

Company Background

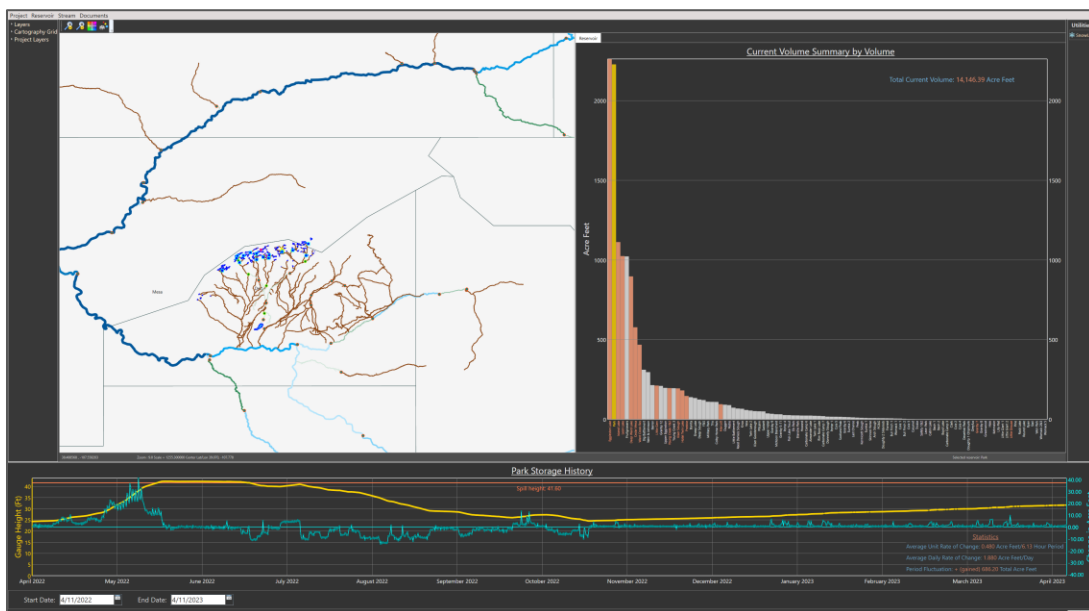
Walker Water is a technology services company founded in 2021 by John Walker, and built upon his strong passion for conservation, and a budding knowledge of how the complex irrigation system in the Surface Creek Valley of Western Colorado works. The development of our technologies is based upon what we learned as irrigators and water users ourselves within this valley.

We are a software development and irrigation system consultation services company whose charge is to build administrative tools that help the water administrator to ensure the accurate and timely delivery of their water to the rightful user and allow ditch companies or even individual users to know what water is flowing in their ditch. We are also specialists in assisting our customers to successfully secure grant monies to help fund their water-related projects.

Introduction

Is water the new oil? Having graduated from CSM in 1985 with a Bachelor's in Geophysics I am familiar with the world of oil. While living in Houston for 30 years water wasn't something we thought of very often unless it was flooded streets delaying our commute to the office. But since living in Western Colorado I have become personally involved in using water for irrigation, and I have seen waste and misuse, and want to do something about it. Water in the Western States is a finite resource that is becoming more and more vital to the life of municipalities and agriculture. It is a resource under intense pressure from increasing demand and dwindling supply. Man can only go a few days without it. We must find ways to conserve, use more efficiently and stretch our water as far as we can amongst all users.

Walker Water is developing a comprehensive irrigation water administration system comprised of numerous software elements including reservoir and stream flow analytics using live sensor/SCADA feeds and dashboards, a full 3D visualization studio, decree priority analytics to ensure delivery of senior water rights in priority and on time, an alarm-based reservoir seep monitor tool, a web-based water ordering and account management system, and a watershed forecasting tool.



We are looking for the brightest and most creative minds in the world to participate in finding ways to not only conserve and preserve, but to get everyone involved in the process, both young and old.

Work Description

The product of this project is an online web-based water ordering and database administration system for water users to place their orders via a simple-to-use app. This app will service over 100 reservoirs, 5 major drainages, 200 hundred ditches and private laterals and 2,000 users just within the Surface Creek Valley of Western Colorado. The specifications include but are not limited to the list below:

- Admin tool
 - Allow user profile setup
 - Personalize user accounts with information such as what ditches the user has permission to use,
 - How much water the user owns or has leased
- Keep track of usage through credits and debits to the remaining balance
- Allow the user to tailor some aspects of their own account
- It will have an interactive map showing their ditch and other orders in the ditch
- A calendar interface to track how many run days or duration of the order and other orders within the ditch
- A lease portal with agreement forms for both parties and a method of payment
- Order history or look back
- Order and usage reports
- Administration reports
- Rules for orders to be approved
 - Orders to not exceed amount of water available
 - Minimum cumulative run amounts of water in the ditch
 - Red/green light to show rules have been approved and order went through
 - Ditch specific constraints
- Payment method for assessment fees
- Water order tickets for ditch riders
- Summary views of days remaining in the irrigation season and days of water left/net amount remaining
- Planning tool for ordering remaining water through the end of the season
- Water transit loss calculator
- Flume/flow rate calculator
- Usage monitoring tool/efficiency tools
 - Type of crop being watered
 - Water per acre
- 7-day weather forecast to see how the weather will impact water orders

The team from last summer's field session did an amazing job of getting this project off the ground. They implemented much of the web-based user interface and stored and retrieved data from a MySQL database. Illustrations of some of the screens are shown below:

Water Order SIGN OUT

Credits: 0

Select User: John Smith

Ditch: Acton

Order Date: 06/16/2023 Days to Run: 3

June 2023

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

SUBMIT

ORDER LOGS

Admin Order History SIGN OUT

View Active Orders
 View Pending Orders
 View All Orders

Ditch: All Ditches

Owner	Place Date	Start Date	End Date	Ditch	Volume (CFS)	Status
Joe Kim	Thu, 15 Jun 2023	Fri, 23 Jun 2023	Fri, 23 Jun 2023	Bonita	2.5 cfs	Pending
Joe Kim	Thu, 15 Jun 2023	Fri, 23 Jun 2023	Fri, 23 Jun 2023	Bonita	0.1 cfs	Pending
Joe Kim	Thu, 15 Jun 2023	Wed, 21 Jun 2023	Mon, 26 Jun 2023	Alfalfa	1 cfs	Pending
Joe Kim	Thu, 15 Jun 2023	Wed, 21 Jun 2023	Wed, 28 Jun 2023	Alfalfa	0.1 cfs	Pending
Adminstrator	Thu, 15 Jun 2023	Wed, 21 Jun 2023	Mon, 26 Jun 2023	Alfalfa	1 cfs	Pending
Joe Kim	Thu, 15 Jun 2023	Wed, 21 Jun 2023	Mon, 26 Jun 2023	Bonita	0.1 cfs	Pending

SCAN ORDERS
PRINT TICKET

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Admin User List SIGN OUT

User ID	First Name	Last Name	Email	Phone #	Address	Remaining Balance
6	Jane	Doe	jdoe@testmail.com	123-123-1233	1 Plainsville Blvd.	2125.00
13	Blake	Topography	topography@testmail.com	999-999-9999	60 Map Lane	0.00
14	Crazy	Horse	crazyhorse@horsemail.com	800-800-8000	400 Farmville	0.00
15	Example	User	example@examplemail.com	111-111-1111	123 Example Street	0.00
16	John	Smith	jsmith@examplemail.com	111-111-1111	123 John Street	0.00

User Ditches

Ditch Name: _____

Acton _____

Adobe _____

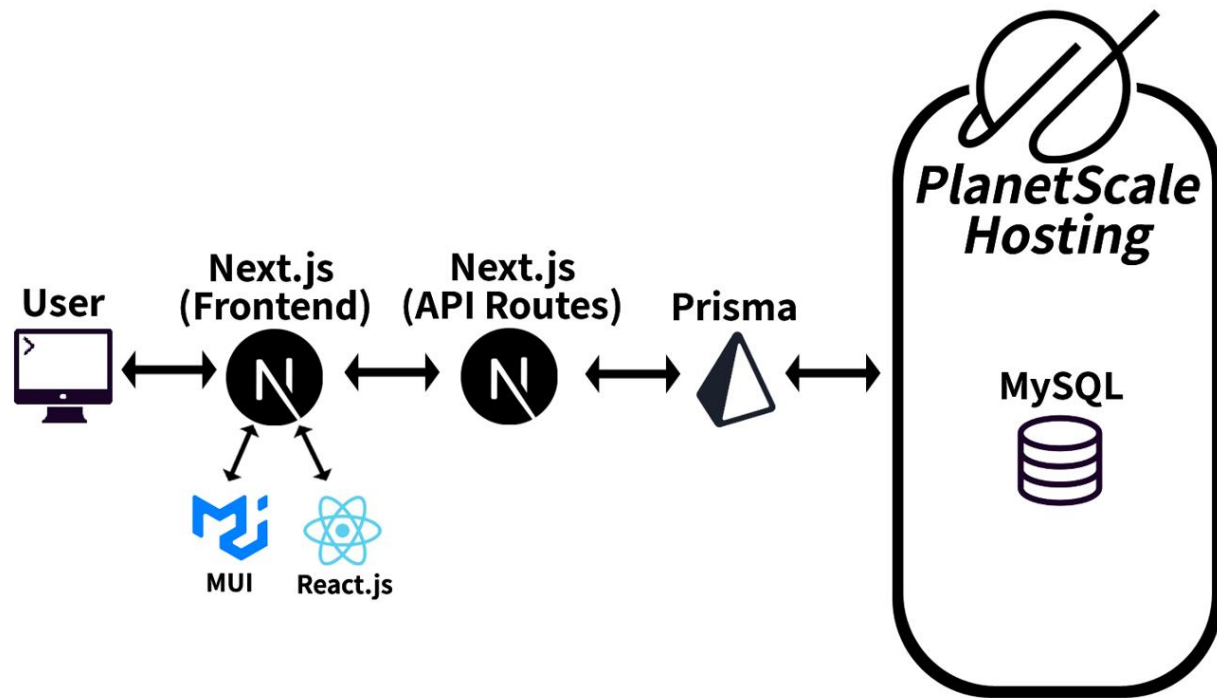
Change Ditches

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There is still a lot of work to be done to complete this system. Users need to be able to make online payments via credit cards, set up water transfers from their account to another user's, and also make available water lease forms that the user can fill out and then be accounted for within the system. There will need to be document printing capability and web hosting implemented. Walker Water's developers will handle all the back-end database administration that will work with the front-end user interface and the MySQL database. The goal of this session will be to make this a fully functional and complete product that can be put to immediate use.

Student Skill Set

The image below shows some of the technical details of the work performed by last summer's students.



There is full documentation of the team's work that will aid in getting this summer's team started and productive.

Team Size

The team size should be a minimum of 3 but certainly could support 5 or 6 members.

Internship Possibilities

Walker Water would be delighted to offer internships. This would be a function of our financial condition at the time, and we anticipate this may be a possibility. That may depend on how the students receive our project and the larger scope of what we do. We really want the younger generation to take an interest in our vital and precious resource, water.

Work Location

Work can be performed remotely. We deploy a git repository that supports collaboration amongst team members who can be located anywhere. Since we live in Cedaredge, we would not ask nor require anyone to visit our office. However, it would be advantageous for students to see how our valley operates since it is arguably the most complicated irrigation distribution systems in the U.S.

NDA

We will not require an NDA for this project.

Intellectual Property

Walker Water will retain ownership of the app and all code developed theretofore.