

Summary of Water Use, Recharge, Groundwater Levels, and Subsidence

Water Year 2025

October 1, 2024 - September 30, 2025

Prepared by



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for



Water Use and Sustainable Groundwater Management

Laguna Irrigation District's groundwater is being managed to achieve sustainability goals established in the North Fork Kings Groundwater Sustainability Plan (GSP), last amended in January 2025. Under the Sustainable Groundwater Management Act (SGMA), the District and neighboring areas, being managed by the North Fork Kings Groundwater Sustainability Agency (GSA), must demonstrate sustainable groundwater management by 2040.

In Laguna Irrigation District, the water cycle is highly dependent on climate. Irrigation water comes from Kings River diversions and groundwater pumping. In wet years, the District gets its full allocation of Kings

Water Use	WY 2025	Average 2009-2023
Precipitation	6.7 inches	8.6 inches
Surface Water Diversion	22,000 AF*	39,200 AF
Groundwater Pumping for Irrigation	~138,000 AF	~146,000 AF
Other Groundwater Pumping in the District (domestic supply, dairies)	~4,000 AF	~4,000 AF

*Assumes groundwater pumping is the difference between WY 2024 crop evapotranspiration (128,000 AF) and WY 2025 surface water deliveries, with 80% irrigation efficiency. Crop evapotranspiration does not change significantly year-to-year.

River water, and more water recharges the aquifers than is pumped. In dry years, diversions are curtailed and more groundwater is pumped than recharged, reducing the volume of groundwater stored in the aquifers. During this time, growers pump groundwater from private wells to irrigate crops.

Water Year (WY) 2025 was slightly below average with precipitation at 77% of the long-term average. The District received about 70% of the Kings River allocation and had to rely on groundwater more than in an average year. Consequently, surface water deliveries were slightly below average and groundwater pumping was above average. The District's WY 2009-2023 average water budget, extracted from the 2025 GSP Amendment, is shown on the diagram below.

WATER BUDGET SUMMARY

Laguna Irrigation District Average (WY 2009-2023)

LEGEND & NOTES

- Groundwater Inflow (+)
- Groundwater Outflow (-)
- Surface Inflow (+)
- Surface Outflow (-)

Arrow size scaled by volume
AFY – acre-feet per year
WY – water year

The District is analyzing groundwater level data to better understand groundwater inflow, outflow, and change in storage over time, to better understand the volumes of water flowing into and out of the area.

Projects and Management Actions

DISTRICT PROJECTS

Implementing projects and management actions is needed to achieve groundwater sustainability. Groundwater recharge in dedicated basins and on working farmlands is critical for storing excess surface water in the ground in wet years for later use in dry years.

The District is constructing Laton North Recharge Basin northeast of Laton. This new 150-acre basin will add ~3,500 AFY of recharge capacity in wet years. The project is being funded by grants and District funds.

The Island Weir Siphon was rebuilt after WY 2023 flood damage using grants and District funds.

EXAMPLE MANAGEMENT ACTIONS THAT PROMOTE SUSTAINABILITY

The GSA completed well registration in WY 2025.

Water Allocation Framework is being rolled out in the next couple of years to meet basin sustainable yield.

Subsidence management is being revisited to align GSP with DWR's 2025 Best Management Practices for Subsidence Management document.

LATON NORTH RECHARGE PROJECT

WATER YEAR 2025 Groundwater Recharge

Total Recharge	22,806 AF
In District	12,764 AF (56%)
canal loss	49%
dedicated basins	5%
Laton North recharge basins	1%
on-farm recharge	<1%
Kings River loss	10,042 AF(44%)

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Groundwater Conditions Update

AGRICULTURAL WATER USE

Annual crop water demand does not change significantly year to year because of the large acreage of permanent crops. The charts below show the WY 2024 distribution of land acreage and crop evapotranspiration of applied water (ETa) for various crops in the groundwater service area (i.e., Little Texas) and surface water service area (with access to District canals and pipelines).

WATER YEAR 2024 Agricultural Water Use

42,900 Irrigated Acreage
128,000 AF Total ETa
3.0 AF/acre Average ETa

Agricultural Land Use, WY 2024

Crop	Groundwater Service Area Acreage	Surface Water Service Area Acreage	Total Acreage
Almonds	~3,800	~6,800	10,567
Stone Fruit	~4,500	~1,000	4,852
Walnuts	~1,500	~2,700	4,184
Pistachios	~500	~3,100	3,648
Vineyards	~1,000	~900	1,944
Other Tree Crops	~500	~400	945
Young Perennials	~500	~700	1,209
Alfalfa	~500	~3,200	3,722
Corn, Sorghum, and Sudan	~1,000	~300	1,364
Other Field and Truck Crops	~1,500	~9,100	10,623

Crop	Groundwater Service Area ETa/acre	Surface Water Service Area ETa/acre	Total ETa/acre
Almonds	3.3	3.3	3.3
Stone Fruit	3.2	3.2	3.2
Walnuts	3.2	3.2	3.2
Pistachios	2.8	2.8	2.8
Vineyards	3.1	3.1	3.1
Other Tree Crops	3.3	3.3	3.3
Young Perennials	2.5	2.5	2.5
Alfalfa	2.9	2.9	2.9
Corn, Sorghum, and Sudan	2.7	2.7	2.7
Other Field and Truck Crops	2.7	2.7	2.7
Total	3.0	3.0	3.0

Groundwater Conditions Update

GROUNDWATER LEVELS

Groundwater levels in the District vary with climate, cropping decisions, groundwater pumping, and groundwater recharge. Groundwater levels decreased between 1.8 and 4.7 on average between Fall 2024 and Fall 2025 in the 3 monitored aquifer intervals. Groundwater levels are approximately 100 feet above the minimum threshold, a sustainability metric defined in the GSP.

Aquifer Name	Average Fall 2024-2025 Groundwater Level Change (feet)	Number of Wells Monitored in the District
Shallow (Above A-Clay)	-1.8 ↓	45
Mid (A- to C-Clay)	-2.4 ↓	39
Deep (Below C-Clay)	-4.7 ↓	66

SIMPLIFIED STRATIGRAPHIC COLUMN below western half of District

Change in Groundwater Levels, Fall 2024-Fall 2025, Mid- and Deep Aquifers

Generally, groundwater levels were within 5 feet of the prior year. Some areas had greater groundwater level declines such as in Little Texas, on the boundary with Tulare Lake and Westlands Subbasins near the Lemoore Naval Air Station, and to the north near Riverdale. A few wells had greater than 10-foot groundwater level increases near the Army and Island Weirs.

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Groundwater Conditions Update

SUBSIDENCE

Subsidence is occurring in the District at a rate of up to 0.4 foot per year. At this rate of decline, areas of the District will exceed 3 feet of total subsidence from 2020 to 2040, which the North Fork Kings GSA set as the subsidence minimum threshold. If more than 3 feet of subsidence occurs, the GSA anticipates that significant and unreasonable subsidence impacts will start to occur. Subsidence is mostly irreversible and at this current rate the GSA projects an increased risk of levee failures, flooding, canal conveyance capacity loss, and damage to supply wells. The GSA is investigating the causes of subsidence in the Subbasin and will identify approaches to address the issue in the next few years. The best way to limit subsidence in susceptible areas with confining clay layers (i.e., the western half of the District) is to reduce deep groundwater pumping. The areas experiencing subsidence in the District are also likely influenced by overpumping and subsidence in other areas in the GSA and the neighboring Tulare Lake Subbasin to the southeast, so managing subsidence will require a regional approach.

SIMPLIFIED STRATIGRAPHIC COLUMN below western half of District

Depth Below Ground Surface (feet)

Groundwater Level

Shallow A-Clay

Mid C-Clay

Deep E-Clay

Very Deep

Compaction

Compaction

Pumping in Deep and Very Deep layers below confining clay layers like the C-Clay and E-Clay causes **compaction of the clays**, which is expressed as land surface subsidence.

SUBSIDENCE cumulative total from January 2020 to July 2025, in feet

EXPLANATION

- North Fork Kings GSA
- Laguna ID Surface Water
- Laguna ID - GW Only
- A-Clay Boundary
- C-Clay Boundary
- E-Clay Boundary

InSAR Cumulative Subsidence, January 2020 to July 2025, in feet

- 3 to -4
- 2 to -3
- 1 to -2
- 0 to -1
- 1 to 0

*Subsidence Minimum Threshold is 3 feet

Sustainable Management Criteria

GROUNDWATER LEVELS relative to sustainable management criteria minimum threshold and measurable objective in the 2025 North Fork Kings GSP Amendment

GROUNDWATER ELEVATION IN FEET

WATER YEAR

Approximate land surface elevation at Well #25 (USGS - 2021 1M DEM). Subsidence minimum threshold is 3 feet relative to the 2020 land surface elevation.

SGMA implementation began January 1, 2020

WATER YEAR CLASSIFICATION

- Dry
- Wet
- Normal
- Unclassified

Aquifer and Well Number

- Shallow: 43F (37-47 ft bgs)
- Middle: 43A (215-235 ft bgs)
- Deep: 25 (320-520 ft bgs)
- Deep: 43C (480-500 ft bgs)
- Confined: 43D (590-630 ft bgs)
- Groundwater Level Measurable Objective
- Groundwater Level Minimum Threshold

Groundwater levels are near the measurable objective (target level) and ~100 feet above the minimum threshold (impact level)

SUBSIDENCE relative to sustainable management criteria minimum threshold in the 2025 North Fork Kings GSP Amendment

Subsidence in Feet Relative to Jan 1, 2020 Land Surface Elevation

WATER YEAR

EXPLANATION

- North Fork Kings GSA
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- C-Clay Boundary
- E-Clay Boundary

Subsidence (Feet) at Well #25 Measured by InSAR

Subsidence Minimum Threshold

WATER YEAR CLASSIFICATION

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1.2 feet subsidence remains before minimum threshold is exceeded and impacts may occur

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