Attachment A

INTERCONNECTED SURFACE WATER AND GDES WORKPLAN IMPLEMENTATION: MONITORING UPDATE

As part of the implementation of the Interconnected Surface Water (ISW) and Groundwater Dependent Ecosystems (GDEs) Workplan: Napa Valley Subbasin (2024), the technical team is using the California Environmental Flows Framework (CEFF) to characterize aquatic and terrestrial GDEs and assess instream flows in the Subbasin. The goal is to complete the science-based sections of CEFF (Sections A and B) by late 2025/early 2026 to inform updates for the GSP Periodic Evaluation. The CEFF evaluation includes monitoring to better understand special-status species and GDEs' distribution and associated aquatic habitat and water quality, including stream temperature and dissolved oxygen, at the extensive study sites. Most high-quality aquatic and riparian habitats in the Napa River Watershed generally occur upstream of the Subbasin, but the degree to which the Subbasin is used by aquatic species to maintain their populations and provide resiliency to disturbance in the upper watershed is unknown.

The CEFF process involves identifying overarching ecological management goals, including streamflow goals to maintain ecosystem health. These goals are a function of the species and lifestages present, their ecological needs, the physical system (e.g., water year type, temperature, water year trends), and the degree to which the ecological functional needs are being met or can be met in the future (i.e., whether flows would be sufficient given the constraints of the physical system). Some ecological management goals are similar throughout the Subbasin while other goals vary depending on the species using the site and their ecological needs. Flow constraints under variable conditions, including climate extremes and ISW conditions with and without groundwater pumping, will be characterized and assessed using the Napa Valley Integrated Hydrologic Model (NVIHM). Ecological management goals will be refined based on evaluation of the literature for the Napa River and similar watersheds and the 2024 and 2025 ISW and GDEs' monitoring results for the Subbasin. Stream reach-specific objectives will be developed as the NVIHM update is completed later in 2025. A comprehensive summary of GDEs monitoring conducted in 2024 is provided in the Technical Memorandum, Napa Valley Subbasin Interconnected Surface Water and Groundwater Dependent Ecosystems Monitoring, 2024 (Stillwater Sciences, Napa Resource Conservation District, and Luhdorff and Scalmanini Consulting Engineers; 2025). This Technical Memorandum is in the Napa County Groundwater Sustainability, Annual Report - Water Year 2024 (March 2025) in Appendix K.

The outcome of CEFF will be groundwater and associated flow recommendations to support the ecological management goals. The flow recommendations will likely vary by site and may differ from the requirements of other beneficial users of water in the Subbasin. The flow recommendations from CEFF will be used to inform future refinement of ISW sustainable management criteria.

2025 Monitoring

The climate in 2025 differed from 2024. WY 2024 was a below average water year at the Napa State Hospital rain gage with a very hot period in June. Precipitation at the State Hospital was slightly lower in 2025 than 2024, but Summer 2025 was much cooler, with maximum average temperature about 10 degrees Fahrenheit lower than 2024 in June and July. Through mid-August, the maximum average temperature was about the same in 2025 as 2024. While precipitation was slightly different between 2024 and 2025 at the Napa State Hospital, rainfall in the northern portion of the watershed was much higher in 2025 relative to 2024, in part due to a very large November rainstorm concentrated in the northern half of the watershed.

The 2025 ISW and GDEs monitoring occurred at all six sites outlined in the ISW and GDEs Workplan, including:

- Napa River at Calistoga,
- Napa River at St. Helena,

- Napa River at Yountville,
- Napa River at Oak Knoll,
- Sulphur Creek, and
- Bale Slough.

Due to challenges involved with site access, this was the first year of surveys at the Napa River at Oak Knoll and Bale Slough sites, and the second year of surveys at the other sites. Surveys conducted in 2025 at each of the sites included:

- Flow connectivity studies;
- Continuous water quality measurements for temperature and dissolved oxygen;
- Fish surveys (May and June);
- Special-status plant surveys (April);
- Visual encounter surveys and environmental DNA surveys for northwestern pond turtle and foothill yellow-legged frog (one in May and one in July); and
- Audio recording of bird usage at all sites except Bale Slough

Fish habitat was mapped at the Napa River at Oak Knoll and Bale Slough in June 2025 to supplement habitat surveys at the four other sites in 2024. Surveys for California freshwater shrimp in the Calistoga Reach of the Napa River and groundwater-dependent vegetation community health and composition will occur in early October and September, respectively, and the flow connectivity data will be processed in October following the end of the water year.

Juvenile steelhead were observed in large numbers at the Sulphur Creek site, and smaller numbers occurred at the Napa River at St. Helena site. Surprisingly, juvenile Chinook salmon were observed at every site, with over 2500 individuals noted at the Napa River at Calistoga site. Foothill yellow-legged frog eggs, tadpoles, and adults were observed at the Sulphur Creek site, and repeated surveys revealed that they metamorphosed to subadult frogs capable of leaving the stream prior to the creek going dry. An environmental DNA sample at Oak Knoll found evidence of foothill yellow-legged frogs at that site. A subsequent survey found that foothill yellow-legged frog DNA was likely from Dry Creek, just upstream of the site. Northwestern Pond Turtles were detected by eDNA at the Napa River at St. Helena site. None of the 15 special-status plants that were identified in the Workplan as likely or possibly associated with groundwater were observed at any of the study sites. Sound recorders deployed in Spring 2025 at all the sites except Bale Slough identified 62 bird species.

The groundwater and flow connectivity data from 2025 are still being processed; however, wet conditions generally persisted for longer in 2025 relative to 2024, and stream temperature and dissolved oxygen were more suitable for rearing steelhead juveniles in 2025.

Ecological Management Goals

Based on the 2024 and preliminary 2025 monitoring results, previous observations, and relevant literature, preliminary ecological goals for all sites include:

- Maintain upstream and downstream fish passage for adult and juvenile steelhead and Chinook salmon.
- Support spring and early summer habitat for juvenile Chinook salmon.
- Maintain groundwater levels within the rooting zone of mapped GDEs (generally 10 to 30 ft for willows and oaks, respectively).
- Support the current distribution and populations of special status species and natural communities to maintain ecosystem diversity.

Site-Specific Ecological Management Goals

- **Napa River at Calistoga**: maintain isolated pools to support California Freshwater Shrimp habitat steelhead rearing if water temperatures[1] are sufficient (i.e., wet years with cool summer temperatures).
- **Sulphur Creek, Napa River at St. Helena, and Dry Creek:** maintain flowing conditions (generally in the late spring/early summer depending on temperature) to support emergence of foothill yellow-legged frogs as well as support Northwestern Pond Turtle.
- **Sulphur Creek:** maintain flowing conditions (generally in the late spring/early summer depending on temperature) to support emergence of foothill yellow-legged frogs and growth of juvenile steelhead.
- **Napa River at Yountville and Napa River at St. Helena**: support habitat for Northwestern Pond Turtle and perhaps juvenile steelhead.
- **Sulphur Creek and Napa River at Calistoga**: sustain habitat conditions to promote juvenile steelhead and Chinook salmon rearing sufficient to promote successful migration to cooler water with dependable flow later in the dry season.

Continuing uncertainties related to fish habitat in the Napa Subbasin include:

- the degree to which streams in the Subbasin provide rearing habitat for steelhead and Chinook salmon,
- the spatial variability of available habitat from year-to-year, and
- the degree to which juveniles rearing in streams in the Subbasin are able migrate to more suitable habitat as habitat conditions decline.

The preliminary goals listed above are based on two years of data; these goals will be refined based on the results of subsequent surveys coupled with results of the updated NVIHM. The science-based portions of CEFF will be completed in late 2025/early 2026 but may be refined based on future data collection. The CEFF analysis will be included as an appendix to the 2027 Periodic Evaluation. As new monitoring results are obtained, adaptive management principles will be applied to adjust ecological management goals and flow recommendations as appropriate.

[1] Stream temperatures start to impact juvenile steelhead growth when stream temperatures reach 64 degrees Fahrenheit and can become lethal when stream temperatures reach 79 degrees Fahrenheit.