CDSS Tools for Water Administration

Through a joint effort between the Division of Water Resources and the Colorado Water Conservation Board a number of tools and data sets have been prepared as part of the DSS development to assist with water administration. These include:

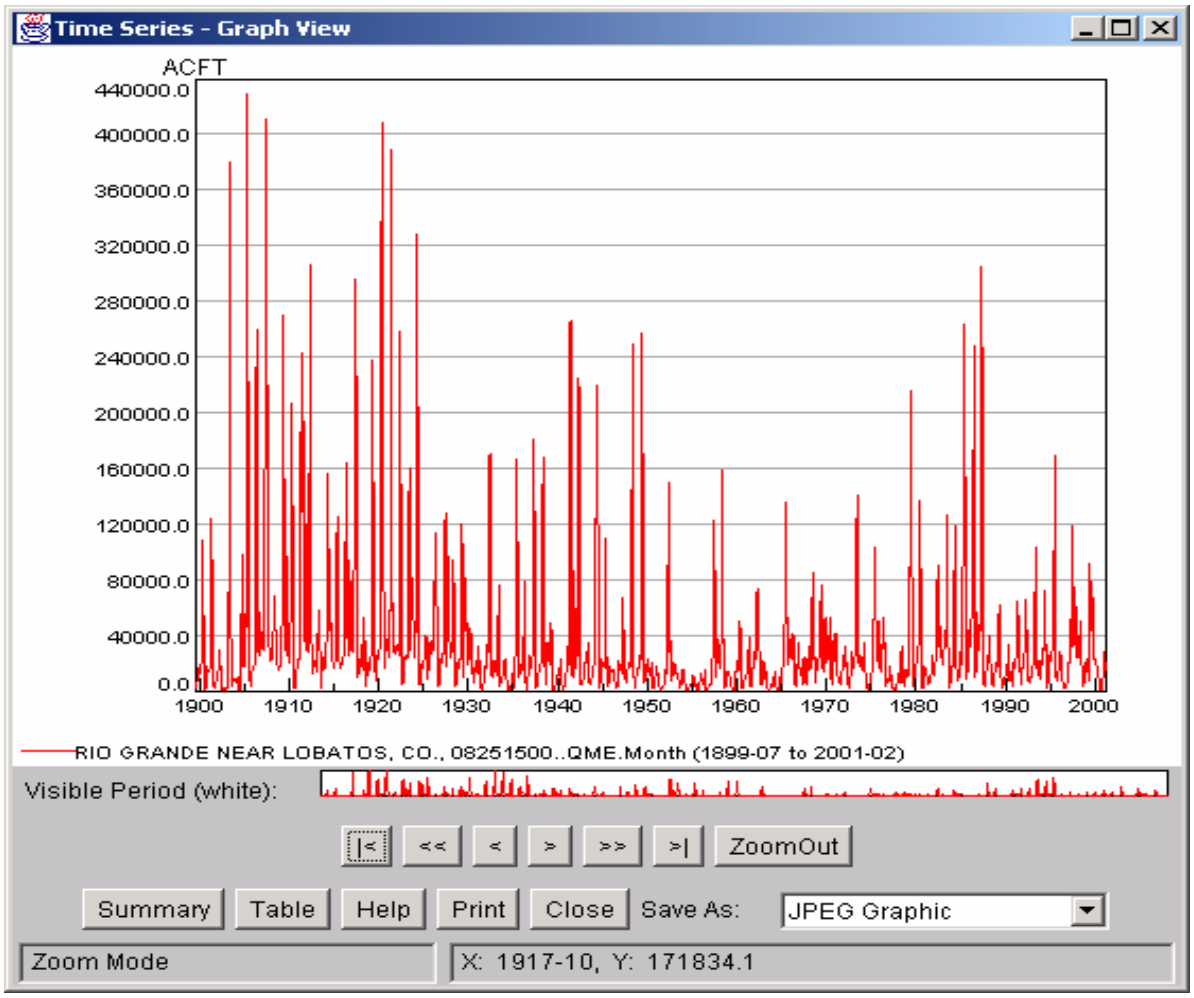
- CD's of HydroBase by Division or Statewide.
- GIS coverages of Water Resource Data
- StateCU, a Consumptive Use Model.
- AWAS, a Stream Depletion Analysis Tool

The CD's can be purchased from DWR's records department. The other tools may be accessed from the "Colorado's Decision Support Systems" (CDSS) homepage - http://cdss.state.co.us. On the menu bar of that page there is a "**Products**" item and beneath that "**GIS**" for GIS files, "**Consumptive Use**" for StateCU and "Other Tools" for the AWAS Tool. Following is a brief summary of each product:

CD's of data by Division or Statewide.
CD's are available that encompass most of HydroBase (only well permits are not included because of a prior sales agreements). The target audience is a user(s) who needs to perform large data queries and/or wants to work independently of the WWW. In addition the CD provides a permanent snap shot of the database upon which a decision or analysis may have been performed.

The cost of a CD is $100 per Division or $500 for the entire State. It is refreshed on an annual basis by approximately June 1. As described previously the CD contains nearly all the data DWR collects (water rights, diversions, streamflows, water levels, dams, etc.). Other water resource data that is collected from other agencies include (climate from NOAA, Streamflow Water Levels from the USGS, Snow Pack from the NRCS, etc.

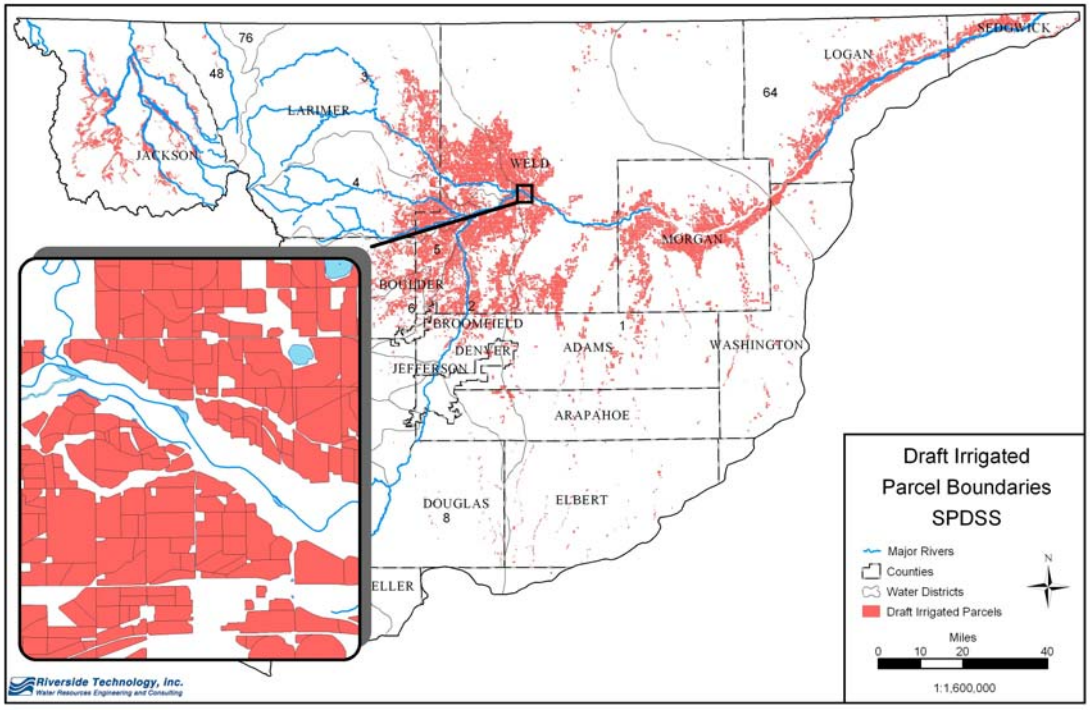
In addition to HydroBase each CD contains GIS coverages and two data access tools, StateView and TsTool. StateView mimics the WWW data viewing tools without size limitations. TsTool provides various tools for manipulating and formatting time series data.



GIS Coverages

GIS coverages are available for free off the web and are included on the CD. The target audience is a user(s) who need basic location and water resource coverages to view, manipulate and analyze.

GIS coverages include baseline information such as stream locations, county lines, water division boundaries, contours, and roads. Water resource data include gage and station locations, soils, lakes, land use and irrigated acreage.



StateCU

The State of Colorado's Consumptive Use Model (StateCU) was developed to estimate/report both crop and non-crop consumptive use within the state. The target audience is a user(s) interested in estimating potential or actual consumptive use of agricultural lands.

StateCU includes a fully functional interactive graphical user interface that allows all input data to be viewed, modified and saved. The primary crop consumptive use method employed in the program and the user interface is modified Blaney-Criddle consumptive use method with calculations on a monthly basis. Other crop consumptive use methods available include the Penman-Monteith and Modified Hargreaves methods, both operated on a daily time step.

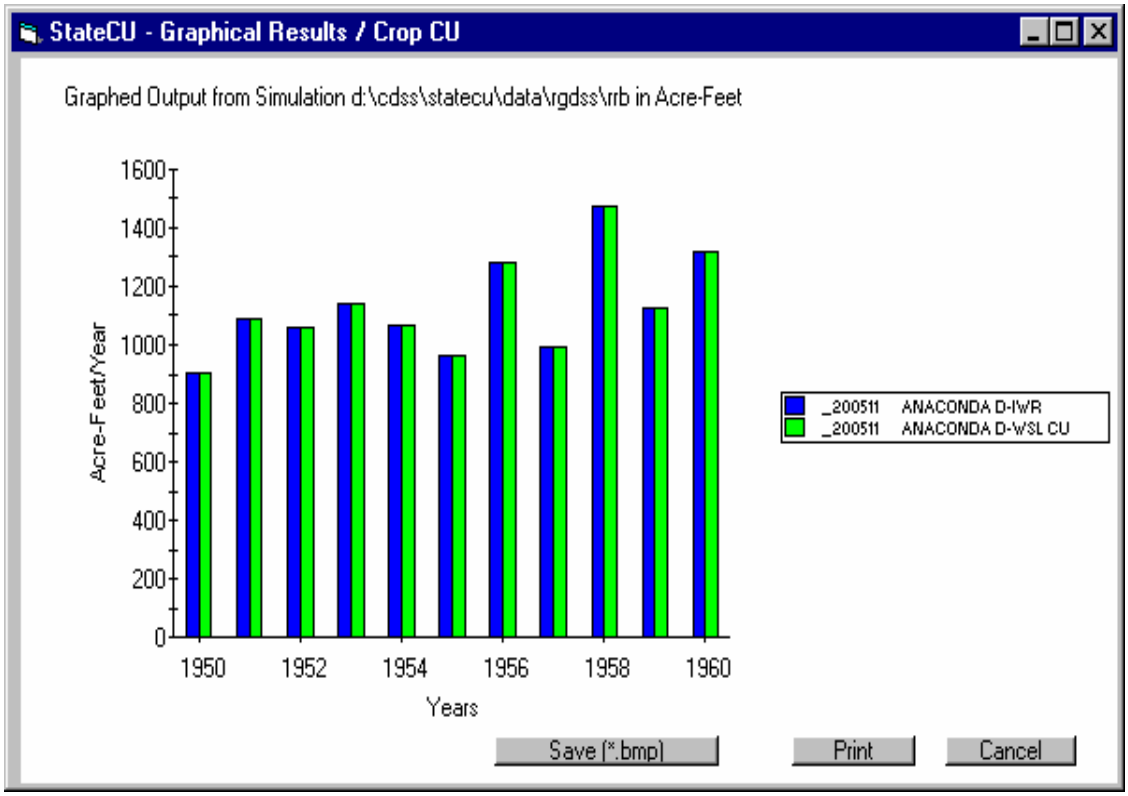
StateCU allows several levels of analysis as follows:

- Crop Irrigation Water Requirement by Structure (Monthly or Daily)
- Water Supply Limited Crop Consumptive Use by Structure (Monthly)
- Water Supply Limited Crop Consumptive Use by Structure and Priority (Monthly)
- Depletion by Structure and Priority (Monthly)

A number of base datasets are provided to allow the user to quickly perform StateCU analysis. Other areas of interest or different structures can be prepared by the StateCU user. Base datasets available from the Web site include:

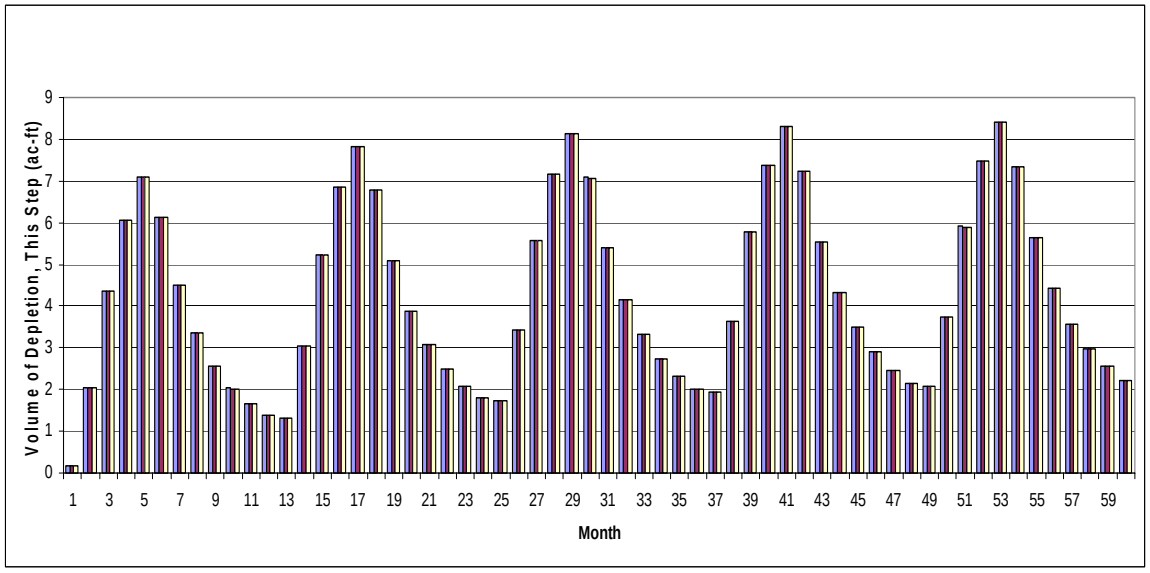
- Primary Climate Stations for the Western Slope of Colorado
- Primary Irrigation Structures in the Gunnison River Basin
- Primary Irrigation Structures in the Upper Colorado River Basin
- Primary Irrigation Structures in the Yampa River Basin
- Primary Irrigation Structures in the White River Basin

- Primary Irrigation Structures in the San Juan/Dolores River Basin
- Primary Irrigation Structures in the Rio Grande River Basin
- Primary Irrigation Structures in the South Platte River Basin (coming soon).



AWAS

AWAS is a computer program that can calculate river depletions using the Stream Depletion Factor method (Jenkins, 1968) or the Analytical Stream Depletion method developed in 1987 by Dewayne R. Schroeder. The AWAS model was adopted as a DWR standard after a detailed analysis and review (Review and Comparison of Stream Depletion Models, Chunming Yu, September 15, 2006). The AWAS model can calculate depletions using daily or monthly time steps. The user has the option to evaluate a number of different boundary conditions: alluvial, infinite, no flow, and effective SDF. Model input for AWAS can either be in the form of pumping records for each well consisting of a pumping rate and duration or net consumptive use or recharge in a daily or a monthly time step. Year type can be set to calendar, irrigation, or USGS. Data can be projected into the future or past based on historical records, and the effect of turning off the well by specifying an end date beyond the period of record can be simulated.



Summary

CDSS has developed a number of data sets and tools to assist with water administration.
Include CD's, GIS coverages, StateCU and AWAS.
These same tools and data have been adopted as a standard for State use.
Available to public