

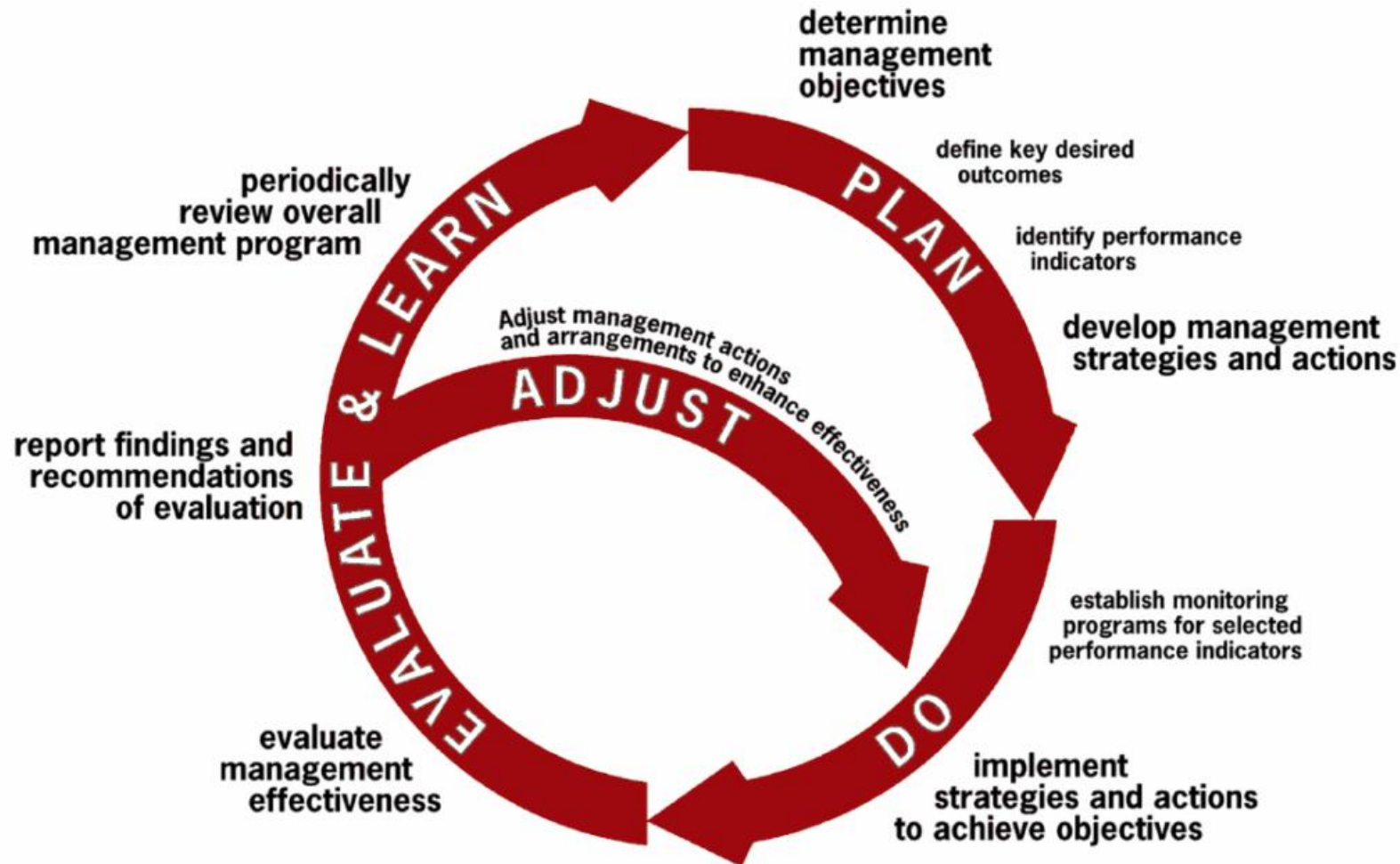


Choose Your Own Adventure

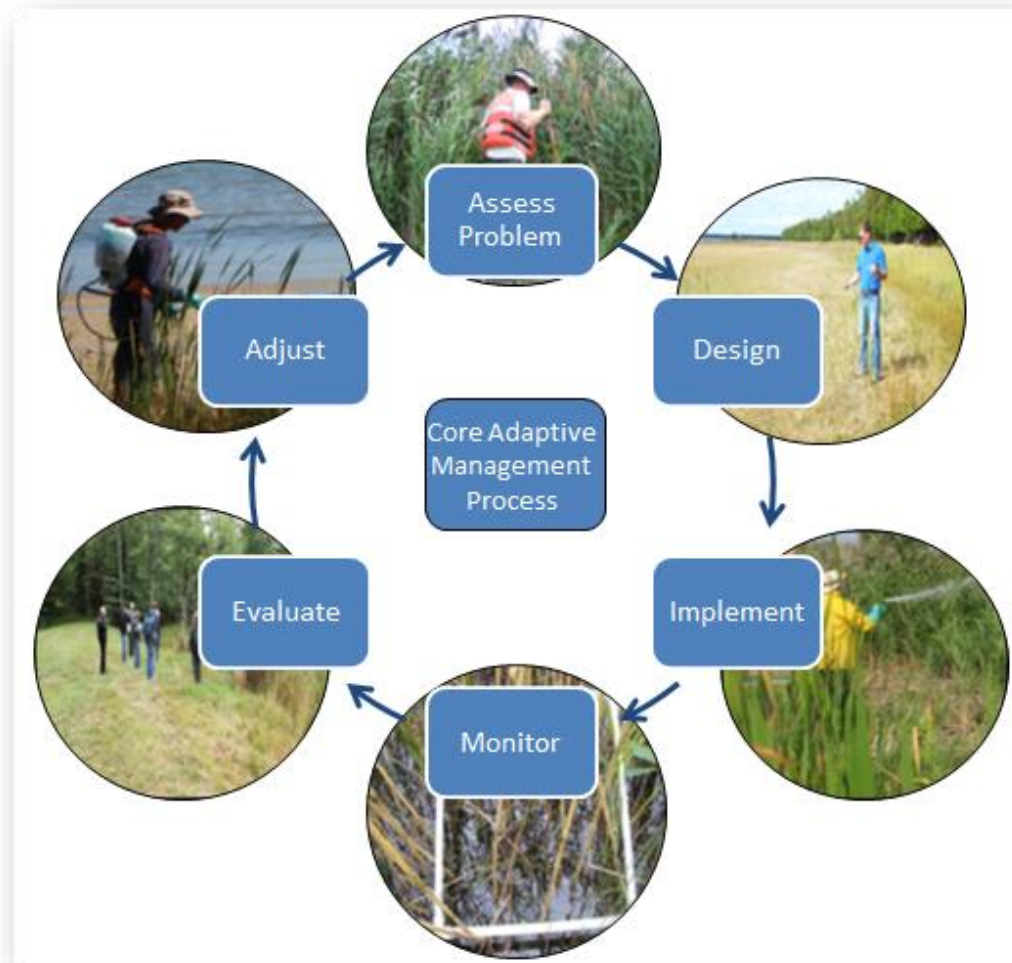
Successful Communication
for Adaptive Management



SUCCESSFUL COMMUNICATION FOR ADAPTIVE MANAGEMENT



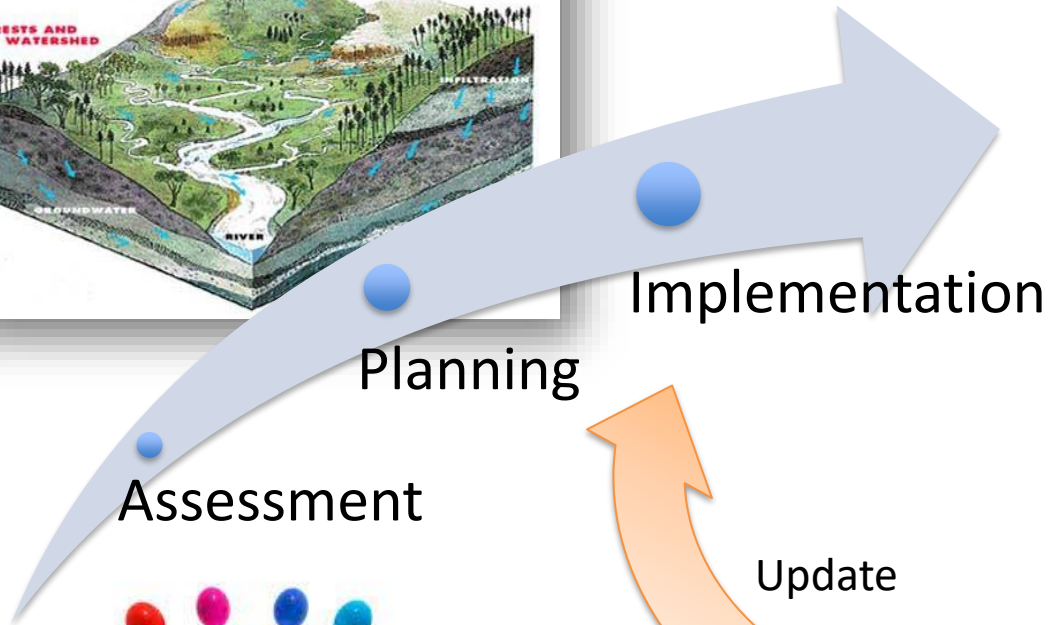
SUCCESSFUL COMMUNICATION FOR ADAPTIVE MANAGEMENT



SUCCESSFUL COMMUNICATION FOR ADAPTIVE MANAGEMENT



SUCCESSFUL COMMUNICATION FOR DATA DRIVEN ADAPTIVE MANAGEMENT



SUCCESSFUL COMMUNICATION FOR DATA DRIVEN ADAPTIVE MANAGEMENT

Who is Involved?

- Data Scientists
- Environmental Regulators
- Watershed Managers
- Engaged Citizens

What do they need?

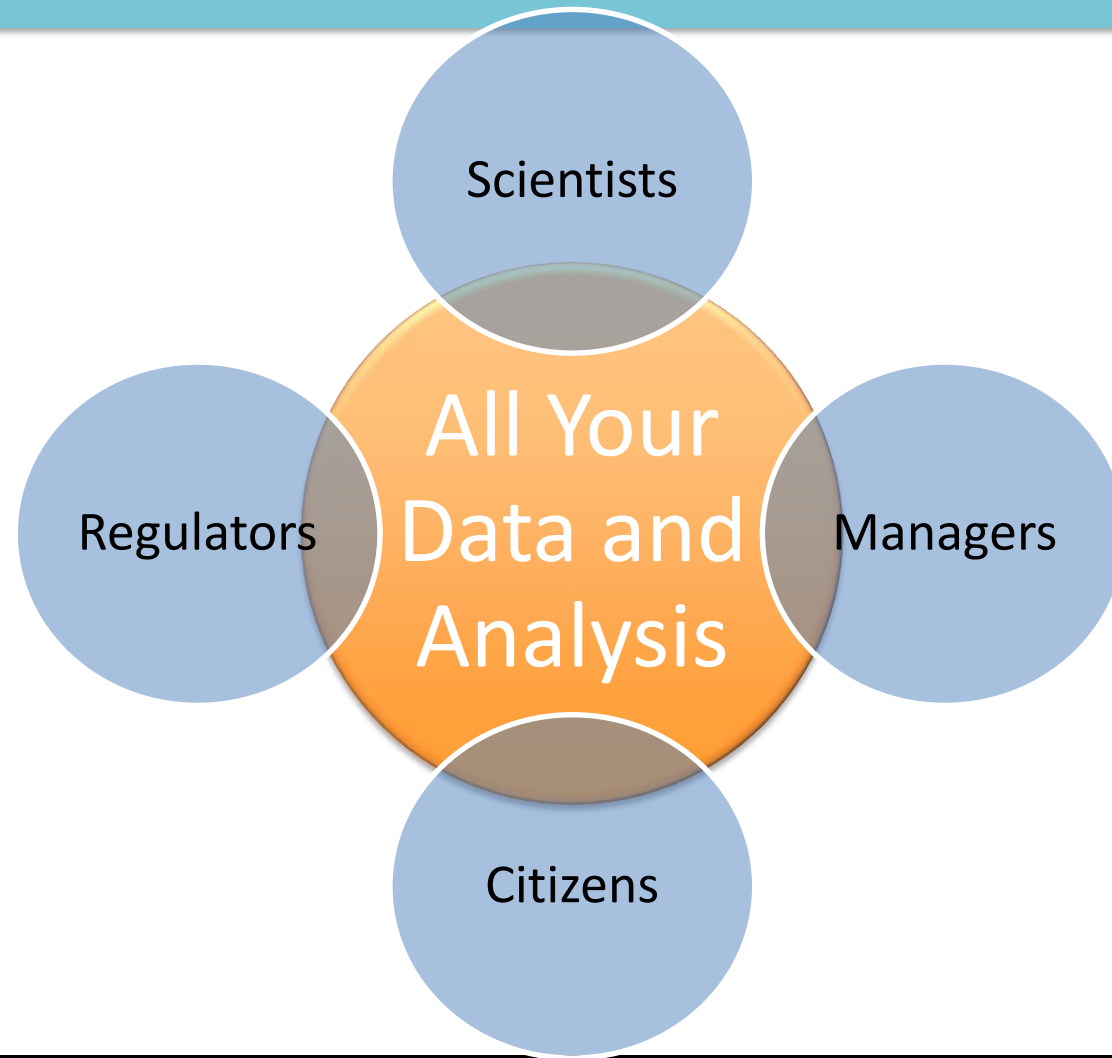


SUCCESSFUL COMMUNICATION FOR DATA DRIVEN ADAPTIVE MANAGEMENT

Who is Involved?

- Scientists
- Regulators
- Watershed Managers
- Interested Citizens

What do they need?



SUCCESSFUL COMMUNICATION FOR DATA DRIVEN ADAPTIVE MANAGEMENT

... Where to start?

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS FIELDS TABLE

View Paste Copy Cut Format Painter

Clipboard

Tables

- ConstituentD...
- ConstituentG...
- Constituents
- ConstituentsS...
- Data
- FlagReplicateID
- Flags**
- LabMethods
- Labs
- LocationTypes
- MonitoringPr...
- Samplers
- SampleTypes
- Stations

Record: 14

Datasheet View

FILE HOME CREATE EXTERNAL DATA DATABASE TOOLS

View Paste Copy Cut Format Painter Filter

Clipboard Sort & Filter

Ascending Descending Remove Sort Selection Advanced Toggle Filter

Records Refresh All New Save Delete More

Find Find

Text Formatting

Calibri 11

B I U

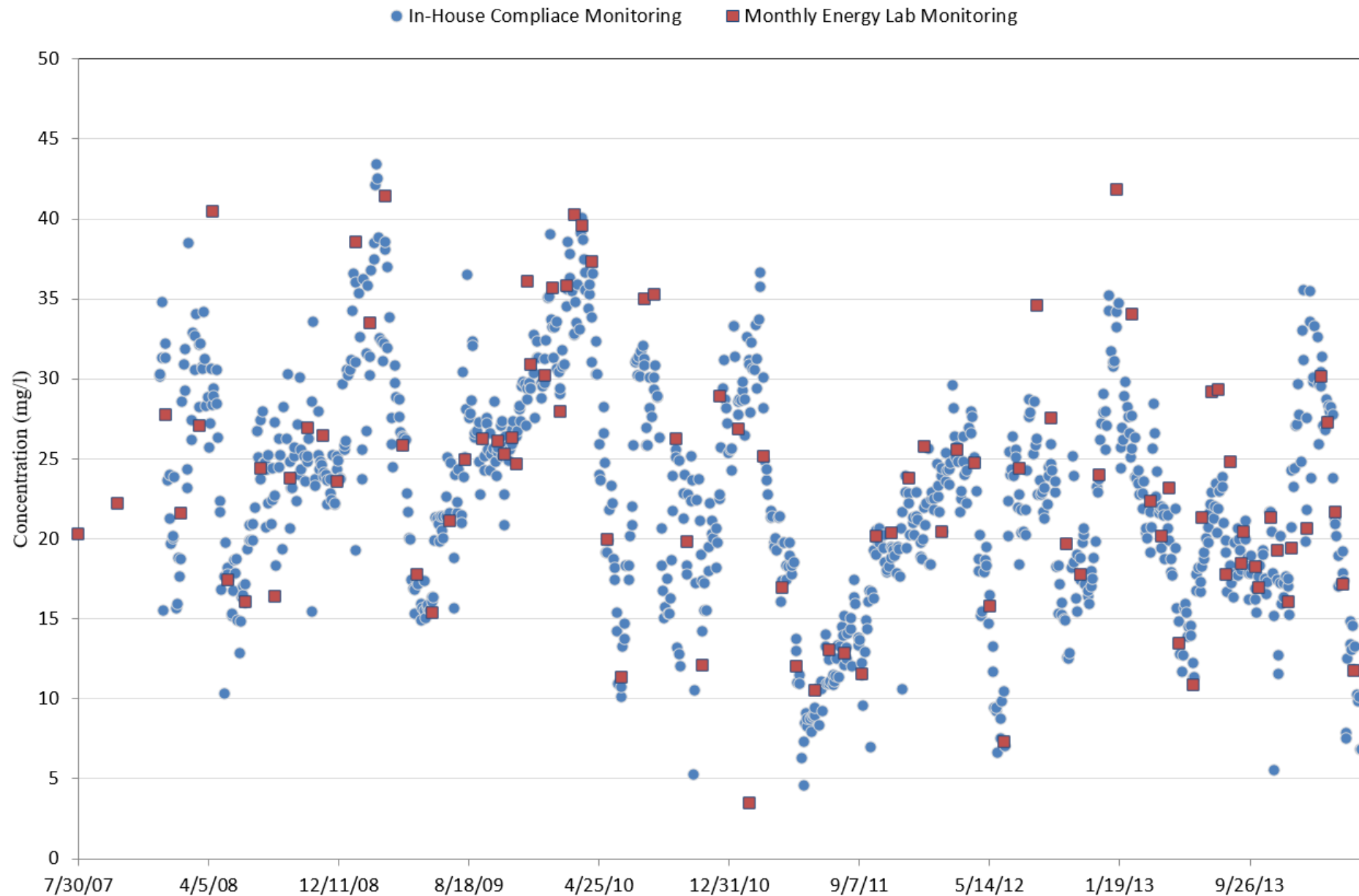
Tables

Query2

StationID	FirstOfStationDescription	Date	ConstituentName	FirstOfValue
GL-ATW	Grand Lake near West Portal of Adams Tunnel	9/20/2010	Hardness (CaCO3) (mg/L)	23.8
GL-ATW	Grand Lake near West Portal of Adams Tunnel	9/20/2010	Mg (mg/L)	1.43
GL-ATW	Grand Lake near West Portal of Adams Tunnel	9/20/2010	Mn Dis (ug/L)	3.17
GL-ATW	Grand Lake near West Portal of Adams Tunnel	9/20/2010	N Total as N (mg/L)	0.37
GL-ATW	Grand Lake near West Portal of Adams Tunnel	9/20/2010	NH3 as N (mg/L)	0.005
GL-ATW	Grand Lake near West Portal of Adams Tunnel	9/20/2010	NO3 + NO2 as N (mg/L)	0.002
GL-ATW	Grand Lake near West Portal of Adams Tunnel	9/20/2010	Organic Nitrogen, Total (i	0.37
GL-ATW	Grand Lake near West Portal of Adams Tunnel	9/20/2010	Ortho P as P (mg/L)	0.003
GL-ATW	Grand Lake near West Portal of Adams Tunnel	9/20/2010	P Total (mg/L)	0.021
GL-ATW	Grand Lake near West Portal of Adams Tunnel	9/20/2010	pH	8.3
GL-ATW	Grand Lake near West Portal of Adams Tunnel	9/20/2010	SpCond (uS/cm)	57
GL-ATW	Grand Lake near West Portal of Adams Tunnel	9/20/2010	Temp (Deg C)	13.4
GL-ATW	Grand Lake near West Portal of Adams Tunnel	9/20/2010	TKN as N (mg/L)	0.371
GL-ATW	Grand Lake near West Portal of Adams Tunnel	9/20/2010	TOC (mg/L)	4.01
GL-ATW	Grand Lake near West Portal of Adams Tunnel	9/20/2010	Transparency	140
GL-ATW	Grand Lake near West Portal of Adams Tunnel	10/28/2010	Ag Dis (ug/L)	-0.008
GL-ATW	Grand Lake near West Portal of Adams Tunnel	10/28/2010	Alk Total Dis (mg/L)	19
GL-ATW	Grand Lake near West Portal of Adams Tunnel	10/28/2010	Ammonia (NH3 + NH4+)	0.003
GL-ATW	Grand Lake near West Portal of Adams Tunnel	10/28/2010	As Dis (ug/L)	0.21

Record: 14 1 of 152502 No Filter Search

In-House Compliance Monitoring vs. Monthly Energy Lab Monitoring





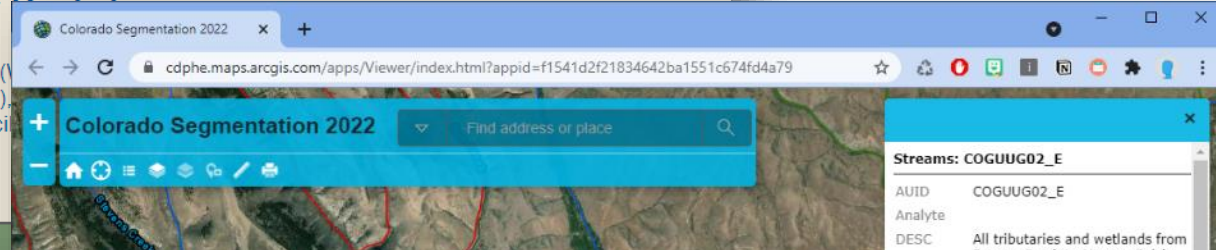
GET THE DATA OUT THERE...

- Printed Reports
- Data Portals
- Web Portals
- Web Analytics...



Water Quality Portal

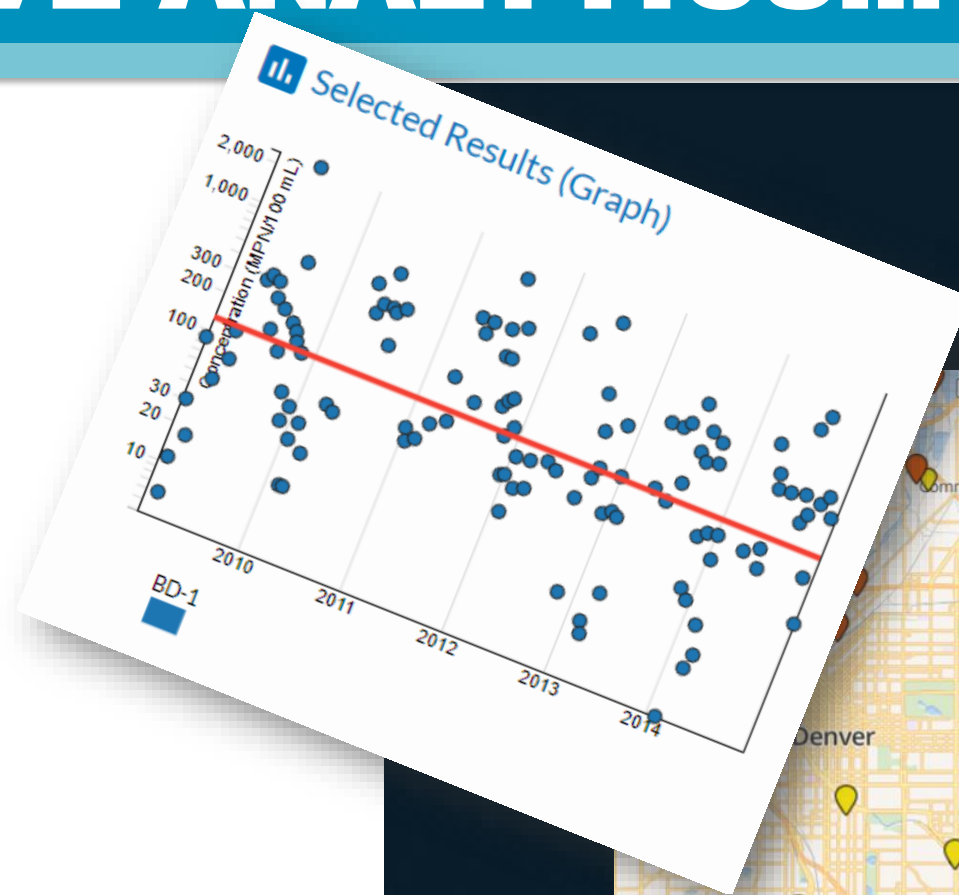
The Water Quality Portal (USGS), National Water Quality Monitoring Council and local agencies.



Streams: COGUUG02_E	
AUID	COGUUG02_E
Analyte	
DESC	All tributaries and wetlands from Beaver Creek to Meyers Gulch, from the West Elk Wilderness boundary to their confluences with Blue Mesa Reservoir, Morrow Point Reservoir, or the Gunnison River, excluding Steuben, and Soap Creek and their tributaries.
GEOID	18,921
Len_Mls	3.24
HUC_8	14,020,002
Cycle_x	2,022.00
Split	0.00
ChngRsn	
Parent	

DATA PORTALS, WEB MAPS AND INTERACTIVE ANALYTICS... OH MY.

Balancing
“Open-Endedness”
with
“Usability”



This block contains three overlapping interface elements. At the top is a document titled "What is Water Quality?" with an illustration of a landscape. Below it is a map of the Denver area with various colored pins (yellow, orange, green, red) indicating data points. At the bottom right is a green button with the text "OPEN STORYLINE".

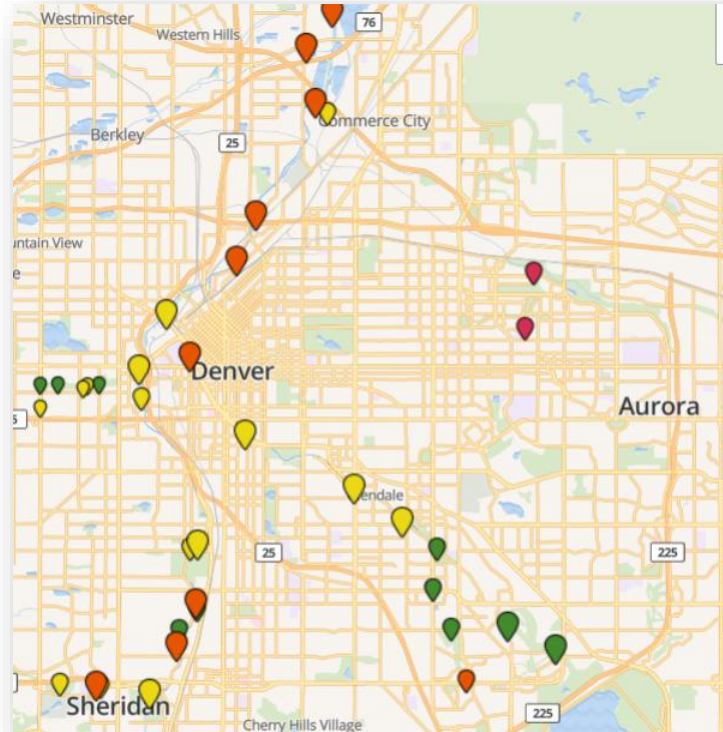
CHOOSE YOUR OWN ADVENTURE!

What is Water Quality?

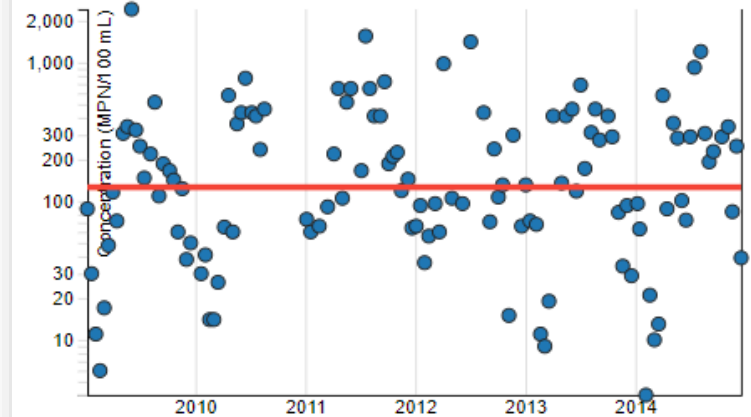


Don't know much about water quality? This storyline is the perfect place to start. Learn about the nexus between water quantity and quality and more.

OPEN STORYLINE



Selected Results (Graph)



EAGLE COUNTY WATERSHED TOOL

Eagle County Watershed Tool Explore

LOAD SCENARIO SAVE SCENARIO

Layer Search

FILTER LAYERS

+ SELECT ALL - SELECT NONE

- Stream Stations
- Reservoir Stations
- Effluent Stations
- Mine Discharge Stations
- Spring Stations
- Groundwater Stations
- USGS Streamflow Stations
- Counties
- Streams
- Lakes
- Parcels
- Land Use
- Parcels (Info)
- Zoning

Legend

Monitoring Points

- 0 - Constituent not detected
- 1 - Below benchmark
- 2 - Approaching benchmark
- 3 - Above benchmark
- 4 - Above secondary benchmark

+ DEFINE QUERY AREA

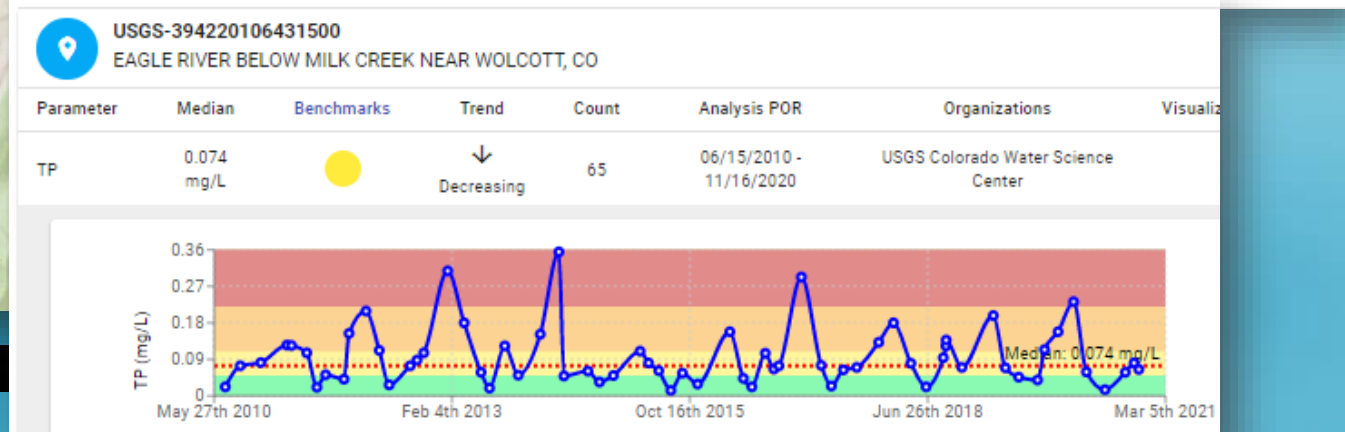
CORIVWCH_WQX-3287
(Stream Station)
Eagle - Bishop G (2.9)

Legend for monitoring points:
 0 - Constituent not detected
 1 - Below benchmark
 2 - Approaching benchmark
 3 - Above benchmark
 4 - Above secondary benchmark

STATS & BENCHMARKS NEARBY RESULTS

CORIVWCH_WQX-3287
Eagle - Bishop G (2.9)

Parameter	Median	Benchmarks	Trend	Count	Analysis POR	Organizations
Cu-D	7.6 ug/L	Approaching benchmark	Stable	3	06/15/2010 - 04/06/2016	Colorado River Watch
TP	0.007 mg/L	Below benchmark	Stable	3	06/15/2010 - 04/06/2016	Colorado River Watch



Eagle County Watershed Tool

The interface features a blue header with the title "Eagle County Watershed Tool" and navigation links for "Explore", "Analyze", and "Stories". Below the header are "LOAD SCENARIO" and "SAVE SCENARIO" buttons. A "Layer Search" input field is located above a "FILTER LAYERS" section, which includes "+ SELECT ALL" and "- SELECT NONE" buttons. The filter list contains the following items:

- Stream Stations
- Reservoir Stations
- Effluent Stations
- Mine Discharge Stations
- Spring Stations
- Groundwater Stations
- USGS Streamflow Stations
- Counties
- Streams
- Lakes
- Parcels
- Land Use
- Parcels (Info)
- Zoning

A "HIDE NAVIGATION" button is at the bottom of the filter panel. The main map area displays a topographic map of Eagle County with a black boundary. A legend titled "Monitoring Points" is overlaid on the map, showing five categories:

- 0 - Constituent not detected (dark green circle)
- 1 - Below benchmark (light green circle)
- 2 - Approaching benchmark (yellow circle)
- 3 - Above benchmark (orange circle)
- 4 - Above secondary benchmark (red circle)

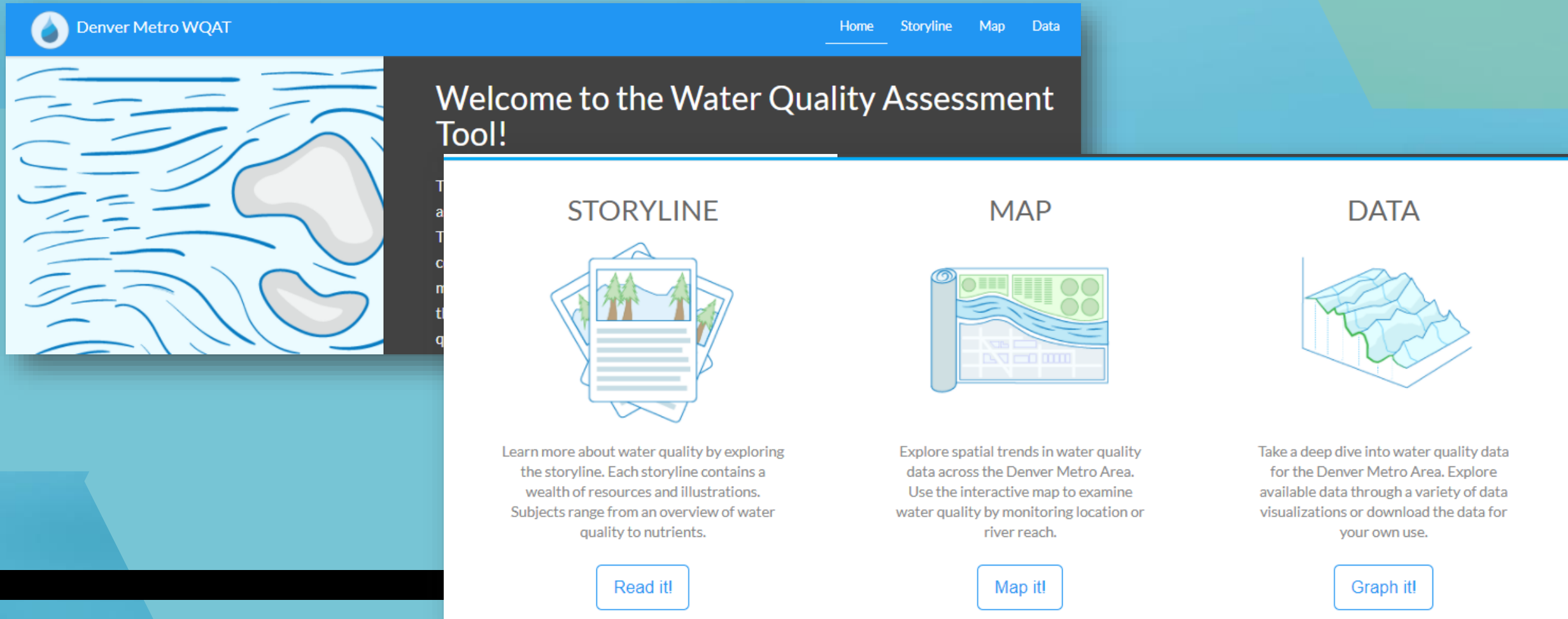
A "+ DEFINE QUERY AREA" button is visible on the map. The map shows various monitoring points scattered across the watershed, with a concentration of points in the central and eastern regions. A hand cursor is visible over a cluster of points near the town of Gypsum.

Eagle County Watershed Tool

The interface features a blue header with the logo and title "Eagle County Watershed Tool" on the left, and navigation links "Explore", "Analyze", "Stories", and "Logout" on the right. Below the header are "LOAD SCENARIO" and "SAVE SCENARIO" buttons. A "Layer Search" input field is located on the left side of the map area. A "FILTER LAYERS" section contains a "+ SELECT ALL" and "- SELECT NONE" button, followed by a list of layer categories with checkboxes: Stream Stations (checked), Reservoir Stations, Effluent Stations, Mine Discharge Stations, Spring Stations, Groundwater Stations, USGS Streamflow Stations, Counties, Streams, Lakes, Parcels, Land Use, Parcels (Info), and Zoning. A "HIDE NAVIGATION" button is at the bottom left of the filter panel. The map displays a network of monitoring points along a river system, with a legend titled "Monitoring Points" defining five categories: 0 (black), 1 (green), 2 (yellow), 3 (orange), and 4 (red). A "+ DEFINE QUERY AREA" button is positioned above the map. The map itself shows a topographic view with a river network, major roads like I-70, and various monitoring point labels such as "21COL001_WQX-000052", "CORIWVCH_WQX-739", and "ARR-SWBC-4".

DENVER METRO WATER QUALITY ASSESSMENT TOOL

<http://www.exploremetrodenverwaterquality.org/>




The screenshot shows the Denver Metro Water Quality Assessment Tool (WQAT) website. The header is blue with the Denver Metro WQAT logo and navigation links for Home, Storyline, Map, and Data. The main content area is white and features a large illustration of water ripples on the left. The central heading reads "Welcome to the Water Quality Assessment Tool!". Below this, there are three main sections: "STORYLINE", "MAP", and "DATA". Each section includes an icon, a brief description, and a button to interact with the content.

Denver Metro WQAT

Home Storyline Map Data

Welcome to the Water Quality Assessment Tool!


STORYLINE



Learn more about water quality by exploring the storyline. Each storyline contains a wealth of resources and illustrations. Subjects range from an overview of water quality to nutrients.

[Read it!](#)

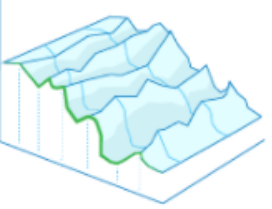
MAP



Explore spatial trends in water quality data across the Denver Metro Area. Use the interactive map to examine water quality by monitoring location or river reach.

[Map it!](#)

DATA



Take a deep dive into water quality data for the Denver Metro Area. Explore available data through a variety of data visualizations or download the data for your own use.

[Graph it!](#)

South Platte Urban Waters Partn... x +

Not secure | exploremetrodenverwaterquality.org/home

Denver Metro WQAT


Home Storyline Map Data

Welcome to the Water Quality Assessment Tool!

The South Platte Urban Waters Partnership is excited to present the updated water quality assessment tool for exploring the health of rivers and streams in the Denver metro area. This online tool combines data from 2009 through 2015 for pollutants including *E. coli*, contaminants of emerging concern, total dissolved and suspended solids, and nutrients. Use maps, graphs and narratives to explore water quality in the South Platte River basin. Take the tool into the field with the new mobile application and learn how you can protect water quality!

Continued population and water use growth in the Denver metro area impact water quality in streams and rivers. Water pollution from urban areas affects plants, aquatic life, wildlife, and people. Decision-makers, researchers and the public can use the water quality assessment tool to better understand pollution and to devise strategies for improving water quality. There is a limited amount of water on the planet for our use; learning about and actively protecting it is a responsibility we all share.


STORYLINE



Learn more about water quality by exploring the storyline. Each storyline contains a wealth of resources and illustrations. Subjects range from an overview of water quality to nutrients.

[Read it!](#)

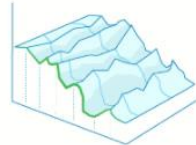
MAP



Explore spatial trends in water quality data across the Denver Metro Area. Use the interactive map to examine water quality by monitoring location or river reach.

[Map it!](#)

DATA



Take a deep dive into water quality data for the Denver Metro Area. Explore available data through a variety of data visualizations or download the data for your own use.

[Graph it!](#)


ABOUT THE TOOL

The Denver Metro Water Quality Assessment Tool (WQAT) represents the successful collaboration of federal, state, local governments, and non-profits to pool resources to make water quality data more accessible to decision-makers and general public. This tool seeks to provide both context and direct access to publically available water quality data for the metro area.

This tool represents a snapshot of conditions for the metro area between 2009 and 2015 for a variety of water quality parameters including *E. coli*, contaminants of

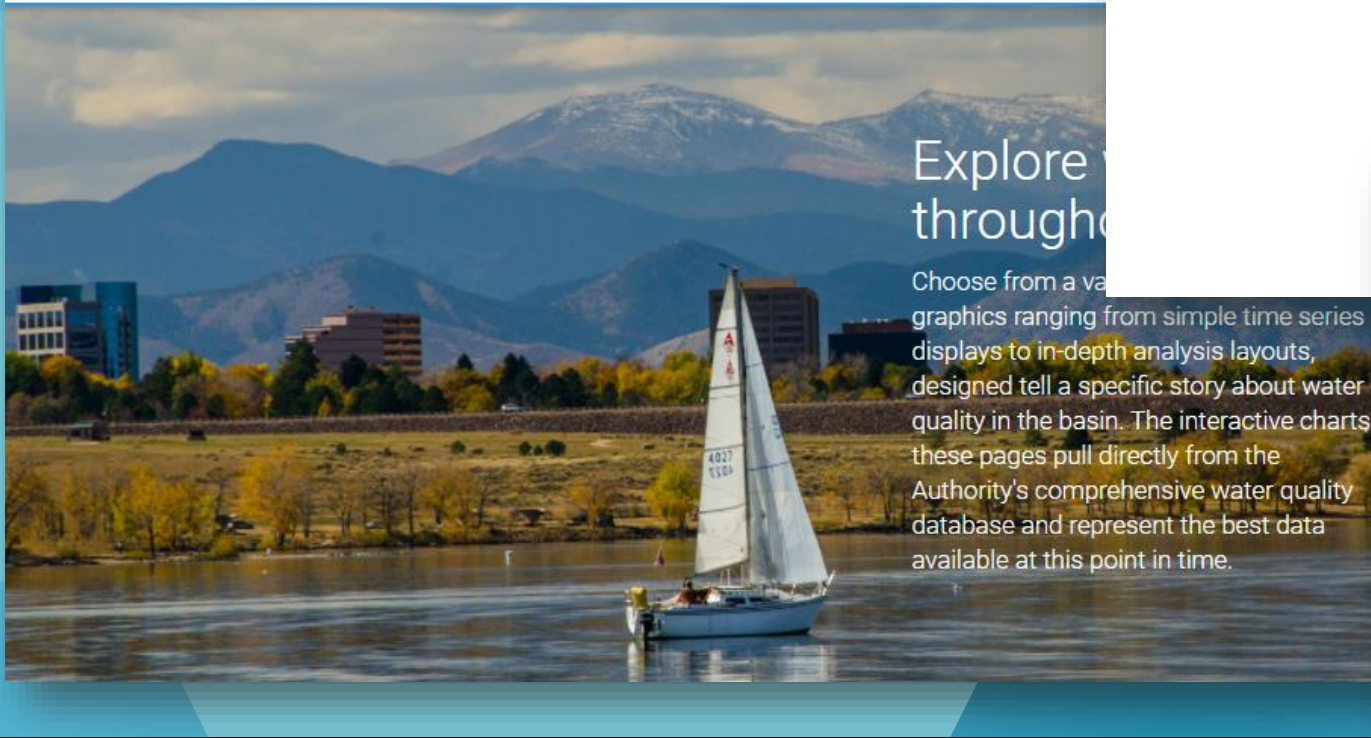
CHERRY CREEK BASIN WATER QUALITY PORTAL

<https://ccbwwqportal.org/>



Cherry Creek Basin Water Quality Data Portal

HOME MAPS ANNUAL REPORTS



Explore
through

Choose from a variety of graphics ranging from simple time series displays to in-depth analysis layouts, designed to tell a specific story about water quality in the basin. The interactive charts on these pages pull directly from the Authority's comprehensive water quality database and represent the best data available at this point in time.



VISION/MISSION

- The Clean Water Act Vision
- CCBWQA's mission per Statute

Goals

- What long-term goals do we want to achieve, to support the Vision/Mission?

Objectives

- What specific, tangible, measurable milestones will we set to achieve to reach our goals?

Strategies

- What do we have to do in order to meet our objectives?

Metrics & Measures

- How will we know if we are achieving our objectives?

STRAIGHT LINE OF SIGHT

2020 Report

PLANNING

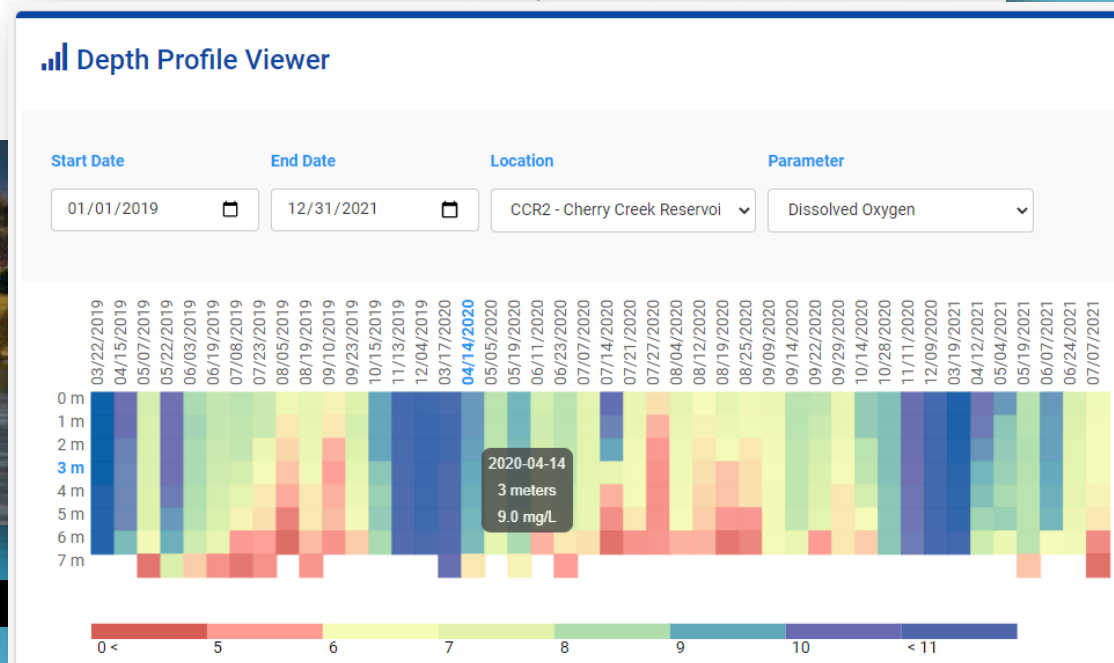
Planning Overview

CCBWQA does two general types of planning:

1. Strategic planning related to its mission and goals and
2. Specific project planning for pollution abatement projects.

Vision

The objective of the Federal Clean Water Act* is to



Cherry Creek Basin Water Quality Portal

<https://ccbwqportal.org/>

Cherry Creek Basin Water Quality Data Portal

HOME MAPS ANNUAL REPORTS EXPLORE DOWNLOAD LOG IN

Explore water quality throughout the basin!

Choose from a variety of inputs and see graphics ranging from simple time series displays to in-depth analysis layouts, designed tell a specific story about water quality in the basin. The interactive charts in these pages pull directly from the Authority's comprehensive water quality database and represent the best data available at this point in time.

Photo Credit: Cathy McCray

About the portal

This portal provides access to water quality data throughout the Cherry Creek Basin, some of which can be explored through a variety of interactive graphs. While you do not need to log-in to explore the data, explorers who want to download data need to set-up an account: click on [Sign Up](#) in the menu bar for details. The data on this site may not have received quality assurance review and its accuracy cannot be guaranteed. Further, the data is subject to change or modification at any time by the Cherry Creek Basin Water Quality Authority. If you have questions, please contact Chuck Reid at 303.968.9098 or at chuck.reid@ccbwqa.org.

Ways to explore the basin

- Visualize Data
- Compare changes over time
- Discover relationships
- Download Data

Questions?

Kelly Close

Kelly.close@lrewater.com



Successful Communication for Adaptive Management