EDF ENVIRONMENTAL DEFENSE FUND

California Water Data Consortium

Groundwater Accounting Platform

Leverage Data to Better Understand and Manage Water Supply, Usage, and Trading

Climate change and population growth are driving many communities to make tough decisions about water use. It is more important than ever that water managers and agricultural water users have access to the best possible data to balance supply and demand. In an effort to chart a sustainable future for water resources, the Groundwater Accounting platform was built in partnership by Environmental Defense Fund, California Water Data Consortium, Olsson, and ESA. The platform was initially created for the Rosedale-Rio Bravo Water Storage District in California, and subsequently expanded to include pilot partners Merced Irrigation-Urban Groundwater Sustainability Agency, Pajaro Valley Water Management Agency, and Yolo County Flood Control and Water Conservation District.

The Groundwater Accounting Platform enables water managers, landowners, and water users to track water budgets and usage in near real-time. The platform includes modules for groundwater modeling and water trading, providing a complete set of tools for local water districts to better manage allocations over time. Built using open-source code, the Groundwater Accounting Platform provides a springboard for water districts everywhere to launch and customize their own software solutions.

Benefits

1. **Measure**
   Enable water managers and agricultural users to understand their water use and available supply in near real-time
2. **Manage**
   Empower well-informed decision making with advanced modeling
3. **Trade**
   Establish a local marketplace for water trading
4. **Support Sustainability**
   Meet regulatory objectives for your region

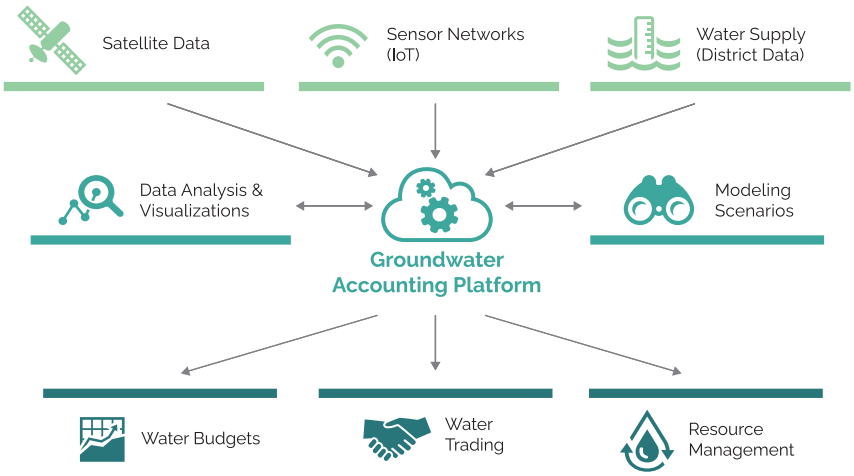
"We developed this accounting and trading platform because we want to provide landowners and growers with as many tools as possible to manage their water more sustainably and balance their water budget."

— Eric Averett | Former General Manager, Rosedale-Rio Bravo Water Storage District

Data Driven Decisions

Manage Water Supply and Demand

The Groundwater Accounting Platform accepts water supply data from a variety of sources including satellite, flow meters, and sensor networks. The platform combines water supply and use data to help track water budgets at the field scale for water users. The platform also features a water manager dashboard to track and account for water across a district or region, which informs management decisions such as billing and allocation planning.



Key Platform Functionality

MEASURE	MONITOR	MANAGE	TRADE

- Track water supply data
- Track demand and account for usage in near real-time
- Capture usage data to inform district billing
- Create, view, and manage water budgets
- Landowners can check their water budget and outstanding balance online, similar to how they check their bank account online
- Model the hydrological impacts of various allocation, usage, trade, and recharge scenarios with the optional Groundwater Evaluation Toolbox (GET) from Olsson
- Post offers to buy and sell water with the optional Trading Module
- Facilitate the transfer of allocations at the request of landowners
- Because the technology used to develop the platform is open source, other water agencies can use it to build their own cost-efficient, locally applicable groundwater accounting and trading platforms

Project Partners

Environmental Defense Fund

California Water Data Consortium

Environmental Science Associates

Open ET

Olsson

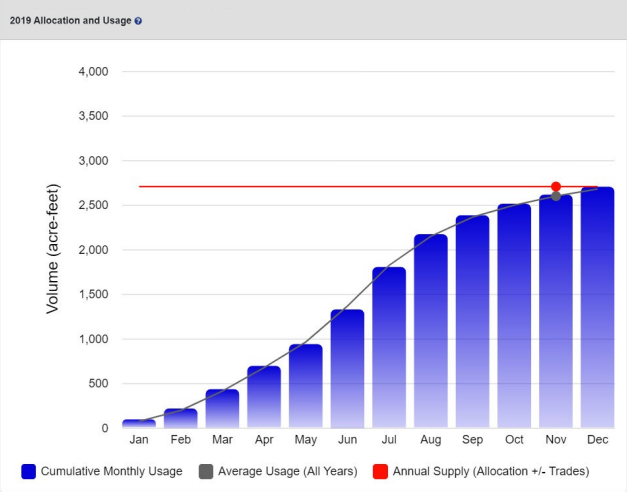
Rosedale-Rio Bravo Water Storage District

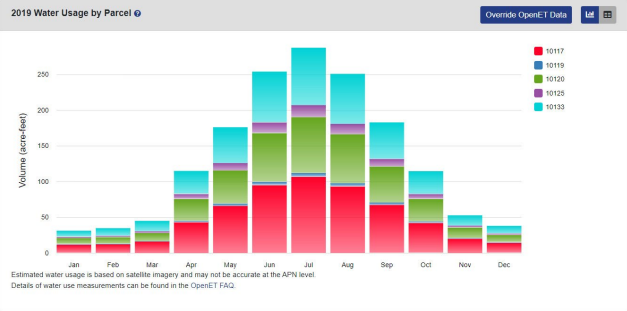
Merced Irrigation-Urban Groundwater Sustainability Agency

Pajaro Valley Water Management Agency

Yolo County Flood Control and Water Conservation District

Groundwater Accounting Platform Features





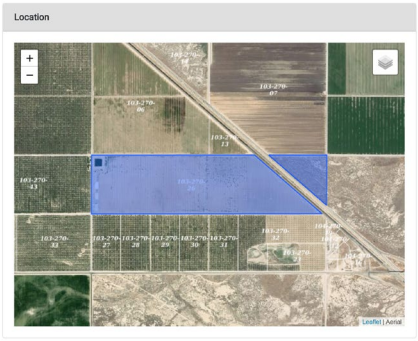
Landowner Dashboard

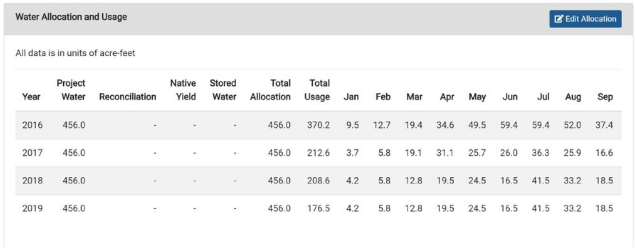
Key Benefits

- Landowners can understand usage and supply in real time to make better informed decisions
- Users can manage allocations month over month and create data-driven water budgets
- Growers can analyze water usage by parcel

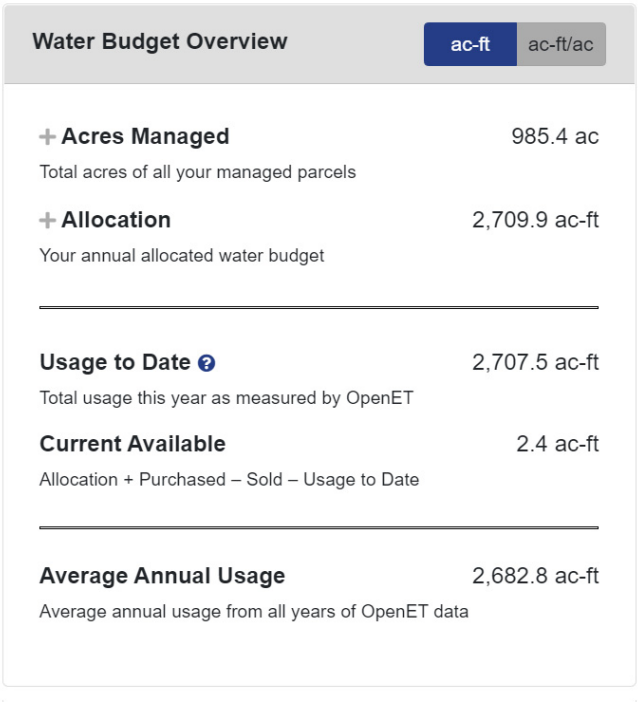
Features

- Review water allocation
- Review water usage to date and current available supply, just like a bank account
- Track cumulative water usage over time, and monitor monthly usage trends
- Review water use data specific to each parcel
- Review buying and selling activity for your account (with the optional Trading Module)
- Review water usage via interactive map tool
- Secure login to individual landowner accounts

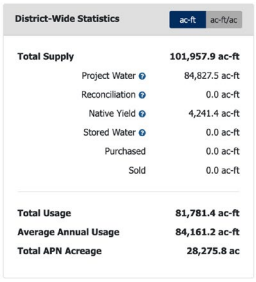


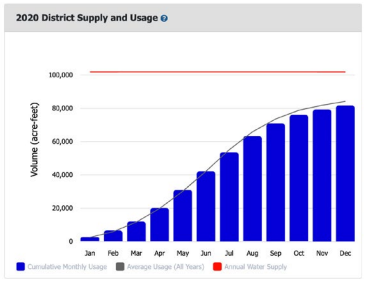


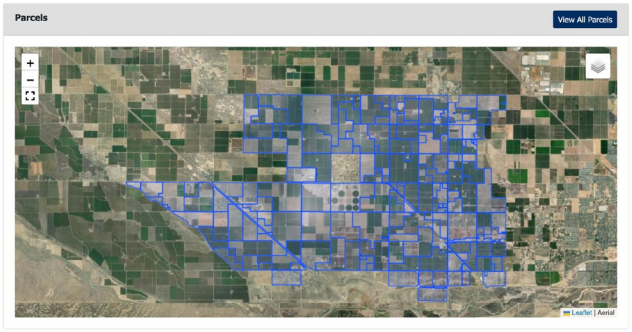
Year	Project Water	Reconciliation	Native Yield	Stored Water	Total Allocation	Total Usage	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2016	456.0	-	-	-	456.0	370.2	9.5	12.7	19.4	34.6	49.5	59.4	59.4	52.0	37.4
2017	456.0	-	-	-	456.0	212.6	3.7	5.8	19.1	31.1	25.7	26.0	36.3	25.9	16.6
2018	456.0	-	-	-	456.0	208.6	4.2	5.8	12.8	19.5	24.5	16.5	41.5	33.2	18.5
2019	456.0	-	-	-	456.0	176.5	4.2	5.8	12.8	19.5	24.5	16.5	41.5	33.2	18.5

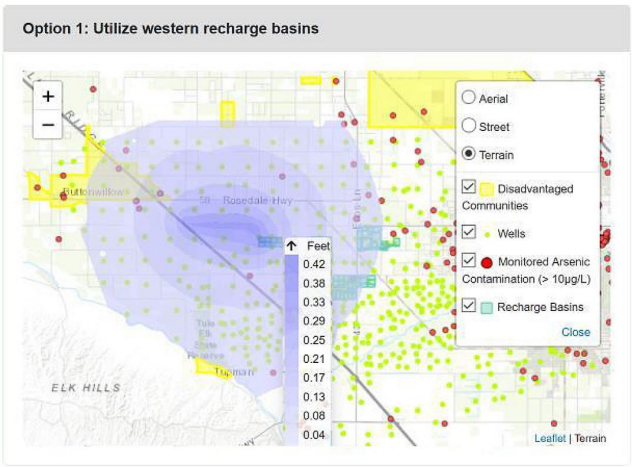


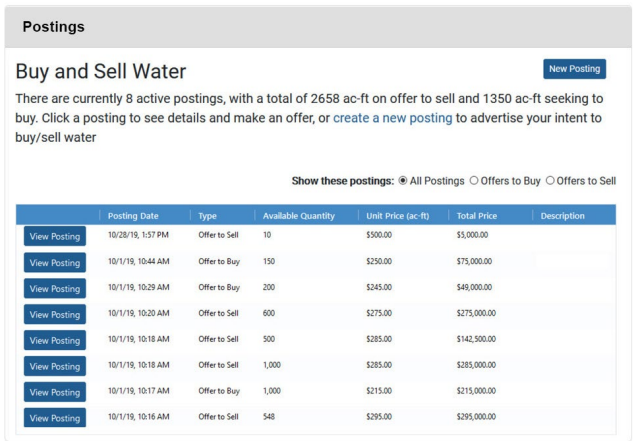
Groundwater Accounting Platform Features











Water Manager Dashboard

Key Benefits

- Water managers can monitor groundwater use and account for customers' water usage
- Real time data empowers adaptive management to achieve compliance with water supply regulations

Features

- Review water allocations and usage for every parcel and water account managed on the platform
- Review cumulative supply and usage data across your region/jurisdiction
- Track usage over time, by account and district-wide
- Review district trading activity (with the optional Trading Module)

Modeling Module

This feature leverages the Groundwater Evaluation Toolbox (GET) designed by Olsson

Key Benefits

- Scenario modeling helps users evaluate the hydrological impacts of groundwater pumping
- Potential management decisions can be evaluated in advance for long-term benefits and impacts
- Automated groundwater model integration with water accounting framework allows evaluation of actual and hypothetical allocation and trading scenarios

Features

- Leverage fully integrated geospatial data to model a wide variety of scenarios including trading, recharge, drawdown, etc.

Trading Module

Key Benefits

- A managed local marketplace gives water users a viable economic alternative to "use it or lose it" model

Features

- View posting details from water buyers and sellers
- Create postings with offers to buy or sell water
- Post counter-offers and negotiate online
- Register completed trades
- Track market metrics

Open-Source Software Benefits

Many public agencies see an advantage to open source solutions because they avoid vendor lock-in and are available for anyone to modify, enhance, and update over time. Open-source software additionally encourages users to participate in an open user-community to guide platform roadmap and feature implementation.

TOPIC OF COMPARISON	GROUNDWATER ACCOUNTING PLATFORM	PROPRIETARY SOFTWARE
Customization	Additional improvements and refinements can be implemented to meet specific needs	When available, you must adapt to vendor's conventions and are often subject to vendor's product roadmap
Third-Party Integration	External tools can be readily integrated using standards-based web services	Functionality varies; often you must conform to proprietary product's requirements
Privacy	FISMA/NIST 800-53 information security standards certified	May not be regularly updated or based on standards
Data Export	Export data to Excel or GIS file; alternatively, external systems can request data on-demand via web services	Functionality varies; you may not be able to get data out in a readily usable format
Ongoing Costs	You control the software and can choose a different vendor or hosting arrangement at any time	You do not control the software; cost to switch to a different platform or solution may be high

Plug into a Community of Like-Minded Organizations

Because Open Water Accounting is open source, upgrades and new features added by one organization benefit all organizations.

Learn More

Visit Open Water Accounting System

- Rosedale-Rio Bravo Water Storage District: waterbudget.rrbwsd.com

Connect with us:

California Water Data Consortium
cawaterdata.org/contact-us/

Environmental Defense Fund
edf.org/offices/san-francisco