Executive Summary

California is a special place. The geography, the climate, and the diverse history have all contributed to the development of the land in California becoming some of the most productive in the world. Nowhere is this truer than the great Central Valley of California. Located at 36.74 latitude, the valley is essentially a desert, receiving on average less than 13 inches of precipitation a year. With the Sierra Nevada Mountains rising to over 14,000 feet in elevation to the east and the close proximity to the Pacific Ocean on the west, seasonal storms provide the water to be annually deposited in the mountains as rain and snowpack that act as a huge storage source for the water resources for the state. Snowmelt from the mountains in the spring and summer months provides the resources needed to fuel the production of the land. While flying over, this is especially evident. The patchwork of farms and communities in the San Joaquin Valley make up an area that lists the three leading counties in farm production for the entire nation. Looking back at the history of water development and crop development in the valley will provide a picture of huge success as well as what many in agriculture have felt are unmet promises.

Early years 1849-1914

The gold rush, the influx of settlers and the initial development of land for farming happened during these years. Much has been documented by authors on this time period including:

1. *The King of California: J.G. Boswell and the Making of a Secret American Empire* by Mark Arax and Rick Wartzman
2. *Consolidated Irrigation District History* by Randy McFarland
3. *History of Kings River* by James Provost

For the Kings Basin area, the names of Church, Sanford, Easterby, and Huntington, and other notables are significant. Considerable land area was dry farmed and grain production occurred. The railroad was constructed, and Fresno was a stop on the rail line so that the crops produced in the region could be sent to market. The Fresno scraper was developed here and helped with the early construction of canal systems to divert surface water supplies that led to the early application of irrigated agriculture and the establishment of the water and irrigation districts that formed under the Wright Act of 1887.

1914-1960

This time period corresponds to expanded irrigated agriculture, the need for more surface water supplies, and flood protection for the communities that have prospered on the valley floor. During this time, the Friant Division of the CVP and the construction of the Corps of Engineers dams including Pine Flat, Terminous, Success, and Isabella all occurred. With the construction of these dams, more surface water supplies could be stored, reregulated, and used later in the summer months when agricultural demand is higher. This led to an expanded footprint of irrigated agriculture.

1960-1992

During this time period, water conservation techniques were developed as well as new irrigation methods, including drip and micro sprinkler. These advances expanded the irrigated agricultural footprint, but also caused a significant impact on the conjunctive use of the groundwater basin. Specifically, as these advances occurred, more farmers changed from flood and basin irrigation methods to these "newer" methods. This transition led to more groundwater pumping, less recharge of surface water supplies, and lowering groundwater levels that we continue to observe today.

1992- present

This time period is our recent history. More people, more farming, an extended drought, and environmental regulations have resulted in approximately 2 million acre-feet (AF) of surface water supplies that had been developed and relied upon in the San Joaquin Valley, being removed and rededicated to environmental purposes. The end result is that subsidence, which was first evidenced in the 1930s to 1950s, has again become more problematic and is partly responsible for the passage of legislation in 2014 regarding sustainable groundwater management.

Given this history and the importance of this region to the nation, allowing for continued agricultural production is of national defense. Many in the farming profession have made the point that they have paid the cost for the infrastructure to develop and transport the water resources needed for farming and that supply was realized. Alas, they solved the problem and "made the desert bloom." Truly that is something to be proud of and quite an accomplishment of these past generations. This generation has decided that other needs are more important and is breaking with the past and using this resource differently.

In an effort to continue farming as well as providing for the human populace, more projects are being developed and the local constituencies are being asked to foot the bill again. As would be expected, many thought they had already "paid the bill" for their economic activity and are not thrilled about paying the bill again.

Kings Basin

With the passage of the law known as the Sustainable Groundwater Management Act (SGMA) in 2014, a new path is being initiated that regulates both surface water and groundwater supplies. The Kings Basin, as defined in State of California Bulletin 118, covers a significant amount of agricultural land in Fresno County. SGMA requires that a plan be developed for the Kings Basin and that a Plan Manager be identified for submitting the plan and serving as the point of contact between the agency and the Department of Water Resources (DWR).

The agencies within the Kings Basin have been meeting since the new law was signed to develop the local policies, structure, and coordination that is needed to enable discussion as well as the technical analysis needed to comply with the law. To this end, the agencies within the basin have developed seven Groundwater Sustainability Agencies (GSAs) that collectively represent the entire basin. These GSAs have worked together on many aspects of the technical basis for the plan but have also decided that each GSA will develop their individual plan, and they will be stitched together to make one plan. To this end, the structure and layout of this plan mimics the other plans within the basin and utilizes coordination of individual plans such as the monitor plan and other basin-wide infrastructure to completely cover the basin.

To also allow for ease in the review of the plan, the basin setting is described first for the basin and then specifics of the GSA are presented.

Central Kings GSA

The Central Kings GSA (CKGSA) covers the entirety of the Consolidated Irrigation District (CID or District), the City of Selma, the community of Caruthers, the Selma-Kingsburg-Fowler sanitation district, and a number of smaller communities, cemeteries, school districts, and a few Fresno County properties.

CKGSA is located at the head of the Kings River Alluvial Fan, and as such, the surface soils and aquifer consist of cobbles, gravels, and sands. The gradation of these soils becomes finer from east to west. CID has excellent surface water rights to the Kings River and has effectively utilized this surface water source for the benefit of its constituency. CID has instituted a financial methodology for the utilization of surface water, and many within the District continue the cultural practice of basin and flood irrigation, which helps to manage the basin conjunctively. The result of these practices is excellent quality groundwater as evidenced by the many reports to regulating agencies of groundwater quality testing from wells over numerous years. Of note is the fate and transport of 1,2-Dibromo-3-chloropropane (DBCP), which has now shown to be less than detectable whereas in the 1990s some measurements exceeded 25 ppm. Lastly, due to location, there is no seawater intrusion, and there is no evidence of subsidence within the region.

The Plan

CKGSA and specifically CID plan to be part of the overall plan within the Kings Basin to stabilize groundwater levels. This doesn't mean that groundwater levels won't go up and down – they will. Rather, over the long term, the groundwater levels will approximate the present levels. This will be accomplished mainly with the development and construction of additional intentional recharge basins. From review of historical data and coordination with the other GSAs in the Kings Basin, it is estimated that overdraft responsibility within the CKGSA and South Kings GSA is between 7,000 and 13,000 af/yr. To accomplish sustainability for groundwater levels and storage change, it is estimated that approximately 250 acres of intentional recharge basins will be needed. To provide for contingencies, climate change, changing demand patterns, hydrologic variability and potential partnerships to recharge for other GSAs within the Kings Basin, or within the San Joaquin Valley, CID is planning for a total of 2,000 acres of recharge ponds. It is anticipated that when completed, an additional 50,000 acre-feet per year (af/yr) of supply will be developed from the Kings River. This is a continuation of the program that was initiated when the district was formed in 1921. This is not something new – it is tried and true and has been practiced for over 100 years. The overall long-term record for the District is included as **Figure ES-1**. A map showing the preliminary plan is shown as **Figure ES-2**. A graph showing the expected response to the average groundwater levels can be seen in **Figure ES-3**

Summarizing for those within the Central Kings GSA:

- Absent the actions of the GSA, groundwater levels are expected to decline.
- The actions of the GSA will improve the groundwater conditions of the basin.
- Those within the GSA will continue as in the past to pump groundwater for beneficial uses.

- The GSA through the Consolidated Irrigation District plan to construct recharge basins and intentionally recharge surface water supplies to offset long term decline in groundwater levels.
- The cost of these facilities and activities are estimated to cost over $2 million dollars per year through the implementation period.
- Recent passage of a Proposition 218 has authorized a rate increase to fund these activities.
- Estimates are that groundwater level change may manifest from 5 to 40 feet lowering of groundwater levels before levels become sustainable.

DWR has given the following sustainability indicators that must be addressed in the plan:

- Chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply if continued over the planning and implementation horizon,
- Significant and unreasonable reduction of groundwater storage,
- Significant and unreasonable seawater intrusion,
- Significant and unreasonable degraded water quality,
- Significant and unreasonable land subsidence, and
- Depletions of interconnected surface water that have significant and unreasonable impacts on beneficial uses of the surface water.

For the CKGSA, groundwater levels and groundwater storage are the two sustainable indicators that are most critical. The other four are not applicable, such as seawater intrusion, or there are no exhibiting conditions that presently, nor are expected to, cause undesirable results.

Much of the success will be based upon the coordination and cooperation of the adjacent GSA neighbors and the basin neighbors. More details on the specifics of the coordination agreements, inter-basin agreements, goals, and plan and implementation strategies can be found later in the document.