Big Thompson Watershed News

~ Newsletter of the Big Thompson Watershed Forum ~

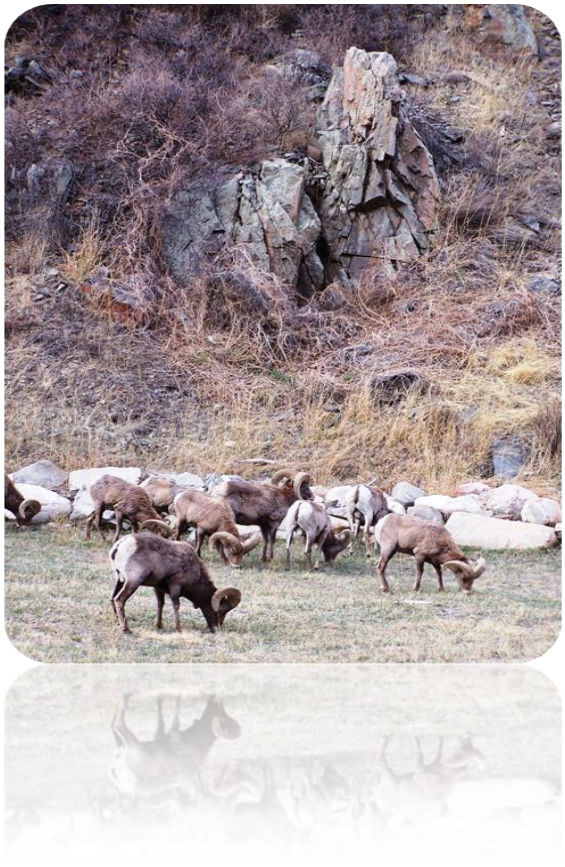
By: Zack Shelley & Gabri Vergara

End of the Year Update – 2011

Wow….where did 2011 go?….Well, speaking for the Forum, it was a great year filled with learning, research, outreach, education and the continuance of our outstanding monitoring and assessment programs. And how could we forget, the Forum completed its tri-ennial state of the watershed report. A quick 'thank you' to all of our major and minor contributors, to our board of directors, to our monitoring volunteers and, of course, to all of our members and individuals who help sustain the Forum and allow us to continue our mission of protecting our most precious resource, water. Ok…let's go see our accomplishments in 2011 ☺

In This Issue:

Big Horn Sheep in the Big Thompson Canyon



Volunteer Program

2011 was another great year for the Forum's Volunteer Monitoring Program. With the continued support of EPA Region 8 and 12 dedicated volunteers, the program continued to monitor 12 sites in the watershed. The Forum monitors nutrients, metals, pathogens, chlorophyll *a* and physical water quality variables at each site, once a month, April to November (26 total). We continue to monitor the Big and Little Thompson Rivers and Glacier Creek….sites extending from Rocky Mountain National Park to the confluence with the South Platte River. For the first time, data collected from this program was used in our state of the watershed report. The Forum continues to be blessed with volunteers who have great backgrounds and experience in the water resources or are working on

2011 Forum Volunteers

(L to R): Back row – Chancie Cavendish, Scott Cornell, Fred Renner, Eddie Trevino ,and Erik Anglund: Front row - Charlie Ferrantelli, Tracy Phelps-Emmanuel, Bob Alexander, Jen Stephenson, and Tim Schmitt. Not pictured: Chris Stewart and Lindsay Davis

Tim Schmitt, Forum Watershed Specialist, prepares chain of custody forms and performs quality control before shipping samples to the USEPA8 lab in Golden

their degrees in the watershed/water quality sciences. Tim Schmitt, the Forum's watershed specialist, assists the Forum in running this great volunteer monitoring program and maintaining the Forum's in-house lab and equipment.

Through class and field training and a low turnaround rate for volunteers, the volunteer monitoring program continues to maintain high credibility.

A **Big Thank You** to the 2011 volunteers and USEPA Region 8!

Bob Alexander, Greeley, CO
Chancie Cavendish, Greeley, CO
Charlie Ferrantelli, Fort Collins, CO
Christ Stewart (intern, UNC)
Donal O'Leary (scholarship recipient, CSU)
Eddie Trevino, Greeley, CO
Erik Anglund, Berthoud, CO
Fred Renner, Loveland, CO
Jen Stephenson, Windsor, CO
Lindsay Davis (scholarship recipient, CSU)
Scott Cornell, Fort Collins, CO
Tracy Phelps-Emmanuel, Boulder, CO
Jack Sheets, USEPA8, Laboratory Manager, Golden, CO

Zack Shelley, Forum Program Director, preparing to filter a sample for dissolved metals from the Little Thompson River

If you would like to be a regular or back-up volunteer, please call *Zack Shelley at 970-613-6163 or email zshelley@btwatershed.org.*

COOP USGS Program

The Forum's 2011 Cooperative Monitoring and Assessment Program continues to run smoothly with the U.S. Geological Survey (USGS) and its cooperative partners (Cities of Fort Collins, Greeley and Loveland, Northern Water and Soldier Canyon). We also

USGS Hydrologic Technicians, Nichole Streifel and Kyle Davis collect Big Thompson River samples east of Loveland

USGS Hydrologic Technician, Karla Burnley, preparing to collect flow data on the Big Thompson in Moraine Park, RMNP….now everyone knows why we have the GS do this!

welcomed four new hydrologic technicians from the GS to our program in 2011 and they did a great job… Nicole Streifel, Bruce Galoob, Clay Thompson, Kyle Davis.

Historically, this program typically maintained '18' sites throughout the watershed. However, in 2011, the Forum decided to make the necessary changes in the program to save on costs, reduce sampling redundancy and to keep the program viable and sustainable. After collaborating with the Northern Colorado Water Conservation District (Northern Water), reviewing site locations, analyte analyses, and collection frequency, it was agreed that Northern Water would continue to sample the canal sites that the Forum had historically monitored…Adams Tunnel, Olympus Tunnel, and three sites on the Hanson Feeder Canal.

The Forum will monitor sites where Northern Water is not sampling and Northern Water will sample where the Forum is not monitoring. The Forum will continue to monitor sites throughout the Big Thompson Watershed on the east slope and Northern Water will monitor river and canal sites in the C-BT system on the west and east slopes. Between these two programs, we are ensuring that the entire watershed is well represented from a water quality and regulatory standpoint, saving on costs for both organizations and eliminating any redundancy between the two monitoring and assessment programs. As such, the cooperative program will now consist of 13 total sites. Between the two programs, the Forum now has '25' total sites located throughout the entire watershed.

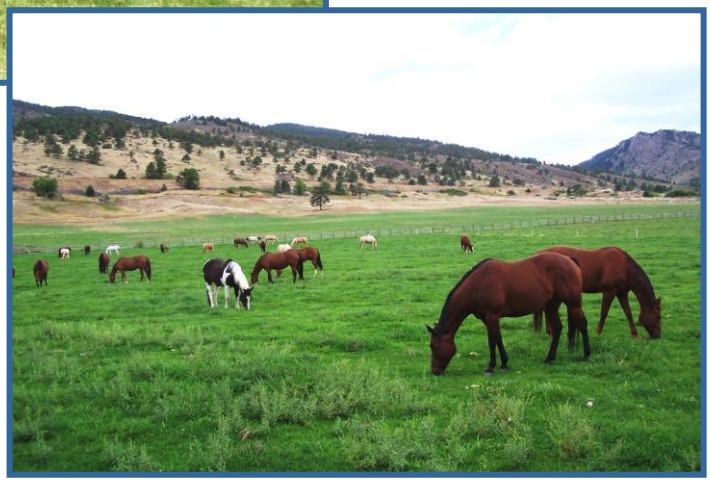
We continue to collect pathogen, nutrient, chlorophyll *a*, metal, physical and flow data at each site. Thanks to our cooperative partners and USGS staff…Sue Hartley, Karla Burnley, Greg Smith and Michael Lewis for all of your hard work in helping to protect the Big Thompson River Watershed!

Sylvan Dale Guest Ranch Nutrient Pilot Project

Sylvan Dale Ranch is a 3,200-acre working guest ranch located at the mouth of the Big Thompson Canyon with the Big Thompson River running through its property. Owned and operated by the Jessup family since 1946, the ranch hosts families from all over the United States and Europe for traditional dude ranch vacations and retreats. The ranch

raises registered quarter horses and pure grass-fed Saler-Gelbvieh cattle.

Years ago, cattle pens were built on a bench above the north side of the Big Thompson River. Cattle are confined in these pens during calving season, weaning time and briefly at other times during the year for vaccinations and vet care. Manure builds up during these times, and the pens are scraped yearly for spreading onto the pastures. During rain and snow melt events, water flows onto and through the pens from the hillside above, picking up nutrients as it collects in rivulets that merge in a roadside ditch, emptying into the river. Nutrients are thus lost for use on the pastures and,
Instead, contribute to pollution of river water.



As a part of the Northern Colorado Ecosystem Market Initiative, the ranch began to look at ways to quantify the difference in nutrient loads carried by the river downstream, from the project sight. The Initiative is doing a feasibility study of whether "buyers" might be found to help finance agricultural and ranching best practices that measurably improve services provided by the watershed ecosystem, including water quality and quantity, soil carbon enhancement, and habitat conservation. In order for this effort to qualify as a "pilot project" of the Initiative, the ranch wanted to find a way to quantify the reduction of nitrogen, phosphorous and coliforms/bacteria going into the Big Thompson River, put in post monitoring best management practices, and monetize its value to the community and water treatment plants.

The results of this project may then be used to show measurable inputs of nutrients and bacteria that ranching practices can contribute to water pollution (depending on area, livestock and location).

The primary water quality objective for this project is to measure the amount of nutrients and bacteria that enter the river during heavy rainfall/stormwater runoff and snow melt events from the ranch's two cattle pens. Stormwater runoff from two cattle pens collects in about a 3.5 acre area making its way directly into the river due to gravity and the downhill topography.

To quantify the amount of nutrients and bacteria going into the river, a ‘six’ inch Parshall Flume was installed on the site to catch and measure the runoff and flow coming from the cattle pens. Grab samples are collected on the downstream side of the flume and sent to a lab to determine targeted concentrations. With the flow data from the flume and the concentration data from the samples,

Alan Halley with Northern Water, works to install the Parshall Flume and uses an excavator to create a small trench behind the flume for controlled runoff and sample collection

Dave Anderson with Northern Water, oversees a test flow event to get the flume prepared for the Spring stormwater runoff season

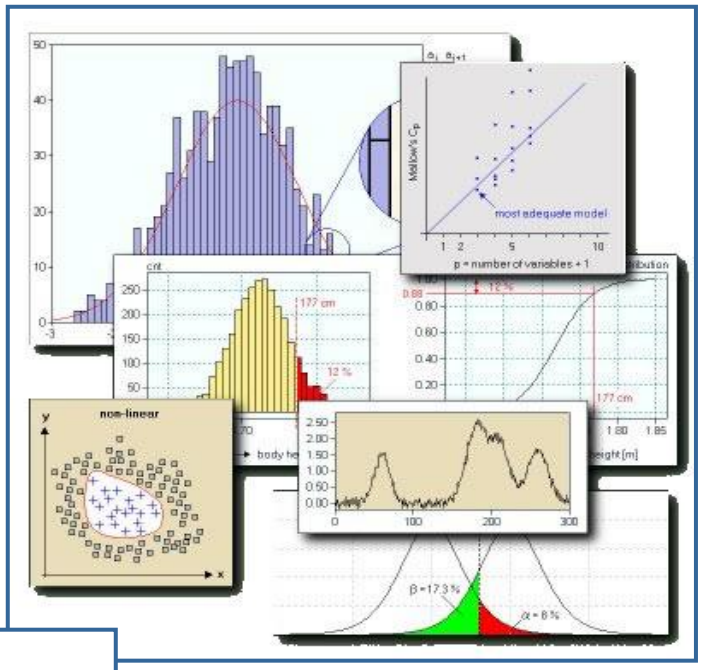
we will then be able to calculate ‘loadings’ in pounds or kilograms per hour, day, year etc. going into the river.

Once BMPs have been implemented, we will then conduct post sampling at the same location to see to what degree the BMPs have reduced or eliminated the nutrients going into the river. Current BMPs being considered include keeping the cattle in the pasture for longer periods of time during the year (including federally owned land) which would lessen pen time, and constructing ‘swales’ above and below the cattle pens to move the runoff directly to the pastures which would then absorb the excess nutrients and assist in pasture growth. This is truly a ***‘collaborative’*** effort for which the Forum is very proud to be a part of and in assisting our ranching and farming communities.

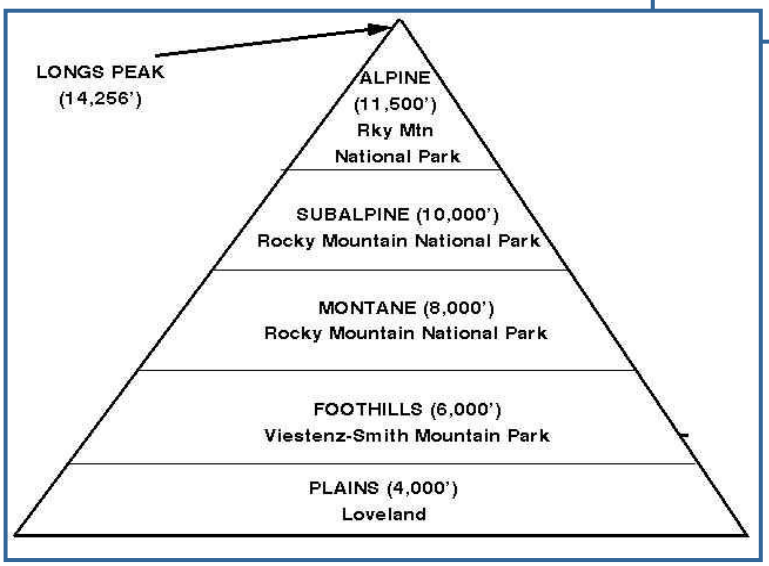
Participating Entities Include:

-Sylvan Dale Guest Ranch
-Colorado State University & Institute for Livestock & the Environment
-City of Loveland Water Quality Laboratory
-Northern Colorado Ecosystem Market Initiative
-Northern Colorado Water Conservancy District
-Big Thompson Watershed Forum

2011 State of the Watershed Water Quality Report



In February, 2011, the Forum, along with Paula Galloway (National Park Service), Hydros Consulting and Integral Consulting, completed its 'tri-ennial' State of the Watershed Report for the rivers, streams, and canals in the Big Thompson River watershed. This water quality assessment report supports the Forum's continuing efforts to identify and evaluate strategies for watershed management and protection in the process of maintaining a comprehensive watershed management plan. Physical, chemical, biological and flow data from the Forum's Cooperative Monitoring Program and Volunteer Monitoring Program, from 2000-2010, were analyzed for this report.

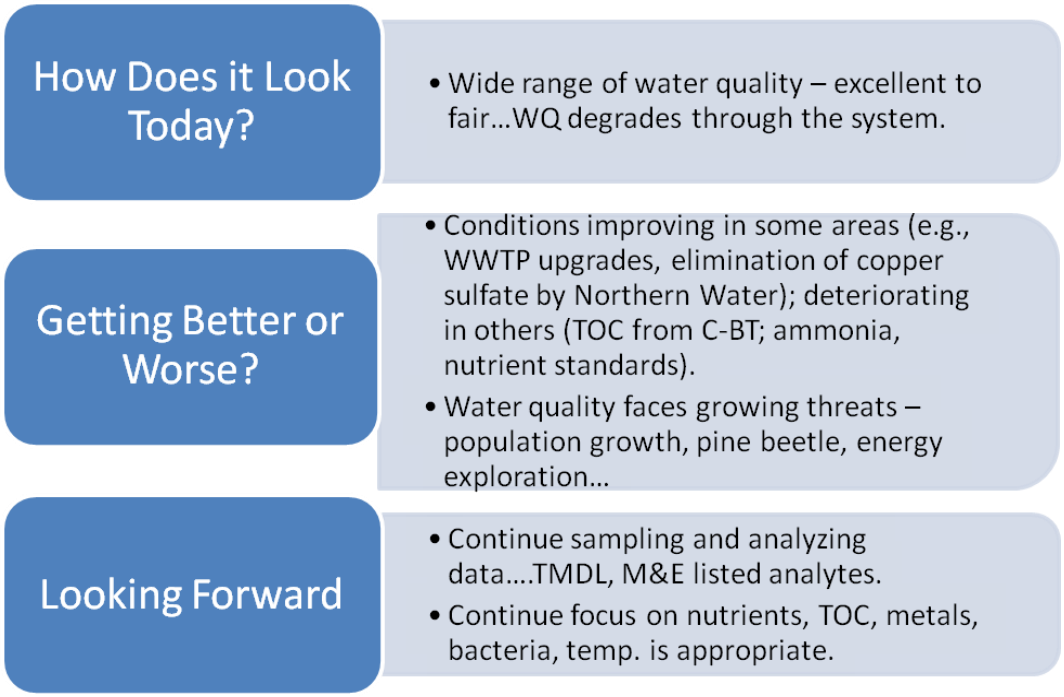


As most of you know, Colorado's Big Thompson watershed, located approximately 50 miles northwest of Denver, is a large, complex hydrologic system covering more than 900 square miles east of the Continental Divide and all 'five' of Colorado's regional life zones. The ecosystems, water uses, population density, and water quality vary widely across the watershed. The Big Thompson watershed also serves as a conduit for Colorado's largest trans-basin water diversion, the Colorado-Big Thompson (C-BT) Project. The C-BT project brings water from the Three Lakes System (Granby Reservoir, Shadow Mountain Reservoir and Grand Lake) to the eastern slope, through the Adams Tunnel, to provide for evolving municipal, agricultural and ranching needs of Colorado's Front Range.

So…..is our water quality getting better or worse ??

Based on the results of calculations, trend analyses, statistical testing, and data products developed for this assessment, the key findings in the report show that, for the most part, we continue to maintain pretty good water quality throughout the watershed. However, as one might suspect, the data does show that water quality generally deteriorates in the lower reaches of the watershed. The upper reaches (with a couple of exceptions), continue to show good to excellent water quality.

The watershed does have some 303(d) (total maximum daily load) and monitoring and evaluation (M&E) listed segments. These are for copper (Cu), cadmium (Cd), zinc (Zn), selenium (Se), sulfide, *Escherichia coli* (*E. coli*), pH, dissolved oxygen and temperature.



Additional findings…..

A comparison of total nitrogen and total phosphorus data to the 2010 draft nutrient criteria indicates widespread results above the total nitrogen value (0.4 mg/L). For phosphorus, values above the draft criteria (0.11 mg/L) are more prevalent in the downstream end of the system. These findings indicate that implementation of phosphorous and nitrogen nutrient criteria, if set at draft values, would likely require many of the systems Waste Water Treatment Plants (WWTPs) to modify their treatment processes to target nitrogen and phosphorus removal. Frequent exceedances of both acute and chronic aquatic life standards for ammonia were also noted on the Big Thompson River and on the Little Thompson River

It should be noted that these observations of increased nutrient concentrations and loads below WWTPs contribute important information to understanding the system and sources of nutrients to the rivers and reservoirs. However, WWTPs are only currently regulated for ammonia (not total nitrogen, nitrate plus nitrite, or total phosphorus). As such, these observations and comparisons to the draft nutrient criteria are not indications of WWTP system discharge permit compliance issues.

The water introduced to the Big Thompson watershed by the C-BT system has generally similar or lower concentrations for most parameters, as compared to the water quality in the upper-most portion of the Big Thompson watershed. Two noteworthy exceptions are total organic carbon (TOC, a measure of naturally occurring organic matter [terrestrial sources and in situ algal sources] plus organic matter from anthropogenic sources [including wastewater effluent and agriculture runoff) and chlorophyll *a* (a form of chlorophyll used in oxygenic photosynthesis; used as a measure of phytoplankton abundance and eutrophication).

TOC concentrations continue to show a statistically significant increase over the last ten years in portions of the east slope C-BT system assessed in this report. TOC is one of the more important water quality parameters analyzed by the drinking water treatment plants that treat Big Thompson River and C-BT system waters.

Note: This report did not evaluate the lakes and reservoirs in the system.

Additional information and technical findings may be found in the report and supporting appendices on the Forum's website, main page…. *www.btwatershed.org.*

Education and Outreach

Annual Spring Waterway Cleanup

The City of Loveland and Big Thompson Watershed Forum's 2011 Annual Spring Waterway Cleanup was held Saturday, April 16th throughout the Loveland area.

This event turned out to be one the most successful cleanup events we have ever had….381 volunteers participated this past year!

In addition to enjoying a great day, we also collected approximately 11.6 tons of trash from 10 major waterways / reaches and lakes. The Forum would like to thank the City's Public Works and Parks and Recreation Departments for their hard work, time and providing goody bags, and to all sponsors for providing treats and gifts for the goody bags to all participants! This year, volunteers removed everything including a kitchen sink! The items removed were comprised of more than a dozen shopping carts, a half dozen or more tires, a vehicle bench seat, bicycle frame, all sorts of construction materials and two engine blocks….all in addition to the other standard trash that unfortunately seems to end up in our waterways. In addition to the volunteers, we also received enormous support and sponsorship from the business community.

The volunteer groups who participated in this year's event were: Loveland High School; Namaqua Unitarian Universalist Congregation; Bill Reed and Conrad Ball Middle Schools; Sylvan Dale Guest Ranch; 150 CS-Unity students; Wal-Mart Distribution Center; Cub Scout Packs 181, 190 and 297, and Crop Production Services.

.

Be on the lookout for the 2012 Spring Cleanup on Saturday, April 21st….*See Flyer*
Or…. *www.cityofloveland.org/index.aspx?page=917*

2011 Sponsors

All Terrain
American Rivers
Aspen Leaf Grille
Big T 4-Wheelers
Bounce
Chick-Fil-A
City of Greeley
City of Loveland
Fireside Café
JAX
King GMC
La Quinta
Larimer County
Orchards Ace Hardware
Seven Lakes Reservoir Company
Sportsman's Warehouse
Stan's Auto Service
Quad Graphics
Walgreens
Wash Time Car Wash
World Beverage

Chris Stewart, University of Northern Colorado intern with the Forum and Zack Shelley presenting 'Water Quality – What's the Point' at the children's water festival

City of Loveland Children's Water Festival

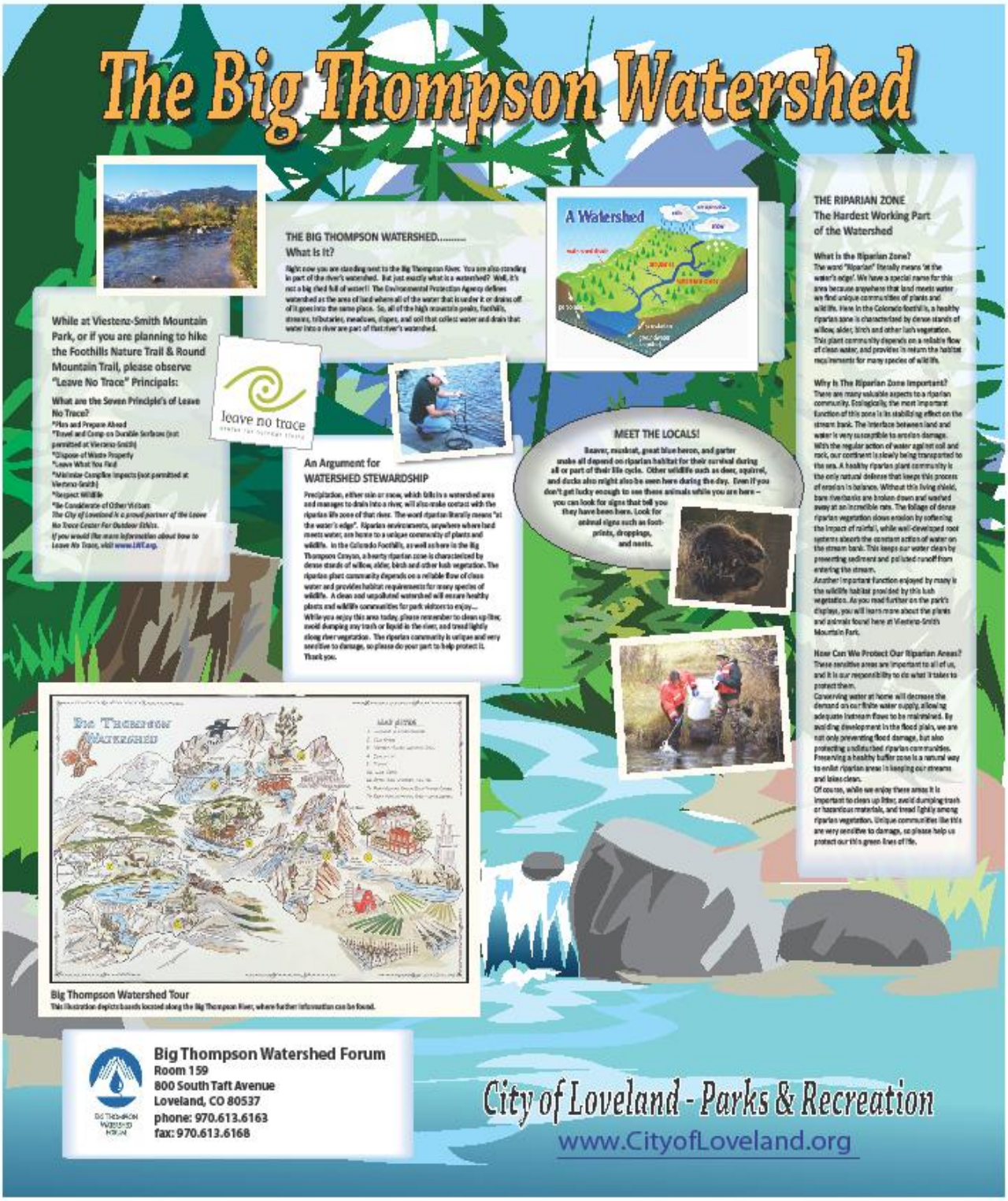
The City of Loveland's Children's Water Festival was held on May 12th at the Church of the Good Shepherd in Loveland. The focus of the festival is to engage fifth-graders in indoor and outdoor water education activities, specifically on topics including water origination, water conservation, water quality and water safety. The Forum continued to be a presenter in this great festival, talking about non-point and point sources of water pollution. Our presentation, called "Water Quality – What's the Point" was done Zack Shelley and Chris Stewart (UNC intern). We also let the kids get hands-on use of our monitoring equipment which they really seem to enjoy. In 2011, 16 education teams presented to almost 1,000 fifth graders from 16 elementary schools in the Thompson School District R2J.

The Children's Water Festival is sponsored by Northern Water, the U. S. Bureau of Reclamation, the City of Loveland - Water and Power Department, the City of Loveland - Public Works - Stormwater Division and the Thompson R2-J School District.

Viestenz-Smith City Park

The Forum partnered with the City of Loveland's Parks and Recreation Department to create a watershed poster for one of the kiosks for visitors to the Viestenz-Smith City Park located in the Big Thompson Canyon, 14 miles west of Loveland. The kiosk information

describes the Big Thompson River and the regional ecosystems, and the importance in protecting our watersheds and surroundings for current and future generations, and to leave no trace. We think it came out great and thank the City of Loveland for this wonderful educational tool to enlighten the thousands of people who visit this park each year. If you have not visited the park, you are missing out on a great day outdoors….



Colorado State University Collaborative Process Situation Analysis

The Forum was chosen as a case study in 2011 for collaborative situation assessment by CSU for a Collaborative Conservation course. This case study provided a valuable snapshot of the Forum's history and overall impact in the community and allowed students to explore the complexity and context of their chosen collaborative (the Forum) as a first step in an overall assessment of that collaborative initiative or collaborative process.

By examining the Forum in the context of a collective organization, the study group for the Forum was able to better understand how collaborative processes

relate to the Forum's structure, goals, mission and challenges. An organization, like the Forum, consists of many collaborative and non-collaborative aspects. By identifying the areas of strengths and weaknesses within the organization's structure and activities, members will be able to conceptualize how collaborative practices may be useful in achieving long-term goals.

This case study provided a baseline understanding of how the Forum operates in order to accomplish its mission and long-term goals, and identifying the areas of strengths and weaknesses within the organization's structure, activities, and members and funders. This study also involved numerous stakeholder structured interviews with members, funders, board of directors, program director, volunteers and individuals who led to the formation of the collaborative initiative (the Forum).

Case Study Concluding Remarks……

Per the study groups final remarks……"Comparing our assessment of the Big Thompson Watershed Forum to the factors for success as identified by Mattessich and Monsey (1992), it appears that the Forum meets many of the ideal standards and best practices found within successful collaborative organizations. Yet, there are still areas of opportunity where the Forum can continue to develop.

Though already a focus of the Forum, outreach and engagement are areas of continued opportunity for improvement. Specifically, inviting more stakeholders to participate would add increased breadth of experience and diversity in thought that could broaden the scope of the Forum, while contributing to cost and information sharing. A relatively few municipalities are actually members of the Forum, as compared to all of the municipalities that are located within the watershed (30). Engaging with more agricultural, ranching and business stakeholders would add diversity and potentially increase the success of water quality improvement measures. In addition, broadening outreach and educational initiatives could help strengthen support and help improve community behavior affecting water quality.

Some members have expressed interest in broadening research and monitoring objectives, yet budgets would have to be increased. Adding businesses and more downstream municipalities and increasing funding could enable these developments and would add to information sharing as well as increase cost sharing to benefit the Forum's budget. With increased capacity and engagement, the Forum could potentially expand its efforts to include remediation and other mitigation practices for dealing with pollution, nutrient and sedimentation issues.

Founded on a regional need for sound scientific water quality monitoring, the Big Thompson Watershed Forum has been able to successfully bring the community together to maintain and improve water quality. The strong dedication to a mission based on unbiased science is the Forum's backbone that allows for the different, sometimes opposing, viewpoints of area stakeholders to collaborate for the greater good of the region. This scientific basis also allows the Forum to provide education and outreach opportunities that benefit every member of the community.

As populations grow on the Front Range, demand for water will increase along with increased pressures on water quality. Given the concrete and mutually beneficial relationships that the Forum is founded on, the organization is in an ideal position to drive conservation and water quality initiatives beyond monitoring that will benefit all stakeholders. As a source of unbiased and scientific water quality assessment data, the Forum is well situated to spearhead collaboration to ensure the successful long-term management of water quality and quantity in the region, ultimately benefiting all stakeholders within the watershed."

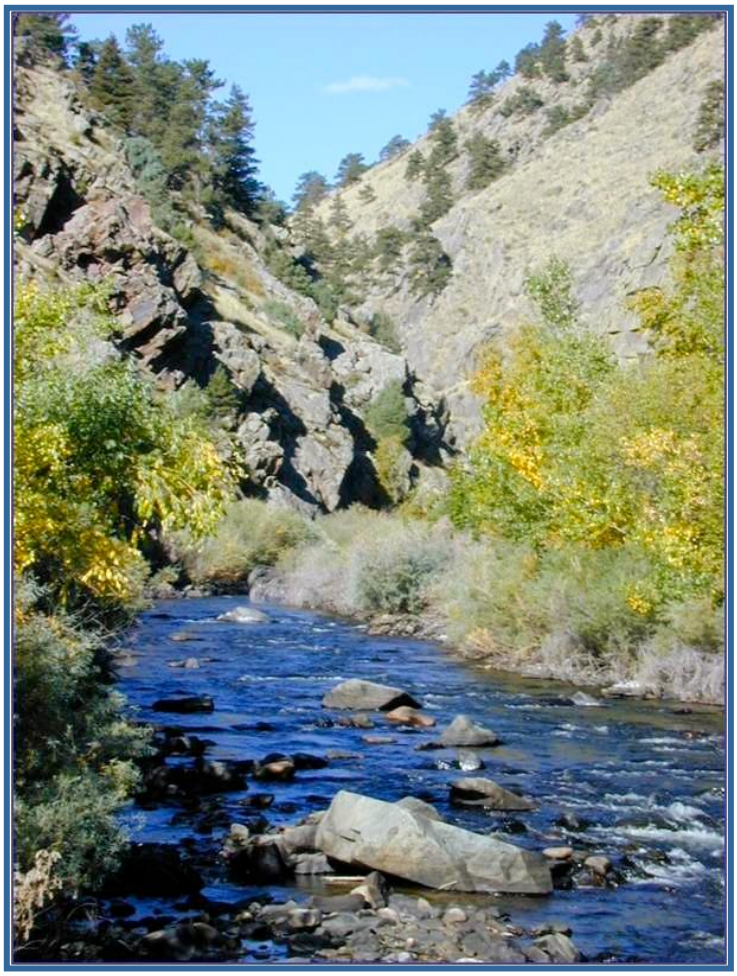
This case study and project was conducted by CSU graduate students Daniela Valle-León, Diana C. Morales-Betancourt, Adam J. Calo, Britt P. Basel and Evan M. Walker, under the guidance of Dr. Robin Reid, Director of the Center for Collaborative Conservation, CSU Warner College of Natural Resources.

Big Thompson Wildfire Watershed Assessment Report

The Big Thompson assessment was designed to identify watershed-based risks to water supplies and prioritize sixth-level watersheds based upon their hazards of generating flooding, debris flows, and increased sediment yields following wildfires that could have impacts on water supplies.

Following the prioritization of watersheds and identification of Zones of Concern, some basic information was analyzed within the Zones of Concern to complete an initial screening of potential opportunities for watershed protection.

Another goal of the assessment was to gather the key water supply stakeholders to communicate the suggested process, listen to any suggested changes, and build collaborative support for the assessment.



(photo courtesy of JW Associates, Inc.)

The Big Thompson watershed is a fourth-level (eight-digit) watershed in the hydrologic unit code (HUC) 10190006, that is 532,032 acres in size and contains 30 sixth level watersheds (11 & 12 digit HUCs).

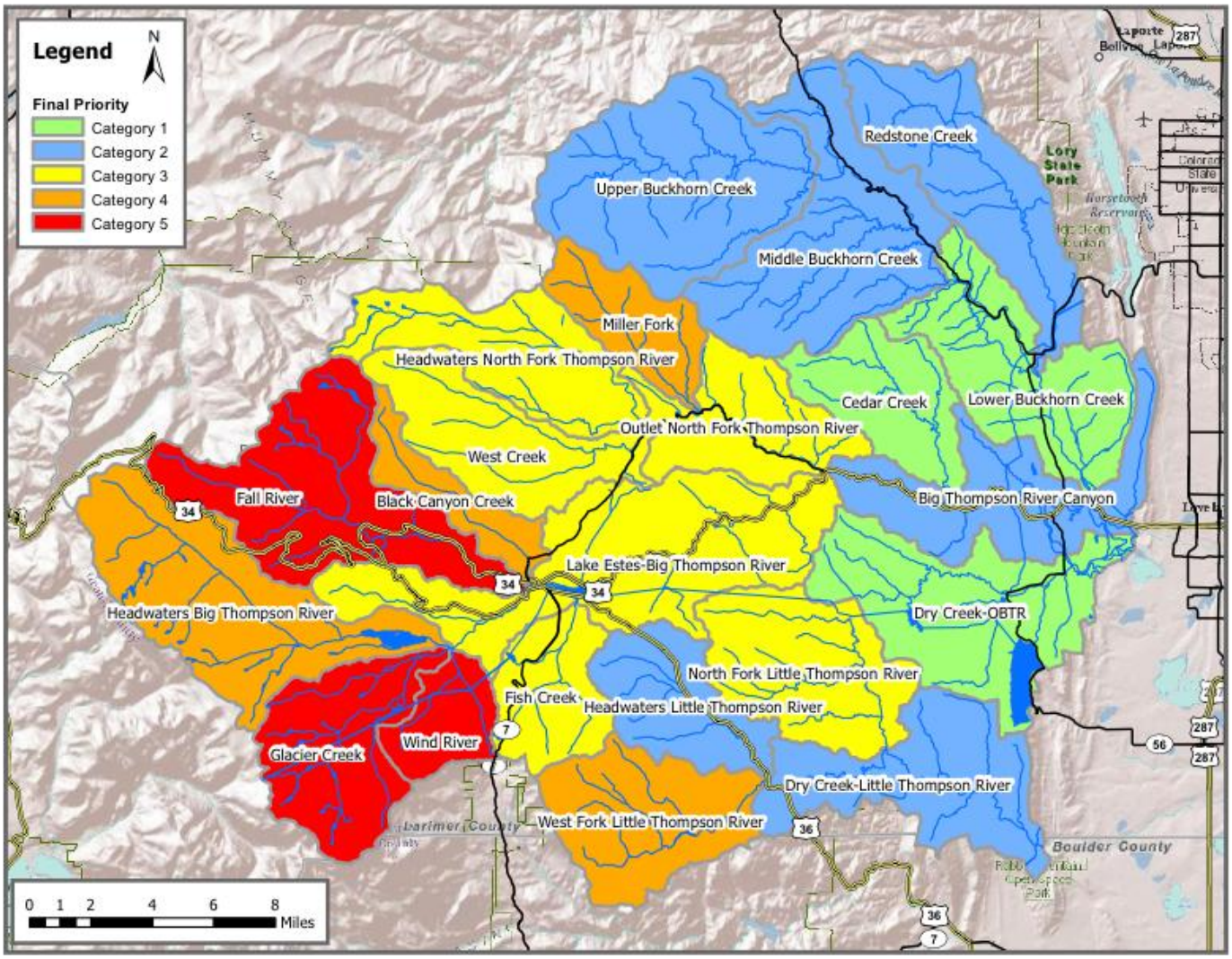
Watershed Assessment

High-severity fires can cause changes in watershed conditions that are capable of dramatically altering runoff and erosion processes in watersheds. Water, forest, soil and sediment yields may increase as more of the forest floor is affected by fire. Four components that are integral in evaluating hazardous watershed conditions were considered for this assessment: ***wildfire hazard***, ***flooding or debris flow hazard***, ***soil erodibility*** and ***water supply***. The Big Thompson Wildfire/ Watershed Assessment was developed by JW Associates Inc. and through stakeholders in the watershed (the Forum, water providers & utilities; federal, state and local land management agencies; counties; townships and other interested groups).

The analysis and results for each component noted above were categorized into ***five categories.*** The categories were used in this analysis for the purpose of comparing watersheds to each other within the Big Thompson Watershed….

Category 1 – Green (Lowest Ranking - least threat)
Category 2 – Blue
Category 3 – Yellow
Category 4 – Orange
Category 5 – Red (Highest Ranking - greatest threat)

The Final Composite Hazard Ranking noted below combines the four components noted above by numerically combining their rankings for each sixth-level watershed and then re-categorizing the results.

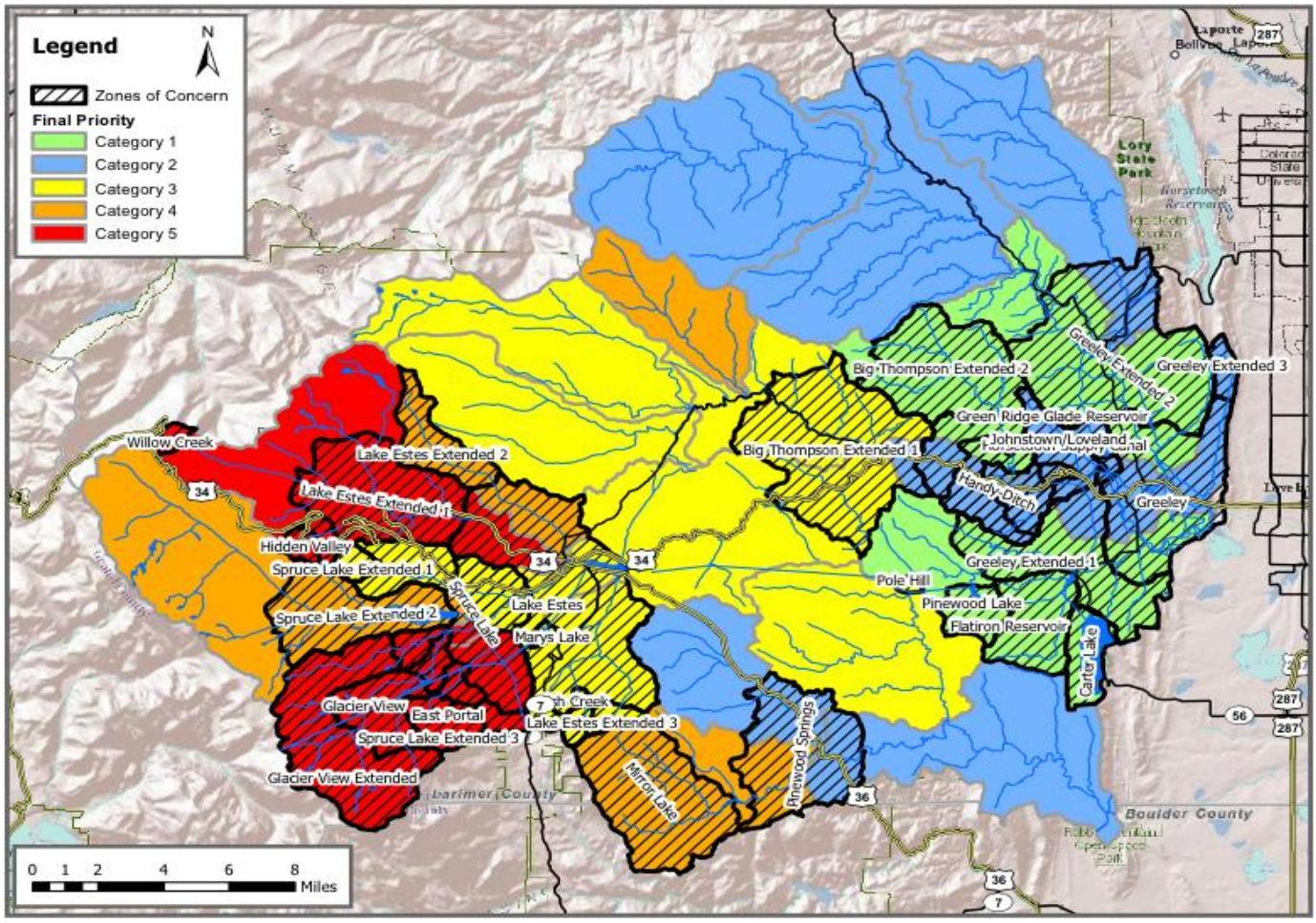


Big Thompson Watershed Final Hazard Rankings

General Opportunities & Constraints

As a result of the study and analysis, 'zones of concern' (ZoC) were created for each watershed to assist the stakeholders in their options and prioritizing their opportunities and best management practices.

Specific treatment areas and priorities identified in existing plans were also recommended for review for their contribution to our watershed protection efforts and incorporated into the expanded plan (existing Community Wildfire Protection Plans). Other existing land and vegetation management plans, fuels treatment plans, source water protection plans, watershed restoration plans or prescribed fire or fire-use plans may also exist that cover portions of the critical watersheds.



Big Thompson Watershed Zones of Concern

The first step in identifying opportunities and constraints within the ZoC for the Big Thompson analysis was to identify potential opportunities that will aid the stakeholders in deciding whether to pursue watershed protection/hazard reduction efforts, the overall scope that those efforts might involve, and identification of the key partners for those projects.

The opportunities and constraints described below were applied to the ZoC as a series of filters and identifiers of potential opportunities. As such, the key factors in looking at final ZoC opportunities and constraints include ***ownership***, ***access***, ***slope***, ***vegetation*** (primarily ponderosa, lodgepole pine and spruce fir), ***wilderness areas*** and ***roadless areas***. Major ownership classifications for the Big Thompson are federal, state, local government and private ownerships. However, there are other agencies or institutions, such as state universities, that may also own significant acreage.

As a side note for all watershed managers and directors, The Colorado State Forest Service is developing a series of documents related to watersheds and their protection. The first document, tentatively titled, "*A Comprehensive Strategy for the Management and protection of Colorado's Watersheds,*" will have a series of companion documents entitled, "*Management and Protection Techniques for Colorado's Watersheds*."

The report, analysis and figures were prepared by JW Associates, Inc. (*www.jw-associates.org*), Breckenridge, CO.

The Big Thompson final hazard rankings are noted in the table below…

Sixth-level Watershed Name	Wildfire Hazard	Flooding/ Debris Flow	Soil Erodibility	Composite	Water Supply	Overall Ranking
Wind River	5.1	5.5	3.4	5.5	1	5.5
Fall River	3.6	4.9	5.4	5.4	1	5.4
Glacier Creek	3.1	4.6	5.3	5.1	1	5.1
Miller Fork	5.5	4.3	3.7	5.2	0	4.2
Headwaters Big Thompson River	3.2	2.1	5.5	4.1	1	4.1
Black Canyon Creek	2.7	5.2	5.2	5.1	0	4.1
West Fork Little Thompson River	4.7	4.4	1.4	4.0	1	4.0
Headwaters North Fork Thompson River	3.9	4.3	3.4	4.4	0	3.4
Lake Estes-Big Thompson River	3.6	3.9	1.5	3.4	1	3.4
Fish Creek	3.1	4.3	1.6	3.4	1	3.4
West Creek	3.7	4.2	2.9	4.1	0	3.1
Outlet North Fork Thompson River	4.1	4.1	1.8	3.8	0	2.8
North Fork Little Thompson River	3.4	2.2	1.3	2.5	1	2.5
Big Thompson River Canyon	1.4	3.5	1.7	2.3	1	2.3
Upper Buckhorn Creek	5.4	2.0	1.3	3.2	0	2.2
Dry Creek-Little Thompson River	0.7	3.8	1.2	2.0	1	2.0
Headwaters Little Thompson River	5.2	0.5	1.6	2.6	0	1.6
Middle Buckhorn Creek	4.2	2.2	0.7	2.6	0	1.6
Redstone Creek	2.1	1.6	0.9	1.6	1	1.6
Dry Creek - OBTR	0.5	2.3	0.8	1.1	1	1.1
Cedar Creek	2.1	2.5	0.5	1.7	0	0.7
Lower Buckhorn Creek	0.8	0.9	0.5	0.5	1	0.5

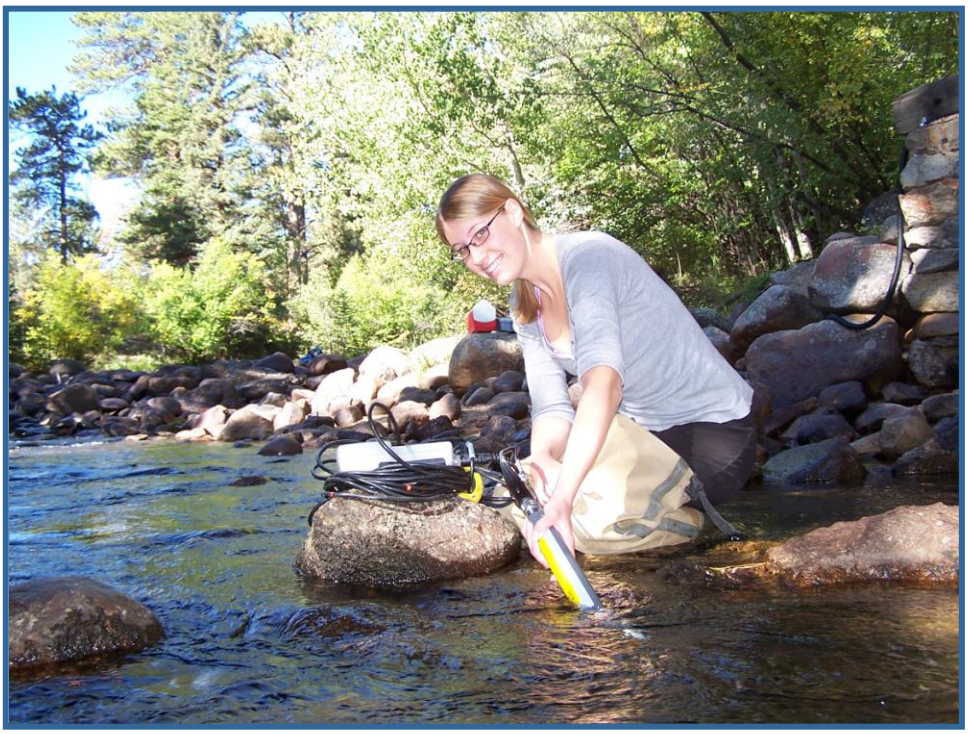
Big Thompson Final Watershed Rankings Table

Dave Cole Environmental Scholarship Fund & Award

Dave Cole served on the Big Thompson Watershed Forum's Board of Directors for 10 years, 1998 – 2008, and was keenly interested in water science education for our region's youth. Dave has long been a steward for improving and protecting water quality and promoting water conservation.

In 2012, the Forum will award an environmental scholarship to a student attending Colorado State University or the University of Northern Colorado in the amount of $1,500.

To be considered, the candidate must be a sophomore, junior or senior student by the fall 2012 semester, in an approved academic program with a primary focus of study in hydrology, water resources, watershed science, water pollution, and/or water quality. Applicants must have a minimum GPA of 3.0. Application for the award must be submitted via mail or electronically via email to the Forum by the close of business on June 29, 2012.



Dave Cole 2010 scholarship winner, Lindsay Davis, a major in Environmental Health from Colorado State University taking in-situ physical samples in Glacier Creek near Rocky Mountain National Park

The application package must include a resume, three references (contact information only), a copy of the candidate's most recent academic transcripts, and a short (one-page max) statement of interest letter that describes the candidate's course of study, future educational and career plans, past/current volunteer or community work and why they should be selected for the award.

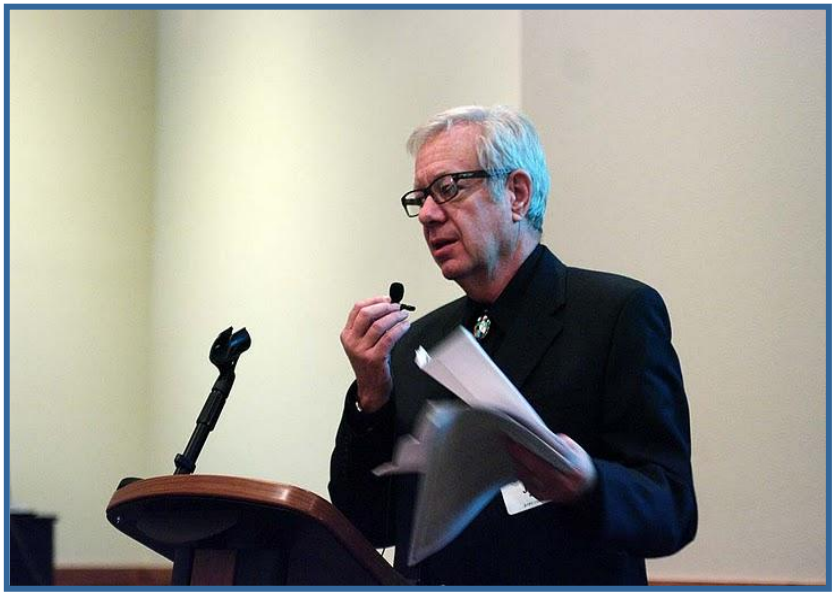
If selected, the candidate will agree to volunteer a minimum of 40 hours for the Forum over the 12-month period beginning in July. Many volunteer opportunities are available with the Forum that can provide the candidate with unique and valuable learning experiences. The selected candidate will be announced on July 16, 2012, and the scholarship will be awarded at the BTWF Annual Meeting in February 2013.

For more information about the award, the acceptable fields of study, a list of acceptable volunteer activities, and instructions for submitting an application, please consult our website at *www.btwatershed.org* and select the *Dave Cole Environmental Scholarship Fund* link.

Dave Cole 2011 scholarship winner, Donal O'Leary, a major in Watershed Science from Colorado State University, accepting the award from Dave Cole

Forum 12th Annual Meeting & Conference

The 2011 BTWF Annual Meeting, '*The State of Our Watershed in 2011'*, was a great success and well-attended. The meeting proved to be an excellent opportunity for attendees to learn and network. The topics and speakers are noted below. Our primary goal for this meeting was to convey, to Northern Colorado stakeholders, the hot issues of today concerning water quality and water conservation and to update our



John Matis, Forum Chairman of the Board, gets the conference started….

watershed community about the state of our water quality in the Big Thompson River and its major tributaries (*see state of the watershed report section on page 7-8 for the results*).

The Forum would like to send out a big thank you to everyone who attended and to our wonderful speakers and their great presentations.

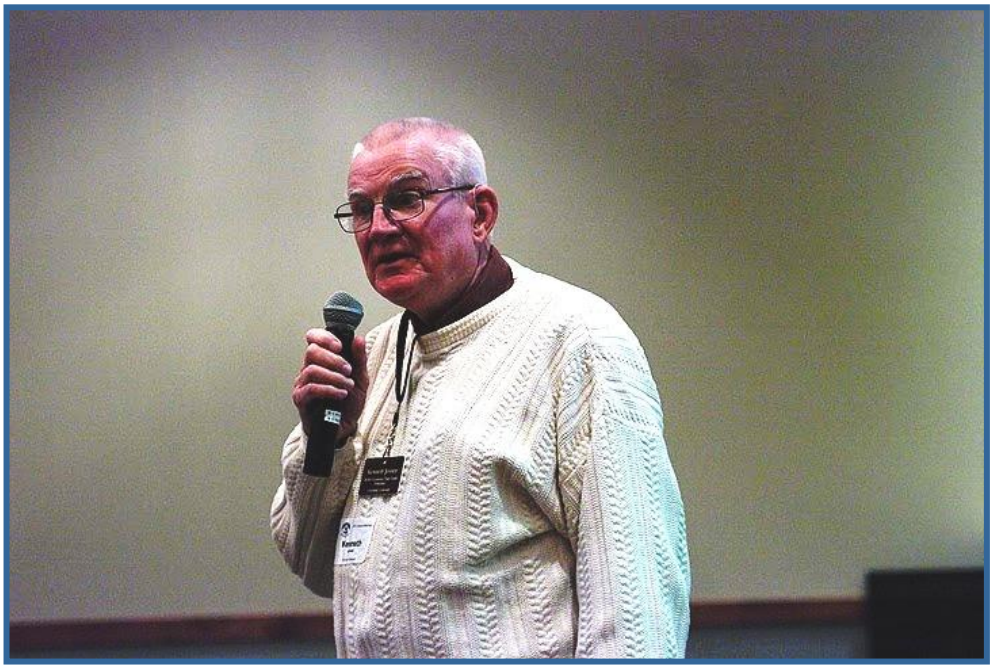
And a special thanks to the Forum's Science and Monitoring Committee (Al Paquet, Esther Vincent, Jennifer Stephenson, John Bartholow and Judy Billica) and Christine Hawley with Hydros Consulting for their knowledge, for their hard work and dedication in putting together the watershed report.

2011 Speakers & Presentations……

What is the Status of Water Conservation in the North Front Range? *– Tracy Bouvette, Principal, the Great Western Institute, Denver, CO*

Nutrient Standards and Management Approach for Colorado's Waters –
Dick Parachini, Program Manager, CDPHE Water Quality Control Division, Denver, CO

Big Thompson State of The Watershed Water Quality Report –
Christine Hawley, Environmental Engineer, Hydros Consulting, Boulder, CO



Keynote Speaker: Ken Jessen **–**
Domestic and agriculture water supply and use in Northern Colorado and the Loveland region

Ken is a recognized Colorado historian, author and guest columnist with the Reporter-Herald, Loveland, CO

Protecting our Watersheds Through Effective Agricultural and Livestock Best Management Practices (BMPs) **–**
Troy Bauder, Extension Water Quality Specialist, Colorado State University, Fort Collins, CO

Northern Colorado and Front Range Climate Change and Vulnerability – Joel Smith, Principal, Stratus Consulting, Boulder, CO

The program, attendees and *power point presentations may be found* on the Forum's website main page at *www.btwatershed.org*.

Note: The Forum has decided to go to a bi-ennial meeting format…as such, we will not be having a meeting in 2012. Save the date for the Forum's next meeting in February, 2013.

Forum Board of Directors Update

The Forum is pleased to introduce three new Board of Directors….David Jessup, Lisa Voytko and Ken Garrett.

Mr. Jessup is co-owner of Sylvan Dale Ranch in Loveland, Colorado, where he introduces cattle and horses to guests, and guests to the ways of the West. He loves preserving open space, battling invasive weeds, catching wild river trout on a fly, singing cowboy songs, and telling stories about the American West—some of them true. Sylvan Dale is a 3200-acre working dude ranch that raises grass-fed beef for local consumption.

David Jessup

David has managed two grants from the Natural Resources Conservation Service to implement rotational grazing by developing new water sources and fencing to increase the number of pastures on both private and national forest land, and to install two center pivots on the ranch's irrigated pasture to conserve water. He worked to place two-thirds of the ranch lands, some 1600 acres, under permanent conservation easements. His dream is to build a sustainable, grass-fed cattle operation that restores health and diversity to the foothills ecosystem.

He's a member of the Colorado and Loveland Historical Societies, the Oregon-California Trail Association and the Downtown Loveland Association. He serves on the Board of Embrace Northern Colorado, a regional organization seeking to develop choices about quality future growth. He is also putting the finishing touches on an historical novel, *Spirit Theft*, which won first place for mainstream, character-driven fiction at the 2009 Rocky Mountain Fiction Writers Contest. He has contributed chapters to two non-fiction books and is active in the Rocky Mountain Fiction Writers and Northern Colorado Writers. Before returning to his sixty-five-year-old family ranch in 2000, he served with the Peace Corps in Peru, and worked for human rights in Latin America with the AFL-CIO International Program in Washington, DC.

David received a BA in Biology at the University of Colorado and an MA in Sociology at the University of California in Berkeley and currently resides in Loveland, CO and Maryland with his wife. He has four children and cherishes exploring the fresh new worlds with two grandchildren

---

Ms. Voytko is the Water Production Manager for the City of Fort Collins Utilities. Her responsibilities include management of the City's water treatment facility (87 mgd), off-site reservoirs and pump stations, watershed program, and the source of supply at the Michigan Ditch at Cameron Pass down the Poudre River. She completed her Masters degree in Civil Engineering from Arizona State University, after graduating from Colorado State University with a degree in wildlife biology. She is a registered Professional Engineer in Colorado, Arizona and Montana, a Level A Water Treatment Operator and level D Wastewater Operator in Colorado. Lisa worked in the consulting field, and had her own consulting business in water and wastewater treatment plant planning and design, prior to joining the City in 2008. Lisa's daughters are grown, so she and her husband are raising alpacas and chickens.

Lisa Voytko

Mr. Garrett is currently the water quality compliance coordinator for the Tri-Districts Water Treatment Facility (Soldier Canyon Filter Plant) in Fort Collins. Mr. Garret has worked in the water treatment industry for 29 years. He started with the City of Fort Collins Water Treatment Plant in 1983, and has worked for the Left Hand Water District in Niwot, Carter Lake Water Treatment Plant in Berthoud, and has also worked as a consultant for the Town of Berthoud, Central Weld County Water District and Little Thompson Water District. Ken has held the top water treatment certificate (Class "A") from the State of Colorado since 1989 and has worked extensively with the CDPHE with compliance issues. Protecting the public health and well-being by providing safe drinking water has been and continues to be a challenge for Ken, but a satisfying one.

Ken Garrett

We know that their community involvement and professional experience in the private and government sectors will be a tremendous asset to the Forum. Welcome and congratulations!

In addition to our three new members, five incumbent members were unanimously re-elected to the Board of Directors: John Matis (chairman), Greg Dewey (vice chairman), Ed Young (major contributor), John Bartholow (at-large) and Al Paquet (at-large).

Colorado Water 2012

What started as a small celebration to commemorate the major anniversaries of some of Colorado's most important water organizations and legislation has quickly grown into a statewide water awareness campaign called Colorado Water 2012. Throughout the year 2012, Colorado Water 2012 will be connecting Coloradans to their water through resources, events, and activities created by seven Colorado Water 2012 Committees and by a coalition of over 200 volunteers statewide.

The mission of Colorado Water 2012 is to engage Coloradans in a statewide celebration of water: past, present, and future. We want Coloradans to celebrate our unique heritage as a headwaters state and understand the diverse uses and values of this precious resource.

The Colorado Foundation for Water Education (CFWE) is spearheading this exciting initiative in collaboration with nearly 200 diverse partners across the state. To learn more about the campaign, visit their *About* page. To join the movement and show your support, register as a member of the Water 2012 *Coalition of Partners*.

Colorado Healthy Rivers Fund

This is a Colorado Tax Check-Off Program Supporting Local Restoration Projects

Make a Donation on your Tax Return!

Haven't done your taxes yet? It's ok, that just mean's there's still time for you to make a donation to the Colorado Healthy Rivers Fund, part of the Tax Check-Off Program! **Remember, this year, taxes are due April 17**, which means that is also the last day to donate to the Colorado Healthy Rivers Fund!

Don't forget: Donations to the CHRF can be made on line 34 of the Colorado Individual income tax return (form 104). Ask your tax consultant to include your donation on line 34!

For more information on the Colorado Healthy Rivers Fund and to learn how it has helped local water enhancement projects in previous years, please visit the *website*.

Colorado Clean Marinas Program

Clean Marinas Colorado is a voluntary recognition program that targets marinas and individual boaters - providing education and outreach activities that help maintain and restore water quality in Colorado's major waterways. The program was developed in collaboration with the EPA, the Colorado Department of Public Health and Environment (CDPHE) - Nonpoint Source program, U.S. Coast Guard Auxiliary Mile High Flotilla and the Colorado Lake & Reservoir Management Association (CLRMA).

Over the past 18 months, the program has established its presence and worked through the successful certification of six Colorado Clean Marinas. Most recently,
In the Dillion Marina was recognized as the first facility to achieve a certification score of 100% in all scoring categories - "a first for the state and worthy of special recognition," commented Paul Clukies, CMC Program Director.

"This is just another way for Dillon to highlight our commitment to preserving resources and recreational activities for the community," said marina manager Bob Evans. "The Dillon Marina has always been committed to preserving natural resources in Dillon and the Dillon Reservoir and this project is just one more example of this commitment."

On a national scale, Clean Marina Programs are gaining visibility and support in over 30 states - mostly in the coastal and Great Lakes areas - and it is anticipated that soon, all 50 states will have programs. The state of Colorado - particularly the CDPHE Water Quality Control Division Nonpoint Source program - is being proactive and progressive in their approach to this topic. To receive certification, a marina has to meet the Clean Marina program's criteria and follow a set of ongoing guidelines. These standards reflect non-structural and non-regulatory best management practices for minimizing the environmental impact of boating and marina operations. Marinas that participate in the program are recognized for their environmental stewardship and may promote these accomplishments in their communities.

Colorado Marina Association is a non-profit 501(c)(3) organization dedicated to delivering the Clean Marinas Colorado Program and promoting clean boating in Colorado's waterways. For more information, contact Paul Clukies, Executive Director, at 720-226-0766, email: *coloradomarinas@comcast.net* or visit: *www.coloradomarinas.org.*

Snowpack Update

February 16, 2012 (courtesy of Colorado Parks & Wildlife)

***Statewide Conditions*:**

- January 2012 was the 15th warmest January on record for Colorado for the period 1895-2012 with temperatures ranging from 3.5 to 5.0 degrees Fahrenheit above normal for most of the state.
- Colorado January 2012 precipitation was well below normal for much of the front range, eastern plains, and lower portions of the San Luis Valley.
- For the water year so far, most of the state is at or below normal moisture levels. Much of northwest Colorado and isolated portions of southwest Colorado is well below average.
- October to January 2011 Total Water Year Precipitation for Colorado is below average for all basins so far except for the Upper Rio Grande basin and the San Miguel, Dolores, San Juan, Animas basin. The cumulative statewide precipitation average is currently at 86% of normal, a slight improvement from the December 2011 measure of 78% of normal.
- Statewide reservoir storage is currently at 106% of average, and is good for all basins except for the Upper Rio Grande.
- Mid-winter statewide snowpack has improved from 66% of average (January, 2012) to 76% of average (February 15, 2012), and ranges from a high of 88% of average in the Arkansas and Upper Rio Grande basins to a low of 70% of average in the Yampa/White/North Platte basins.
- The NRCS stream flow forecast for 2012 projects below average flow for virtually all major streams within the state.

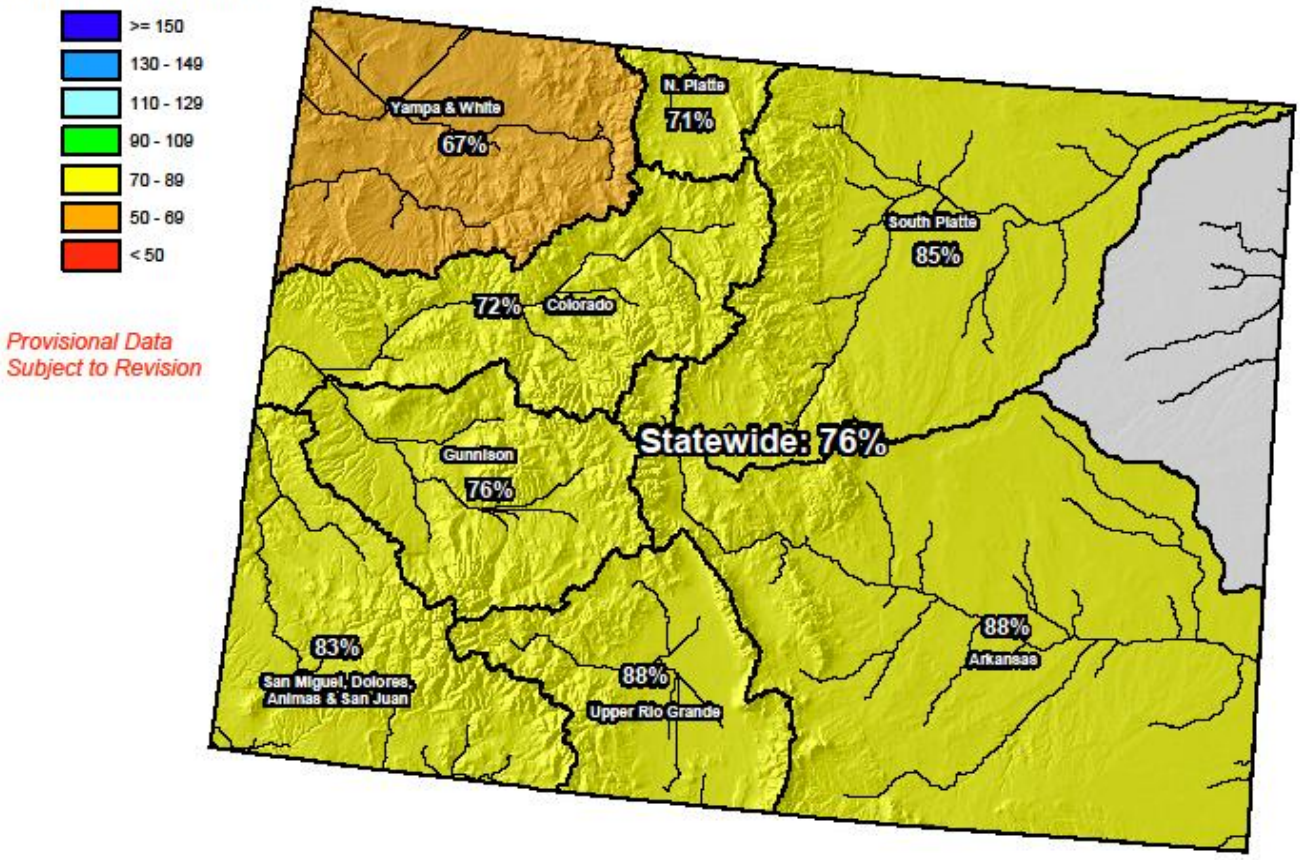
Listed in the following table are reservoir storage and precipitation conditions as of February, 2012.

Basin	Snow Pack (% of Average)	Reservoir Storage (% of Average)	Total Water Year Precipitation (% of Average)
South Platte	**85**	**109**	**92**
Arkansas	88	94	90
Upper Rio Grande	88	66	105
San Miguel/Dolores/ San Juan/Animas	83	105	100
Gunnison	76	107	85
Colorado	**72**	**113**	**77**
Yampa/White/N Platte	70	120	74
Statewide Conditions	76	106	86

SNOTEL (or **sn**ow **tel**emetry) is an automated system of snowpack and related climate sensors operated by NRCS of the U.S. Department of Agriculture in the Western United States. There are over 600 SNOTEL sites in 13 states, including Alaska.

Colorado SNOTEL Snowpack Update Map

Percent of Average



Current as of Feb 15, 2012

*Data may not provide a valid measure of conditions

Forum Supporters – Thank you!

The Board of Directors and staff of the Forum would like to say thank you to the following for their continued support:

City of Fort Collins
City of Fort Morgan
City of Greeley
City of Loveland Public Works
City of Loveland Water and Power
Larimer County
Northern Water (NCWCD)
North Front Range Water Quality Planning Association (NFRWQPA)
Soldier Canyon / Tri-Districts
Thompson School District R2J
Town of Estes Park
Town of Milliken
U.S. Environmental Protection Agency 8
U.S. Geological Survey
Weld County

We appreciate your efforts to ensure the success of the Forum and the integrity of the Big Thompson Watershed Forum, and we look forward to our continued partnerships and collaborations.

Anyone interested in being nominated for a board member seat should email or call Zack Shelley (970) 613-6163 *zshelley@btwatershed.org*, John Matis (970) 663-1056 *Johnm80225@yahoo.com* , or Greg Dewey (970) 962-3717 *deweyg@ci.loveland.co.us*.

Forum Mission

The mission of the Big Thompson Watershed Forum is to protect and improve water quality in the Big Thompson River watershed through collaborative monitoring, assessment, education and restoration programs. The Forum fosters stakeholder teamwork by conducting scientifically sound watershed assessments, identifying priority protection measures, educating affected interests, and promoting voluntary practices that protect the quality of Big Thompson waters. The Forum monitors nutrients, pathogens, metals and other physical parameters, and reports on the health of the watershed. We are funded by 13 major Benefactors -- and by you, our loyal individual contributors!

Please send any ideas regarding how the Forum can better serve our community or relay your suggestions to the Forum Outreach Team at zshelley@btwatershed.org.

Please forward this message to others who may be interested in the Forum's activities.

==========

PLEASE BECOME OR CONTINUE TO BE A PART OF THE LEADING WATER QUALITY PROTECTION ORGANIZATION IN OUR REGION

With your **tax-deductible** financial support in 2010, we will be able to gather an even wider array of water quality monitoring data, produce better periodic assessments and conduct more community outreach and education.....

We have established several different levels of individual and corporate support:

Benefactor	$1000 or more (annually)
Sponsor	$500 (annually)
Patron	$250
Sustainer	$100
Individual	$25
Student	Free

Please send a check for your annual donation *along with your email address* to:

Big Thompson Watershed Forum
800 South Taft Avenue
Loveland, CO 80537

Your cancelled check may be used as your receipt or we can provide you with an invoice.

Thank You Very Much for Your Support!