

California Central Valley Groundwater-Surface Water Simulation Model – Fine Grid (C2VSimFG) Web Application Tool

Presented By:

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SGMO, Model and Tools Support Section, &

***Tom Heinzer**, Consultant*

Michael Thomas Group



CALIFORNIA DEPARTMENT OF WATER RESOURCES
SUSTAINABLE GROUNDWATER
MANAGEMENT OFFICE

Overview

- I. Purpose of the C2VSimFG Web Application
- II. Explore Groundwater, Subsidence and Stream Hydrographs
- III. Explore the Surface and Subsurface Budgets
- IV. Explore the Zone Budgets
- V. Web Application Architecture
- VI. Research Tools
- VII. Next Steps



Purpose of the C2VSimFG Web Application

- Interactive, utility tool to show the results of the C2VSimFG with little to no modeling experience needed
- Targeted Audience: Groundwater Sustainability Agencies (GSA's), consultants, and general public
- Able to use the model results right away



Explore Groundwater, Subsidence and Stream Hydrographs

- Able to generate:
 - Groundwater Hydrograph
 - Groundwater Hydrograph at Node and Layer
 - Subsidence Hydrograph
 - Stream Hydrograph



Groundwater Hydrographs

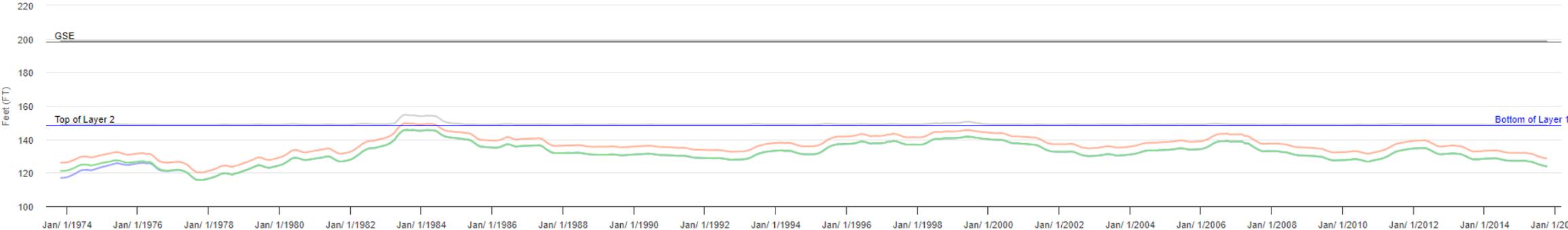
- Shows the C2VSimFG simulated groundwater elevations over time for all layers or a specific model layer
- At a simulated groundwater observation well location



[Go to top](#) |
 [Remove this chart](#) |
 [Turn on all chart series](#)
 [View all model layers](#)

Groundwater hydrograph | Well 392714N1213309W001

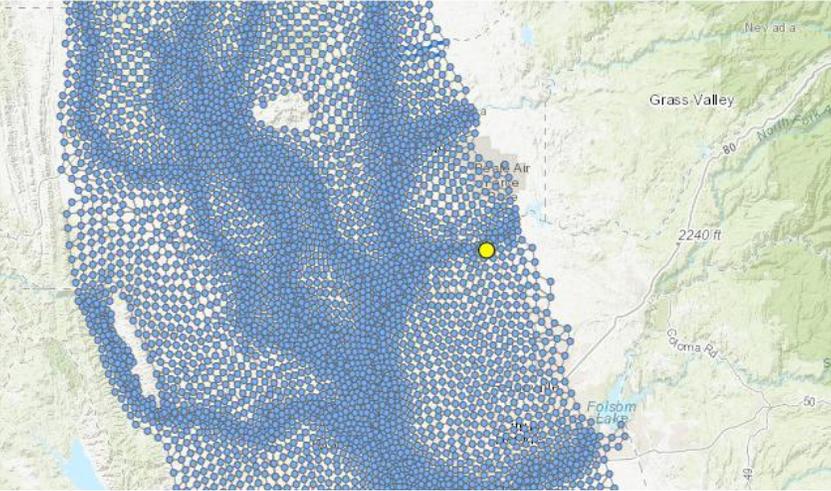
Click and drag in the plot area to zoom in



Click to turn on/off:
— S_392714N1213309W001%1
 — S_392714N1213309W001%2
 — S_392714N1213309W001%3
 — S_392714N1213309W001%4
 — Ground Surface

Groundwater Hydrographs at Node and Layer

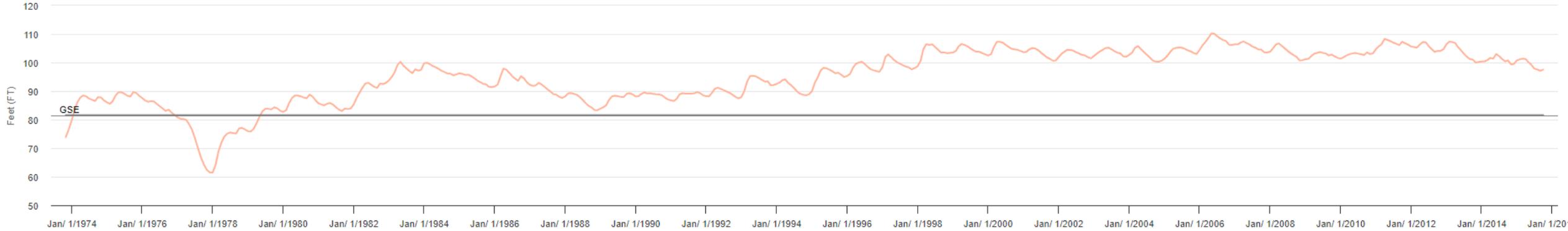
- Generate a chart of the groundwater elevation over time at a specific groundwater node and model layer



[Go to top](#) | [Remove this chart](#) | [Turn on all chart series](#)
 [View all model layers](#)

Groundwater hydrograph at node and layer | Layer 2

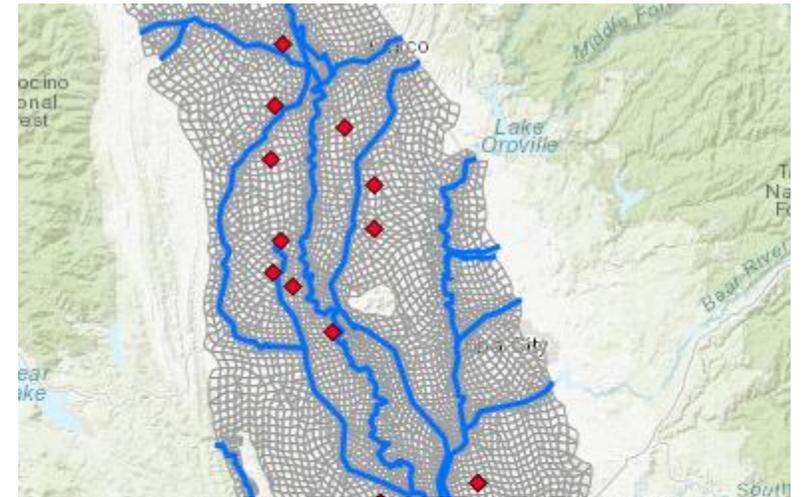
Click and drag in the plot area to zoom in



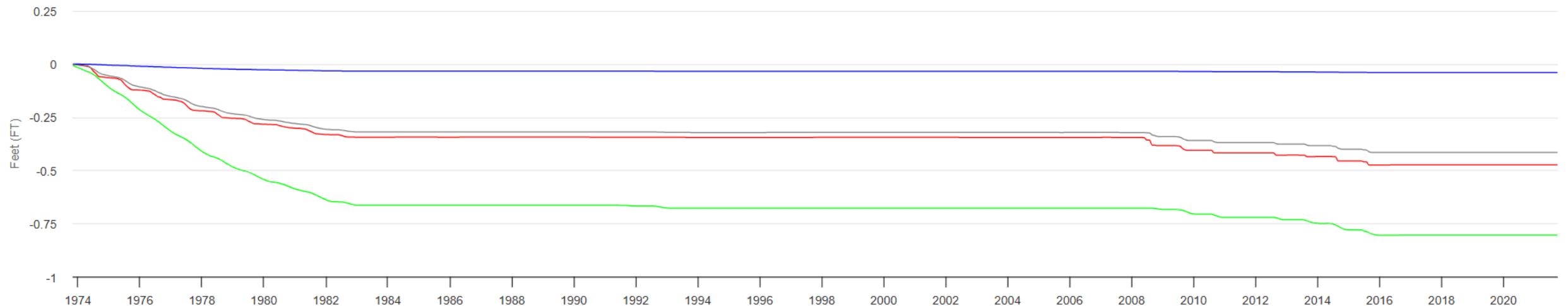
Click to turn on/off:
— Layer 2: 7371 — Ground Surface

Subsidence Hydrographs

- Generates the subsidence hydrograph at a specific GPS station
- GPS stations from DWR & USGS Extensometers, USGS InSAR, and continuous UNAVCO PBO GPS



Subsidence | Feature IDs: 110,566,262,414



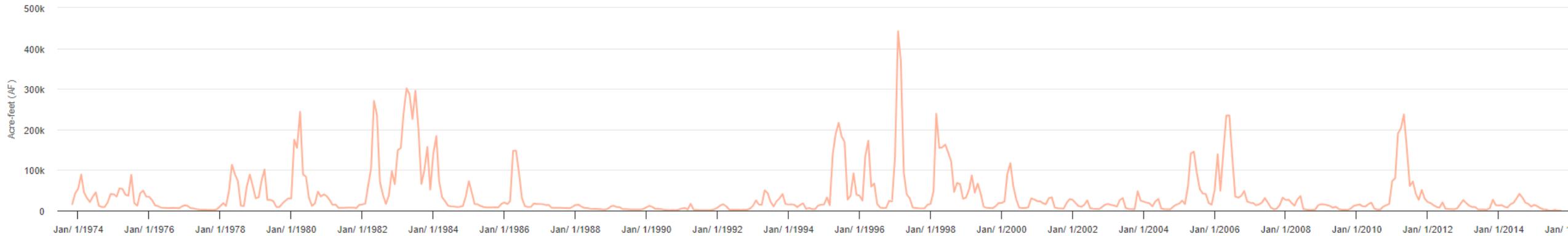
Stream Hydrographs

- Generating the stream hydrograph at specific stream gauge

[Go to top](#) | [Remove this chart](#) | [Turn on all chart series](#)

Stream hydrograph (flow) | Stream Name: 11271500

Click and drag in the plot area to zoom in



Click to turn on/off:

— 11271500



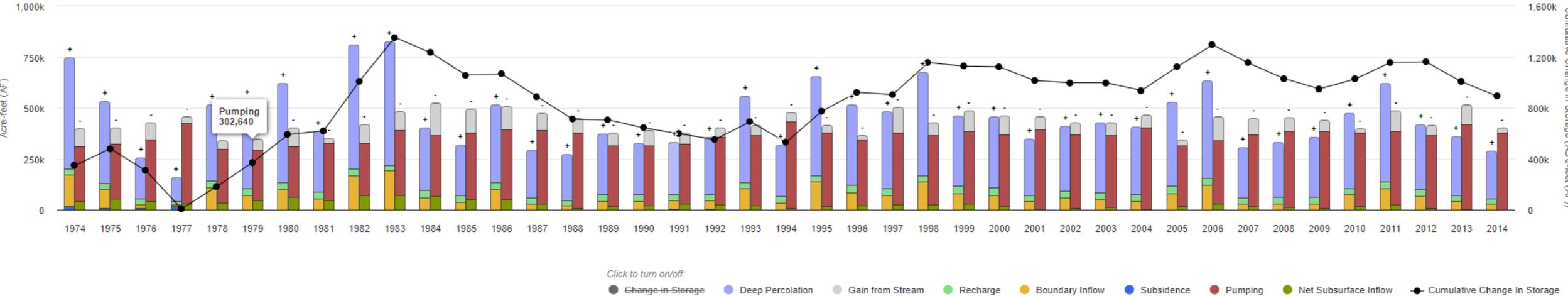
Groundwater Budget

- Generate the inflow and outflow components of groundwater and the cumulative change in storage

[Go to top](#) | [Remove this chart](#) | [Turn on all chart series](#)

Annual Flows | Groundwater budget | Subregion 7 | Calendar Year

Click and drag in the plot area to zoom in



Click to turn on/off:

- Change in Storage
- Deep Percolation
- Gain from Stream
- Recharge
- Boundary Inflow
- Subsidence
- Pumping
- Net Subsurface Inflow
- Cumulative Change In Storage



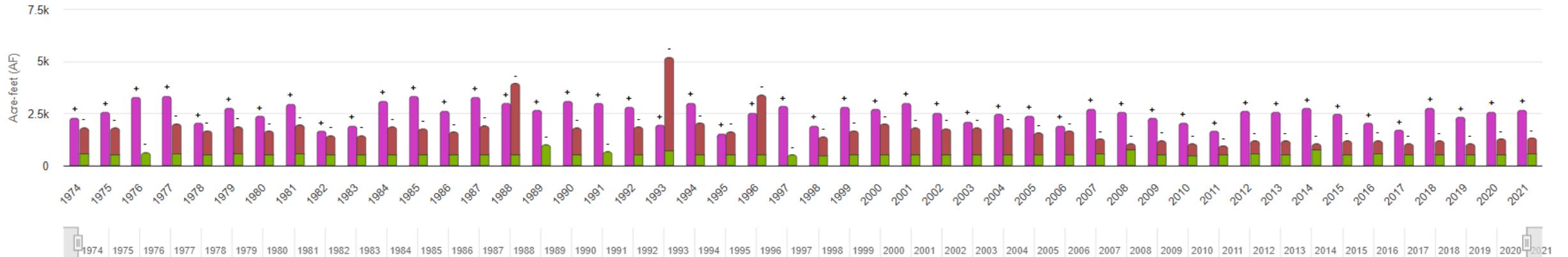
Stream Node Budget

- Generate the inflow and outflow components of the surface water at specific stream node

[Go to top](#) | [Remove this chart](#)

C2VSimFG_v1.5_07302024 | Stream node budget | Stream node ID: 4279

Click and drag in the plot area to zoom in

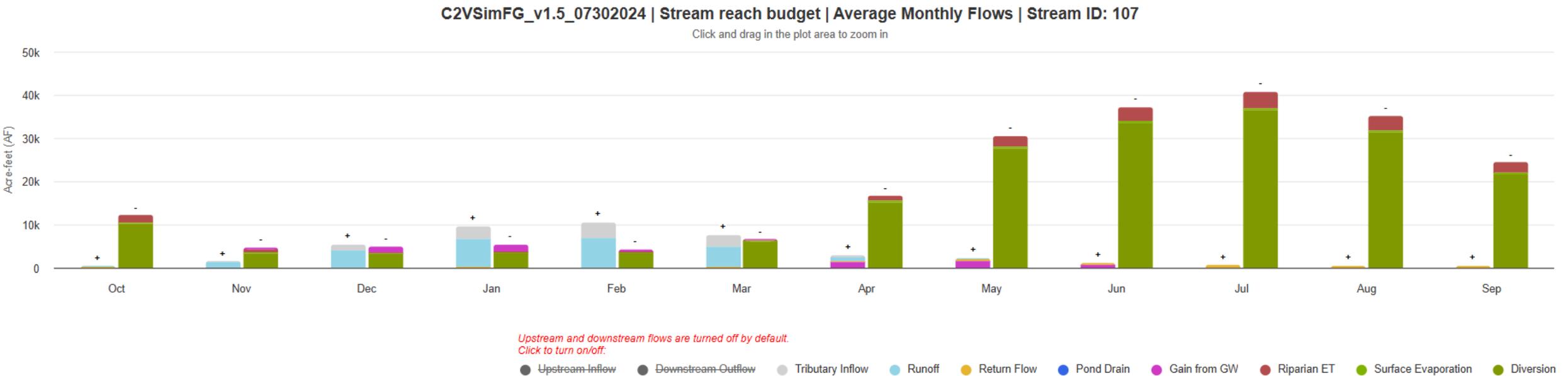


Upstream and downstream flows are turned off by default.
Click to turn on/off.

● Upstream-Inflow ● Downstream-Outflow ● Gain from GW ● Riparian ET ● Surface Evaporation

Stream Reach Budget

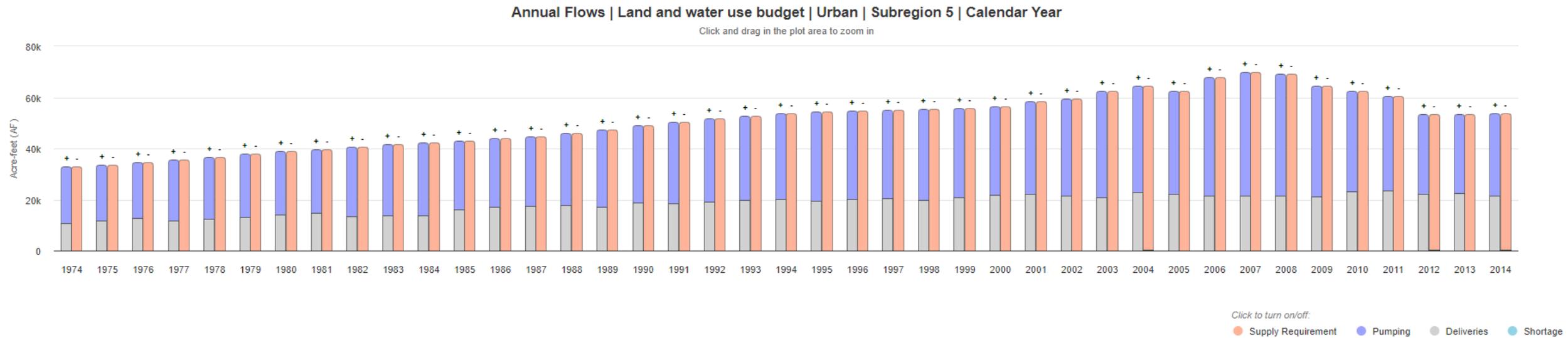
- Generate the inflow and outflow components of the surface water at specific stream reach



Land and Water Use Budget

- Generate the supplies and demands required for agricultural requirements within a specific subregion and land use (e.g., General Ag, Urban).

[Go to top](#) | [Remove this chart](#) | [Turn on all chart series](#)



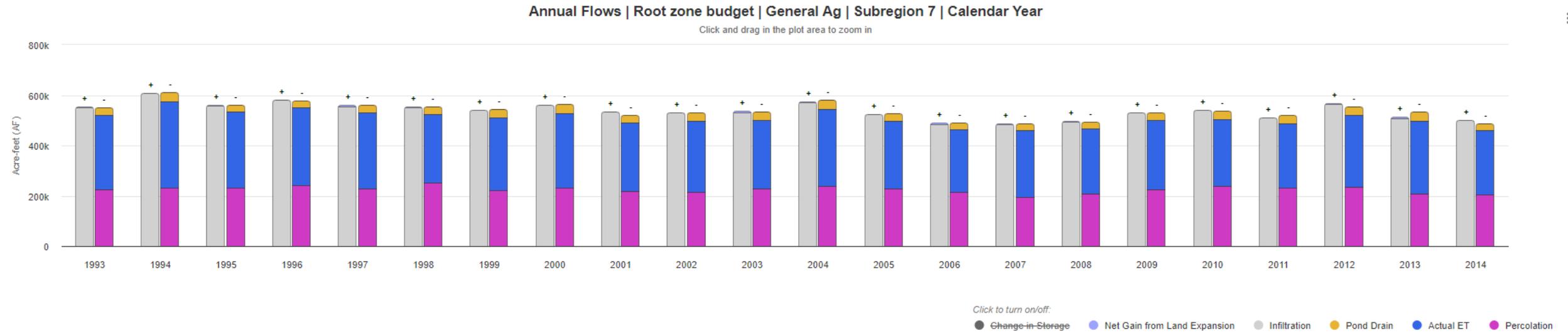
[Shuffle colors](#) | [Turn all series off](#) | [Turn all series on](#)



Root Zone Budget

- Generate the inflow and outflow components of the root zone budget within a specific subregion and land use (e.g., General Ag, Urban, Native and Riparian Veg).

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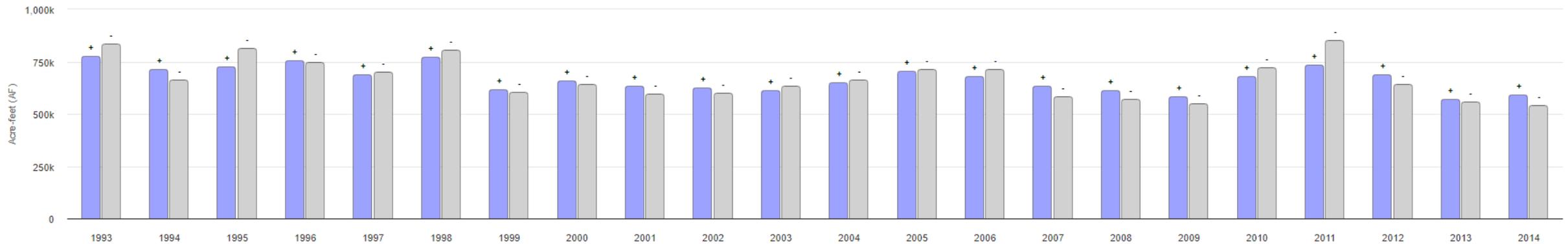
Unsaturated Zone Budget

- Generate the inflow and outflow components of the unsaturated zone budget within a specific subregion and land use (e.g., General Ag, Urban, Native and Riparian Veg).

[Go to top](#) | [Remove this chart](#) | [Turn on all chart series](#)

Annual Flows | Unsaturated zone budget | Subregion 9 | Calendar Year

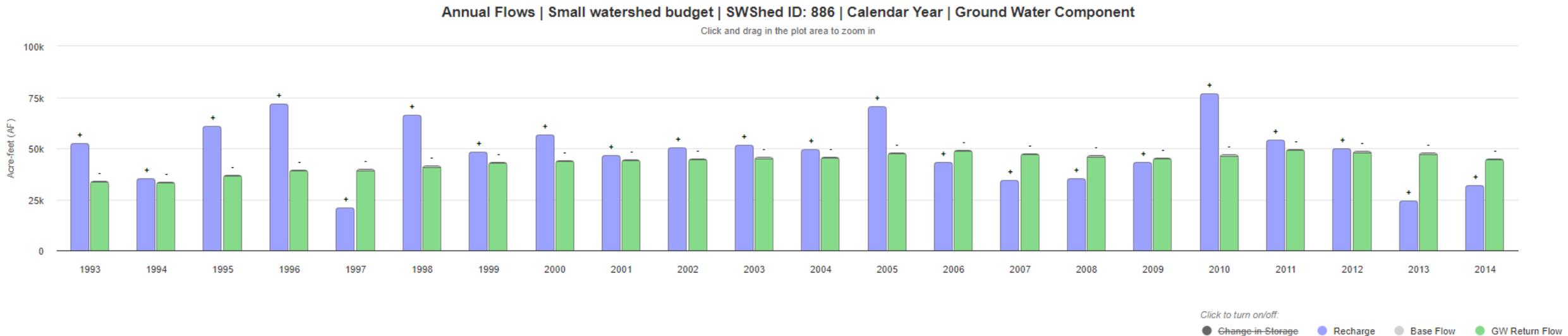
Click and drag in the plot area to zoom in



Small Watershed Budgets

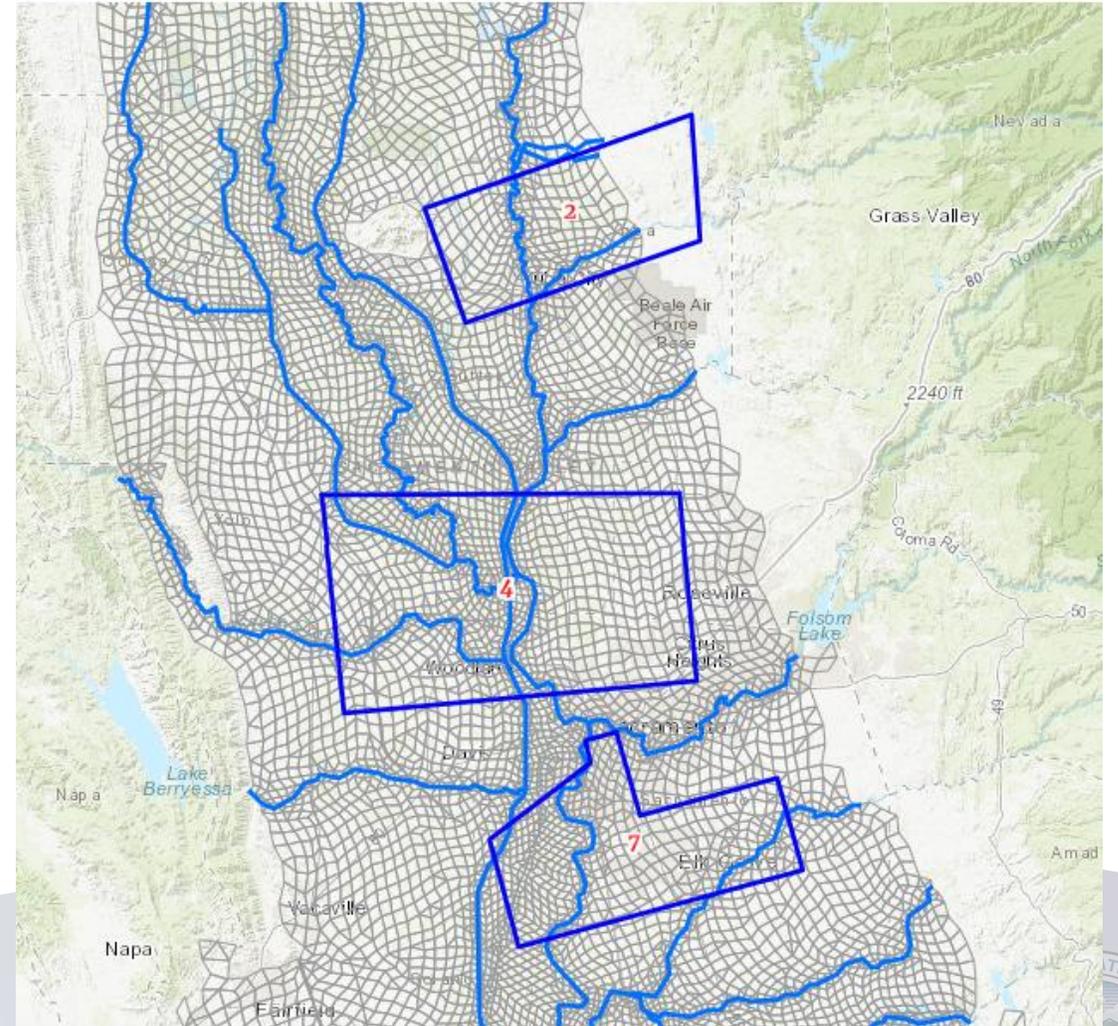
- Generate the inflow and outflow components of a specific small watershed for groundwater or root zone components.

[Go to top](#) | [Remove this chart](#) | [Turn on all chart series](#)



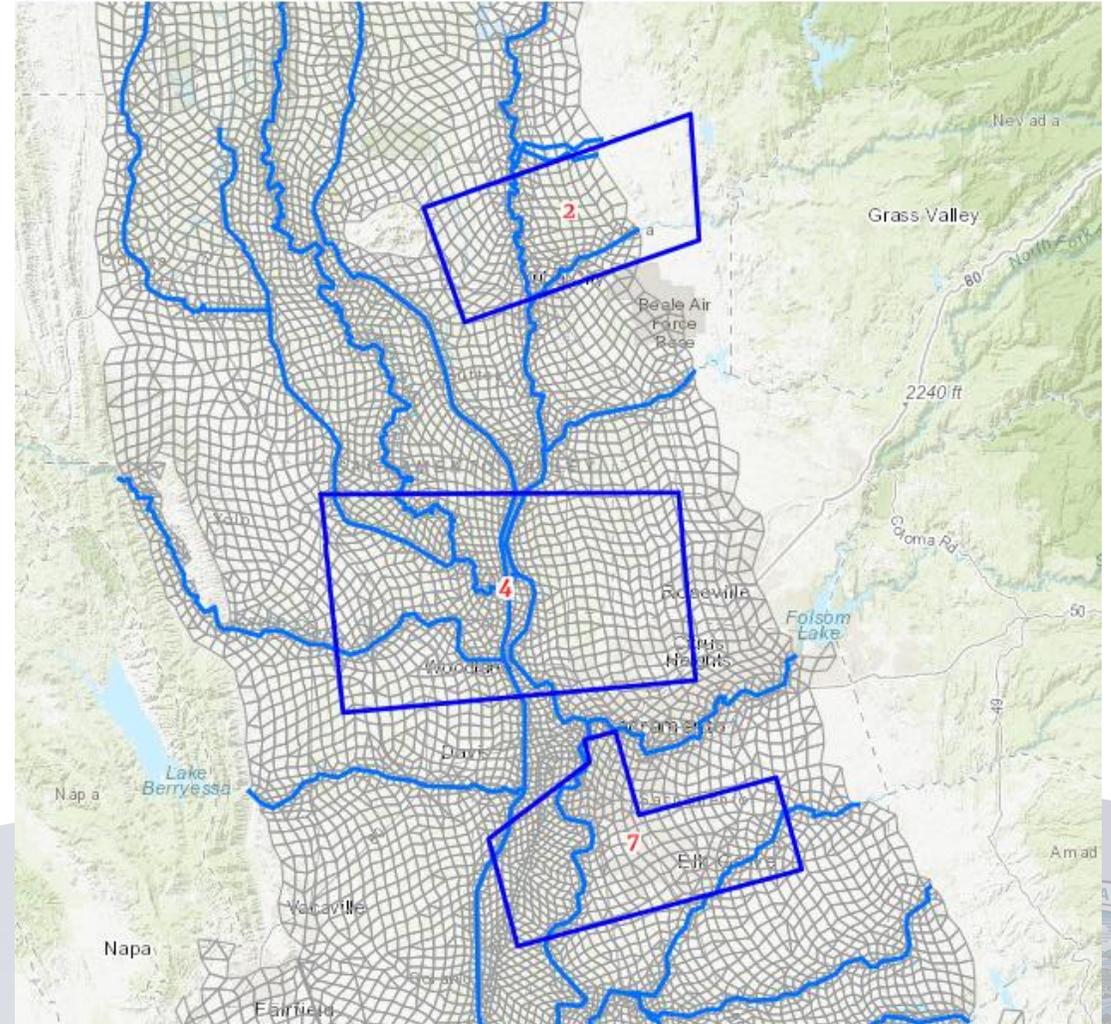
Zone Budgets

- Upload a shapefile in a zip folder
- Requirements:
 - Coordinates - UTM Zone 10
 - Less than 2 MB
 - Needs to have an integer, zone field



Zone Budgets

- Able to generate:
 - Groundwater Zone Budget
 - Land and Water Use Budget
 - Root Zone Budget
 - Unsaturated Zone Budget



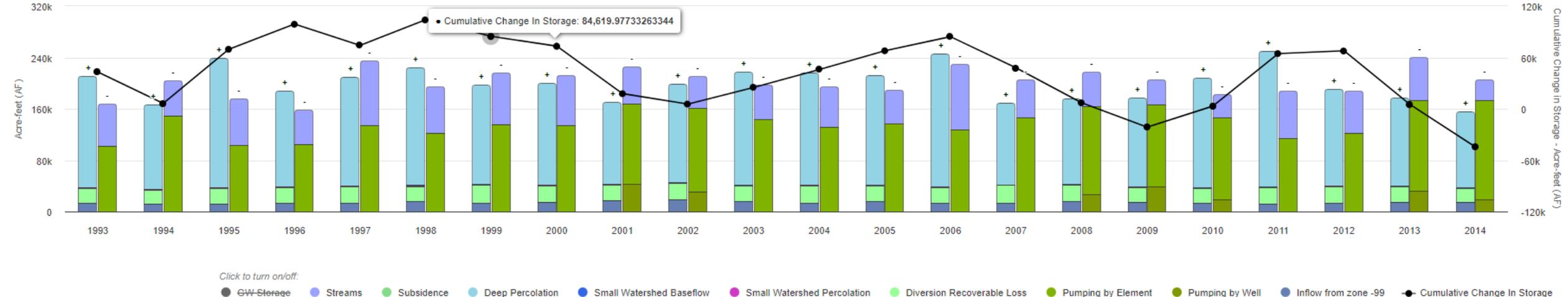
Groundwater Zone Budgets

- Generates the inflows and outflows of the groundwater budget within a specific area of interest

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Annual Flows | Groundwater zone budget | Zone: 2 | Calendar Year

Click and drag in the plot area to zoom in



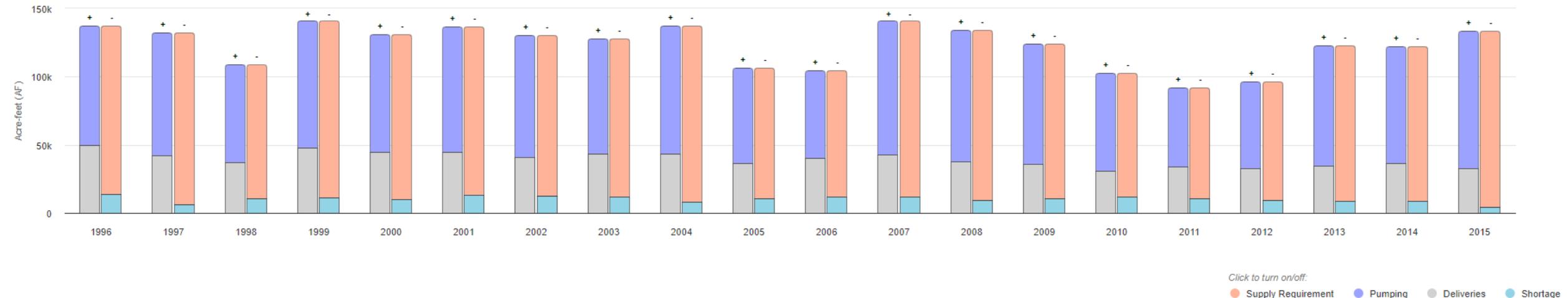
Land and Water Use Zone Budgets

- Generate the agricultural requirements, demand and supply for specific zone and land use/crop type
- e.g., Urban, Non-ponded Ag, Rice (ponded Ag), Refuge

[Go to top](#) | [Remove this chart](#) | [Turn on all chart series](#)

Annual Flows | Land and water use zone budget | Non-ponded Ag | Zone: 2 | Water Year

Click and drag in the plot area to zoom in



Click to turn on/off:

Supply Requirement Pumping Deliveries Shortage

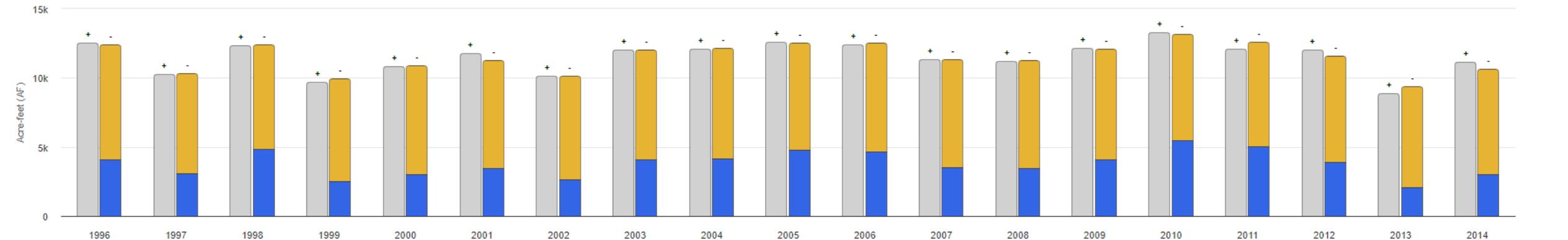
Root Zone Water Budget

- Generates the inflows and outflows of the root zone water budget for specific zone's land use/crop types
- e.g., Urban, Non-ponded Ag, Rice, Refuge

[Go to top](#) | [Remove this chart](#) | [Turn on all chart series](#)

Annual Flows | Root zone zone budget | Urban | Zone: 2 | Calendar Year

Click and drag in the plot area to zoom in

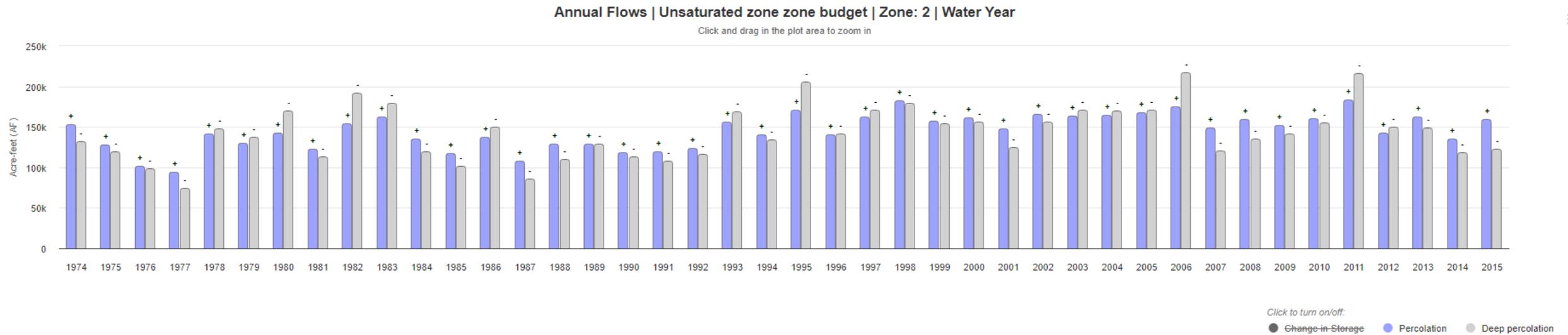


Click to turn on/off:

● Change-in-Storage ● Infiltration ● ET ● Percolation

Unsaturated Zone Zone Budget

- Generates the inflows and outflows of the unsaturated zone for specific area of interest



Architecting the IWFM Visualization Tool

Development Platform

How it works

Research



IDE and Components



VISUAL STUDIO 2022



HIGHCHARTS



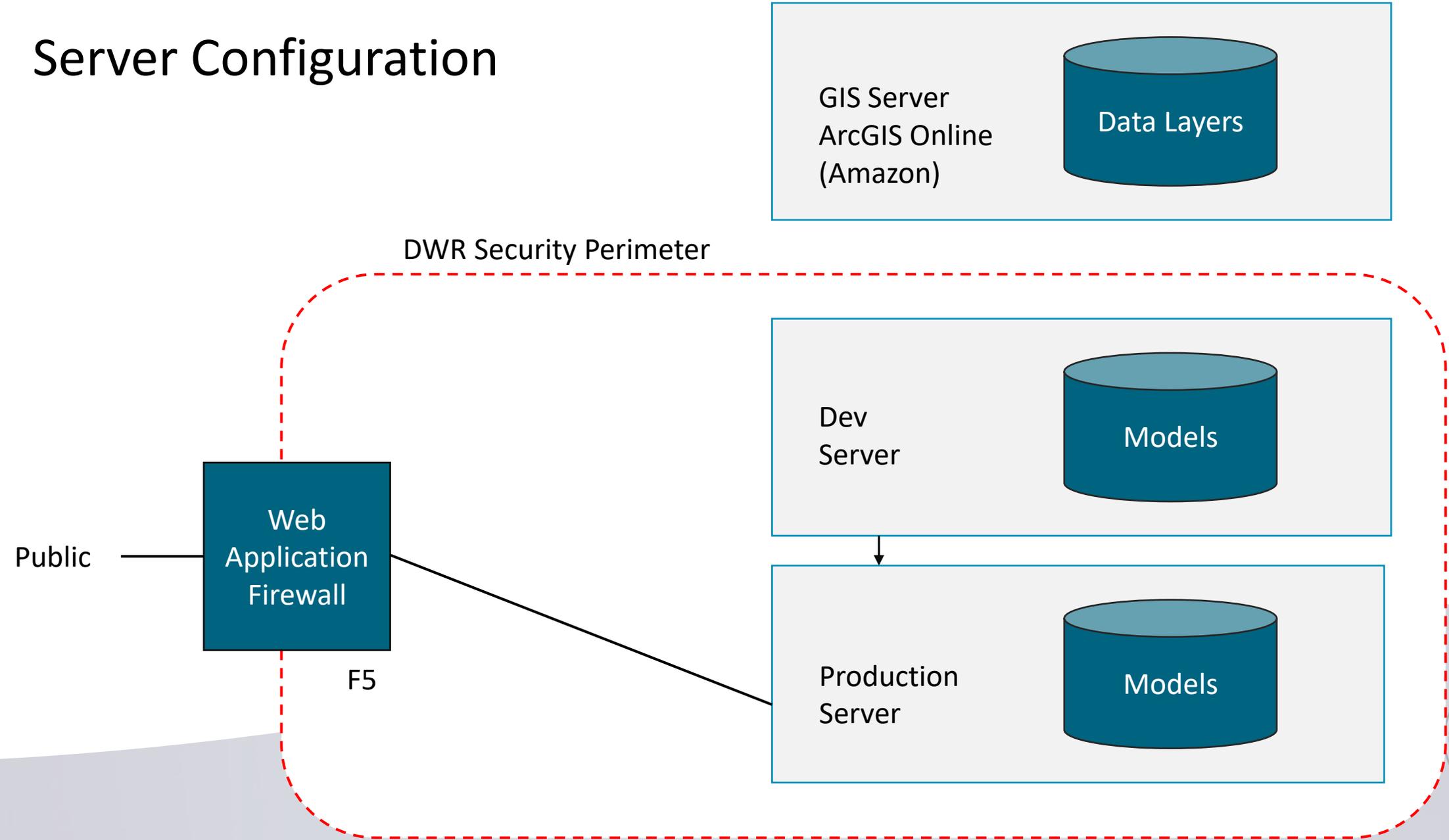
ArcGIS Online



IWFM DLL



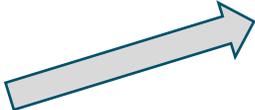
Server Configuration



Send Initial Request

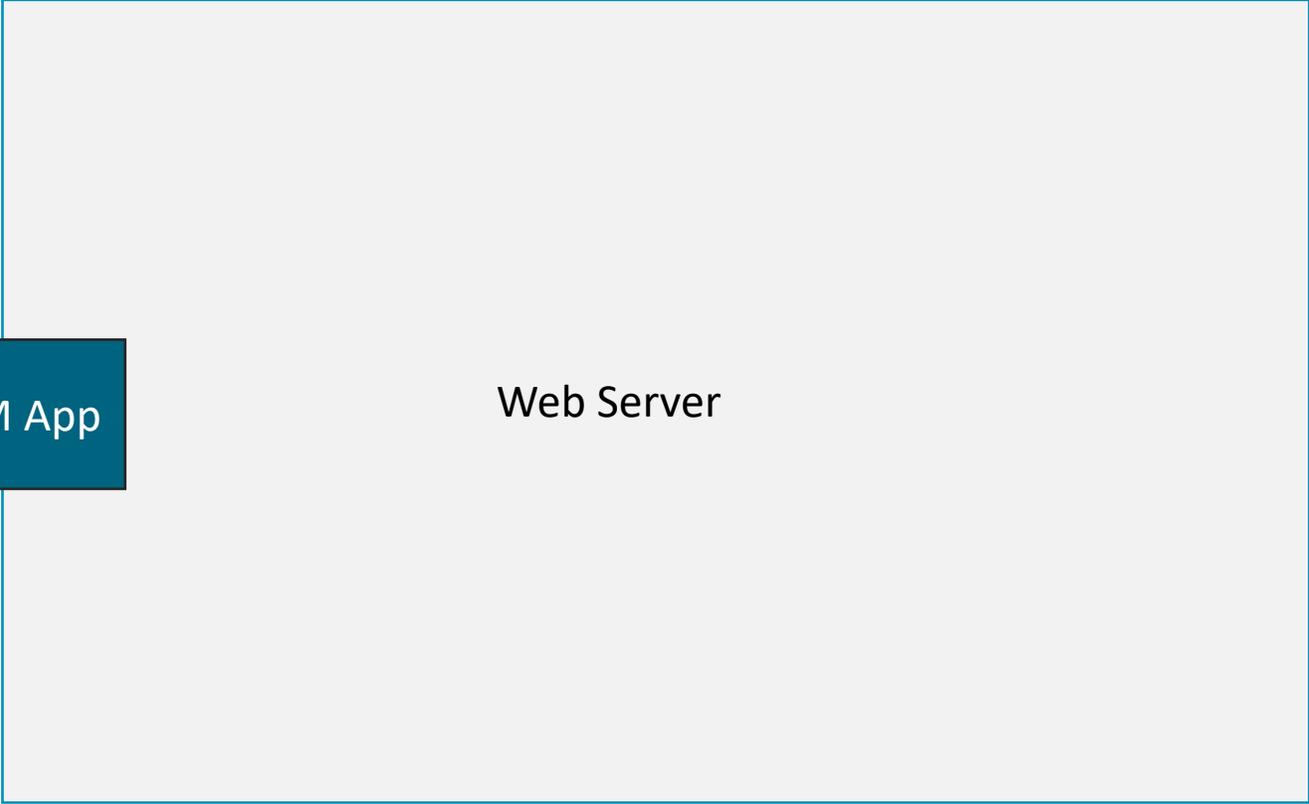


Web browser



URL

IWFM App



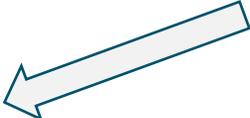
Web Server



Receive Web App Code

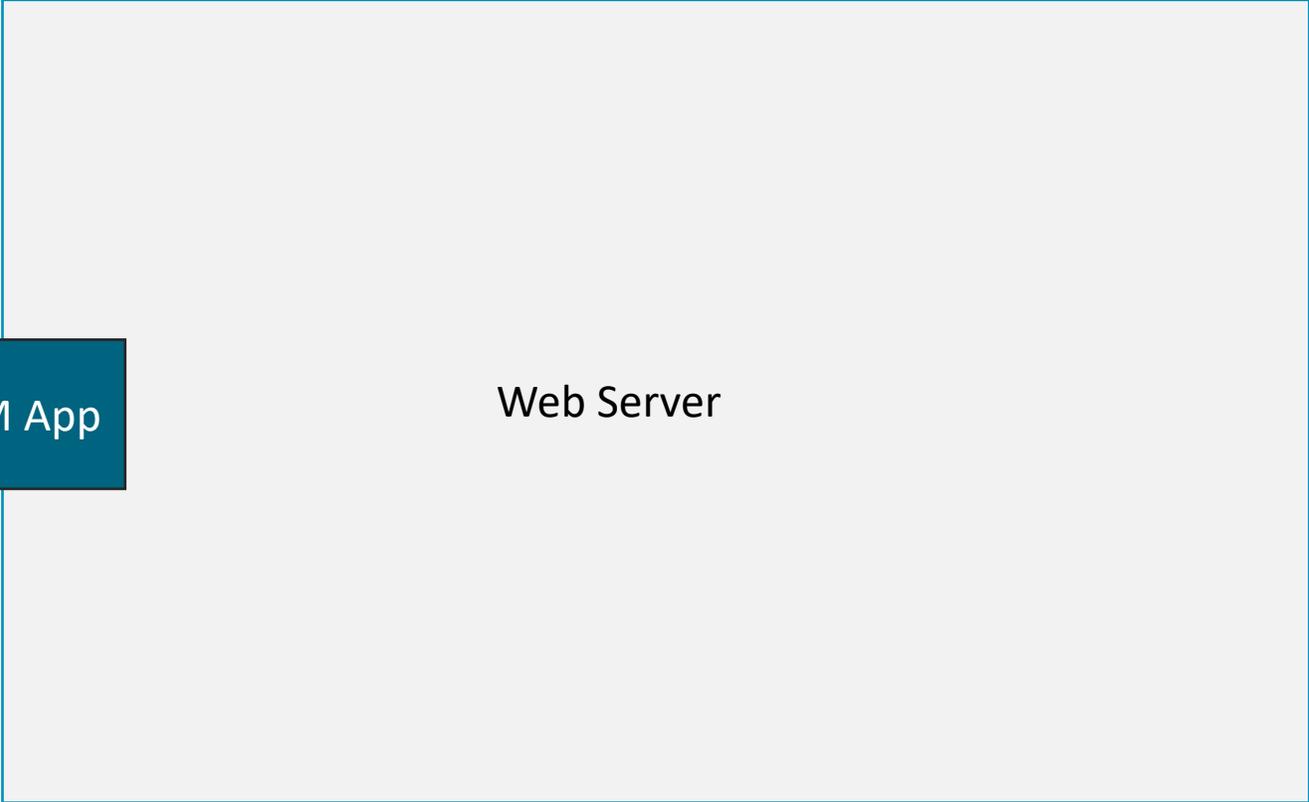


Web browser



HTML
Javascript

IWFM App



Web Server

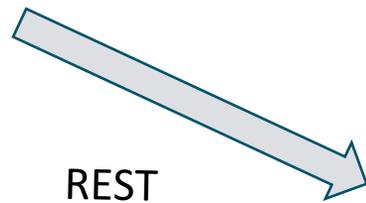
Ask For GIS Data (mesh, etc.)



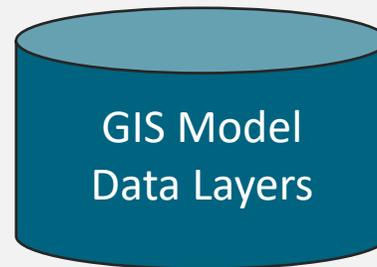
Web browser

IWFM App

Web Server



REST
Endpoint



GIS Server

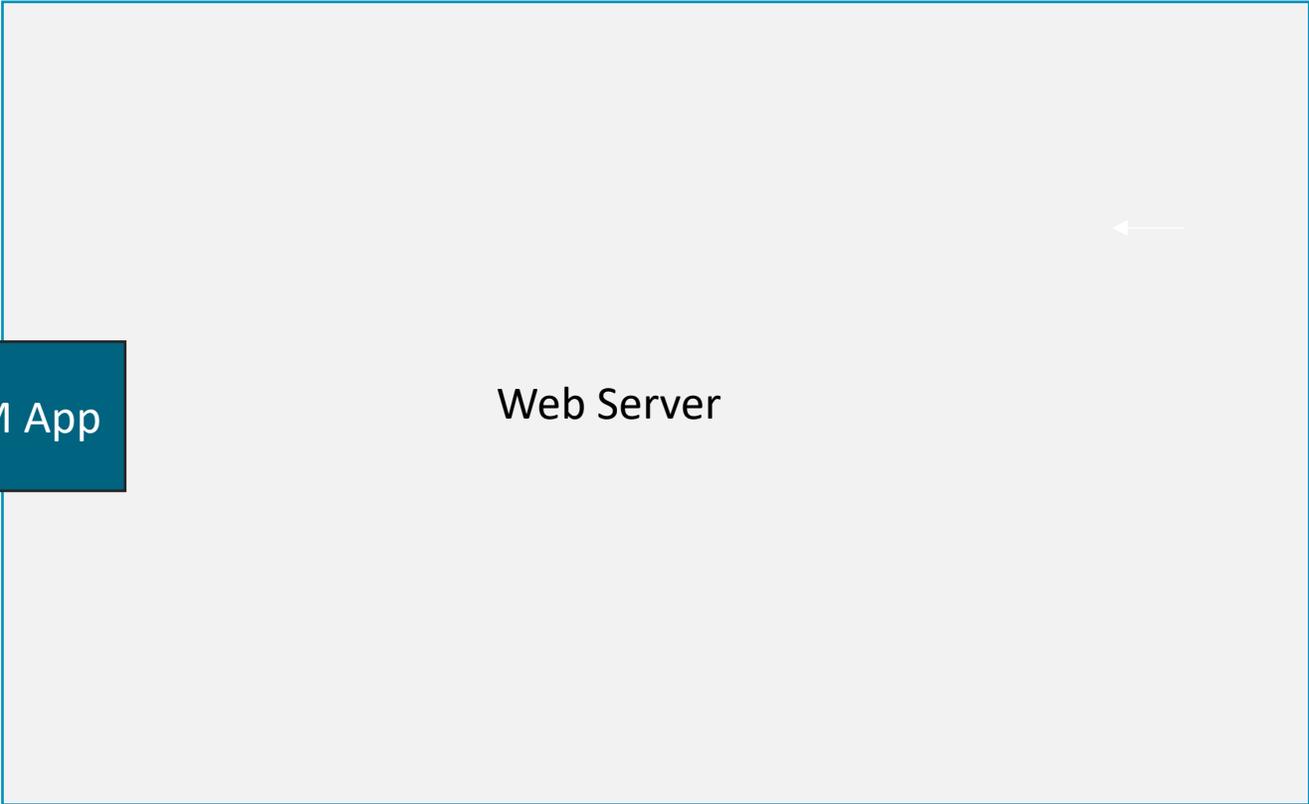


Receive GIS Data



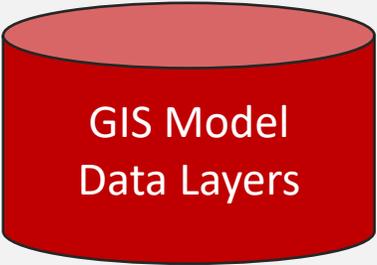
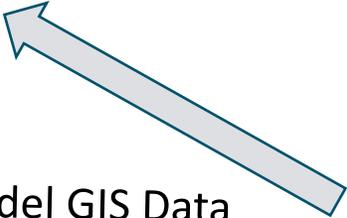
Web browser

IWFM App



Web Server

Model GIS Data
Tiled Images

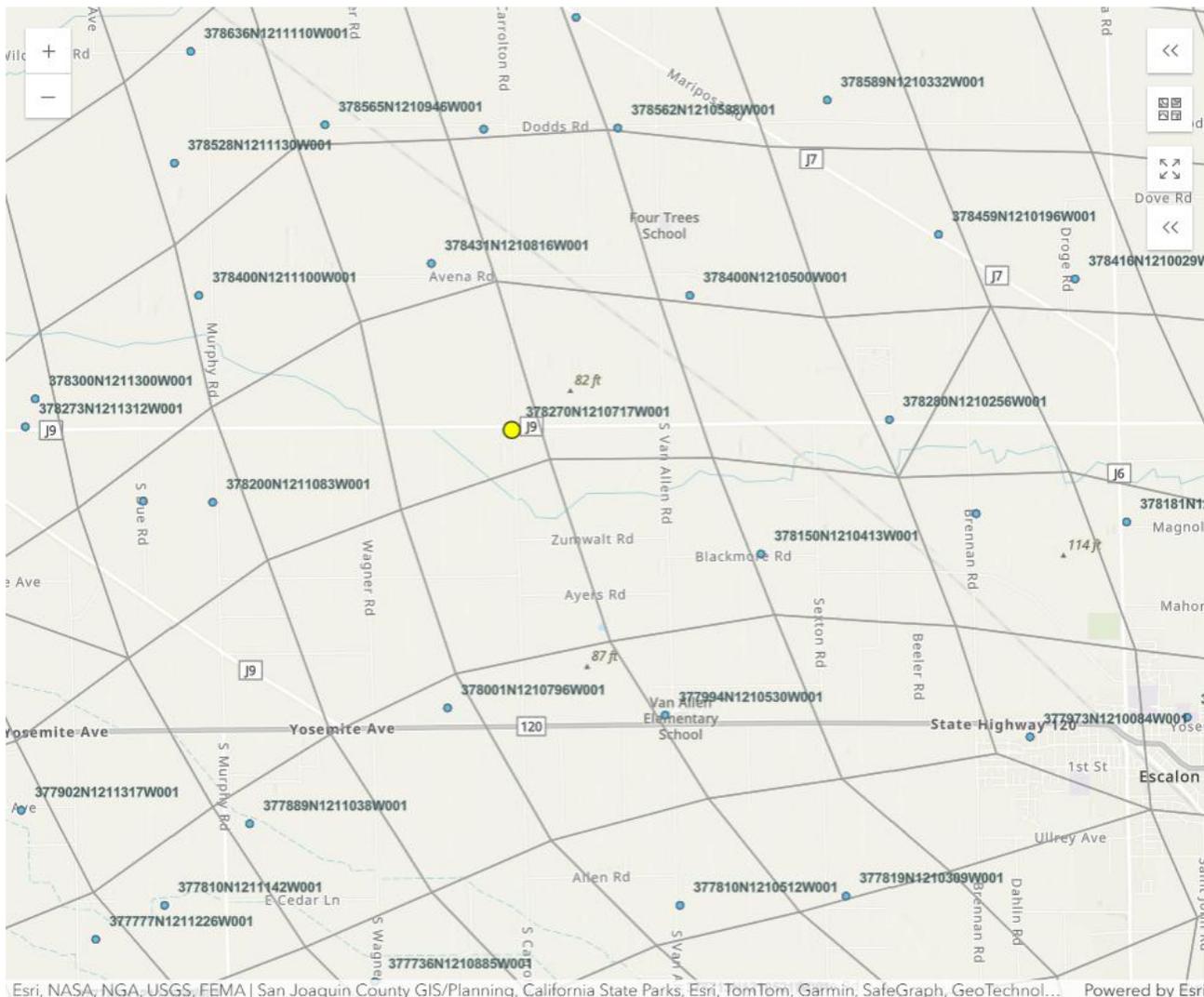


GIS Model
Data Layers

GIS Server



- SGMA
 - SGMA Portal
 - Technical Support
 - Grant Program
- Tutorial
- IWFM Version
- C2VSimFG Version
- Contact Us



Hydrographs Budgets Zone Budgets

Model:
C2VSimFG_v1.5

From Date:
10/31/1973_24:00

Hydrograph Type:
Groundwater hydrograph

To Date:
09/30/2021_24:00

Layer:
All

Length: Feet (FT)

Area: Acre (AC)

Volume: Acre-feet (AF)

Add to chart

Add observations

Output interval:
1MON

Retrieve Data

Simulated Groundwater Observation Well:

- 378270N1210717W001_Layer1
- 378270N1210717W001_Layer2
- 378270N1210717W001_Layer3
- 378270N1210717W001_Layer4

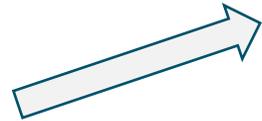
Remove all charts

Scale chart:

Ask For Budget Chart



Web browser



IWFM App



IWFM DLL

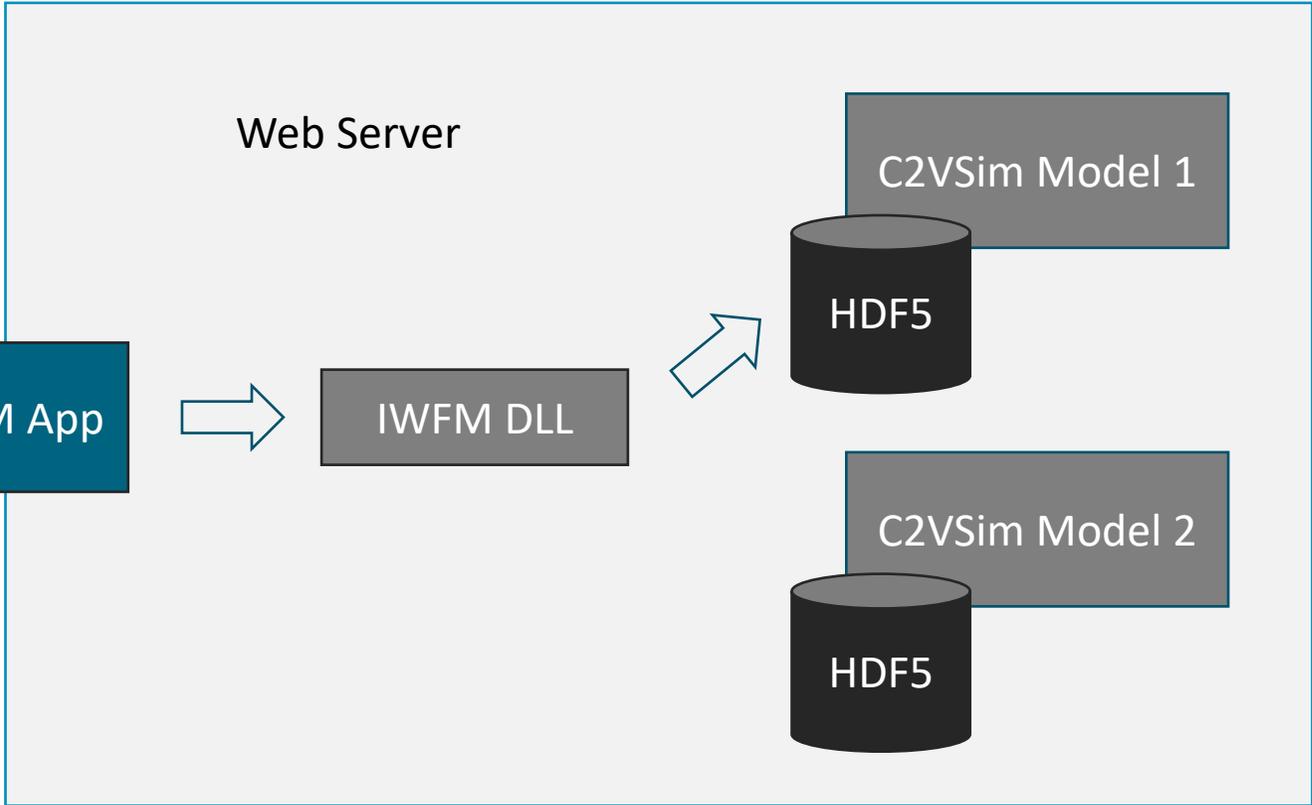


HDF5

C2VSim Model 1

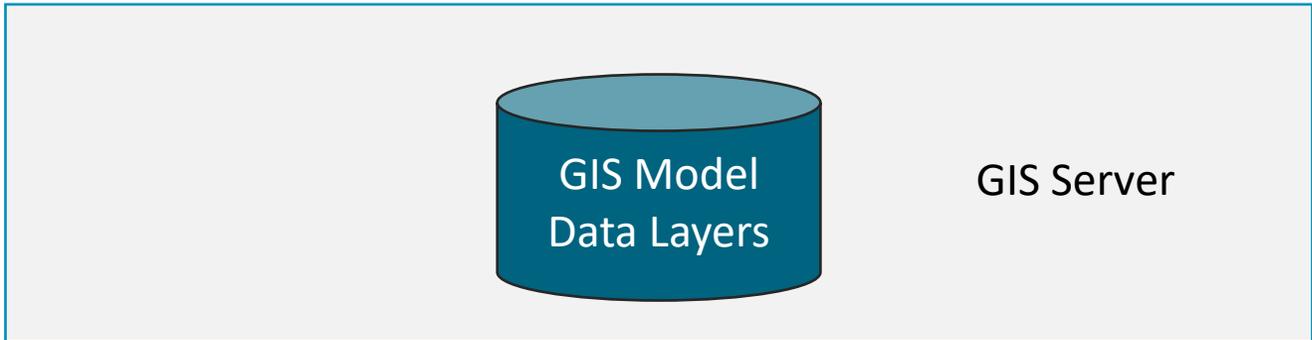
HDF5

C2VSim Model 2



GIS Model
Data Layers

GIS Server



Get Budget Chart Back



Web browser

IWFM App

Web Server

IWFM DLL

C2VSim Model 1

HDF5

C2VSim Model 2

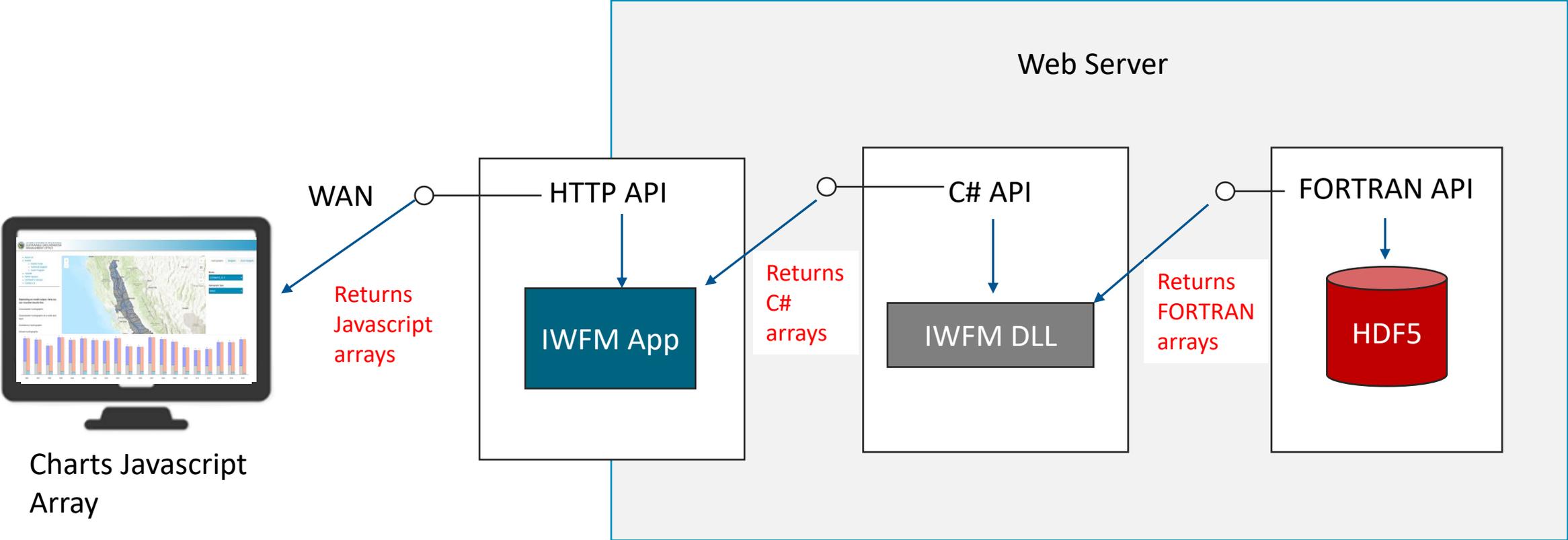
HDF5

GIS Model Data Layers

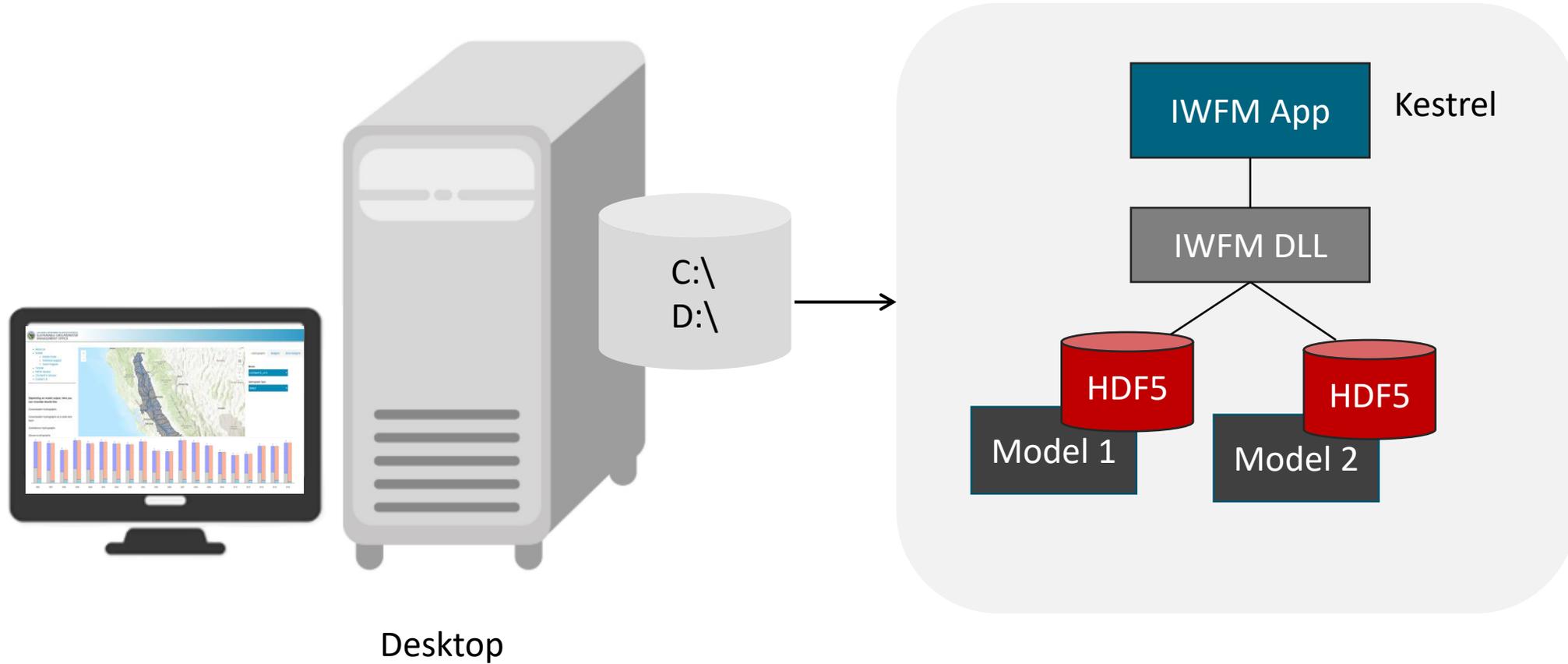
GIS Server



Receiving Results



Running On The Desktop - .Net Core



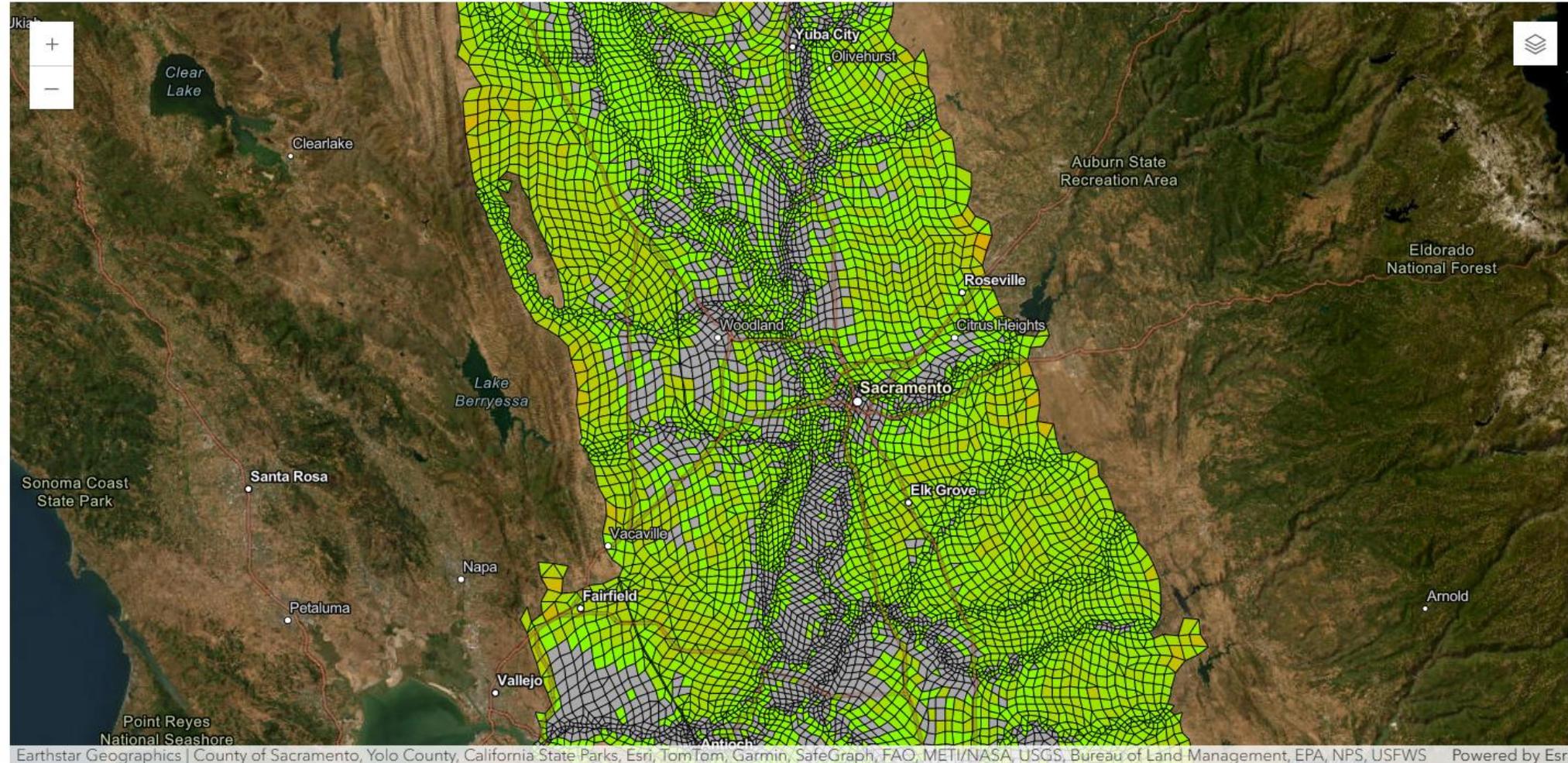


Land Use Areas

Item assignment complete

Model:

C2VSimFG_v1.5_07302024



LU Type:

NVRV

LU:

Native vegetation

Date:

10/31/1973_24:00

Retrieve Data

Opacity:





Date:

10/31/1973_24:00

Head Differences Between Models

All features acquired

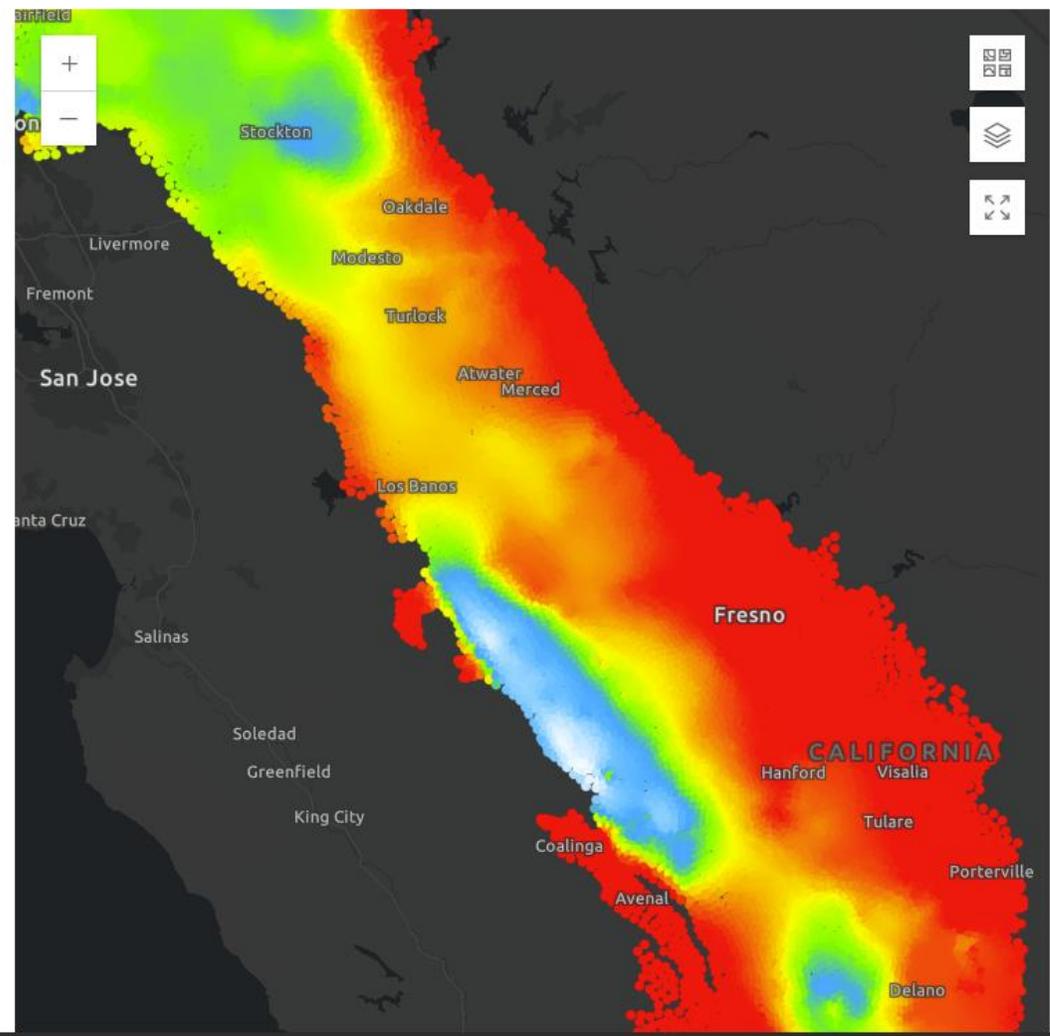
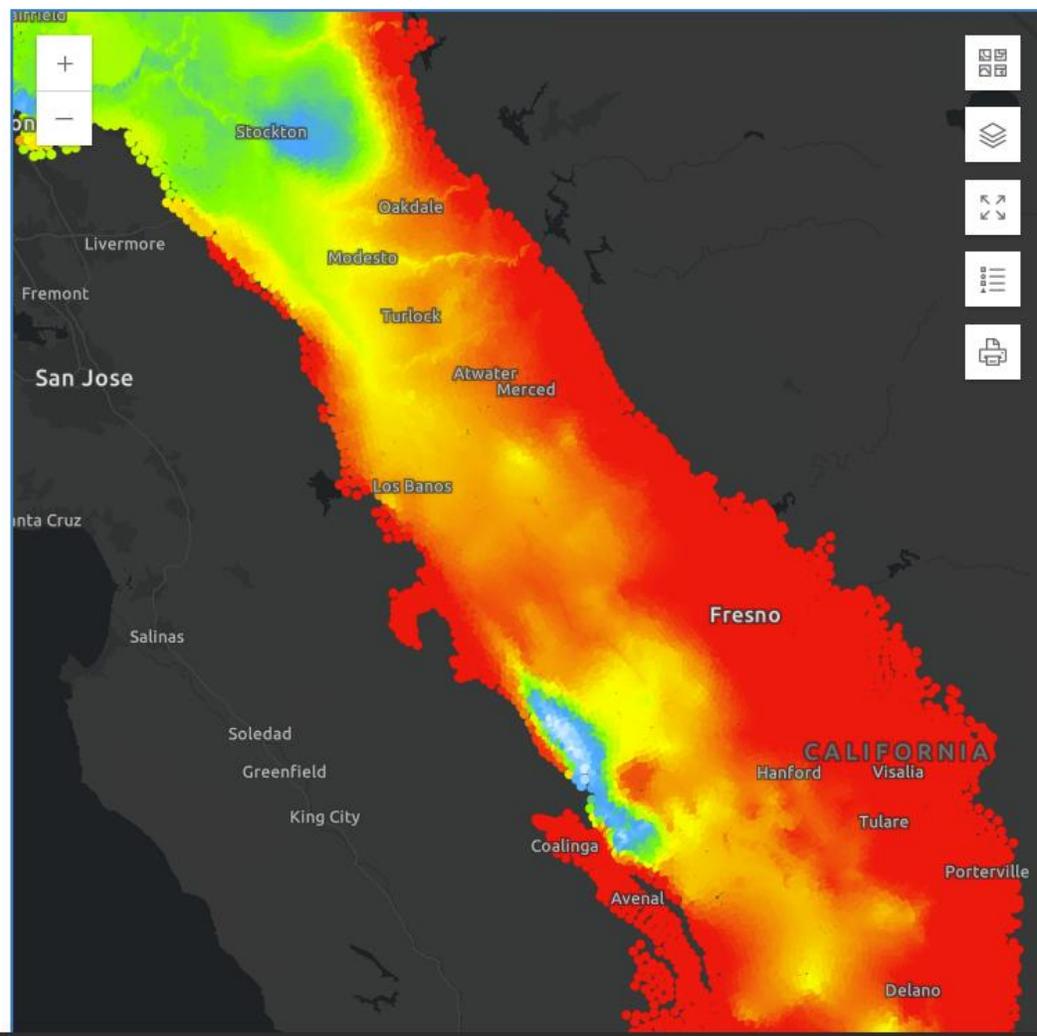
Model: C2VSimFG_v1.5_07302024 Layer: Layer 1 Update Map

Labels
 Contours

Model: C2VSimFG_v1.5_07302024 Layer: Layer 4 Update Map

Labels
 Contours

Compare Models



Base Contour:

Contour Interval:

Upper limit:

Regenerate Contours

Contour Color:

Line Weight:



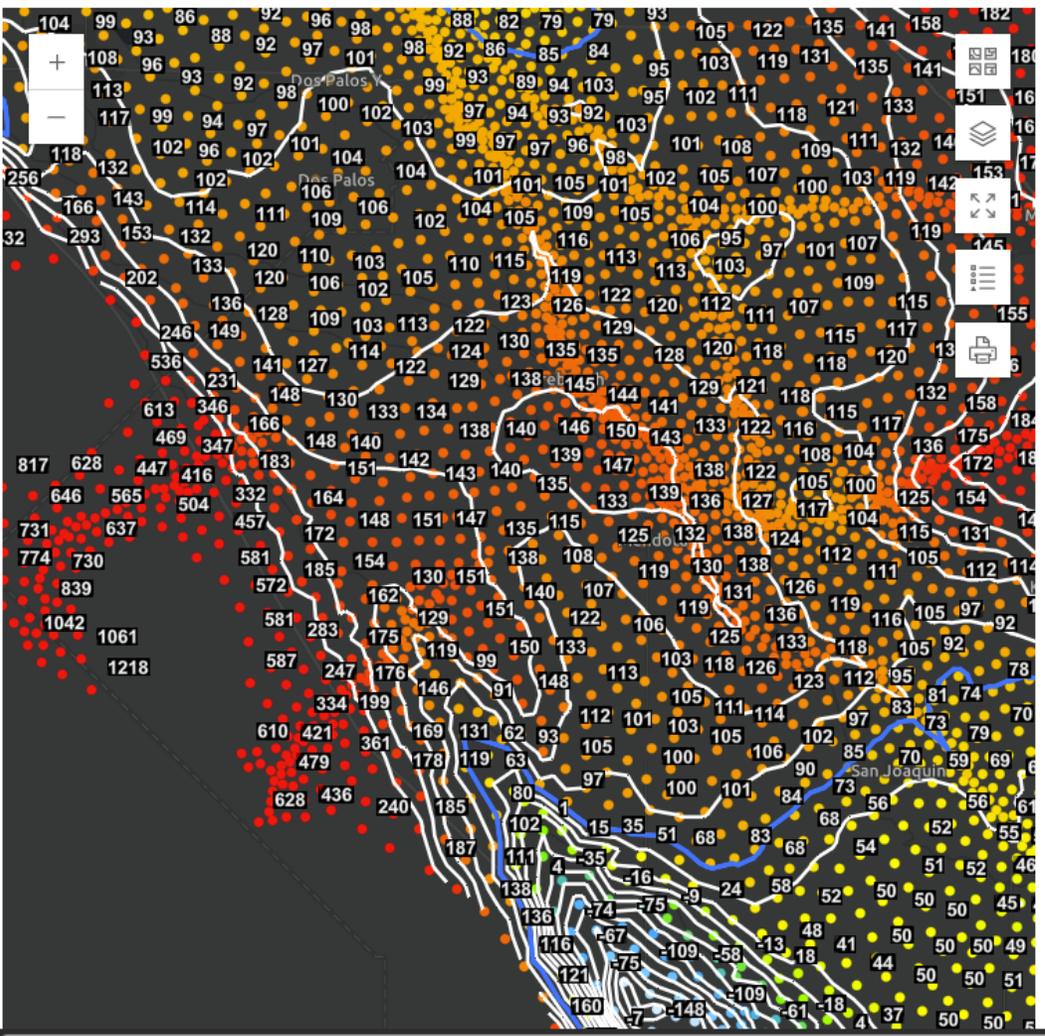
Date:
10/31/1973_24:00

Head Differences Between Models

All features acquired

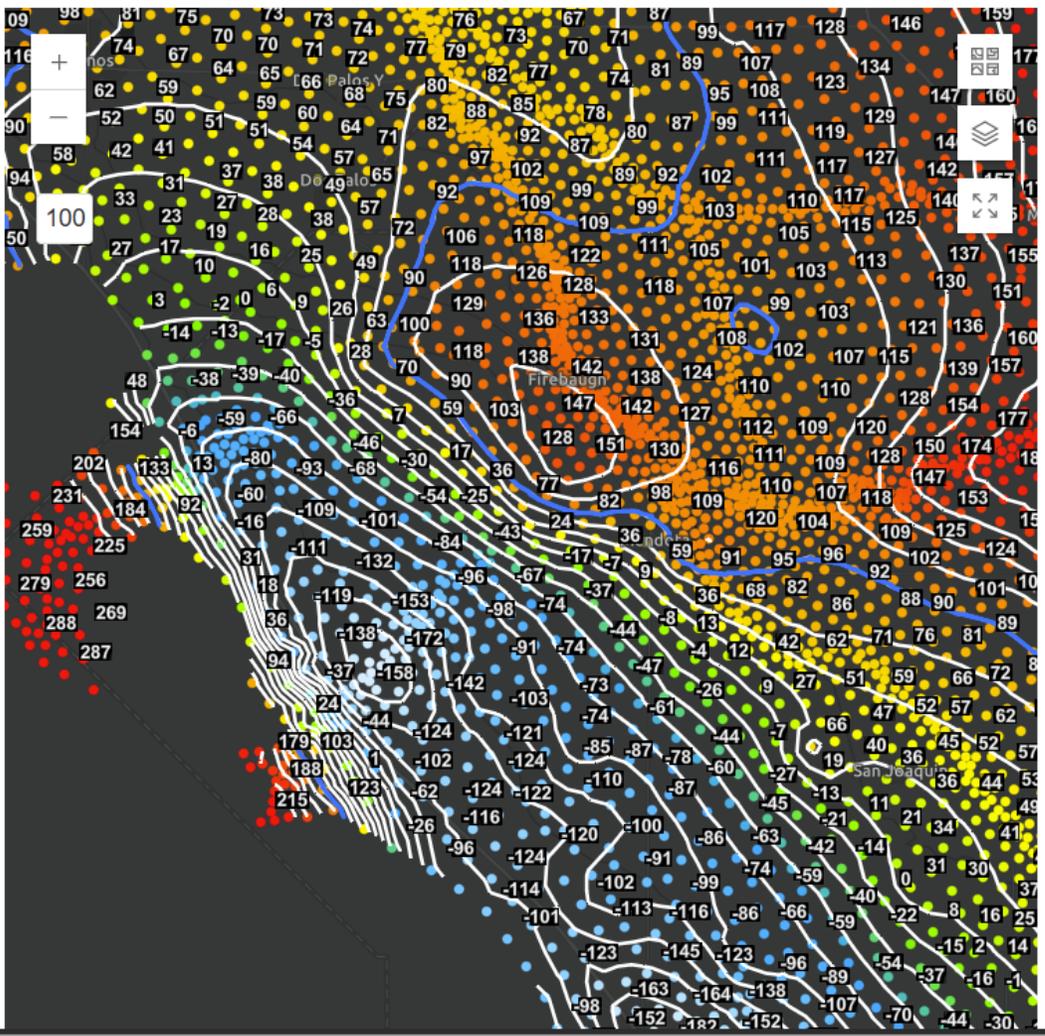
Model: C2VSimFG_v1.5_07302024
Layer: Layer 1
80
Update Map

- Labels
- Contours



Model: C2VSimFG_v1.5_07302024
Layer: Layer 4
Update Map

- Labels
- Contours



Compare Models

Base Contour:

Contour Interval:

Upper limit:

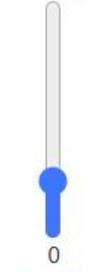
Regenerate Contours

Contour Color:

Line Weight:

Positive

1295.20



0

291.42

Negative

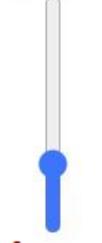
-135.50



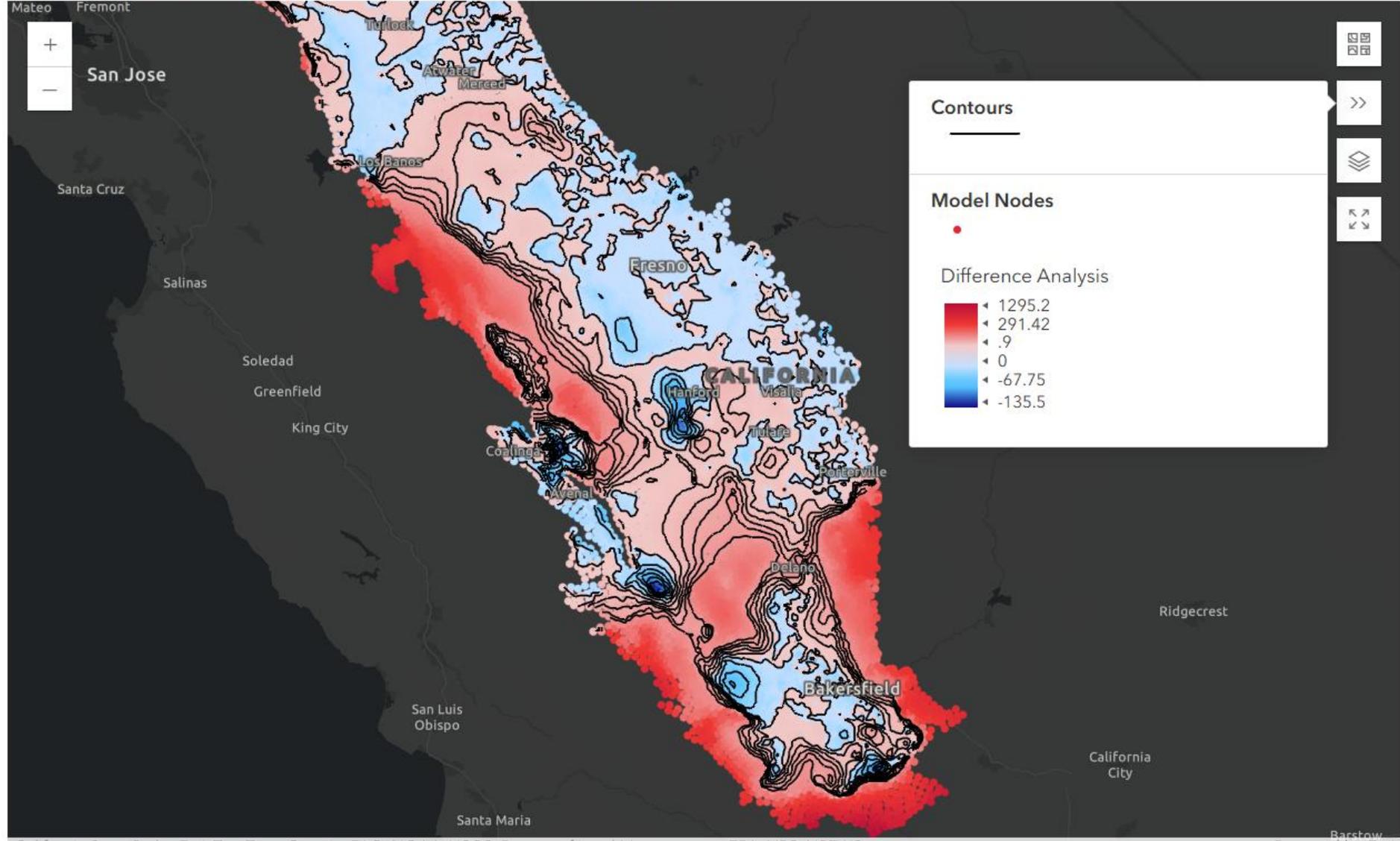
0

-67.75

Size:



C2VSimFG_v1.5_07302024 | Layer 1 - C2VSimFG_v1.5_07302024 | Layer 4



Contours

Model Nodes

Difference Analysis

- 1295.2
- 291.42
- .9
- 0
- 67.75
- 135.5

- Labels
- Contours
- Contour highlights

Base Contour:

Contour Interval:

Upper limit:

[Regenerate Contours](#)

Contour Color:

Line Weight:

Next Steps

- Public Release version 1.0
 - Using the most updated C2VSimFG v1.5
 - Using the most updated IWFM DLL - 2025
 - Public release: Spring / Summer 2025
- Version 1.5
 - Incorporating model comparisons tools



Acknowledgements:



- Tom Heinzer
- Can Dogrul
- Lan Liang
- Guobiao Huang
- Craig Altare
- Uditha Bandara
- Tyler Hatch
- DWR/SGMO Reviewers





Thank You! Questions?

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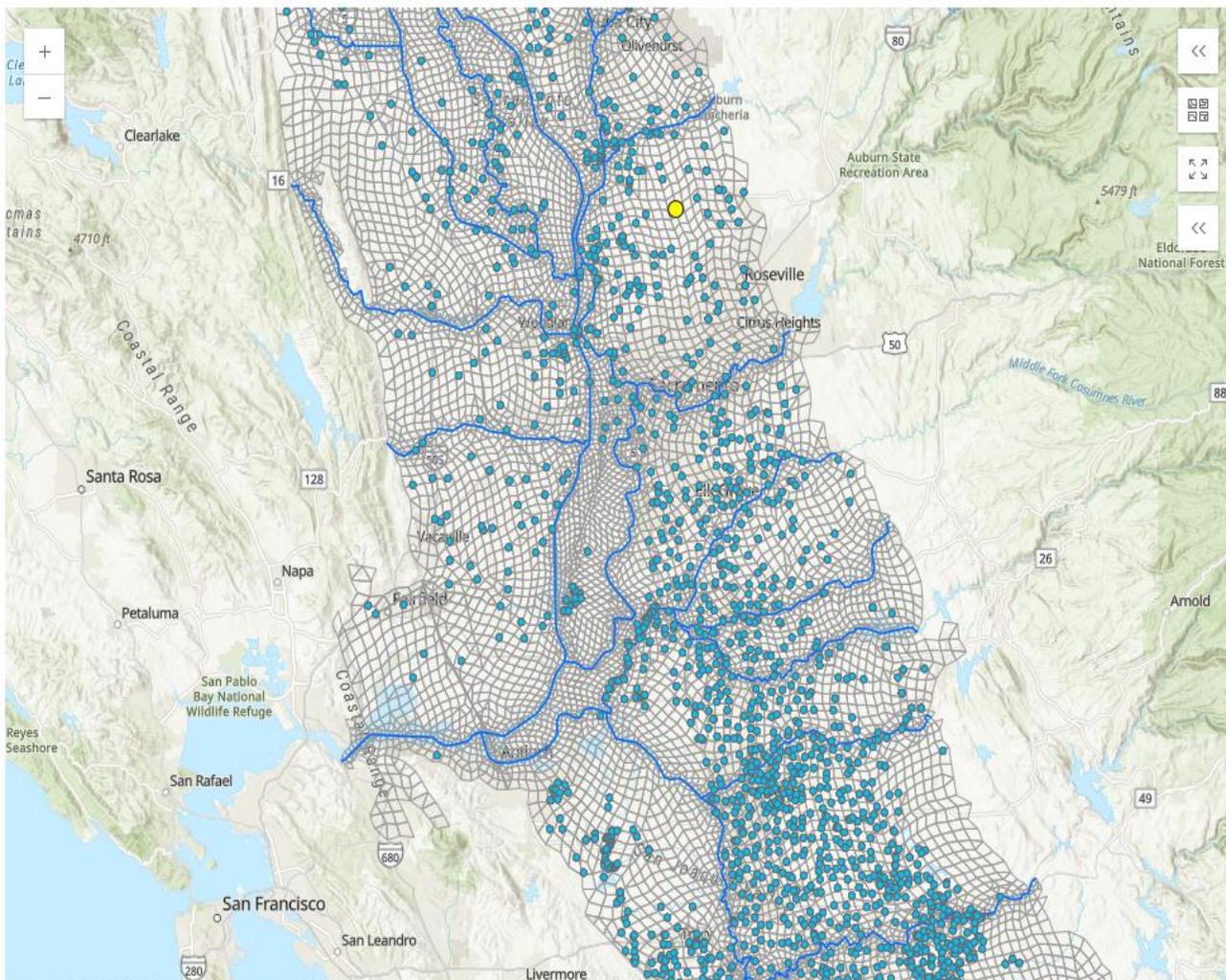




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Simulated Groundwater Observation Well:

- 388674N1214243W001_Layer1
- 388674N1214243W001_Layer2
- 388674N1214243W001_Layer3
- 388674N1214243W001_Layer4



Esri, CGIAR, USGS | County of Sacramento, Yolo County, California State Parks, Esri, TomTom, Garmin, SafeGraph, FAO, METI/NASA, USGS, Bureau of Land Ma... Powered by Esri

Hydrographs
Budgets
Zone Budgets

Model:
C2VSimFG_v1.5

Hydrograph Type:
Groundwater hydrograph

Layer:
All

Add observations

Retrieve Data

From Date:
10/31/1973_24:00

To Date:
09/30/2021_24:00

Length: Feet (FT)

Area: Acre (AC)

Volume: Acre-feet (AF)

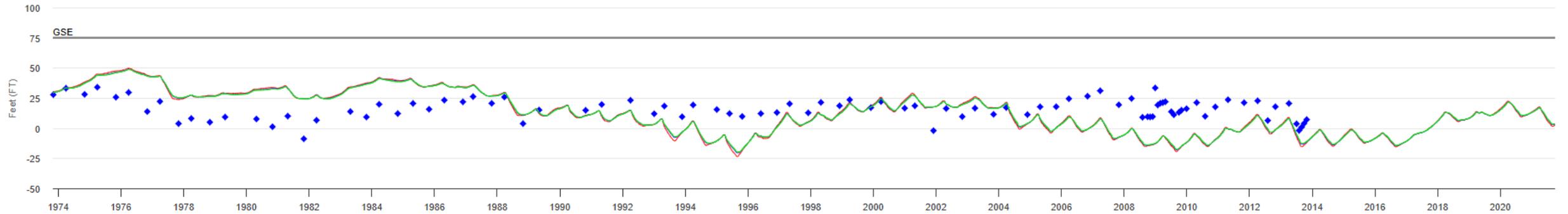
Output interval:
1MON

Groundwater Hydrograph (version 1.5)

[Go to top](#) | [Remove this chart](#)

[View all model layers](#)

Groundwater hydrograph | Well 388674N1214243W001 | Layer All



Click to turn on/off.

C2VSimFG_v1.5 | 388674N1214243W001_Layer1 C2VSimFG_v1.5 | 388674N1214243W001_Layer2 C2VSimFG_v1.5 | 388674N1214243W001_Layer3 C2VSimFG_v1.5 | 388674N1214243W001_Layer4 Ground Surface Elevation Observations

Highcharts.com

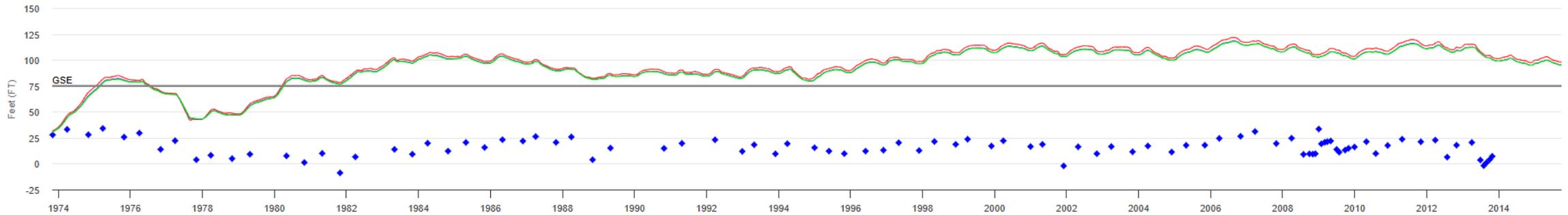
[Turn all series off](#) | [Turn all series on](#)

Groundwater Hydrograph (version 1.01)

[Go to top](#) | [Remove this chart](#)

[View all model layers](#)

Groundwater hydrograph | Well 388674N1214243W001 | Layer All



Click to turn on/off:

C2VSimFG_v1.01_IWFM1585 | 388674N1214243W001_Layer1 C2VSimFG_v1.01_IWFM1585 | 388674N1214243W001_Layer2 C2VSimFG_v1.01_IWFM1585 | 388674N1214243W001_Layer3 C2VSimFG_v1.01_IWFM1585 | 388674N1214243W001_Layer4 Ground Surface Elevation Observations

Highcharts.com

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Esri, USGS | California State Parks, Esri, TomTom, Garmin, FAO, NOAA, USGS, Bureau of Land Management, EPA, NPS, USFWS | Department of Water Resour... Powered by Esri

- Hydrographs
- Budgets
- Zone Budgets
- Comparisons

Model:

C2VSimFG_v1.5

Hydrograph Type:

Groundwater hydrograph at node

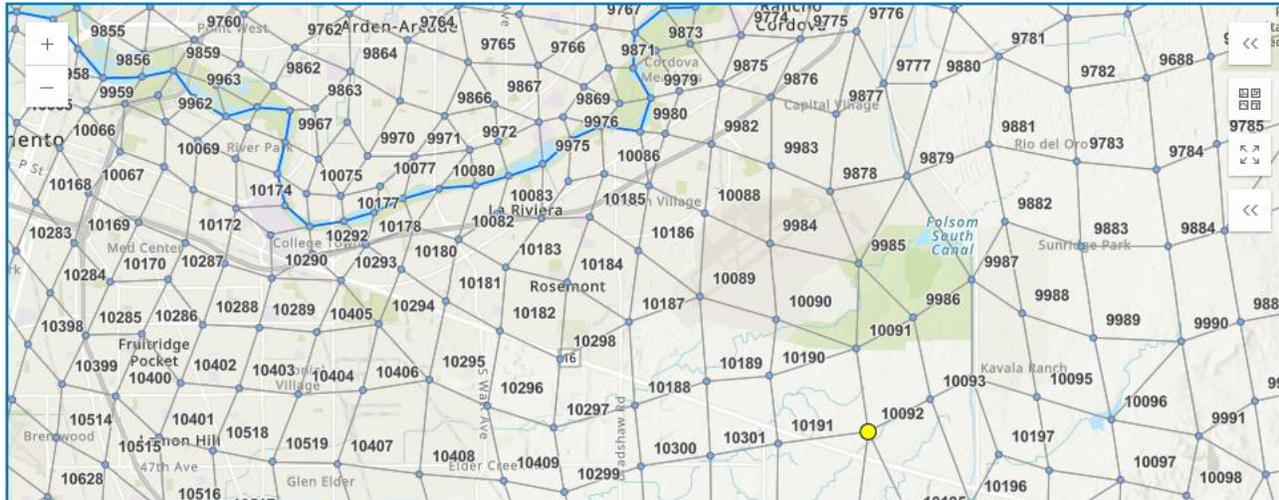
Select model node
Zoom-in to view labels

Remove all charts

Scale chart:



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Hydrographs | Budgets | Zone Budgets | Comparisons

Model: **C2VSimFG_v1.5**

Hydrograph Type: **Groundwater hydrograph at node**

Layer: **Layer 1**

From Date: **10/31/1973_24:00**

To Date: **09/30/2021_24:00**

Length: **Feet (FT)**

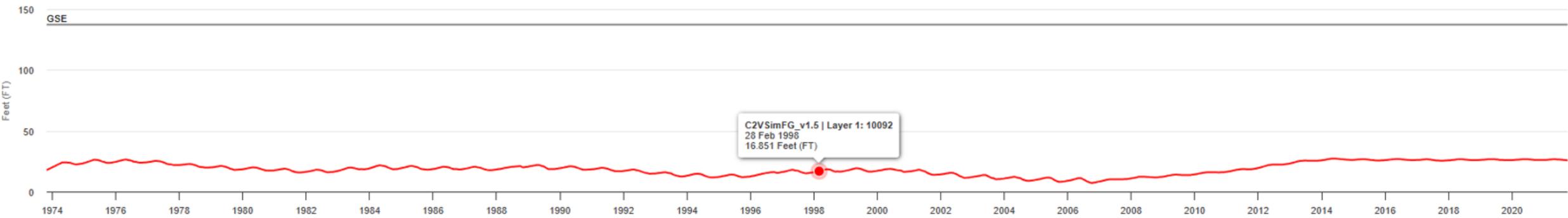
Area: **Acre (AC)**

Volume: **Acre-feet (AF)**

GW head node & layer
Node ID: 10092

[Go to top](#) | [Remove this chart](#)
 [View all model layers](#)

Groundwater hydrograph at node and layer | Node 10092 | Layer 1



Click to turn on/off:

— C2VSimFG_v1.5 | Layer 1: 10092 — Ground Surface Elevation

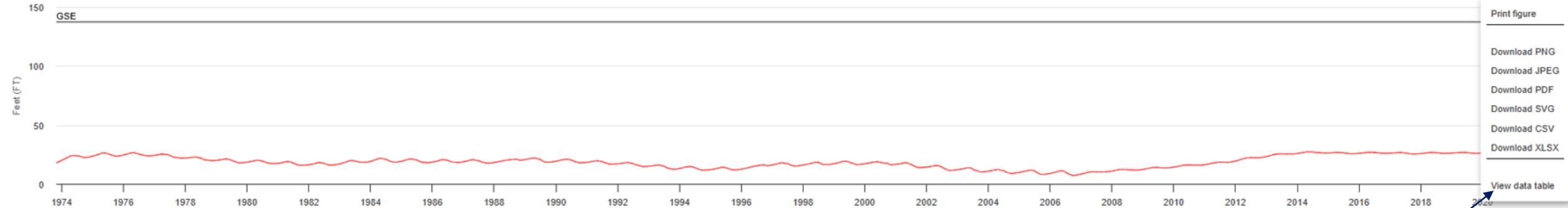
[Turn all series off](#) | [Turn all series on](#)

Print and Download Chart or View Data Table

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[View all model layers](#)

Groundwater hydrograph at node and layer | Node 10092 | Layer 1



[Click to turn on/off.](#)

— C2VSimFG_v1.5 | Layer 1: 10092 — Ground Surface Elevation

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- Print figure
- Download PNG
- Download JPEG
- Download PDF
- Download SVG
- Download CSV
- Download XLSX
- View data table

Groundwater hydrograph at node and layer Node 10092 Layer 1		
DateTime	C2VSimFG_v1.5 Layer 1: 10092	Ground Surface Elevation
1973-10-31 00:00:00	17.77	137.24999945580552
1973-11-30 00:00:00	18.81	137.24999945580552
1973-12-31 00:00:00	19.902	137.24999945580552
1974-01-31 00:00:00	20.975	137.24999945580552
1974-02-28 00:00:00	22.012	137.24999945580552
1974-03-31 00:00:00	23.022	137.24999945580552
1974-04-30 00:00:00	23.982	137.24999945580552
1974-05-31 00:00:00	24.057	137.24999945580552
1974-06-30 00:00:00	23.829	137.24999945580552
1974-07-31 00:00:00	23.602	137.24999945580552



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Model: C2VSimFG_v1.5

From Date: 10/31/1973_24:00

Hydrograph Type: Groundwater hydrograph at node

To Date: 09/30/2021_24:00

Layer: Layer 1

Length: Feet (FT)

Area: Acre (AC)

Volume: Acre-feet (AF)

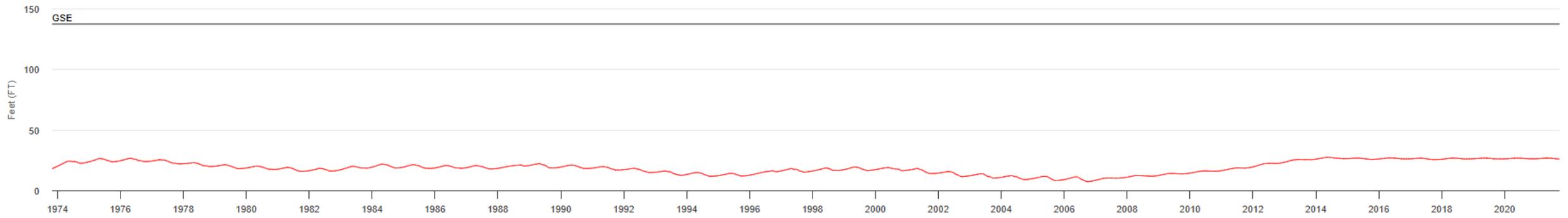
Output interval: 1MON

Retrieve Data

GW head node & layer
Node ID: 10092

Go to top | Remove this chart
View all model layers

Groundwater hydrograph at node and layer | Node 10092 | Layer 1



Click to turn on/off:

C2VSimFG_v1.5 | Layer 1: 10092 Ground Surface Elevation

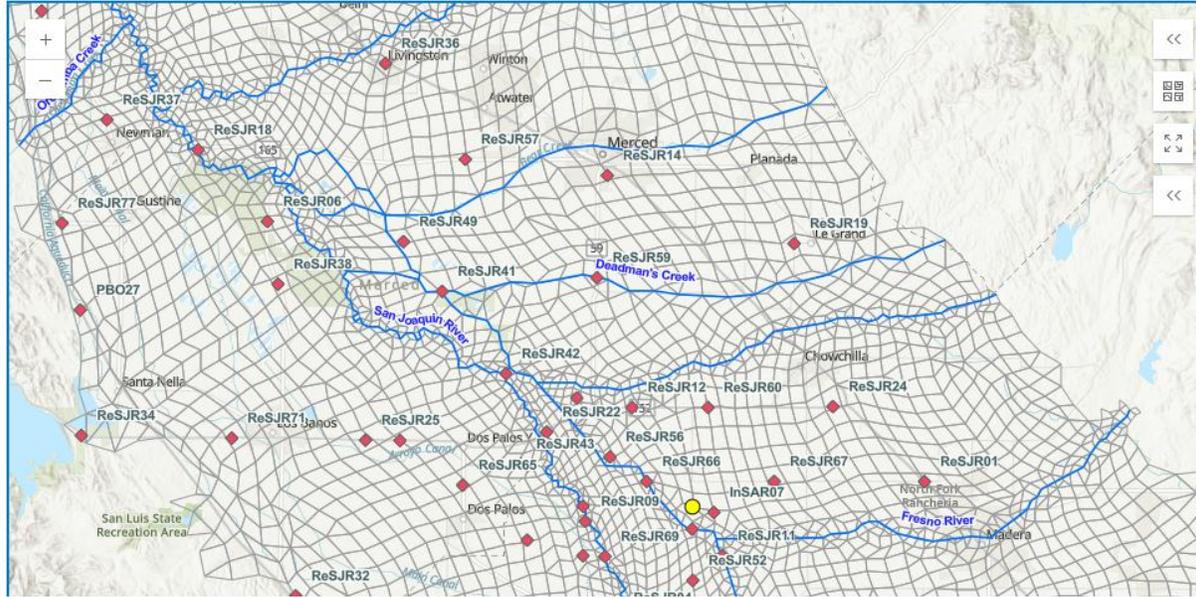
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Name: ReSJR55_Layer1
Subsidence ID: 87

Name: ReSJR55_Layer2
Subsidence ID: 239

Name: ReSJR55_Layer3
Subsidence ID: 391

Name: ReSJR55_Layer4
Subsidence ID: 543



Hydrographs | Budgets | Zone Budgets | Comparisons

Model: C2VSimFG_v1.5

From Date: 10/31/1973_24:00

Hydrograph Type: Subsidence hydrograph

To Date: 09/30/2021_24:00

Length: Feet (FT)

Area: Acre (AC)

Volume: Acre-feet (AF)

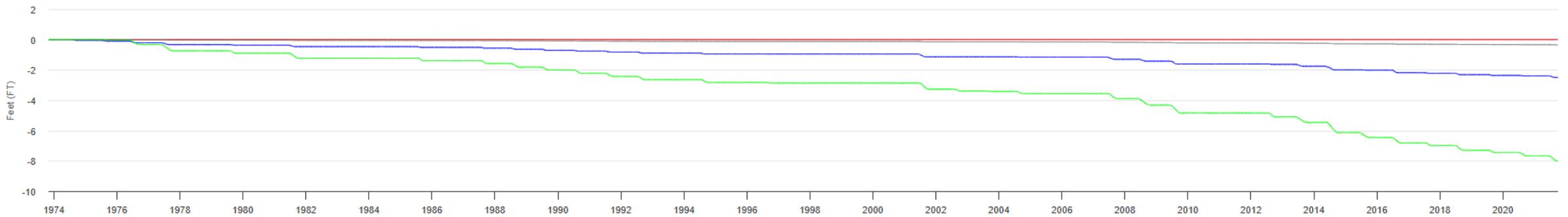
Output interval: 1MON

Add to chart

Retrieve Data

Go to top | Remove this chart

Subsidence | Feature IDs: 87,239,391,543



Click to turn on/off.

— C2VSimFG_v1.5 | ReSJR55_Layer1 — C2VSimFG_v1.5 | ReSJR55_Layer2 — C2VSimFG_v1.5 | ReSJR55_Layer3 — C2VSimFG_v1.5 | ReSJR55_Layer4

Turn all series off | Turn all series on

Budgets

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Depending on model output, here you can visualize subregion based results like:

- Groundwater budgets
- Stream node budgets
- Stream reach budgets
- Land and water use budgets
- Root zone budgets
- Unsaturation zone budgets
- Small watershed budgets



Hydrographs Budgets Zone Budgets Comparisons

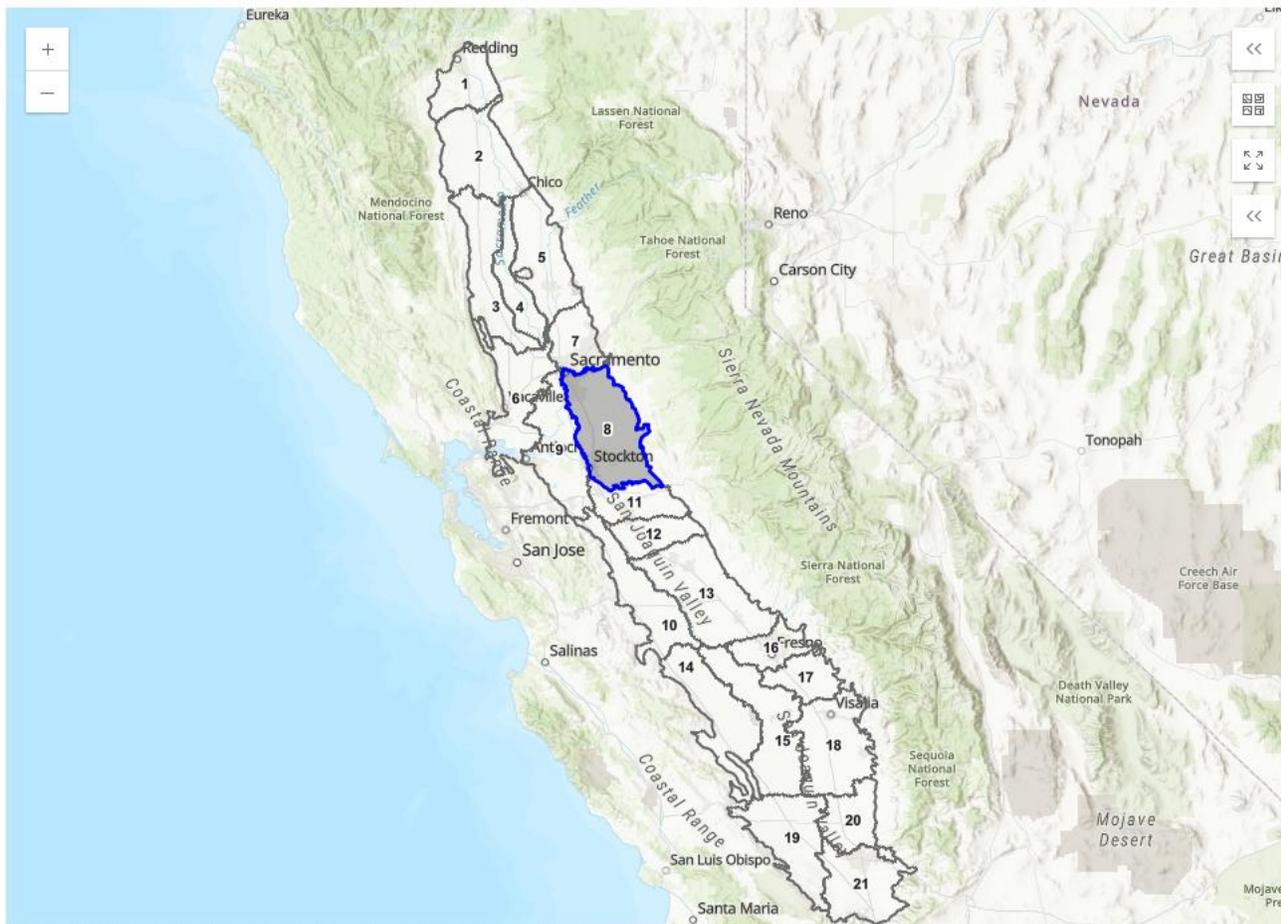
Model:
C2VSimFG_v1.5

- Budget Type:
- Select
 - Select
 - Groundwater budget
 - Stream node budget
 - Stream reach budget
 - Land and water use budget
 - Root zone budget
 - Unsaturation zone budget
 - Small watershed budget

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Subregion: 8



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- Hydrographs
- Budgets
- Zone Budgets
- Comparisons

Model:

C2VSimFG_v1.5

From Date:

10/31/1973_24:00

Budget Type:

Groundwater budget

To Date:

09/30/2021_24:00

- Average Monthly Flows
- Annual Flows
- Time Series Chart

Length: Feet (FT)

Area: Acre (AC)

Volume: Acre-feet (AF)

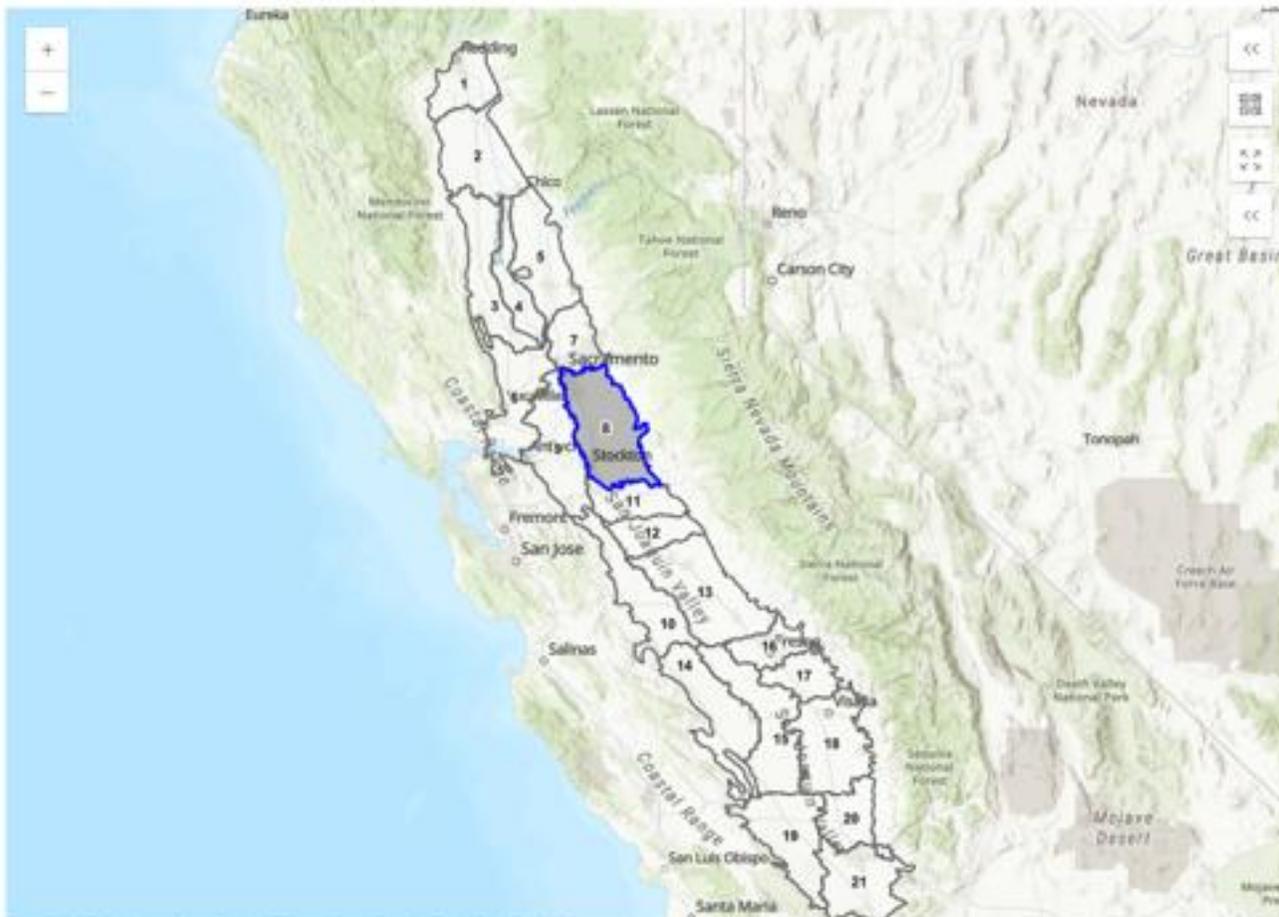
Remove all charts

Scale chart:



Groundwater Budgets

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Hydrographs | Budgets | Zone Budgets | Comparisons

Model: C2VSimFG_v1.5

Budget Type: Groundwater budget

From Date: 10/31/1973_24:00

To Date: 09/30/2021_24:00

Average Monthly Flows

Annual Flows

Time Series Chart

Water Year

Calendar Year

Length: Feet (FT)

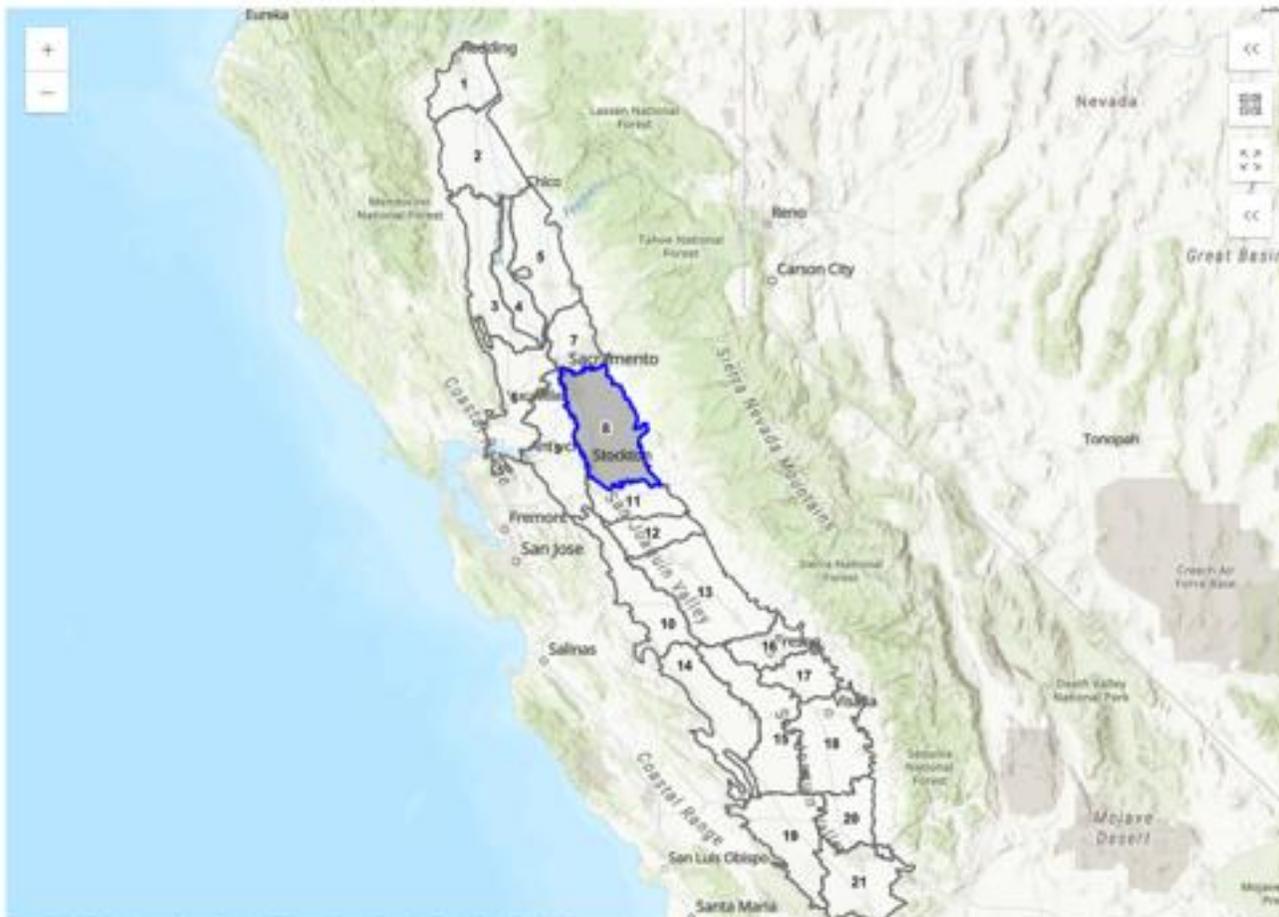
Area: Acre (AC)

Volume: Acre-feet (AF)

Retrieve Data

Groundwater Budgets

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Hydrographs Budgets Zone Budgets Comparisons

Model:
C2VSimFG_v1.5

From Date:
10/31/1973_24:00

Budget Type:
Groundwater budget

To Date:
09/30/2021_24:00

- Average Monthly Flows
- Annual Flows
- Time Series Chart
- Water Year
- Calendar Year

Length: Feet (FT)

Area: Acre (AC)

Volume: Acre-feet (AF)

Retrieve Data

Remove all charts

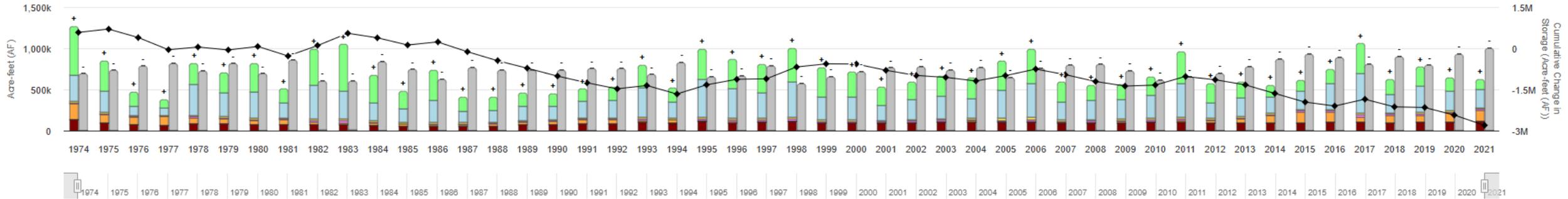
Scale chart:

Groundwater Budgets

[Go to top](#) | [Remove this chart](#)

C2VSimFG_v1.5 | Groundwater budget | Subregion 8

Click and drag in the plot area to zoom in



Click to turn on/off:

- Change-in-Storage
- Deep Percolation
- Gain from Stream
- Recharge
- Boundary Inflow
- Subsidence
- Tile Drain Outflow
- Pumping
- Outflow to Root Zone
- Net Subsurface Inflow
- Cumulative Change In Storage

[Turn all series off](#) | [Turn all series on](#)

All zero: Gain from Lake, Subsurface Irrigation

Stream Budget



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Stream node: 4202



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- Hydrographs
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- Zone Budgets
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Model:

C2VSimFG_v1.5

Budget Type:

Stream node budget

Select a stream node

Remove all charts

Scale chart:

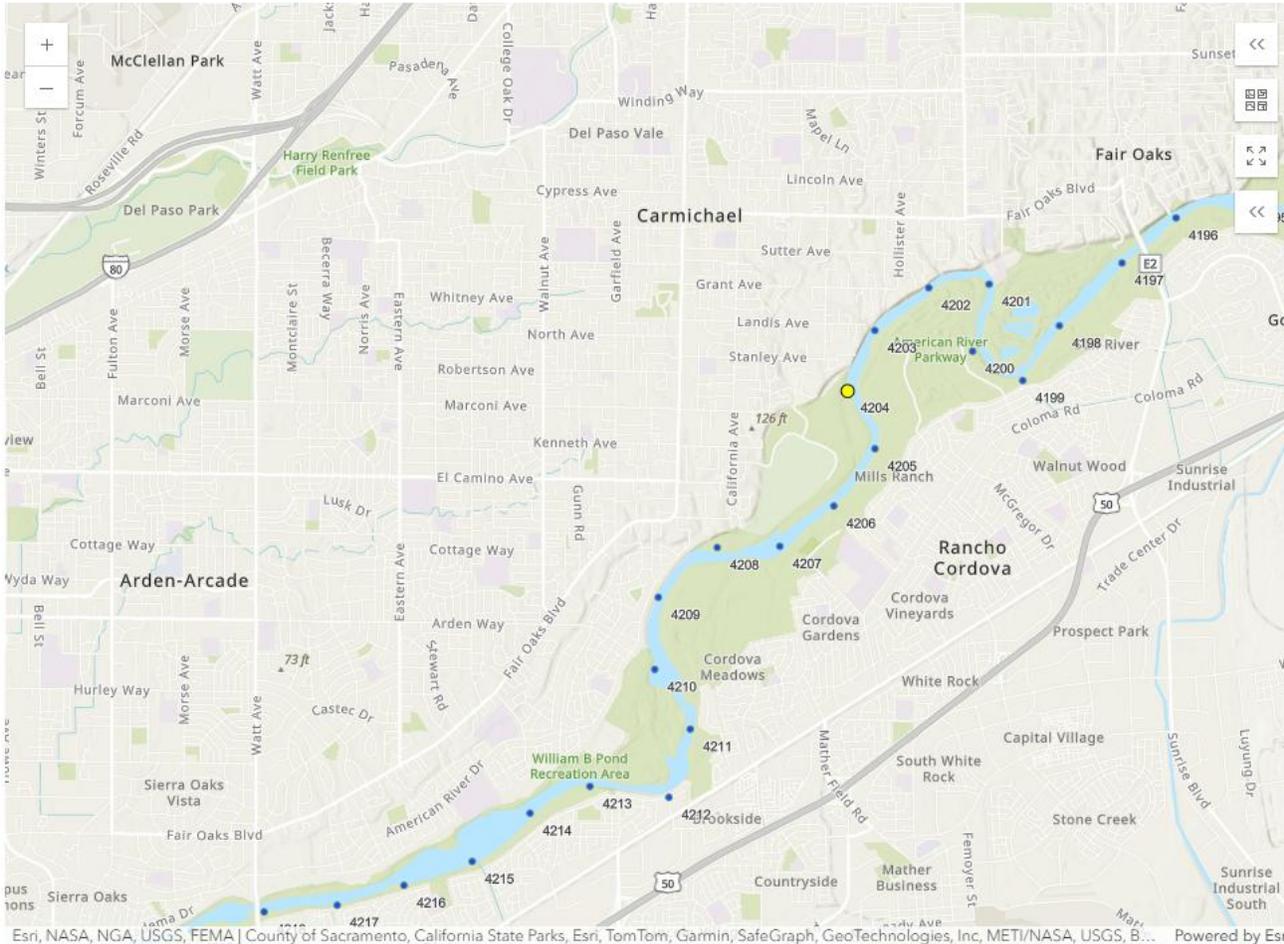


Stream Budget



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Hydrographs | Budgets | Zone Budgets | Comparisons

Model: C2VSimFG_v1.5

Budget Type: Stream node budget

From Date: 10/31/1973_24:00

To Date: 09/30/2021_24:00

Length: Feet (FT)

Area: Acre (AC)

Volume: Acre-feet (AF)

Average Monthly Flows

Annual Flows

Time Series Chart

Water Year

Calendar Year

Retrieve Data

Remove all charts | Scale chart:

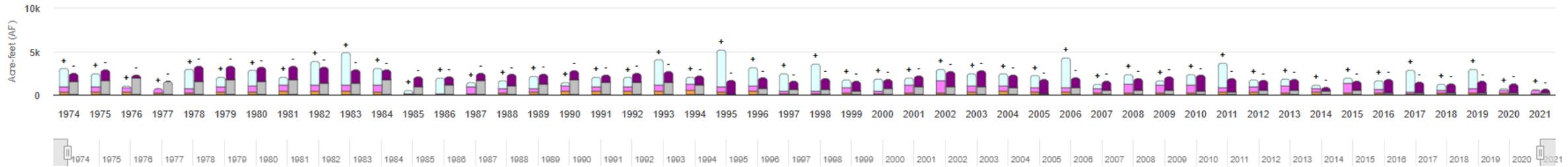
Stream node: 4204

Stream Budget

[Go to top](#) | [Remove this chart](#)

C2VSimFG_v1.5 | Stream node budget | Stream node ID: 3938

Click and drag in the plot area to zoom in



*Upstream and downstream flows are turned off by default.
Click to turn on/off.*

● Upstream Inflow ● Downstream Outflow ● Runoff ● Return Flow ● Pond Drain ● Gain from GW ● Riparian ET

[Turn all series off](#) | [Turn all series on](#)

All zero: Tributary Inflow, Tile Drain, Gain from Lake, Surface Evaporation, Diversion, Bypass Flow

Stream Reach Budget

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Stream node: 3469



- Hydrographs
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Model:

C2VSimFG_v1.5

Budget Type:

Stream reach budget

Select a stream reach

Remove all charts

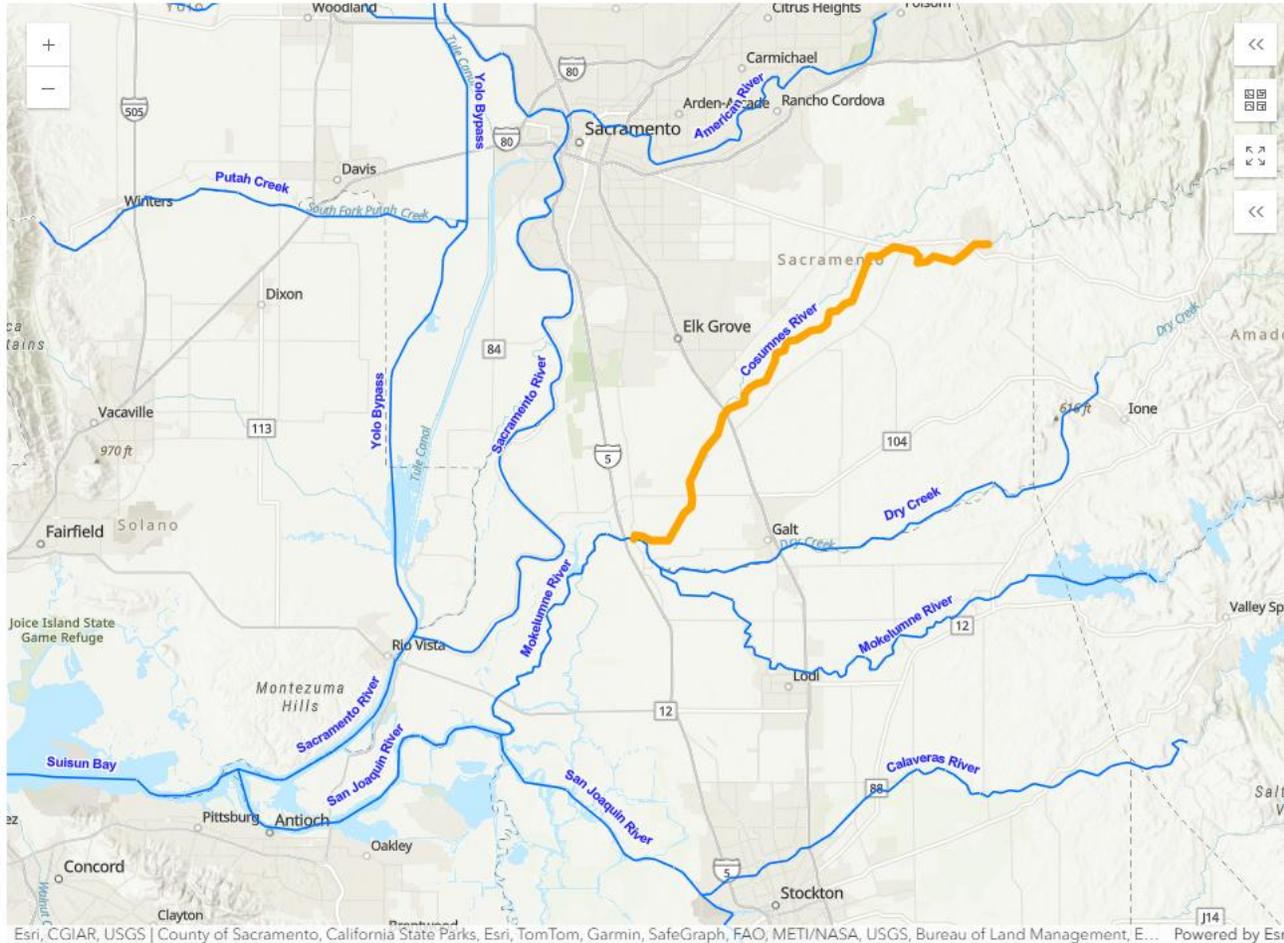
Scale chart:



Stream Reach Budget

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Stream reach: 51
Stream name: Cosumnes River



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- Hydrographs
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Model:

C2VSimFG_v1.5

From Date:

10/31/1973_24:00

Budget Type:

Stream reach budget

To Date:

09/30/2021_24:00

Average Monthly Flows

Annual Flows

Time Series Chart

Water Year

Calendar Year

Length: Feet (FT)

Area: Acre (AC)

Volume: Acre-feet (AF)

Retrieve Data

Remove all charts

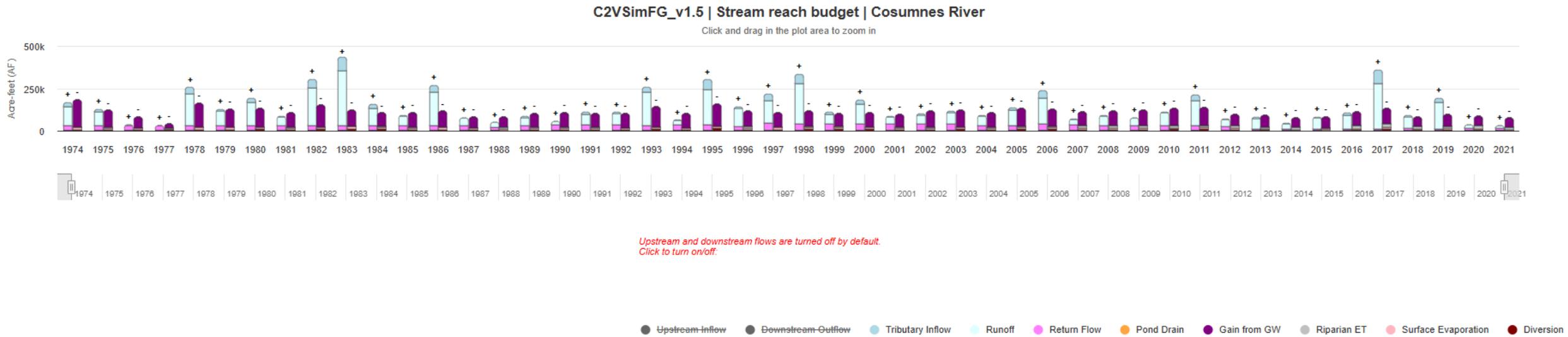
Scale chart:



Stream Reach Budget

- Upstream and downstream flows are turned off by default

[Go to top](#) | [Remove this chart](#)



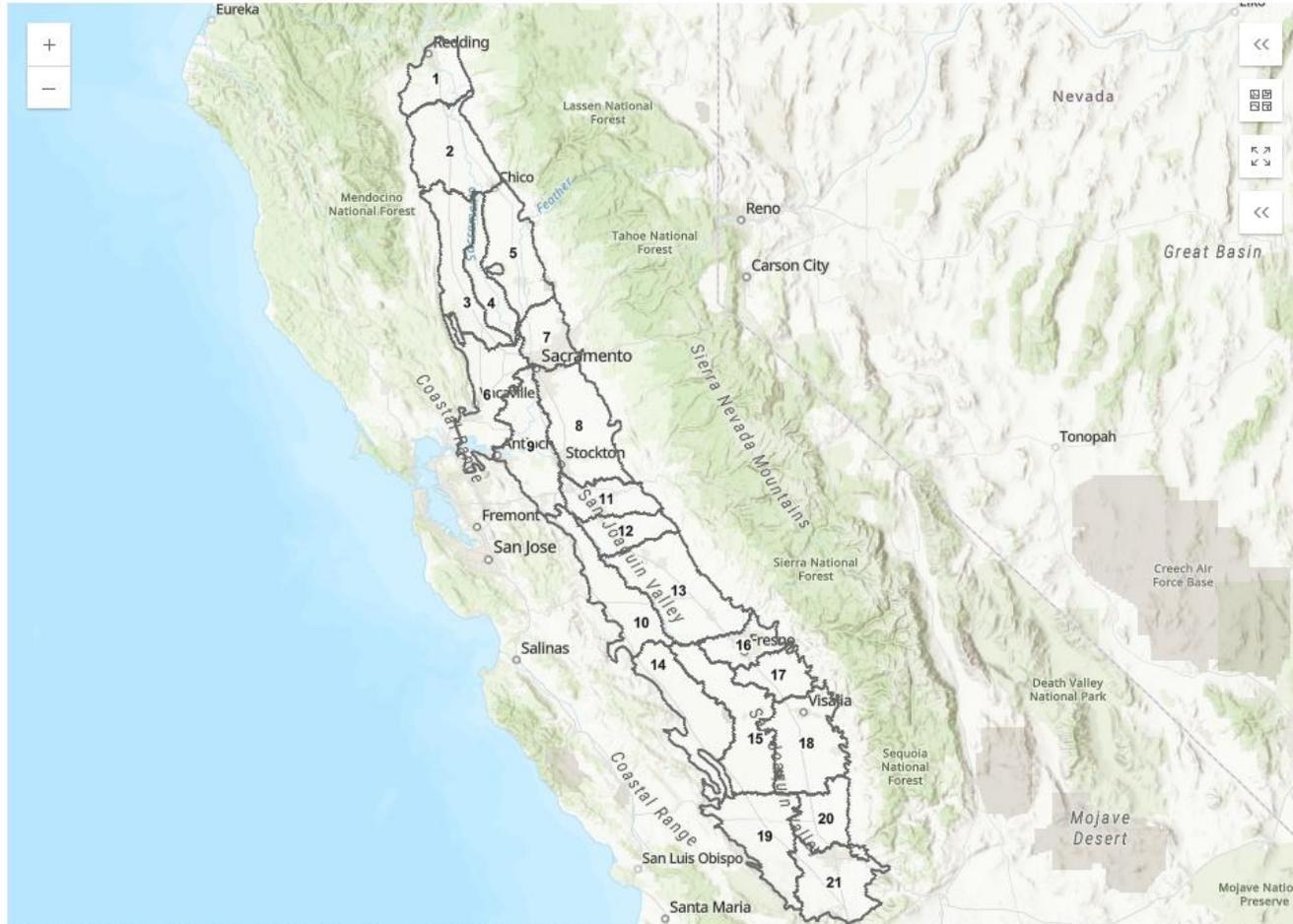
[Turn all series off](#) | [Turn all series on](#)

All zero: Tile Drain, Gain from Lake, Bypass Flow

Land and Water Use Budget

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Stream reach: 51
Stream name: Cosumnes River



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Hydrographs Budgets Zone Budgets Comparisons

Model:

C2VSimFG_v1.5

Budget Type:

Land and water use budget

Select a subregion

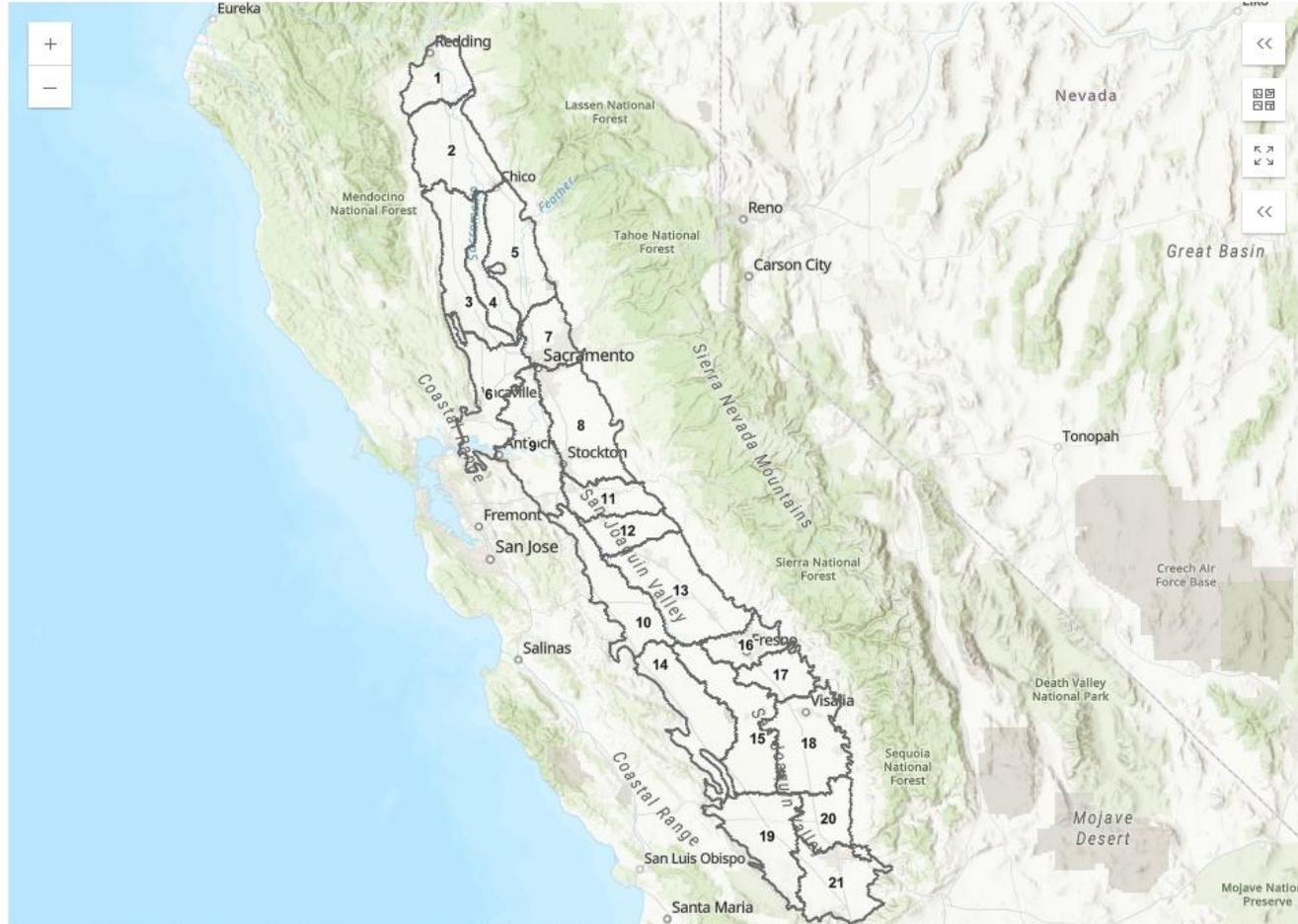
Remove all charts

Scale chart:



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Model:

C2VSimFG_v1.5

Budget Type:

Land and water use budget

Select a subregion

Remove all charts

Scale chart:

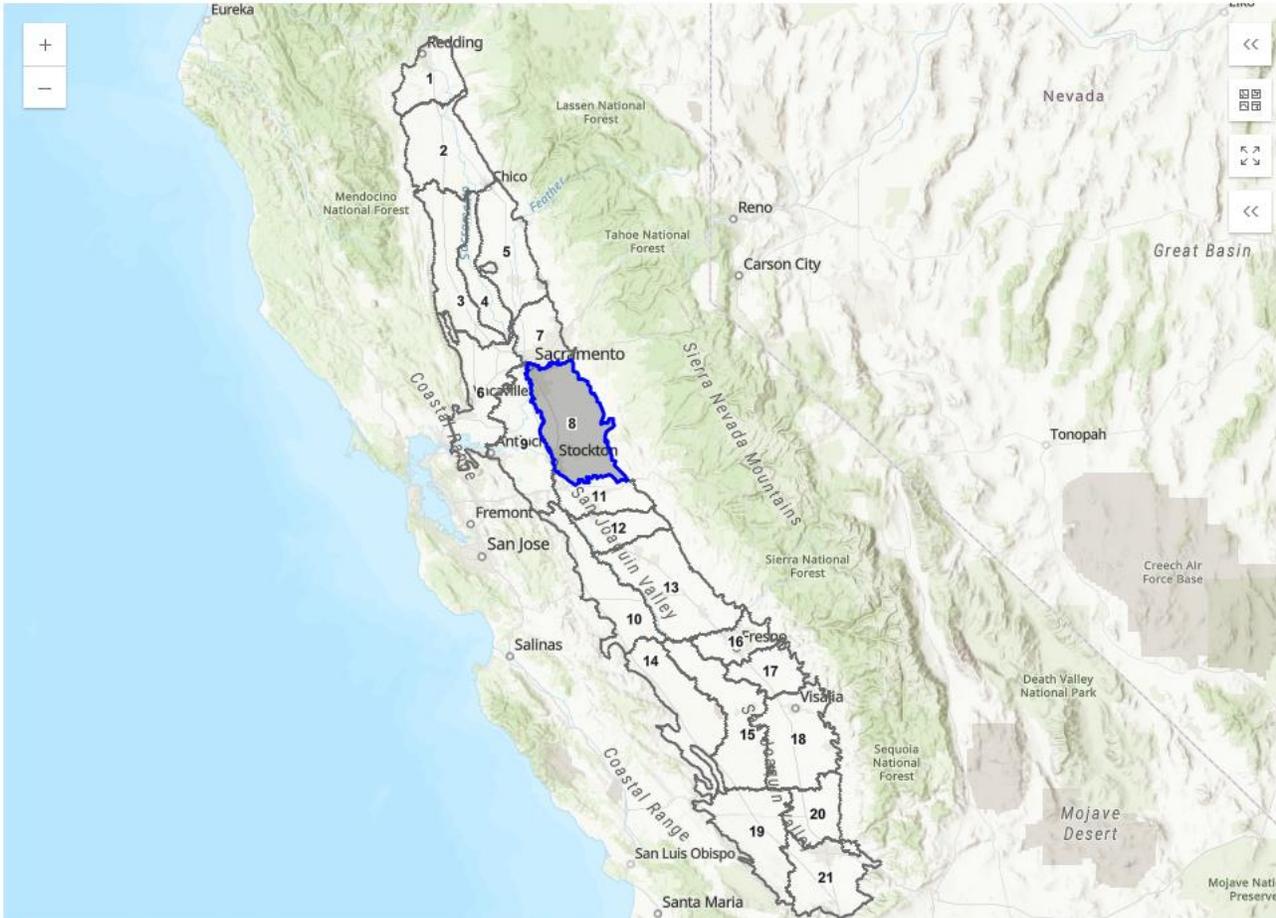


Land and Water Use Budget



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Hydrographs | Budgets | **Zone Budgets** | Comparisons

Model: C2VSimFG_v1.5

From Date: 10/31/1973_24:00

Budget Type: Land and water use budget

To Date: 09/30/2021_24:00

Average Monthly Flows

Annual Flows

Time Series Chart

Water Year

Calendar Year

Length: Feet (FT)

Area: Acre (AC)

Volume: Acre-feet (AF)

Land Use Type: Urban

Retrieve Data

Remove all charts | Scale chart:

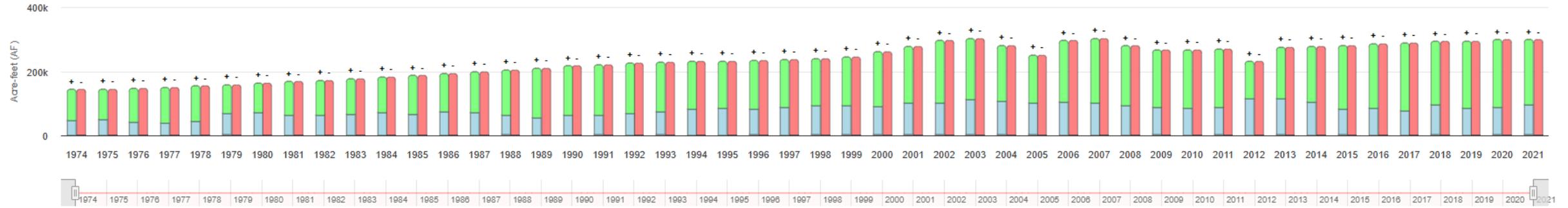
Subregion: 8

Land and Water Use Budget

[Go to top](#) | [Remove this chart](#)

C2VSimFG_v1.5 | Land and water use budget | Urban | Subregion 8 | Water Year

Click and drag in the plot area to zoom in



Click to turn on/off:

- Supply Requirement
- Pumping
- Deliveries
- Shortage

[Turn all series off](#) | [Turn all series on](#)

All zero: Inflow as Surface Runoff

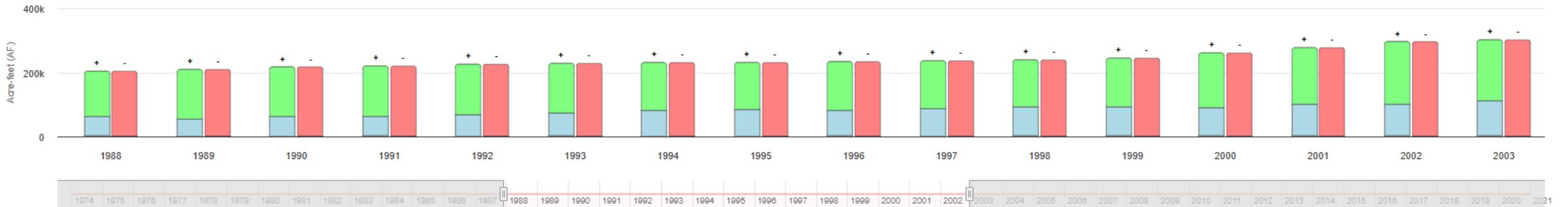
Land and Water Use Budget

- Zoom into the chart

[Go to top](#) | [Remove this chart](#)

C2VSimFG_v1.5 | Land and water use budget | Urban | Subregion 8 | Water Year

Click and drag in the plot area to zoom in



Click to turn on/off:

Supply Requirement Pumping Deliveries Shortage

[Turn all series off](#) | [Turn all series on](#)

All zero: Inflow as Surface Runoff

Root Zone Budget

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Subregion: 12



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Hydrographs Budgets Zone Budgets Comparisons

Model:
C2VSimFG_v1.5

From Date:
10/31/1973_24.00

Budget Type:
Root zone budget

To Date:
09/30/2021_24.00

- Average Monthly Flows
- Annual Flows
- Time Series Chart
- Water Year
- Calendar Year

Length:
Feet (FT)

Area:
Acre (AC)

Volume:
Acre-feet (AF)

- Land Use Type:
- Urban
 - Select
 - General Ag
 - Urban
 - Native and Riparian Veg

Remove all charts

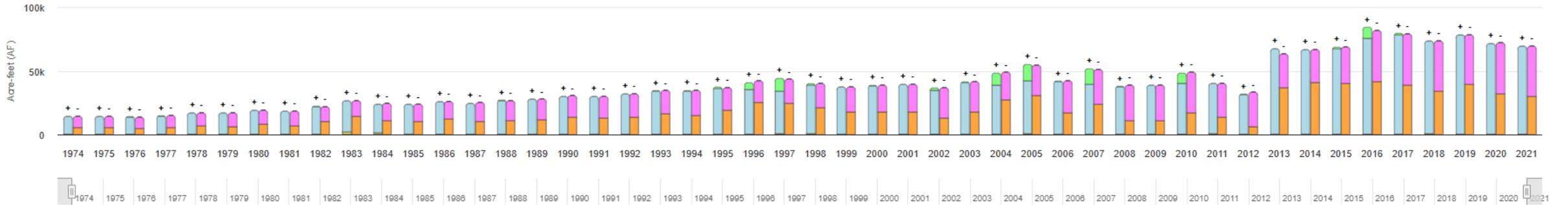
Scale chart:

Root Zone Budget

[Go to top](#) | [Remove this chart](#)

C2VSimFG_v1.5 | Root zone budget | Urban | Subregion 12 | Water Year

Click and drag in the plot area to zoom in



Click to turn on/off:

- Change-in-Storage
- Net Gain from Land Expansion
- Infiltration
- GW Inflow
- Actual ET
- Percolation

[Turn all series off](#) | [Turn all series on](#)

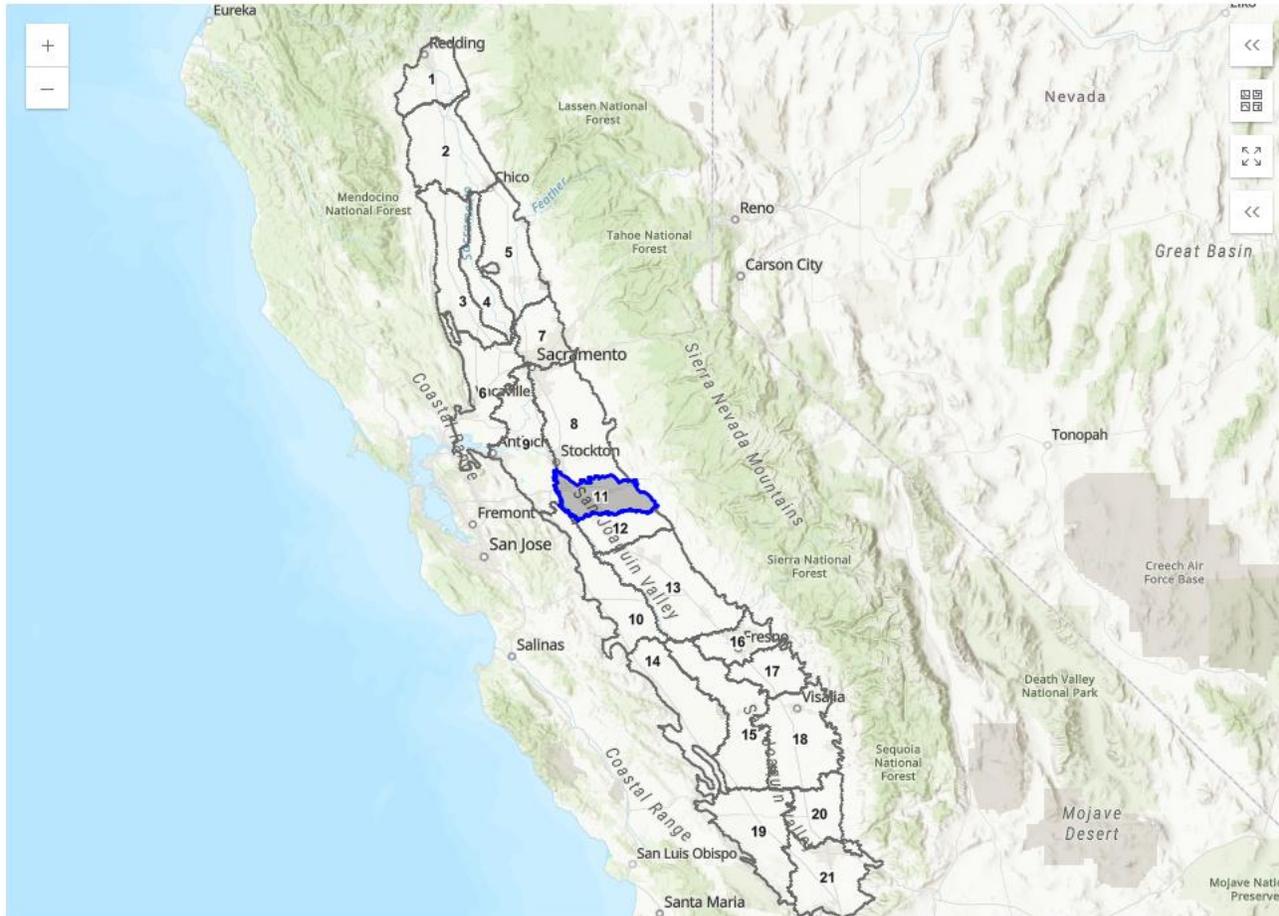
All zero: Other Inflow

Unsaturated Zone Budget



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Hydrographs Budgets **Zone Budgets** Comparisons

Model:

C2VSimFG_v1.5

From Date:

10/31/1973_24:00

Budget Type:

Unsaturated zone budget

To Date:

09/30/2021_24:00

Average Monthly Flows

Annual Flows

Time Series Chart

Water Year

Calendar Year

Length: Feet (FT)

Area: Acre (AC)

Volume: Acre-feet (AF)

Retrieve Data

Remove all charts

Scale chart:



Unsaturated Zone Budget

[Go to top](#) | [Remove this chart](#)

C2VSimFG_v1.5 | Unsaturated zone budget | Subregion 11

Click and drag in the plot area to zoom in



Click to turn on/off:

Change-in-Storage Percolation Deep Percolation

[Turn all series off](#) | [Turn all series on](#)

All zero:

Small Water Budget

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Model:

C2VSimFG_v1.5

Budget Type:

Small watershed budget

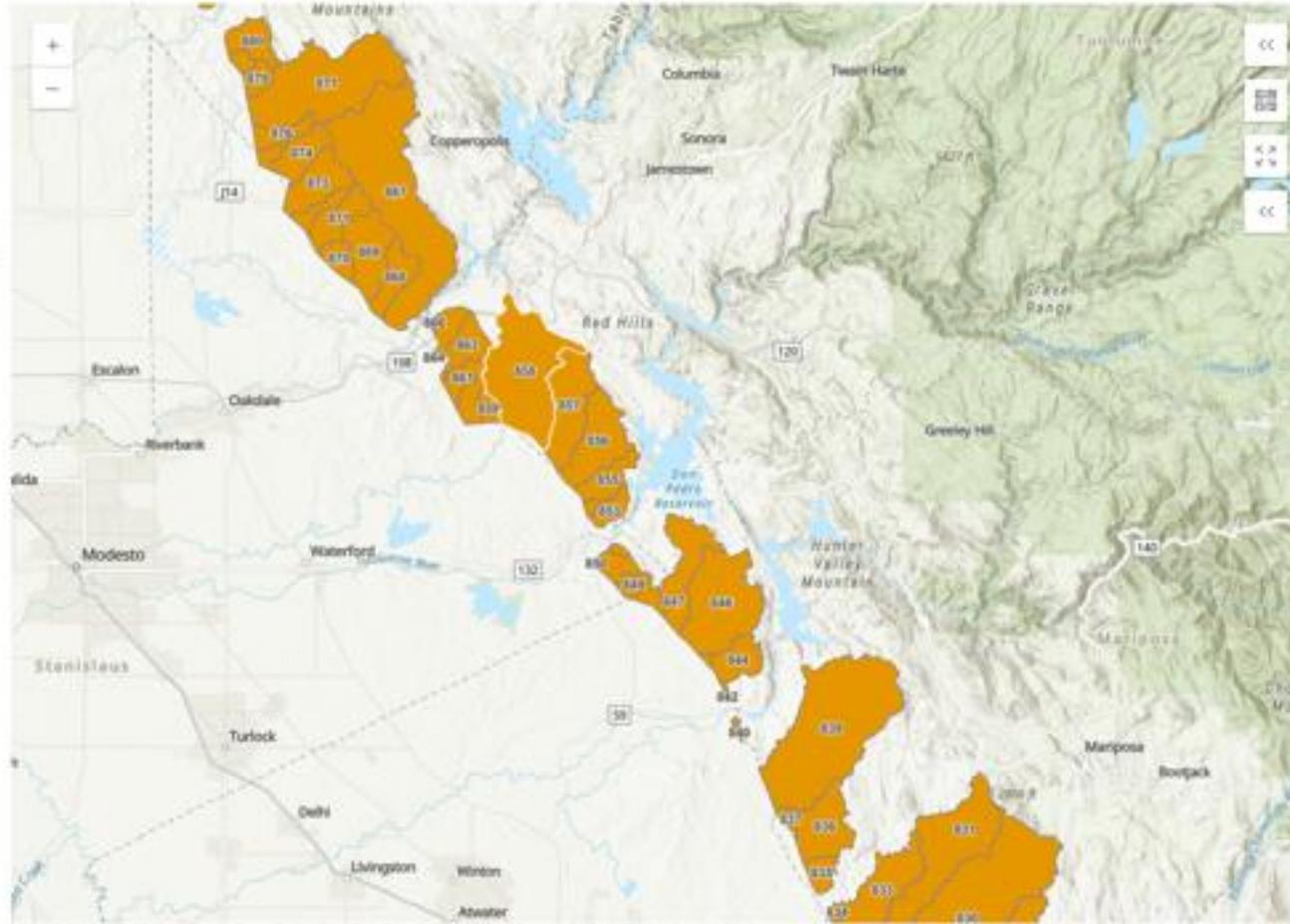
Select a watershed

Small Water Budget



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Hydrographs Budgets Zone Budgets Comparisons

Model:

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From Date:

10/31/1973_24 00

Budget Type:

Small watershed budget

To Date:

09/30/2021_24 00

Average Monthly Flows

Annual Flows

Time Series Chart

Water Year

Calendar Year

Length:

Feet (FT)

Area:

Acre (AC)

Volume:

Acre-feet (AF)

Component Type:

Select

Select

Ground Water Component

Root Zone Component

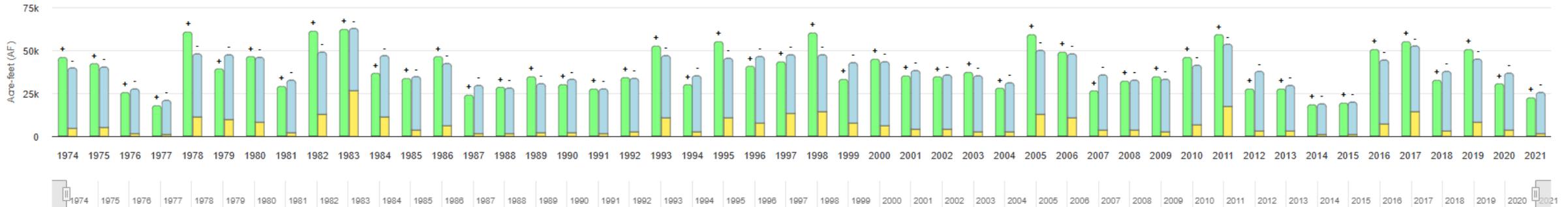
Small Water Budget

- Groundwater Component
- Root Zone Component

[Go to top](#) | [Remove this chart](#)

C2VSimFG_v1.5 | Small watershed budget | SWSHed ID: 839 | Root Zone Component

Click and drag in the plot area to zoom in



Click to turn on/off:

Change-in-Storage Infiltration Actual ET Deep Percolation

[Turn all series off](#) | [Turn all series on](#)

All zero:

Zonal Budget



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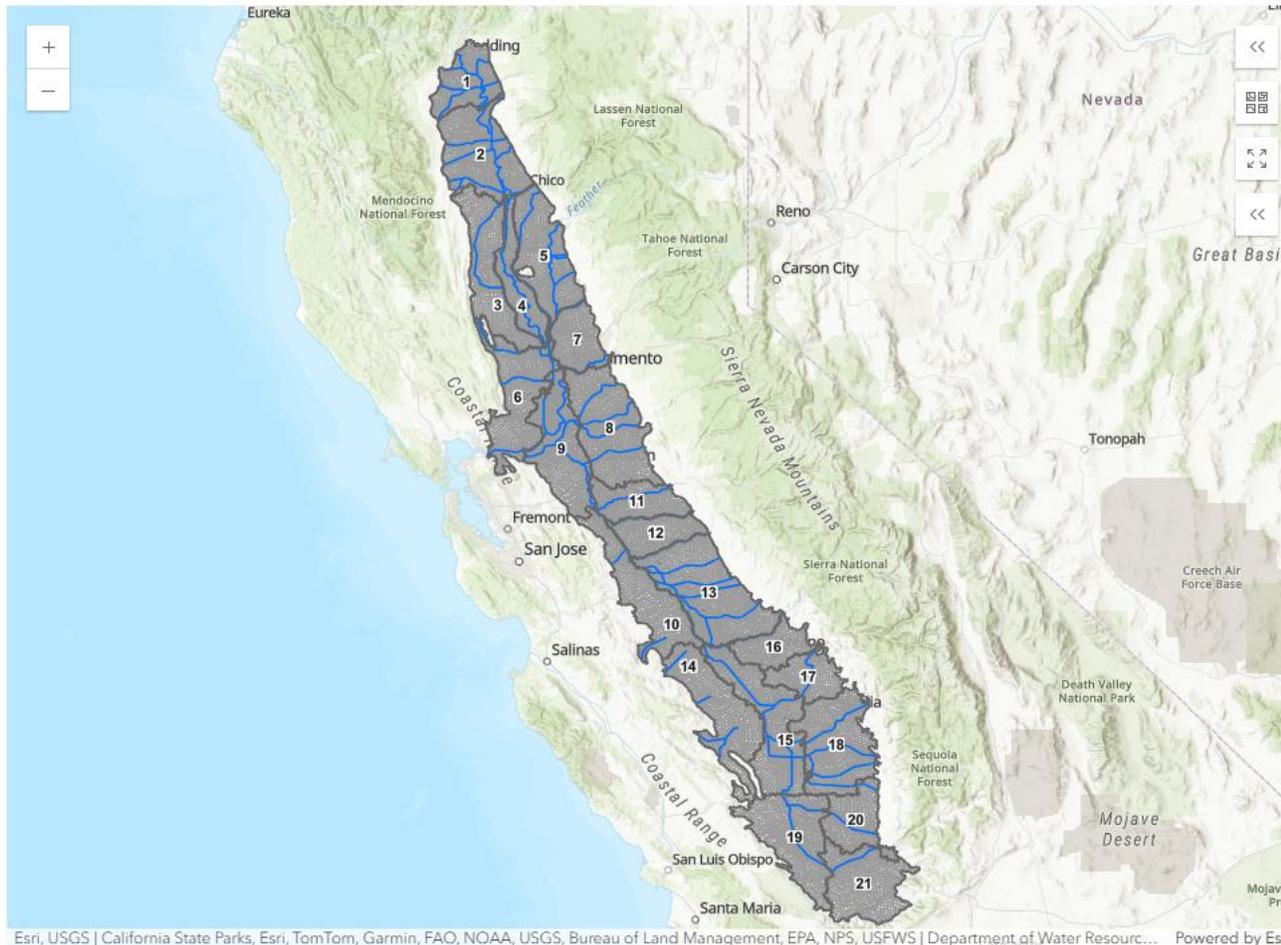
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Here you can upload and view a zone budget for a custom zone.

Start by uploading your zone(s)

The upload file must be a valid shape file that is zipped

Please use the following projection: NAD 1983 UTM Zone 10N



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- [Budgets](#)
- [Zone Budgets](#)
- [Comparisons](#)

Please upload a zipped GIS shapefile that represents your custom zones.

The shapefile must have an integer field that identifies your zone(s), less than 2Mb, and be in UTM Zone 10.

No file chosen

[Remove all charts](#)

Scale chart:

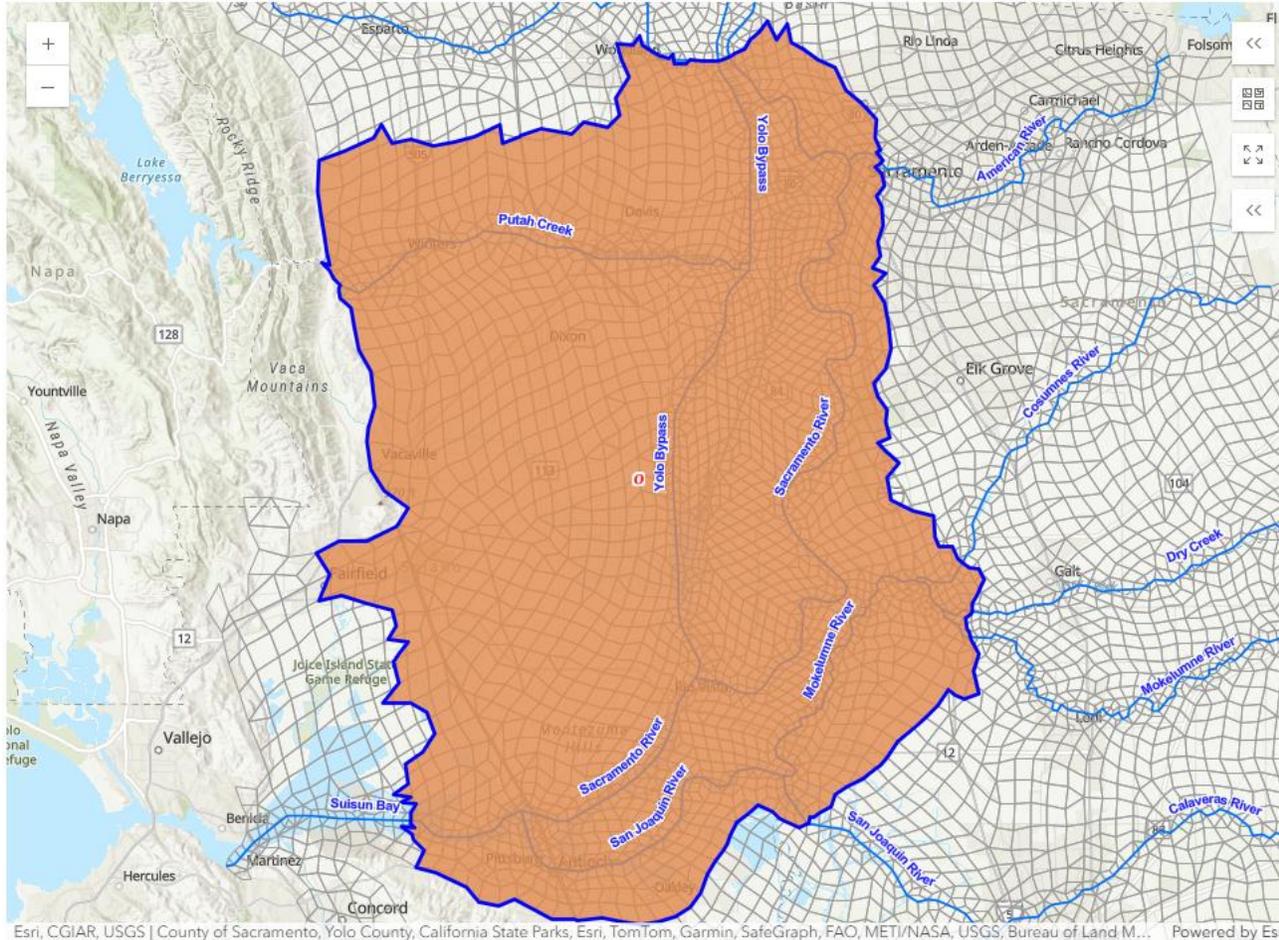
Zonal Budget



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Zone: 0



Hydrographs Budgets **Zone Budgets** Comparisons

Zone Field (must be integer):

FID

Continue

Reset

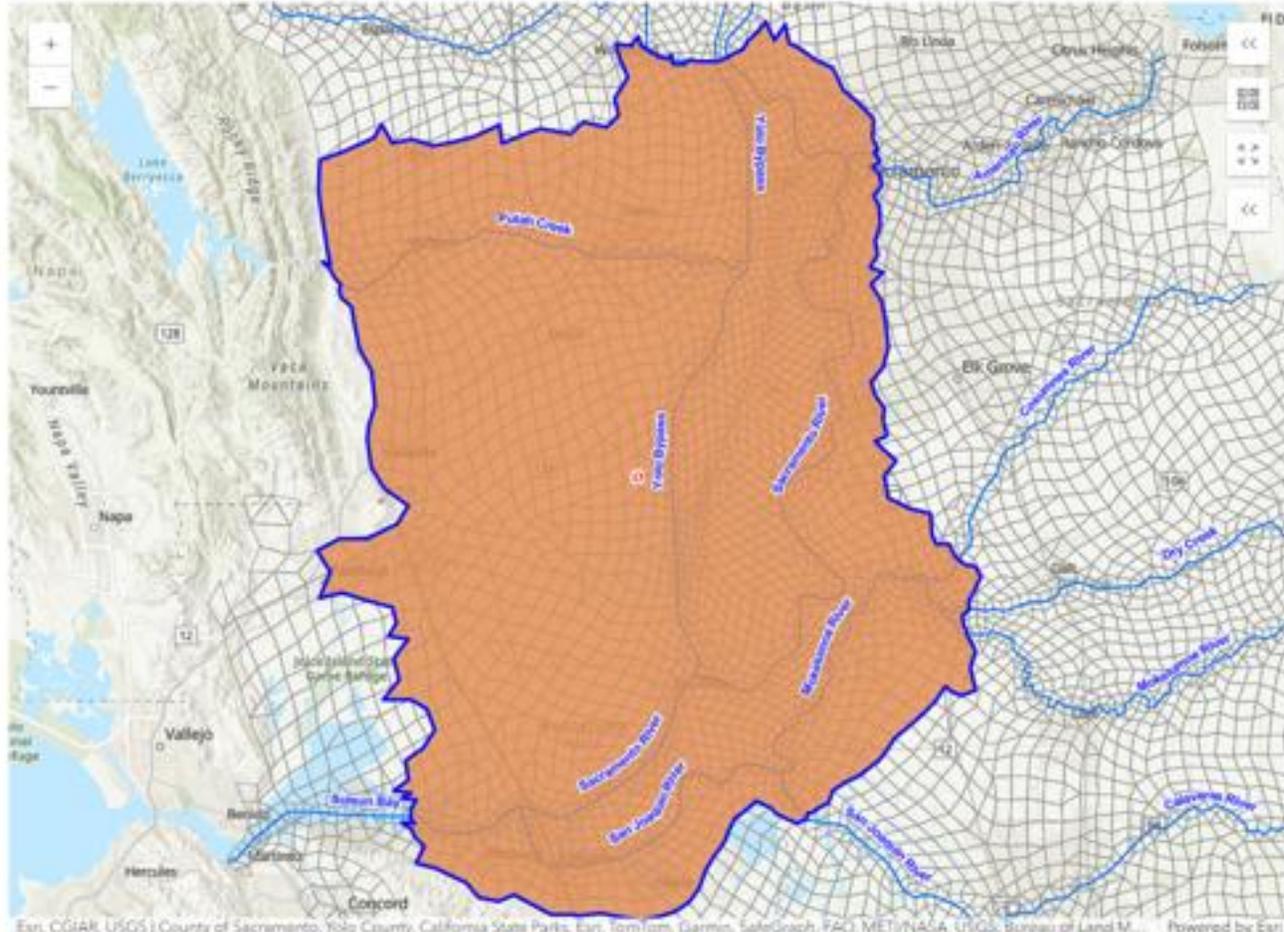
Remove all charts Scale chart:

Zonal Budget



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Hydrographs | Budgets | **Zone Budgets** | Comparisons

Model: C2VSimFG_v1.5

From Date: 10/31/1973_24.00

To Date: 09/30/2021_24.00

Zone Budget Type: Groundwater zone budget

Select

- Groundwater zone budget
- Land and water use zone budget
- Root zone budget
- Unsaturation zone budget

Water Year

Calendar Year

Length: Feet (FT)

Area: Acre (AC)

Volume: Acre-feet (AF)

Retrieve Data | Cancel

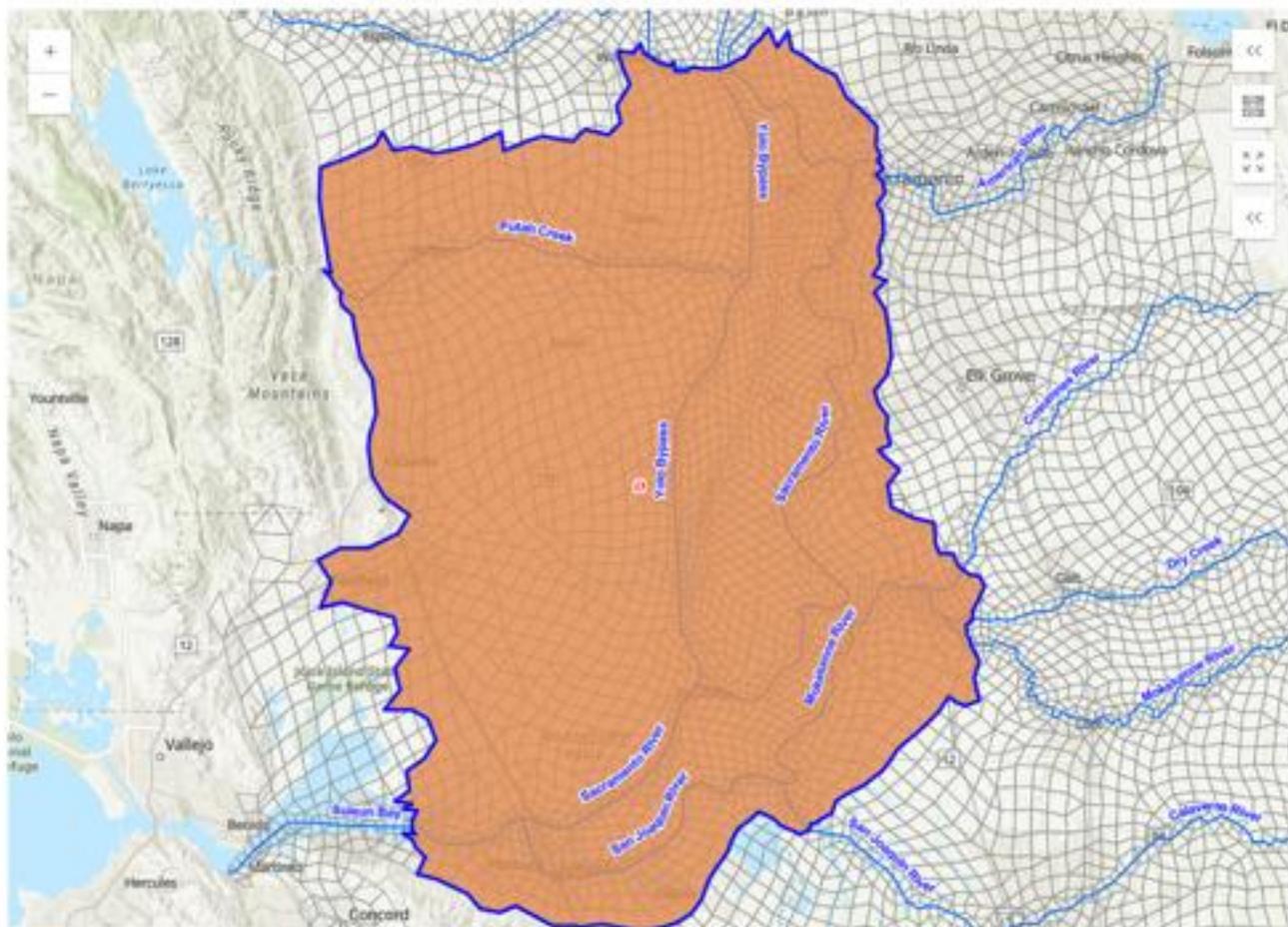
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Zone: 0
Groundwater zone budget
Annual Flows



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Hydrographs Budgets Zone Budgets Comparisons

Model:
C2VSimFG_v1.5

From Date:
10/31/1973_24.00

Zone Budget Type:
Groundwater zone budget

To Date:
09/30/2021_24.00

- Average Monthly Flows
- Annual Flows
- Time Series Chart
- Water Year
- Calendar Year

Length: Feet (FT)
Area: Acre (AC)
Volume: Acre-feet (AF)

Retrieve Data

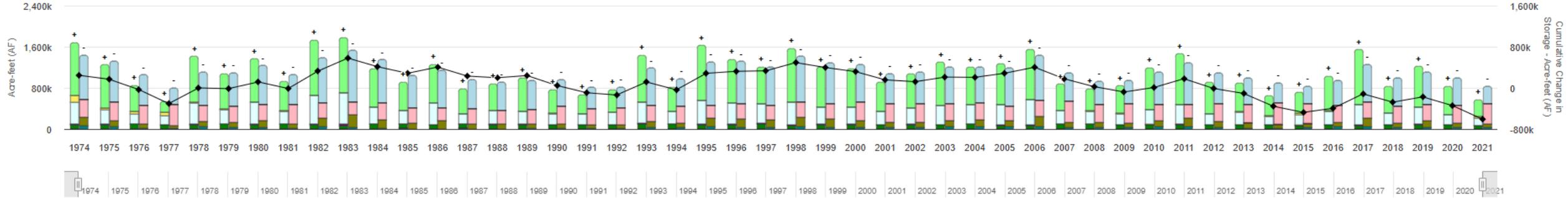
This may take a minute...

Zonal Budget

[Go to top](#) | [Remove this chart](#)

C2VSimFG_v1.5 | Annual Flows | Groundwater zone budget | Zone: 0 | Water Year

Click and drag in the plot area to zoom in



Click to turn on/off:

- GW-Storage
- Streams
- Tile Drains
- Subsidence
- Deep Percolation
- Small Watershed Baseflow
- Small Watershed Percolation
- Diversion Recoverable Loss
- Pumping by Element
- Pumping by Well
- Root Water Uptake
- Inflow from zone -99
- Cumulative Change In Storage

[Turn all series off](#) | [Turn all series on](#)

All zero: Constrained General Head BC, Bypass Recoverable Loss