowledges this likelihood in Water Code § 10735.2(a)(5) which allows the SWRCB to intervene after January 31, 2025, where it determines that a GSP is inadequate or being implemented in a manner not likely to achieve the sustainability goal and **“groundwater extractions result in significant depletions of interconnected surface waters [emphasis added].”** There is no definition in SGMA or the Emergency Regulations of what amount of depletions of surface water would be impermissibly significant under this provision and this guide addresses only those situations where laws, regulations, or legal doctrines provide explicit guidance.

Specific examples to illustrate how this guide would apply to various circumstances are set forth in Appendix A to the guide.



RED LIGHT – YELLOW LIGHT – GREEN LIGHT

GUIDE TO UNDESIRABLE RESULT NO. 6

	Red Light:	Remedial Action is Likely Required if it is Determined that Groundwater Diversions Contribute to the Harms Noted
	Yellow Light:	Legal Constraints Could Limit Either Existing or New Depletions of Surface Water — Further Technical Analysis Should Be Undertaken.
	Green Light:	No Apparent Risk of Impermissible Impacts on Beneficial Uses of Surface Water — Maintain Groundwater Levels At or Above January 1, 2015, Levels.

Red Light Circumstances

The Red Light category of undesirable results relating to impacts on surface water uses lists factors that likely will, assuming they are caused or amplified by groundwater diversions, require a GSA to take remedial steps. Where the impacts, or the legal protections barring such impacts to beneficial uses of surface water, pre-date 2015 and thus no action is required by SGMA, GSAs should determine whether other laws or regulations require them, or their groundwater users, to address the impacts of groundwater pumping. **The presence of any Red Light factors creates a presumption that any new groundwater diversion would cause significant and unreasonable adverse impacts on beneficial uses of surface water and rise to the level of an undesirable result.** In addition, in some cases where existing diversions are determined to be having impermissible impacts on surface water uses, they may need to be addressed.

In general, any of the impacts discussed below should be presumed to be unreasonable unless a clear showing is made that remedying or avoiding the violations would cause even more undesirable results. Even where such actions might be found reasonable under SGMA, violations of federal or state laws are still impermissible and must be addressed by the parties responsible for the violations. Although in some cases this might be water users, water districts or parties other than the GSA, the best practice should still be for the GSP to seek to prevent violations of these laws.

Where legal requirements listed below are not currently being met, we recommend that the GSA do a technical analysis of the problem to determine the extent to which groundwater diversions are contributing or expected to contribute to the problem. If a determination is made that groundwater depletions are not a contributing factor, and not likely to become a contributing factor while depletions remain at current levels, or the problem developed before and is not being made worse than it was as of 2015, then maintenance of groundwater at current levels does not constitute undesirable result no. 6 as prohibited by SGMA. If, however, the analysis indicates that groundwater diversions are currently contributing to post-2014 legal violations or are expected to do so in the future, then steps should be taken to ensure that groundwater diversions do not contribute to these violations.

Finally, where analysis of one or more of the factors listed below leads to the conclusion that new groundwater diversions are impermissible due to anticipated adverse impacts on beneficial uses of surface water, that may not be the end of the story. It may be possible for the party seeking the groundwater extraction to proceed if the GSA has established or plans to establish some sort of banking or augmentation program whereby parties may offset impacts from new groundwater diversions by bringing into the basin an amount of water sufficient to fully offset the adverse impacts caused by the groundwater pumping. Any such program must

ensure that both the timing and location of the water offsets fully mitigate or avoid the damage that would otherwise be caused by pumping. While neither SGMA nor the DWR Emergency Regulations directly address the possibility of offsetting groundwater depletions that cause an undesirable result, SGMA expressly notes that GSAs have the authority to “import surface water or groundwater into the agency, and conserve and store within or outside the agency,”⁴⁴ and SGMA’s references to “replenishment of groundwater extractions” and “groundwater recharge” as optional Plan elements tacitly endorse the augmentation concept.⁴⁵

1. Federal and/or State Endangered Species Act (ESA) surface flow or other surface water-dependent requirements are currently not being met at least partially due to groundwater diversions

- If it is determined that groundwater diversions are causing or contributing to unauthorized “take”⁴⁶ of listed species, that is an explicit violation of the ESA that needs to be addressed;
- Even where there is no direct violation of the ESA, the following situations are problematic because of the high likelihood of unlawful take of the species:
 - Where a federal Biological Opinion specifies minimum instream flows that are currently not being met;⁴⁷ or
 - Where critical habitat⁴⁸ has been designated for a listed species⁴⁹ and features in the critical habitat considered essential for survival of the species are currently being destroyed or adversely modified; or
 - Where groundwater diversions are causing or contributing to low instream flows that are likely to jeopardize the continued existence of listed species. This should be assumed to be a problem even where violations may be rare, or very sporadic.⁵⁰
- **Resources:** See <https://www.fws.gov/endangered/>; <https://www.wildlife.ca.gov/Conservation/CESA/FESA>

2. Other (non-ESA) legally established instream flow requirements are currently not being met at least partially due to groundwater diversions

- “Legally established” refers to instream flow requirements that have been adopted by the SWRCB, by a regional water quality control board or by a court.
- Where the SWRCB or a Regional Board has expressly assigned responsibility for compliance with a flow requirement to one or more specific water users, a GSA has no legal responsibility to address groundwater diversions that may be contributing to violation of the requirement unless the SWRCB alters its allocation of responsibility.⁵¹ Nevertheless, even absent direct legal responsibility under the ESA, groundwater depletions could still be found to be causing significant and unreasonable harm to surface water uses.

44 Cal. Water Code § 10725.(b).

45 See Cal. Water Code §§ 10727.4 (e) & (h).

46 “Unauthorized take” is defined as “to harass, harm pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” 16 U.S.C. § 1532(19).

47 While technically federal Biological Opinions issued pursuant to the federal Endangered Species Act apply only to federal agencies, adherence to their requirements has been found necessary to avoid the likelihood of jeopardizing the continued existence of the species.

48 “Critical habitat” is generally defined as one or more specific geographic areas occupied by the species that contain features essential for the conservation of a listed species and that may require special management and protection, or unoccupied areas that are “essential for the conservation of the species.” See 16 U.S.C. § 1532(5)(A). For maps showing federal critical habitat designations see: <https://ecos.fws.gov/ecp/report/table/critical-habitat.html>

49 “Listed species” refers to species listed as endangered, threatened or rare under the federal Endangered Species Act, 16 U.S.C. §§ 1531 et seq., the California Endangered Species Act, Cal. Fish & Game Code §§ 2050 et seq., or the California Native Plant Protection Act, Cal. Fish & Game Code §§ 1900 et seq.

50 Even a single day of river-drying or mortally high water temperatures can kill a large number of fish, thereby causing longterm harm to the survivability of the species.

51 See, e.g., SWRCB, Revised Water Right Decision 1641 (establishing and implementing water flow and quality objectives for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary) (March 15, 2000), pp. 146-180 (SWRCB Order assigns responsibility for compliance with various flow and salinity requirements to different groups of permittees, and decides not to assign compliance responsibility for a dissolved oxygen requirement to any specific permittees).

- Resources: See Instream Flow Recommendations Map: <https://www.wildlife.ca.gov/Conservation/Watersheds/Instream-Flow/Recommendations>.

3. Water quality requirements and/or “Total Maximum Daily Loads” (TMDLs) are currently not being met due at least partially to groundwater diversions

- Such requirements must have been adopted by either the SWRCB or one of the regional water quality control boards.
- As noted above, where specific parties other than groundwater users have been directed to ensure compliance with such requirements, SGMA may not require that the GSA address groundwater contributions to these violations. Nevertheless, it is still possible that groundwater depletions to the problem could be considered to have “significant and unreasonable impacts” on surface water uses under SGMA.
- While temperature and sedimentation standards are the requirements most commonly associated with groundwater depletions, other water quality standards may also be implicated.

4. Senior surface water rights or fishing rights are currently not being met at least partially due to groundwater diversions

- The three categories of surface water rights likely to have priority over groundwater pumping by overlying landowners are federal reserved rights,⁵² tribal water or fishing rights based on treaties, laws or executive orders and state-based pueblo rights.⁵³
- Most water rights have not been adjudicated or otherwise quantified and legally confirmed. Where claimed rights have not been legally confirmed an effort should be made by the relevant parties to agree on a course of action that will address the problem.

5. Instream flows and/or riparian areas within the boundaries of federal or state-designated Wild and Scenic Rivers are currently being adversely affected at least partially by groundwater diversions

- The California Wild and Scenic Rivers Act states that preservation of specified rivers “in their free-flowing state, together with their immediate environments, for the benefit and enjoyment of the people of the state . . . is the highest and most beneficial use and is a reasonable and beneficial use of water within the meaning of Section 2 of Article X of the California Constitution.”⁵⁴
- Whether groundwater depletions of surface water flows in Wild and Scenic Rivers are impermissible may depend on the amount and timing of the depletions. For example, if the depletions are minimal and occur during high flow periods, they may not rise to the level of significant and unreasonable adverse impacts. In such circumstances, applicable legislation and other pertinent documents should be reviewed to determine whether the flow depletions constitute an undesirable result.
- State-designated Wild and Scenic Rivers are protected by both the State Constitution and statutes.⁵⁵ Federally-designated Wild and Scenic River are protected by statute.⁵⁶

52 See Frank J. Trelease, Federal Reserved Water Rights Since PLLRC, 54 Denv. L.J. 473 (1977); Michael C. Blumm, Federal Reserved Water Rights as a Rule of Law, 52 Idaho L. Rev. 369 (2016).

53 See Wells A. Hutchins, Pueblo Water Rights in the West, 38 Tex. L. Rev. 748 (1960). California courts have interpreted the pueblo right as a prior and paramount right encompassing the rights to all surface and groundwater within the city boundaries. Pueblo water rights date back to the original founding of the pueblo/city and are superior to both riparian and appropriative rights on any streams within the city. To date, pueblo water rights have been adjudicated in only Los Angeles and San Diego. *Id.*, at pp. 750-52.

54 Cal. Pub. Res. Code § 5093.50.

55 See Cal. Const. Art. XA, § 3; Cal. Pub. Res. Code §§ 5093.50-5093.70.

56 16 U.S.C. §§ 1271-1287.

- For map and list of federal and state-listed wild and scenic rivers in California see: <https://www.calwild.org/portfolio/wsr/>
- Additional Resources: <https://www.nps.gov/orgs/1912/index.htm>; <https://map.dfg.ca.gov/metadata/ds0950.html>

6. Groundwater diversions have adversely affected groundwater dependent ecosystems (GDEs) not included in specially protected areas but covered by the Public Trust Doctrine

- GDEs are highlighted in SGMA⁵⁷ and the Emergency Regulations require GSAs to identify all GDEs in the basin⁵⁸ and to consider beneficial users of groundwater, including GDEs, when developing GSPs.⁵⁹
- Many GDEs are covered by the public trust doctrine since the trust protects ecosystems connected to navigable waters and the fish and wildlife dependent on them.⁶⁰
- GDEs protected under the public trust doctrine deserve close attention even where they are not in areas expressly protected by federal or state laws.⁶¹
- Whether groundwater depletions in GDEs are impermissible may depend on the amount and timing of the depletions. If the depletions are minimal they may not rise to the level of significant and unreasonable adverse impacts. Even a very temporary impact on the GDE however, if it is substantial, irreversible and avoidable, may be significant and unreasonable.

7. Surface waters or GDEs within National Parks or Monuments, National Conservation Areas, National Wildlife Refuges, National Recreation Areas, Wilderness Areas, Wilderness Study Areas, National Forests, Areas of Critical Environmental Concern (U.S. Bureau of Land Management (BLM)), Units of the California State Park System, or California Department of Fish and Wildlife Ecological Reserves or Wildlife Protected Areas are currently being adversely affected by groundwater diversions

- Whether groundwater depletions in GDEs are impermissible may depend on the amount and timing of the depletions. (See bullets under Red Light Nos. 5 and 6).
- The nature and extent of federal reserved water rights associated with the designated areas listed above can be legally complex and may vary significantly depending on the language of the governing statute or executive order and how courts have interpreted that language.⁶² These water rights are superior to groundwater diversions occurring after the federal reservation.

⁵⁷ Cal. Water Code § 10727.4(l).

⁵⁸ 23 CCR § 354.16(g). See The Nature Conservancy's Groundwater Resource Hub for a list of resources on GDEs: <https://groundwaterresourcehub.org>.

⁵⁹ 23 CCR § 355.4(b)(4).

⁶⁰ Marks v. Whitney, 6 Cal. 3d 251, 259 (1971). See also fn. 24 above, and Robin Kundis Craig, A Comparative Guide to the Western States' Public Trust Doctrines: Public Values, Private Rights, and the Evolution Toward an Ecological Public Trust, 37 Ecology L. Q. 53, pp. 84-86, 104-117 (2015). Navigable rivers in valleys, such as the Scott River in northern California, are public trust resources that are generally dependent on groundwater unless groundwater levels have dropped below the riverbed due to pumping. See, e.g., <https://mavensnotebook.com/2015/06/11/groundwater-problems-and-prospects-part-7-groundwater-dependent-ecosystems-and-the-groundwater-surface-water-connection/>. See also fn. 27, supra.

⁶¹ The Nature Conservancy has done significant research into GDEs in California. See reports listed at <https://www.scienceforconservation.org/science-in-action/groundwater-dependent-ecosystems-story>.

⁶² When the United States reserves public land for uses such as Indian reservations, national parks, recreation areas, monuments or forests, it also implicitly reserves sufficient water to satisfy the primary purposes for which the reservation was created. Both reservations made by presidential executive order or those made by an act of Congress have federal reserved water rights. The priority date of a federal reserved right is the date the reservation was established. Courts look to the language of the law or executive order under which the land was reserved to determine the nature and extent of the water rights implicitly reserved. Unlike state-based rights to appropriate water based on a priority system, these federal reserved water rights do not have a lower priority than groundwater diversions by overlying users. Rather, only diversions that pre-date the federal reservations are superior to federal reserved water rights.

- BLM's Areas of Critical Environmental Concern (ACEC) include Outstanding Natural Areas and Research Natural Areas. Some but not all ACECs are intended to protect GDEs.
- **Resources:** <https://www.nps.gov/state/ca/index.htm>; <https://www.scienceforconservation.org/science-in-action/groundwater-dependent-ecosystems-story>; <https://www.blm.gov/programs/national-conservation-lands>; <https://www.wildlife.ca.gov/Lands/Regulations>

8. Groundwater diversions are known to have caused or contributed to substantial or irremediable surface water infrastructure damage

- This problem also implicates undesirable result no. 5 ("significant and unreasonable land subsidence that substantially interferes with surface land uses").

Yellow Light Circumstances

The "Yellow Light" category is a warning flag: it lists legal factors that warn of the potential that a groundwater diversion could have impermissible impacts on beneficial uses of surface water. The warning should prompt GSAs to obtain technical advice as to what further investigation is appropriate to determine whether such impacts would occur, how severe they could be, and whether they should be considered significant and unreasonable.

This category includes situations where **legal requirements regarding surface water uses are likely to be violated and there is a direct connection between groundwater and surface water**, but the extent to which, if any, groundwater diversions are causing harm or are likely to cause harm in the future is unknown. Where the likelihood of harm to surface water uses is confirmed, it is recommended that analysis be done to determine whether groundwater diversions are expected to cause adverse effects on surface water uses, and if so, the degree to which they, as opposed to other surface water uses, contribute to the problem.

1. Surface waters or GDEs within national or state parks or monuments, national conservation areas, national wildlife refuges, national recreation areas, wilderness areas, wilderness study areas, national forests, areas of critical environmental concern, units of the California State Park System, California Department of Fish and Wildlife Ecological reserves or wildlife protected areas, government-approved mitigation banks or conservation banks are likely to be adversely affected by existing groundwater diversions

- All of the areas listed above are subject to enhanced legal protection or possess federal reserved water rights that are likely to have priority over some or all groundwater pumping.
- Government-approved mitigation banks or conservation banks are areas whose ecological resources must remain protected in order to comply with federal or state legal requirements. These banks are generally established to comply with permitting requirements under the Clean Water Act or the federal or state Endangered Species Acts (ESAs) by protecting wetlands and/or listed species and their habitats.
- **Resources:** <https://www.epa.gov/cwa-404/mitigation-banking-factsheet>; <https://www.fws.gov/endangered/landowners/conservation-banking.html>; <https://www.wildlife.ca.gov/Conservation/Planning/Banking>

2. Instream flow requirements recommended or being considered by the California Department of Fish and Wildlife (DFW), the State Water Resources Control Board, or a regional water quality control board are currently not being met, are unlikely to be met due to groundwater diversions

- California DFW has recommended instream flow standards for 22 rivers.
- Resources: <https://www.wildlife.ca.gov/Conservation/Watersheds/Instream-Flow/Recommendations>

3. Federal and/or State Endangered Species Act (ESA) surface flow or other surface water-dependent requirements will likely not be met in the future at least partially due to groundwater diversions

- See bullets under Red Light no. 1.

4. A species dependent on surface waters that has been proposed for listing or designated as “Candidate Species,”⁶³ or for which listing under the Endangered Species Act has been determined to be either “warranted” or “warranted but precluded” by the U. S. Fish and Wildlife Service (USFWS),⁶⁴ the National Oceanographic and Atmospheric Administration (NOAA)⁶⁵ or the California DFW is being harmed or is likely to be harmed due at least partially to groundwater diversions

- USFWS References: <https://ecos.fws.gov/ecp/report/table/candidate-species.html> (list of FWS candidate species); <https://ecos.fws.gov/ecp0/reports/ad-hoc-species-report?status=P&header=Species+Proposed+for+Listing&leadreg=on&fststatus=on&finvpop=on> (species proposed by FWS for listing); <https://www.fws.gov/endangered/what-we-do/candidate-conservation-process.html> (description of USFWS candidate review and conservation process)
- NOAA References: <http://www.nmfs.noaa.gov/pr/species/esa/candidate.htm> (NOAA proposed and candidate species lists)
- California DFW References: <https://www.wildlife.ca.gov/Conservation/CESA>

5. It is likely that groundwater diversions will in the future prevent compliance with a water quality standard or TMDL

- The attributes most likely to be adversely affected by reduced water volumes are temperature and sediment, but other standards or TMDLs may also be implicated where groundwater depletions increase concentrations of other pollutants in surface waters.
- As noted above (Red Light no. 3), where compliance with a water quality standard has been assigned by the SWRCB or a regional board to one or more specific parties, GSAs may not be legally required by the SWRCB to take action.

6. Instream flows and/or riparian areas within the boundaries of federal or state-designated Wild and Scenic Rivers are likely to be adversely affected by groundwater diversions

- See comments under Red Light no. 5.

⁶³ A description of candidate species can be found at: https://www.fws.gov/endangered/esa-library/pdf/candidate_species.pdf.

⁶⁴ In reviewing petitions to list a species as “endangered” or “threatened,” USFWS has three options: (1) propose the species for listing; (2) declare the species does not warrant listing; or (3) find that while the species deserves to be listed, listing cannot occur at that time due to other, higher priority actions, leading to a “warranted but precluded” finding. Where USFWS finds that listing of a species is warranted but precluded by work on higher priority listings, the species is placed on the Candidate list.

⁶⁵ Unlike USFWS, NOAA does not issue “warranted but precluded” findings. When, after an initial review, NOAA identifies a species as a “candidate” for listing, it then conducts a twelve-month status review which results in either a proposed listing or a determination that listing is not warranted.

7. Groundwater diversions are likely to adversely affect GDEs not included in specially protected areas but covered by the public trust doctrine

- See comments under Red Light no. 6.

8. There is reason to believe that groundwater diversions may cause or contribute to substantial or irreparable water infrastructure damage

- See comment under Red Light no. 8.

Green Light Circumstances

The absence of any Red Light or Yellow Light warnings may lead to a Green Light, meaning that there are no immediately obvious concerns that should cause a GSA to worry about how to avoid significant and unreasonable adverse effects on beneficial uses of surface water. However, getting a clear Green Light confirmation that undesirable result no. 6 is not occurring may be difficult and requires technical analysis that is beyond the scope of this guide. Not only is it difficult to take the steps necessary to ensure the sustainability of a groundwater basin, but it is also challenging – and potentially expensive – for a GSA to obtain sufficient data and other information to confirm that this goal has been achieved and that all the potential problems noted above have been avoided.

Even if no significant and unreasonable adverse impacts on surface water uses are detected currently, maintenance of current pumping levels could in the future lead to additional surface water depletions due to delayed impacts of groundwater pumping on surface water uses. Furthermore, apart from delayed impacts from pumping, changes in weather and climate could lead to significant and unreasonable impacts on surface water uses even while groundwater pumping and levels remain the same.

Another complication arises from fluctuations in groundwater levels and surface flows due to changing weather conditions and pumping amounts. While groundwater levels may stay the same on a year to year basis, there are often large seasonal fluctuations, with the greatest risk of harm to surface water uses occurring in the summer and fall when flows are lowest. In these situations, groundwater management based on annual average data will not be sufficient to prevent significant and unreasonable impacts on surface water uses.

In addition, there may be other reasons not noted in this guide that consider impacts on surface water uses to be significant and unreasonable. As mentioned above, there will be some situations not listed under the Red and Yellow Lights above where the damage caused by groundwater pumping on surface water uses is so great as to rise to the level of significant and unreasonable adverse impacts. Also, new laws or requirements could be adopted after this guide is issued that may affect compliance with SGMA, or court decisions might set new legal standards for compliance with SGMA or other pertinent laws and regulations, thereby rendering impacts to such uses “significant and unreasonable.”

A final caveat concerns SGMA’s provision allowing GSAs to choose not to address undesirable results that “occurred before, and have not been corrected by, January 1, 2015.”⁶⁶ GSAs should bear in mind that other laws such as those referenced in this guide do not have an equivalent time limitation, so there may be other legal constraints or obligations resulting from the impacts of groundwater depletions on surface water uses even where no action is required under SGMA.

⁶⁶ Cal. Water Code § 10727(b)(4).

Nevertheless, with all the caveats noted above, where none of the concerns listed above are present and groundwater levels are maintained at or above January 1, 2015, levels, there is good reason to presume there is no immediate risk of undesirable result no. 6 occurring.

This document is a general guide that does not account for every circumstance that might lead to prohibited effects on surface water uses. It is intended to assist GSAs and others by alerting them to legal requirements and factors to bear in mind as they develop Plans intended to avoid all undesirable results, including significant and unreasonable adverse impacts on surface water uses. When in doubt, it is appropriate to consider options for enhanced groundwater-surface water monitoring and modeling efforts to better understand the impacts of groundwater pumping on surface water resources, and/or to seek legal advice.



CONCLUSION

By enacting SGMA in 2014, the California legislature committed the state to bringing groundwater use into balance with groundwater supplies and achieving groundwater sustainability within the next three decades. In doing this, the legislature expressly connected sustainability of groundwater resources with protection of beneficial uses of surface water. Neither SGMA nor the SGMA Emergency Regulations, however, provide much guidance as to what exactly GSAs, through their Plans, must do to avoid any significant and unreasonable impacts on beneficial uses of surface water. The purpose of this guide is to start to fill that gap by providing some guidance on this part of SGMA.

The premise of this guide is that the legal requirements discussed above set forth the circumstances in which SGMA's definition of sustainability requires that particular beneficial uses of surface water must be protected even if and when that requires reducing beneficial uses of groundwater. While there may be some situations not covered in the guide that run afoul of undesirable result no. 6, the issues and legal provisions most likely to give rise to compliance problems under SGMA are set forth here. An understanding of these issues will provide a strong foundation for GSAs to design Plans that do not impermissibly interfere with surface water uses.

APPENDIX A:

Examples of Hypothetical Situations That May Present Undesirable Result No. 6 – Significant and Unreasonable Adverse Impacts to Beneficial Uses of Surface Water

Example 1: Under the Endangered Species Act (ESA) in 2015 the National Marine Fisheries Service (NMFS) issued a Biological Opinion (BiOp) establishing minimum stream flows and temperatures for certain times of year on a specified navigable stretch of river. The Groundwater Sustainability Agency's (GSA's) technical analysis concludes that groundwater pumping is contributing to violations of both the flow and temperature requirements.

Response: This should be considered a significant and unreasonable adverse impact on beneficial uses both because the ESA BiOp requirements are violated and because the salmon are a public trust resource. BiOp requirements are what NMFS (or the U.S. Fish and Wildlife Service) believes necessary to avoid jeopardy to the continued existence of the listed species or to avoid destruction or adverse modification of the species' critical habitat. Although BiOp requirements are legally binding only on federal agencies, violating temperature and flow requirements harms the listed fish species and likely results in unlawful take of the species. Therefore, GSAs should design plans that comply with BiOps. Even if this situation pre-dated 2015, and therefore does not constitute an undesirable result under the Sustainable Groundwater Management Act (SGMA), the GSA should take steps to address this problem to ensure compliance with the state and federal ESA requirements.

Example 2: The State Water Resources Control Board (SWRCB) has issued a water rights decision establishing specific minimum stream flow levels for certain times of the year. The instream flow requirements are not being met for one stretch of stream during the late summer and early fall and the best available science shows that groundwater depletions are contributing to the low flows. The SWRCB decision requires specific surface water diverters to ensure compliance with the instream flow requirement.

Response: The GSA could argue that because the SWRCB placed all responsibility for meeting the flow requirements on other parties the GSA need not take any action. However, it is also possible that, assuming the problem post-dated 2014, either the state or a court might find that these facts constitute undesirable result no. 6, and therefore the GSA's Plan should address groundwater depletions contributing to the violation.

Example 3: The GSA determines that groundwater pumping is depleting the flows of a river stretch designated as a "Wild and Scenic River" under federal law.

Response: The GSA should first assess the extent and timing of the flow depletion caused by groundwater pumping. Maintaining river flows is expressly specified in both the federal and the state law as one of the purposes of a wild and scenic river designation:

"It is hereby declared to be the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable, scenic, recreational, geologic, fish and wildlife.... shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected [emphasis added] for the benefit and enjoyment of present and future generations..." (Wild & Scenic Rivers Act, 16 U.S.C. § 1271; see also Cal. Pub. Res. Code § 5093).

A federal designation of a river stretch as “wild and scenic” establishes a federal instream flow right as of that date. If the designation results in a “take” of a more senior water right, the Act expressly provides for just compensation to the water right holder. 16 U.S.C. § 1284(b).

Unless the GSA determines that any flow depletions caused by groundwater pumping are sufficiently “de minimis” as to not perceptibly affect the river flows, it will likely need to address this problem which is contrary to the Wild and Scenic Rivers Act and should be considered a significant and unreasonable impact on beneficial uses of surface water. Depletions of river flows caused by later groundwater pumping that interferes with the more senior federal reserved water right are not permitted.

Example 4: A national wildlife refuge containing wetlands fed by groundwater, whose purpose is to provide a refuge and breeding ground for migratory birds and other wildlife, is adjacent to an area where a number of farms in recent years have drilled wells and increased their groundwater use. Since the new wells have been drilled nearby, the wetlands in the refuge have become drier and the size of the wetlands has been reduced. The area has been in a drought and it is unclear whether the effects on the refuge groundwater dependent ecosystems (GDEs) result from the drought or the increased pumping or both.

Response: The GSA should take steps to obtain the best available science to determine whether and/or to what extent groundwater pumping is dewatering the wetlands and harming the biological resources on the refuge. If this investigation shows that groundwater pumping that post-dates the establishment of the refuge is demonstrably harming the refuge wetlands and the species that depend on them, then the GSA should ensure that its Plan includes measures to address those impacts. While water rights for the Refuge may not have been adjudicated, at the time the refuge was established, a federal water right sufficient to sustain the wetland habitat was reserved. Groundwater pumping that is demonstrably harming the wetlands impairs that right and prevents the refuge from fulfilling its purpose.

Example 5: A Bureau of Land Management Area of Critical Environmental Concern (ACEC) is in a basin where groundwater levels have been falling in recent years due to groundwater pumping. The ACEC was established to protect an extinct volcano site for its visual and geological significance and there are no GDEs within the ACEC.

Response: Because declining groundwater levels do not affect the aspects of the ACEC resource that were the basis for its designation, there is no risk of impermissible impacts on beneficial uses of surface water.

APPENDIX B:

Chart of Various Red and Yellow Light Factors and Legal Requirements

Purpose	Beneficial Use	Applicable Laws/Requirements
Protection of endangered, threatened, or rare species dependent on surface waters (Red Light #1; Yellow Light #3, #4)	<ul style="list-style-type: none"> support habitat necessary for species listed as endangered, threatened, or rare 	<p>Federal Endangered Species Act (16 U.S.C. §§ 1531 et seq.);</p> <p>California Endangered Species Act (Cal. Fish & Game Code §§ 2050 et seq.)</p> <p>California Native Plant Protection Act (Cal. Fish & Game Code §§ 1900 et seq.)</p> <p>California Public Trust Doctrine (case law)</p>
Protection of instream flows required under California law (Red Light #2; Yellow Light #2)	<ul style="list-style-type: none"> support cold water ecosystems support warm water ecosystems support high quality aquatic habitat for reproduction and early development of species support habitats necessary for migration support estuarine ecosystems 	<p>Porter Cologne Water Quality Control Act (Cal. Water Code Div. 7 and related sections)</p> <p>Public Trust Doctrine</p>
Protection of water quality (Red Light #3; Yellow Light #5)	<ul style="list-style-type: none"> support uses of water for maintenance of water quality all beneficial uses listed herein 	<p>Federal Clean Water Act (33 U.S.C. §§ 1251 et seq.)</p> <p>Porter Cologne Act</p> <p>Public Trust Doctrine</p>
Protection of senior federal reserved water rights (for Indian tribes and specially protected areas) (Red Light #4; Red Light #7; Yellow Light #1)	<ul style="list-style-type: none"> all beneficial uses of surface water appropriate for the specific reservation support biological habitats of special significance 	<p>Case law (beginning with Winters v. U.S., 207 U.S. 564 (1907))</p>
Protection of wild and scenic rivers (Red Light #5; Yellow Light #6)	<ul style="list-style-type: none"> support biological habitats of special significance support cold water ecosystems support high quality aquatic habitat for reproduction and early development of species support habitats necessary for migration 	<p>Federal Wild and Scenic Rivers Act (16 U.S.C. §§ 1271-1287)</p> <p>California Constitution Art. X A § 3</p> <p>California Wild and Scenic Rivers Act (Cal. Pub. Res. Code §§ 5093.50-5093.70)</p> <p>Public Trust Doctrine</p>

Purpose	Beneficial Use	Applicable Laws/Requirements
Protection of mitigation and/or conservation bank lands and waters (Yellow Light #1)	<ul style="list-style-type: none"> • support habitat necessary for species listed as endangered, threatened, or rare • support cold water ecosystems • support warm water ecosystems • support high quality aquatic habitat for reproduction and early development of species • support habitats necessary for migration • support estuarine ecosystems 	Federal Clean Water Act, § 404 40 CFR Pt. 230; 33 CFR Pts. 325 & 332 Federal Endangered Species Act 81 Fed. Reg. 95316-95349 (Dec. 27, 2016) California Fish & Game Code §§ 1797 et seq. Public Trust Doctrine
Protection of public trust resources (Red Light #6; Yellow Light #7)	<ul style="list-style-type: none"> • [all beneficial uses listed above] • support terrestrial ecosystems 	Public Trust Doctrine
Protection of agricultural and municipal water delivery infrastructure (Red Light #8; Yellow Light #8)	<ul style="list-style-type: none"> • support municipal and agricultural uses 	California Constitution Art. X A § 3 California Water Code Reasonable Use Doctrine Case law



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