



GREELEY TRIBUNE
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 (Weld County)
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Evans considers requiring builders to find more water

Current regulations don't meet needs

By **DONOVAN HENDERSON**
 Greeley Tribune

For every new home or business that is constructed in Evans, the builder must dedicate a certain amount of water to the city.

EVANS That amount is supposed to meet the needs of that new home or business.

But the city's current rules on the dedication of water — which require a flat rate of three acre-feet of water per acre of developed land — have left the community thirsting for more.

"The current ordinance is less than adequate," said Earl Smith, director of public works, at Tuesday night's city council meeting. He pointed out that in the city's amended 1997 budget, which the council approved Tuesday, Evans is spending \$1.1 million to purchase water to make up a shortfall.

The demand far outweighs the supply, he said.

So a new ordinance was proposed to the council Tuesday changing the dedication requirements. Instead of charging the flat rate, the city would require water dedication based on consumption.

The consumption rate would be based on a complicated formula and the unit of measure would be called an EQR, or Equivalent Residential Unit.

"The intent we have is to collect the water necessary to meet our long-term demands," said Michael Smith, city manager. "It's hard to exactly compare the old system to the new

system."

In fact, a subdivision that's not high in density may end up needing less water under the proposed ordinance. Where the city is having problems, for instance, is in trailer courts where there are more than four units per acre. Those residents are using more water than was allocated for them.

Adam Buna of Landings Development voiced his concern that his group would have to immediately ante up additional water rights for its development at the northwest corner of 23rd Avenue and 37th Street. The subdivision will have more than 200 homes.

City staff members said that if the ordinance passed, the additional water probably wouldn't be required until later in the construction stage.

"It's clearly not (our) intent to cripple any developer," said Mayor Dallas Greenfield.

The council approved the ordinance 7-0 on first reading. The ordinance will now go through the public hearing process and it may face some scrutiny because current establishments will be affected.

Businesses such as laundromats and car washes that require large amounts of water will have to come up with additional units to cover their water use.

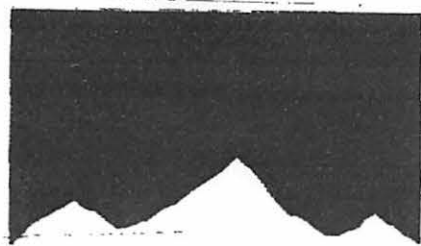
And if the expansion of an existing structure or development increases water use, more water will have to be found.

"The trigger is anything that causes more water demand," said Michael Smith.

Greeley Water and Sewer Board considering cash payments for large quantities of raw water. Developers say this is threat to retail and commercial growth. Present policy - one 2 million gallons [a year?] required to get raw water. Now scarce and highly priced. Fix charges would start at \$10,000 per acre foot, and only until city sells 1,400 ac-ft.

1 ac-ft serves 1 or 2 families

Jesse Stephenson
 Water Board Considers Relief
 For Developers
 Greeley Tribune Feb 10, 2000
 P. A3



Rocky Mountain News
March 25, 1986

80

SPEAKOUT

To cut deficit, use "Green Scissors"

By Chris Seldin
and Jill Lancelot

If recent polls are any indication, most Americans can agree on two things: we need to balance the budget, and we need to protect the environment. On Feb. 15, a broad-based coalition of taxpayer organizations, deficit hawks, and environmental groups showed Congress an easy way to tackle both these goals.

In a report entitled "Green Scissors '96," this coalition of strange bedfellows identified a menu of 47 spending and subsidy cuts that would save federal taxpayers \$39 billion.

"Green Scissors '96" targets spending throughout the nation, including needless water projects, corporate subsidies, unnecessary highways, polluting energy research and development, foreign aid projects, and farm programs. Individual savings gained by canceling these programs range from \$71 million for dropping a bridge proposed in Stillwater, Minn., by the Department of Transportation, to the \$1.7 billion conserved by discontinuing the New Jersey Beach restoration project of the U.S. Army Corps of Engineers.

Many of the federal projects highlighted by the "Green Scissors" coalition represent "federal pork" of the worst kind. "Green Scissors '96" identifies such parochial projects and make-work schemes throughout the country, including one right here in Colorado: the \$710 million Animas-La Plata water project.

Proposed by the U.S. Bureau of Reclamation, the Animas-La Plata project would siphon away up to half the flow of the Animas River, largely to irrigate surplus, low-value crops on high altitude lands. With a negative benefit/cost ratio

of .36 to 1, Animas-La Plata would provide an average subsidy exceeding \$1 million per farm to about 225 ranchers in southwestern Colorado near Durango.

In 1987, supporters of Animas-La Plata took out an advertisement in the *Durango Herald* that epitomizes the pork mentality. Intended for area residents, the ad declared: "Why we should support the Animas-La Plata Project: Because someone else is paying most of the tab! We get the water. We get the reservoir. They pay the bill."

Who are "they?" Taxpayers, of course — both Colorado and U.S. taxpayers.

Why should Colorado taxpayers who live in the populous areas of the Front Range have to pay for a boondoggle benefiting only a small number of people on the other side of the state? At present, a \$50 million chunk of Coloradans' state income taxes is slated to subsidize project irrigators near Durango. That number could climb to as high as \$200 million.

And that's just Colorado taxes — the small part of the Animas-La Plata price tag. The larger portion, more than \$450 million, comes from federal taxpayers. Thus, Colorado taxpayers would pay twice for Animas-La Plata: once at the state level, and again at the federal level.

Environmentalists also cite harms they believe are large-scale and irreversible: dewatering one of the last free-flowing rivers in the West, inundating Native American archaeological sites, flooding scarce elk habitat, violating the Clean Water Act, and harming two species of endangered fish.

Putting these significant fiscal and environmental costs aside, some proponents of Animas-La

Plata claim the project is needed because of its ties to Indian water rights. Over two thirds of the project's costs, however, are for non-Indians.

Studies demonstrate that Animas-La Plata can be re-formulated to better protect taxpayers and still serve the tribes. A July 1994 audit report by the Interior Department's Inspector General concluded that taxpayers could save up to \$170 million simply by downsizing the current project design to eliminate subsidized non-Indian irrigation. In addition, an October 1995 report by a respected Colorado engineering firm concluded that by completely re-structuring the current design to focus on Indian needs, taxpayers could save as much as \$450 million.

Animas-La Plata is not an isolated case. Similarly groundless spending throughout the country contributes to our nation's debt and deficit problems. Some economists, in fact, argue that environmentally harmful spending carries double costs: those borne by taxpayers to finance the harmful activity, and those incurred to clean up the environmental damage that results.

If common sense prevails, the cuts outlined in "Green Scissors '96" should be easy to make. Not only do these cuts add up to \$39 billion, but they also provide elected leaders with an easy way to help the environment.

Only one thing stands in the way of the "Green Scissors" cuts: special interest politics. And to voters, that's no excuse at all.

Chris Seldin is research and policy associate with the Sierra Club Legal Defense Fund in Denver. Jill Lancelot is legislative director with Taxpayers for Common Sense in Washington, D.C.



FORT COLLINS COLORADOAN
Fort Collins, CO
(Larimer County)
AM, 23,486; Sun, 29,340

Colorado Press

get people serious about providing

Loveland panel calls halt to Big Thompson study

By DAVID PERSONS
The Coloradoan

LOVELAND — The Loveland City Council officially pulled the plug Tuesday night on the controversial Big Thompson River Corridor Study on the recommendation of the Loveland Open Lands Advisory Commission.

Jim Danforth, chairman of the commission assigned to review an interim report of the \$90,000 study jointly funded by the city and Larimer County, briefly told the council that the commission's recommendation was to consider the study complete and terminate the contract with EDAW Inc., the Fort Collins consulting firm that did the study.

Larimer County commissioners received the same recommendations recently and also agreed to consider the study complete.

The City Council quickly adopted the recommendation, 9-0, with little discussion.

Deb Pearson, manager of long-range planning and natural resources for the city, told the council that \$59,696 has been paid to EDAW for work completed on the

study. Pearson said county officials have agreed to pay their fair share in the future, which should be roughly one-third of the cost.

Also upon recommendation of Danforth, the council unanimously agreed to consider the river corridor study report as an element of the 1996 Loveland Open Lands Plan and as an amendment to the 1994 Loveland Comprehensive Master Plan.

The river corridor study — designed to study, map and inventory land along the Big Thompson River from Interstate 25 to the mouth of the Big Thompson Canyon west of Loveland and identify potential sites for open-space preservation and trails — has been a thorny issue almost from the outset.

Corridor landowners perceived the study as a threat, saying they feared it would create a way for local governments to take away their property or allow public access to it if they didn't agree to sell it. Their concern triggered a 90-day moratorium of the study by the council in February.

Purgatory to start seeding clouds

Procedure back after 15 years

By Tom Sluis
Herald Staff Writer

Cloud seeding will resume at Durango Mountain Resort this winter after a 15-year hiatus.

Beginning Nov. 1, clouds over the upper Hermosa Creek drainage will be laced with minute particles of silver iodide shot from generators on the ground. With

any luck, the seeding will produce the 120-percent to 160-percent snowfall that occurred when the ski area participated in a similar program in the late 1970s through 1985.

The cost of the \$41,946 program run by Western Weather Consultants of Durango will be split evenly between the resort and the Southwestern Water Conservation

District, which hopes the extra precipitation squeezed from the sky will translate into more water for irrigators.

Water district board members approved the expenditure Wednesday, along with money for two other cloud-seeding programs: one in the upper San Miguel drainage for \$75,953, and another for the Dolores Water Conservancy District costing \$10,000.

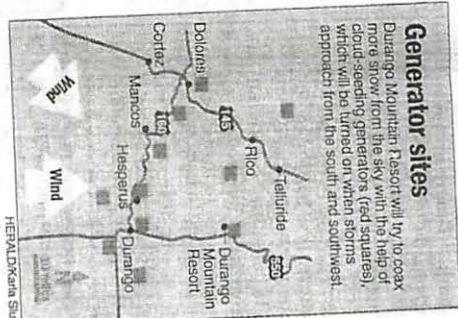
The Southwestern water district will pay half of the three programs' \$104,199 cost — just more than \$52,000. The Telluride ski area will pay for half of the San Miguel program; the Dolores water district will pay for \$5,000 of its program.

For the upper Hermosa Creek drainage, nine cloud-seeding generators owned by Western Weather Consultants will run for 750 hours between Nov. 1 and Jan. 31, 2001. Larry Hjertstad, owner of the company, said the generators will be put on private land in spots similar to where they were in the 1980s.

"When we had the program before we were more generalized targeting for the San Juans," Hjertstad said. "Now we'll be more specifically targeting on the east part for Durango Mountain Resort."

Hjertstad said that after the upper Hermosa program ended in 1985, snowfall dipped below normal for the first time in a decade. Since then, snowfall has averaged between 70 percent of normal to

See PURGATORY, Page 12A



GREELEY TRIBUNE
Grealey, CO
(Weld County)
Daily, 24,422; Sun, 24,888

On cloud seeding

The Durango Herald

After a summer of low water levels and high fire risk, more snow in the high country sounds like a great idea. Come ski season it should sound even better.

After a 15-year hiatus, cloud seeding is planned for the mountains north of Durango. As dry as the last three winters have been, that is welcome news.

Durango Mountain Resort and the Southwestern Water Conservation District have agreed to share the \$41,946 cost of a cloud-seeding program to squeeze more snow out of the sky over the ski area. The actual seeding is to be carried out by Western Weather Consultants of Durango.

Two other cloud-seeding programs are also planned, one in the upper San Miguel basin — to benefit Telluride — and one near Dolores. The Southwestern Water Conservation District will share the cost of those efforts with Telluride and the Dolores Water Conservancy District.

There is some evidence that cloud seeding can help. The Purgatory ski area participated in a similar program from the late 1970s through 1985. During that time, the ski area saw snowfalls in the range of 120 percent to 160 percent of normal. When cloud seeding was halted in 1985, snowfall fell below normal and has been down ever since.

As experts are quick to point out, that drop was largely coincidence. After 1985 the weather patterns changed, sending fewer storms toward Southwest Colorado.

That, of course, is the limitation of cloud seeding: There have to be clouds to seed. It does not mean, however, that the effort is a waste of time and money. On the contrary, weaker natural snow conditions may make it all the more valuable. Last year, for example, Telluride, which conducted cloud seeding, received 25 percent more snow than Lizard Head and Red Mountain passes. ...

Durango is the most valuable



DURANGO HERALD
Durango, CO
(LaPlata County)
M-F, 9,292

THE DURANGO HERALD

Purgatory: Resort to begin seeding clouds

Continued from Page 1A

just above normal. Last winter was one of the worst snowfalls on record for the ski resort.

"It was ironic that almost immediately after the program stopped, the weather systems made an abrupt change, and Southwestern Colorado and much of Colorado ended up being in a much significantly drier weather pattern," Hjermstad said.

The coincidence was of interest, Hjermstad said, "But it was not because of the weather modification."

Hjermstad said he asked Durango Mountain Resort's previous owners to restart the program in the mid-1990s, but they said they didn't have the money. He sold the idea to the ski area's new management in part by saying it reduced reliance on snowmaking.

Mike McCormack, Durango Mountain Resort's vice president of mountain operations, said the last two seasons of sub-par snowfall spurred the ski area to action.

Even though the ski area has upgraded its snowmaking equipment and produces good snow, it is not a fail-safe device in attracting

skiers, McCormack said. "The way the snow-making systems and the snow cat equipment have improved over the last several years you can provide a pretty good product, but the perception overall is that skiing is bad because we haven't had any good snowfall," McCormack said.

"We're not looking for 180 percent of snowfall, but we need at least to try to do everything we can to have a normal opening" by mid-December, McCormack said.

Any snow resulting from the seeding would also be reported to Colorado Ski Country, the trade organization that tallies snow depths at ski resorts throughout the state. Snow from snowmaking is not reported, McCormack said.

As for cloud-seeding results, Hjermstad said precipitation at Telluride ski area last year was 25 percent greater than nearby Lizard Head and Red Mountain passes.

For the water districts, a 10 percent to 15 percent increase in precipitation could translate into a 10,000-acre-foot increase in the Animas River, Hjermstad said, and a 24,000-acre-foot runoff increase for the Dolores River.

For the \$52,000 invested by the

water district for all three programs, this means water is obtained for around \$1.50 an acre-foot.

John Porter, general manager of the Dolores Water Conservancy District, said it's a great deal. His water district typically charges irrigators \$27.50 an acre-foot.

Hjermstad's company has a permit with the Colorado Water Conservation Board for the Telluride cloud seeding, but has to apply for a second one for the Durango Mountain Resort generators. He said the state water board is meeting the first week of October and may consider the application.

Only one of the water district's eight directors voted against the program. Steve Fearn, representing San Juan County, said he was opposed to the program because there is no guarantee the snow targeted for Telluride will not drift the 10 miles to Silverton, possibly creating an avalanche hazard.

"We look at it as a public safety issue," Fearn told the board.

Fearn said as an aside that he was pleased with Hjermstad's willingness to work with the town on mitigating the program's effect on Silverton.

Rothberg, Tamburini and Winsor, Inc. (July 21, 1995) Upper East River Valley - Areawide 201 Facility Plan; Final Report Submission, TN-2200-SC-C, Denver, Colorado, pagination by section.

p. 4-1 "According to the Colorado Department of Health, a total flow (sewage plus I/I) of 120 gallons per capita per day is considered excessive."

p. 4-9 For Mt. Crested Butte -- "The 1993 report determined that I/I reached as high as 190 gallons per capita per day (gpcd) during the spring runoff months. Assuming a per capita sewage flow of 80 gpd, the total wastewater flow (sewage flow plus I/I) equates to approximately 270 gpcd, that could be considered very excessive when compared to the Colorado Department of Health's I/I parameter of 120 gpcd."

p. 5-2 There are significant numbers of hotel rooms and other lodging available in the area. These units were added to the single family housing figures at an equivalent housing rate of 0.7 times the number of rooms available. [what about pillow count of early 1980's -- this figures seems like an understatement of demand] The condominiums in the area experience a peak wastewater flows equivalent to a single family home and were therefore not reduced by a factor for the projections. [what is water use in hotel besides in the rooms?]

p. 5-2 "The Upper Gunnison Water Conservancy District has compiled the housing and growth figures accepted at the public meeting and made projected population figures from the numbers and the accepted peak season occupancy rates for use in the water resources study. Their population estimates assume full occupancy of hotels, condominiums, and houses. The low and high population figures depict the range of population that would be expected to be occupying housing units during a peak of seasonal use."

p. 5-2 "The peak season population estimates for the Towns of Crested Butte and Mt. Crested Butte are derived from information provided by each town. They use and (sic) equivalent residential unit (EQR) value for estimating population and wastewater flow from a housing unit. The Town's EQR is significantly lower than Mt. CB due to the type of housing available. The low and high population estimates for developed areas outside these two Town's [what area?] are based upon an occupancy of 2.8 and 3.5 persons per housing unit respectively. This figure is commonly used for unincorporated Gunnison County. Crested Butte South has a lower occupancy rate based on a more permanent population with less transient units and seasonal peaks. The result of this investigation has shown [p. 5-3] that growth in this area is likely to exceed both Regional Water quality Management (208) Plan and the County planning figures." Need to consider cycles of demand.

analysis from engineering perspective and did not address legal obstacles, costs of implementation, and mitigating factors; (3)

p. 6-1 "A phased approach to all capital expenditures is also important so that facilities are not constructed so large that service providers have to rely on growth to pay off debt."

p. 6-1 "The American Association of Cost Engineers divides cost estimates into three basic categories: Order-of-Magnitude Estimate, Budget Estimate, and Definitive Estimate. The cost estimates for this planning study are order-of-magnitude estimates. Accordingly, they are considered to reflect true costs within an accuracy range of about - 30 to + 50%"

p. 7-3 Fear that an autonomous authority would indirectly encourage growth by providing service to anyone who would help pay off debt service.

p. 8-2 For a regional wastewater facility -- "Phasing of the capital expenditures for the Regional facilities is of paramount importance to the entities involved. Existing user charges can continue to pay for debt service of existing facilities while tap fees from growth can be appropriated for the regional improvements required. Growth will be used to fund regional improvements, where the additional plant capacity will be constructed for that purpose. Having actual growth establish the contributing portion to plant funding will allow for a more equitable distribution of costs."

p. 8-3 "Growth should be responsible for paying the cost of extending wastewater collection and treatment services. It is important that the financing plan be considered along with the engineering feasibility."

Appendix C

Memorandum from Claudia Cummins of RBD Inc.(?) to Frank Glick of Mt. CB Water and San. May 30, 1995. Provides data on demand projections. Present service area of Mt. CB water and San. - from 1975 to 1994 shows average of 64 housing unit a year added to system. assuming 3.5 persons per unit and based on 74 gpcd wastewater flows. Meridian Lake has 42 units built of total 140. assuming 3.5 persons per unit and based on 74 gpcd. For the extended service area of MT. CB of 1,280 acres with a density of 40 family residences per 150 acres given past experience so total buildout is 341 housing units at 3.5 persons per unit and 74 gpcd. For Glacier Lilly at 40 acres with 21 lots and 7 built and assuming 3.5 persons per unit and 74 gpcd. Mountain Highlands Estates at 40 family units on 154 acres and 3.5 persons per unit and 74 gpcd. Total of 542 housing units in expanded service area plus 1,280 units in existing MCB service area. At 64 housing units a year built would take 29 years to buildout.

Letter from Robert Wright, Atty for Mt. CB water and San to Gary Tomsic, Gun. County Manager, September 23, 1994, Consideration of a regional facility does not consider water rights implications. (1) relocation will require water court action; (2)

Rural areas may tap new water source

Irrigation district makes plans for extended service company

By **Ojala**
Herald Staff Writer

For La Plata County residents with a cistern in the yard, it might quench a decades-long thirst. But it could also increase the thirst for development, a worry for government officials trying to bring some order to the area's rapid growth.

It's a variation of the chicken-or-the-egg question. Will people go to where the water is or will the water go to where the people are? That seems to be the central question underlying plans by the Pine Irrigation District to supply a portion of the county with potable water through a nonprofit, member-owned water company.

Chris Kramer, the consultant hired by the district to form the Vallecito Water Co., said the intent is

definitely to bring the water to where the people are.

"Water is a basic need," he said. The project is meant to bring water to areas with marginal groundwater supplies or selenium, methane and other water-quality problems, he said.

County commissioners support the project, saying it could ease demand on underground water sources and ensure potable water for residents. But they say it needs to be done carefully, within the bounds of the master plan the county expects to adopt soon and with consideration for the impacts such a large central water system will have on the county.

The city of Durango sees the potential for significant growth on its periphery, bringing more cars

See WATER, Page 12A

*surrounding plans -
River Fruition -
areas of the -*

WATER

Continued from Page 1A

and people into an already jammed downtown, and City Manager Bob Ledger said he hopes land-use controls go along with the water service. In Bayfield, the town's government has been asked to connect to the water company's lines, but Town Manager Denise Naegle said the town has opted instead for expanding its own system to meet an urgent need for more water.

Kramer said the company will work closely with local governments to ensure water lines do not become a burden. He is also the former manager of the Montezuma Water Co., now locked in a fight with Cortez over water service.

The Montezuma Water Co. was formed in 1964 meet the need for drinking water in Montezuma County and has since grown to serve about 3,000 people and parts of Dolores and San Miguel counties. The water company surrounds Cortez.

That has caused a clash between the city, which is showing much more interest in guiding development in its "urban influence area" within three miles of the city limits, and the company, which eyes the area for increased revenue.

Cortez City Manager Bill Ray said the differences between the two entities stem also from a historic laissez-faire attitude toward planning in the county, which basically figured growth would go to where the utilities were.

A federal loan the company has applied for through the Farmer's Home Administration complicates the matter. It would be used to upgrade the company's treatment plant to cut the need for buying water from Dove Creek.

If awarded, water company Manager Mike Bauer said it comes with federal protection of the company's market for the 40-year life of the loan, protection needed to ensure enough customers to pay back the taxpayer loan.

"That would choke off any control the city would have over development for 40 years," Ray said, development that will certainly affect the city and that the city may some day inherit. He said the federal protection amounts to a monopoly, precluding Cortez from expanding its water system.

Bauer said the company is willing to sell the city any pipes or other assets in areas that are annexed by Cortez, and it will also agree to meet city standards within the urban influence area if the city will make up any cost difference between the company's normal water lines and those required by the city.

There are also other issues associated with water companies. Many have no interest in fire protection, and undersized lines can leave firefighters high and dry during major structure fires.

But Kramer said he plans to work out planning issues ahead of time, making sure water lines within areas targeted for annexation by Durango, Bayfield and Ignacio meet their standards.

That's part of the rub in Cortez, where Montezuma Water Company's lines are not always compatible with city standards based on fire safety needs.

Kramer said part of the problem in Montezuma County stems from Farmer's Home Administration financing. Because the company could only get loans for serving

people who wanted water, he said it was nearly impossible to plan for future demand by putting in larger water lines than were needed at the time.

Now, he said the FHA allows water companies to plan for the future. But any financing from them will also likely carry the protection for service areas, he said; meaning any public entity would have to purchase the company's pipes and other equipment if an area is annexed.

"We want to avoid what's going on over in Montezuma County and avoid the mistakes that were made there," he said. "That's a very nasty fight."

Kramer said the Vallecito Water Co. has submitted articles of incorporation to the Colorado secretary of state, and is working on a draft of bylaws. Letters and questionnaires will be sent out soon to potential members, he said, with the cost for a residential tap now set at \$3,000.

People can secure membership now through a \$500 deposit, with the balance for a tap due whenever a construction bid for an area is awarded. The price is expected to increase when construction begins.

The company will have storage rights to 2,000 acre feet of water in Vallecito Reservoir, or enough to serve about 6,000 lots. Kramer said the tentative service area includes La Plata County south of Vallecito and east of U.S. Highway 550 and the western fringe of Archuleta County.

Though Kramer said the project won't happen overnight, he expects construction bids to be advertised soon for a treatment plant at Vallecito and the first sections of water lines.

Assembly Reviews Water Sale Contract

By SHANNON HAUGLAND
Sentinel Staff Writer

The City and Borough Assembly got its first look at a proposed contract Tuesday to sell water for export in a deal that, if approved, would yield an average of \$1.3 million per year for the city.

At an Assembly work session and the regular meeting, City Public Works Director Larry Harmon presented the details for a proposed 15-year contract, which includes provisions for a firm to take an average of 84.5 million gallons per year from Blue Lake.

The maximum amount the company would take would be 4.5 billion gallons per year, which is only one-fourth of the volume that was drawn from the lake annually by Alaska Pulp Corp. when its pulp mill was in operation.

The city uses Blue Lake as its primary drinking water source, and to power one of its hydroelectric plants.

If the Assembly approves the final version of the contract with Global Water Corporation of Vancouver, B.C., the firm plans to perform engineering studies for construction of a 36-inch pipeline from the lake for filling tankers in Siiver Bay.

The water would be shipped to China for bottling at a rate of four to six 24-million gallon tankers per year to start.

Harmon said he believes this would be the first export agreement of its kind in Alaska.

"We're on the leading edge of this thing," he said today.

Assembly members offered a few suggestions to clarify the contract, but were generally enthusiastic about the prospect of another revenue source for

the city.

The city is still waiting for permission from the state to export the water.

Harmon said he plans to present a final version of the contract in late January or early February and will likely recommend approving it as a non-competitive bid.

In other business, the Assembly:

— heard a presentation from a representative of a group of investors which wants to set up a sawmill in Sitka.

— set anti-drug and alcohol policies for city employees who drive commercial vehicles.

— agreed on a 4-1 vote to lease space in the new shelter to a veterinarian at a rate of \$1 per square foot per month.

— voted to put a tract of city land near the Sitka Trap Club up for auction at a minimum bid price of \$149,

200.

Present at the Assembly meeting were Anne Morrison, Keith Perkins, Dick Smith, Bert Stedman and Stan Filler. Dennis Rogers and Mayor Perla Hallgren were absent and excused. Filler, who is deputy mayor, presided at the meeting.

Water Sale

Harmon said the contract for water export provides protection for the city's use of Blue Lake water for power and consumption. The 4.5 billion gallon maximum is the equivalent of 90 days of the former Alaska Pulp Corp. mill use, and 16 percent of the appropriation amount the city is seeking in its request to the state.

The city would receive the engineering studies if the project does not proceed, Harmon said. The timeline for construction of the facilities is about two years.

Harmon said Global Water Corp. plans to market untreated Blue Lake water to other companies as well, marking the price up to cover the cost of constructing and operating the water line, plus "a small profit." The company would have exclusive rights to sell the Blue Lake water.

The contract terms would be subject to review after 15 years.

"I really think that beyond the 15-year period, we should not get locked into the 3 cents per gallon," Smith said.

Harmon told the Assembly that the city will charge less than 1 cent per gallon (\$10 per thousand gallons) and increase the rate by 0.2 cents per gallon every two years with a maximum of 2.3 cents per gallon.

One other company, Alaska Premium Beverage and Bottling Co. of Kent, Wash., is buying Sitka's tap water at a rate of \$4 per thousand gallons, Harmon said today.

The rates for commercial water use in Sitka is 50 cents per thousand gallons.

Continued on Page 10

City Administrator Gary Paxton said he is hoping to put the revenues into the water fund, the electric fund and the general fund.

(end of this section)

SCHOOLING SHOW

High point english and western win director's chair. June 8 at Chaffee County Fairgrounds in Salida. Call Nicole at 719-539-5499 or Dawn at 719-942-4091.

5/15-5/29

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5/15

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5/15

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Youth Build, which was overseen by Christopher Klein Construction, Inc. has recently built a beautiful new home in the Sunspot Subdivision. The address is 601 7th St. This is a:

- Single Story Home
- 1080 Sq. Footage of Living Area
- Modern Kitchen
- 3 Bedrooms
- 1.75 Baths
- .26 Acres
- No Deed Restrictions

This home was built for a family earning \$27,100 for 1 person for the last 3 years to a family of 4 earning no more that \$38,700 for the last three years.

The price is \$124,900.00

For more information contact
Chris Klein at 641-1246 or 209-0111.

HOME FOR SALE

3 bedrooms, 2 bath, on 3 acres, shed, 2 car attached garage, double fenced yard. Very clean, very heat efficient. 132 Navaho Lane, Gunnison. \$220,000. Call 641-2769.

4/17-tfn

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4/24-tfn

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OTERO JUNIOR COLLEGE Law Enforcement Academy

La Junta, Colorado

Basic Peace Officer Certification Training

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(719) 384-6867
miner.blackford@ojc.edu

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HORNED HEREFORD BULLS for sale. Priced reasonably. Potter Ranch, Ridgeway, CO (970) 626-5540. 5/15-5/29

MISCELLANEOUS FOR SALE

WATERLESS COOKWARE

Stopped doing dinner parties! 17 piece, 7-ply surgical stainless steel sets left! Were \$2,000, now \$695! First 7 callers buy set for \$368!
www.vaposeal.com 1-800-434-4628.
5/15

MOTORCYCLES

1991 Honda Goldwing SE Anniversary edition, with matching cargo trailer. † Both in excellent condition. † \$7800.00 OBO. † Call 970-243-5910
5/15

AGENDA

GUNNISON COUNTY BOARD OF COMMISSIONERS
TUESDAY, MAY 20, 2003

- Housing Authority Department Report
- Discuss Costs to Create Library Special District
- Board Approval of Reorganization Plan
- Adoption of 2003 All Hazard Mitigation Plan
- Warrants and Transfers
- Treasurer's Monthly Report

tion, proposed single-family residence, review for compliance with Section 5-207: Protection of Water Quality, located on Lot 22, Allen Homesites

Lunch

12:30 p.m. Eric Lamb, site visit/no action. re-

AGENDA
GUNNISON COUNTY BOARD OF COMMISSIONERS
PRELIMINARY AGENDA

FOOSBALL AND P
at Alpine Leisure models deeply disc ball and Harvard pi ssembly and deliver **Leisure Products** son. 641-3935
5/15-6/26

REN
THE G MOUNTAIN MEA TWO AND THRI HANDICAP AC LAUNDRY CALL JB BOY FOR AP (970)

North Elk
4,100+/- s.f., 4 Bd Master Suite. \$360 try-Wilson Realty. 6/5/15

Western Colorado
Registered State 3 Story Vintag on 35 +/- acre Fronts beautiful Gunnison River. C views. Excellent \$725 Call Bo 970-527-7756 o RE/MAX Mo

RECRE EQUIP

GUNNISON COUNTRY LEGAL NOTICES

*Gunnison Country Times
15 May 2003, p. 33*

THE BUSINESS ENTHUSIAST

A JOURNAL OF COMMERCE

RESOURCES

Drops of Revenue

Gold, oil, fish and timber have been traditional routes to wealth in Alaska; now entrepreneurs are trying to add the state's most plentiful resource, water, to the list.

Sitka, surrounded by glacier-fed mountain lakes and fronting on the open ocean, is a center for this burgeoning enterprise. Blue Lake, source of the city's water, also supplies water bottled by the Alaska Premium Beverage and Bottling Company under the brand name Alasika. Available in Alaska and at more than 1,000 stores and restaurants in the Seattle area, the brand is also being distributed in Hawaii, Brazil and Taiwan. Vice president of marketing Janice Lee says Asian markets are thirsty for anything imported, and Alaska glacial water carries a cachet of purity.

Premium Beverage uses more than 100,000 gallons per month from Sitka and transports the water to its \$4 million Kent, Washington, bottling and filtration plant, using enormous FDA-approved bladders hauled by barge. Alasika sales are expected to exceed \$2 million in 1996.

Global Water Products of Vancouver, B.C., is negotiating with Sitka for the first large-scale raw water sale from Blue Lake. Global proposes drawing 84 million gallons a year and hauling the water in oceangoing tankers to a bottling plant in China.

Global's commitment would net the city about \$1.3 million in

revenue annually. Yet Global's portion would be just a fraction of what the city already diverts to generate electricity.

Sitka Public Works director Larry Harmon describes Global as wanting "16 minutes of what already comes out of the (Blue Lake) turbines in a year." Global



Glacial purity is the cachet claimed by Alasika bottled water.

plans to ship up to eight tankers per year; Harmon says the city has the capacity to fill a tanker a day and not affect local use.

What gets Sitka officials smiling is the potential to offset local employment lost in 1993, when a large pulp mill closed down. Right now, only one company actually bottles in Sitka, and it is drawing its water from a different

source than Blue Lake.

Bob and Marko Dapceovich found their mother lode at the end of the road where they grew up, when the U.S. Forest Service tapped into an uncharted artesian well. The wellhead became a local shrine, with scores of Sitkans trekking out each Saturday to fill jugs with the special water. The Dapceoviches load tank trucks full of the liquid and bring it across town for filtration and bottling. About \$100,000 of Misty Fjords artesian spring water is to be sold this year throughout Southeast Alaska. A second bottler, Alaska Fiord, hopes to be processing Sitka water this summer, perhaps in conjunction with a proposed microbrewery.

One big advantage of dealing in water is just soaking in. After years of local wrangling over timber cutting and mill pollution, drawing water seems to pose few environmental risks. "There may be problems, but I can't put my finger on them yet," says Harmon of Sitka Public Works. "To me, water export is about as benign as you can get."

—Will Swagel

Sacramento's first gold came from the ground; now it may be found directly overhead. As the sun's bright rays shine on Alvin and Janet Wolf-Esher's home in the California capital, a rooftop collection of photovoltaic panels (PVs) collect the sunlight, turning it into electricity, which powers theirs and neighboring homes.

Supplied by the Sacramento Municipal Utility District (SMUD) with this miniature power plant, the Eshers are among 240 volunteer homeowner participants in SMUD's PV Pioneer Project, a \$2.5 million

pilot program that produces 5 megawatts of the utility's 2,200 megawatt peak load. That's a tiny fraction, but Donald Osborn, supervisor of SMUD's solar program, says it is a significant step toward expanding solar power as an alternative source of energy.

While he acknowledges the high cost of solar technology has inhibited widespread introduction—purchase and installation of each residential system is \$23,000—Osborn believes that spending extra money today ensures that a clean, renewable, and cost-effective

Cruises tap water, strain system



Wooden puppet Pinocchio as Geppetto (Robin Starr) in a classic by members of the Chilkat Centre of Youth. The one-hour program artist Dena Cowen, Saturday at the Chilkat Centre play multiple roles. The full production and the mount- students in the conservatory's Pinocchio are available from stu- Allister photo.

Demand for Haines city water has been at an all-time high in recent weeks because the city has been selling a substantial amount of water to cruise ships on top of increased domestic use.

Due to the cruise ship sales, amounting to \$1,500 as of early June, the treatment plant has on occasion reached its capacity of 500,000 gallons a day.

In May, the average water use was 339,000 gallons a day — a record for the month, and more than a one-third increase since May 1991. A five-month comparison with 1991 shows water use in Haines up 28.7 percent.

"The top priority is more storage capacity," water/sewer operator John Shaw says in a report to the city council.

With the increased water flow, residents of FAA and Small Tracts roads have seen pressure drops, Shaw said.

Also, there isn't enough time for

complete chlorine disinfection, Shaw said. "Under normal operating conditions in the past the chlorine contact time was about half of what is required; on days of high water demand it is now 25-30 percent of that time. This may or may not cause any immediate problems, depending on the priorities of the ADEC" (Alaska Department of Environmental Conservation).

"Another problem, as perceived by the public at any rate, is that the treatment plant operator appears to be spending his entire day doing nothing but driving up and down FAA Road," he added. "While this may be mostly true, the reason for it is that the flow through the plant has to be adjusted by a flow control valve located in a manhole in Battle Road."

Shaw recommended a 500,000-gallon tank above the elevation of the water plant, which he said would solve problems with pressure, domestic supply and chlorine contact.

"The second priority is to expand the water production capability," he said. "This can be accomplished by building a new higher volume plant, or by adding a smaller new plant to operate in line with the existing one. Another possibility is to develop a new source — dare I mention wells?"

Businessman John Floreske Jr. has offered to sell the city water from a proposed well field at 1.5 Mile Haines Highway. Floreske also has offered to sell the city the entire facility, once it's built.

But the city council has put that issue on the back burner until the Alaska Public Utilities Commission rules on Floreske's simultaneous attempt to "de-certify" the city's

water service area west of city limits. "He's trying to be your friend and take away your business at the same time," mayor Greg Combs has complained.

Floreske contends that the city has, in effect, abandoned the service area through its ordinance prohibiting the extension of water mains outside the city unless accompanied by annexation.

The city counters that Floreske is just trying to take away its 30 non-resident customers who get water from the Piedad spring.

There is not much chance of an imminent resolution of the issue, said APUC spokeswoman Agnes Giles. "It could be a year. There are 1990 dockets that are still open."

That's fine with the city, said city administrator Tom Healy. It might be a year before the council decides on a new storage tank, new or expanded treatment facilities or a new water source, let alone the financing for the project, Healy said.

Giles said that Floreske has not yet applied to establish a new water utility, anyway.

Although he originally told the council that the city's participation was not necessary for the well field to proceed this summer, Floreske spokesman Darrell Maple now says the project is on hold until the APUC rules.

Asked whether Floreske had concluded that he needed the city's business to make the project financially feasible, after all, Maple said: "I don't think anything's changed whatsoever. I am not free to discuss the project while we're in the APUC proceeding. We're trying to stay out of the paper as much as we can these days."

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HAINES

CHILKAT VALLEY NEWS

DENVER POST
Denver, CO
(Denver County)

AM, 247,053; Sun, 411,783

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School, Aurora join in water, ranch deal

By Cindy Brovsky
Denver Post Staff Writer

AURORA — In a unique arrangement with the Colorado Outward Bound School, the city is poised to buy a 535-acre ranch in Lake County.

Aurora will keep the surface water rights that go with the ranch — and then sell the property to the outdoor adventure group.

"Outward Bound never could afford to purchase the property without this cooperative venture with the city of Aurora," said Glenn Porzak, vice president of the school's board. "The city is seeking to meet its water demands, and this is a unique way for Aurora to meet those demands, while allowing us to purchase the land."

The water rights to Spurlin-Shaw Ranch, located near Leadville, are worth close to \$225,000. The rights would supply 330 acre-feet a year, enough water for 330 five-member families.

The property is currently owned by several investors and leased to private individuals for grazing and other agriculture uses. The purchase contract, which lists a total cost of \$775,000, still

needs the approval of the Aurora City Council, which will review it next month.

The water, which normally would be used to irrigate the land, would be diverted to Twin Lakes near Buena Vista. From there, the water would go through a pump station and several reservoirs and tunnels and end up at Aurora's water treatment plant.

Outward Bound, meanwhile, may build a new lodge on the property. The rest of the land would remain as open space.

Aurora has been criticized by other mountain communities — namely Park County — for its aggressive pursuit of water rights. The Upper South Platte Water Conservancy District is fighting an attempt by Aurora to eventually pump nearly 16 million acre-feet of water out of an aquifer near Como.

The water district argues that the project will harm the water rights of senior water-right holders, including existing well owners. The case is currently in water court.

Lake County Commissioner Jim Martin said he understands the concerns of communities about municipal-

ities buying mountain community water rights. However, Martin said the pending sale of the Spurlin-Shaw Ranch is more acceptable because the land will be bought by Outward Bound.

"I'd rather see local control (of the water rights)," Martin said. "But the land will be under local control. And the amount of water being diverted will not make the land a desert."

Aurora's pursuit of another Lake County property, the 2,100-acre Hayden Ranch, could be more complicated. The city has an option to buy the property and water rights for \$2.6 million. Money for both ranch purchases would come from revenue from Aurora's utility fund.

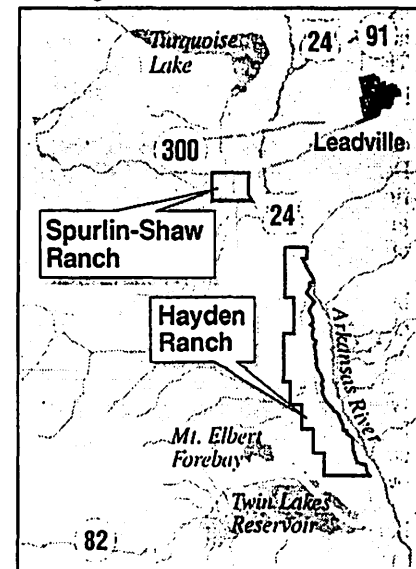
Doug Kemper, manager of water resources for Aurora, said the city just wants the water rights on the Hayden Ranch — which would yield about 700 acre feet of water.

The city is working with several agencies, including Lake County and the U.S. Forest Service, to discuss what will be done with the land.

One option is a possible land swap between the Forest Service and Lake County, Martin said.

Ranch rights

The city of Aurora will buy the 535-acre Spurlin-Shaw Ranch for its water rights. The city also is hoping to purchase the 2,100-acre Hayden Ranch also for its water rights.



W. C. B. expansion

C. B. Water and San. - plans augmentation and exchange - 12 June 1991 / 91CWS 49 case

5 cfs to North Village Reservoir from Malenich Ditch Subdevelopment
and from East River supplied from East River Pump Station

700 ac-ft

Total Water Requirements of ultimate build-out

1,272.0 ac-ft - of which 1,061.4 for domestic and 166.4 for irrigation

Based on 2,800 permanent year round residents

14,000 persons seasonal

1,000 day skiers

80 gallons per day requirement per capita for permanent and seasonal population.

20 gallons per day for day skiers.

Both inclusive of residential and commercial water use.

110 acres of lawns.

② 188.4 ac-ft consumption use. [15%]

Based on Blaney-Criddle calculation of 1.21 ac-ft per acre.

The 110 acres of lawn and park require 132.1 ac-ft

Domestic use consumption totals 55.3 ac-ft of 1,106. [5%]

Total estimated 188.4 ac-ft of consumption use at build-out

Inlet use in May 2.9 ac-ft consumption vs 6.5 in Jan, Dec, Mar.

Summer 4.8.

Summer 73% of winter

Assume - no out of priority conditions on Upper Gunnison above Blue Mesa, because excess of flows over decreed and conditionally decreed diversions even in dry year.

Augmentation - will return 2. cfs from Vergah Young Bijaw

- will use dry up easement on 20 acres - put in 24.2 ac-ft per year to benefit lower East River

- pump water from North Village Res to East River -
[obtain better quality water]

of 1,084 ac-ft of return flow 881.4 ac-ft from East River

So exchange this for out of priority use on Slate River.

- Dry up helps lower East, and also releases from N.V. Res.

- Purchased 53 ac-ft from BOR 89CWS 221 18 Sep 90

and wants additional 45. for 98 ac-ft. to meet lower Gunnison calls.

95% of Colorado's water in 1992 is consumed by agriculture; 2.7% by domestic use; .08% for thermal electrical power generation; .3% for mining; and .3% for commercial, office, restaurants, schools and swimming pools.

1 acre-foot equals 325,851 gallons or enough for a family of four for one year.

15.6 million ac-ft flow annually in the state's rivers.

11 million ac-ft in the Colorado River Basin; 2.1 million ac-ft in the South Platte, 1.6 million in the Rio Grande, and .9 million in the Arkansas

Source: Tom McAvoy (1993) Foundation Launches Water Education Effort, The-Denver-Post, December 2, 1993, Pueblo Chieftain, no page. article about Colorado Water Education Foundation map.

Conejos WCD (Water Conservation District) wants to set aside up to 20 ac-ft in Platoro Reservoir for release in exchange for people drilling new wells in Conejos Canyon.

Augmentation plan patterned after one by San Luis WCD on western side of San Luis Valley.

Well permis are difficult to obtain. Participants would petition to join district which has mill levy of 8.229 mills. District is considering a fee of \$750. for a certificate to be used in getting well permit and \$50. annual maintenance fee.

Application filed on December 1, with Water Court in Alamosa.

Source: Erin Smith (1993) Conejos WCD Seeks Approval Of Plan To Augment Local Wells, Pueblo Chieftain, Dec. 1, 1993, no p.

*They succeeded
July 15?
1994*

Colorado State Board of Land Commissioners purchased the 86,000 acre Box T Ranch north of Pueblo for \$4.2 million. Plans to get \$200,000 annually from ranch management. Expects a 4% return on the investment for the state. Total investment is \$5.0 million in ranch. Local school district would lose about \$17,000 in taxes.

Source: Tom McAvoy (1993) Legislators Question Land Board's Buying Box T, Pueblo Chieftain, November 23, 1993, no pg.

*Seaman Reservoir reconstruction northwest of Fort Collins
for City of Greeley*

*If new reservoir to be built, cost \$5,000 to \$10,000 per ac-ft
as opposed to spending \$640 per ac-ft for reconstruction*

*Source: Sharon Dunn Greeley completes spillway
reconstruction at reservoir Greeley Tribune 25 June 96*

Summit and Grand Counties hope to buy a reservoir from Climax Moly. Clinton Reservoir on Fremont Pass between Leadville and Copper Mountain Purpose to help in water storage problems. Climax wants \$14 million. Counties want \$3 to \$4 million from Colorado River District. The yield is from 1,800 to 2,400 acre-feet per year. That is said by Porzak, atty for counties, to be enough for many needs of the two counties. Rolly Fisher of CRWCD says not enough time to work on the project, but Board of District said work in vote that over ruled Fisher.

Source: Heather McGregor (1991) 2 Counties Hope To Buy Climax Reservoir, The Daily Sentinel (Grand Junction), July 19, p. 9A.

Aurora and Colorado Springs want to build next phase of the Homestake project, \$100 million for 21,500 acre-feet annually. Project is in wilderness area, HolyCross Wilderness, and H.B. 1041 has been used by Eagle and- County to deny project. The first phase left big scars and was \$72 million for 37,000 acre-feet annually in 1965.

Source: Cliff Thompson (1991) Homestake II Decision Expected This Week Avon-Beaver Creek Times (Avon, Colorado) June 26, pp. 1 and 6

94651-
P. 2
A. 7.

Northern Colorado Water Conservancy District plans 7,180^{ac} reservoir near Nunn, Colo. for 100,000 acre-feet
Soaking 100,000 ac-ft unappropriated water under on South Plate.
Rocky Mountain News District Plans Reservoir Near Nunn
Avon (1992 Dec 24) 40 page.

Increase of Green Ridge Glade Reservoir
from 600 acft to 6,000 acft for raw water storage
in Ireland to cost \$20M.
\$3703. (project begun in 1986) acft
Source Anon 1998 Reservoir Plans to Be Discussed
Fred Collins Coloradoan 3/15/98.

Utah - Farmers petition for 140,000 acft of Flaming Gorge
Reservoir water. They formed a new water company.
Bj Rec gave state 500,000 acre (seed originally for Central
Utah Project but system to pump water never built.
State given 15 years to develop the water.

State decided to release 170,000 of depletable water of
which allowed 30,000 already given out including
2,000 acft to city of Green River.

Agriculture typically returns 50%
Cintah Water Conservancy District applied for 60,000 as
supplemental water.

18 Farmers formed the Gunnison Butte Municipal
Irrigation District surrounding Green River
^{could serve}
They also have 6,000 state school lands + 5,000 under
cultivation now. Could grow melons.

Water is for free.

any irrigator getting the water must put it to use in 3 years

State has criteria for deciding who gets what.

- 1st health, ~~2nd~~ safety, 3rd welfare purposes
- 2nd municipal
- 3rd supplemental
- 4th can proposal be realistically done.

State plans to split water in 3rds

1/3 to ag, 1/3 municipal, 1/3 resd.

Patrick C. Cleary (1998) Farmers Petition For Water
Daily Sentinel (Grand Junction CO) pp 113, 913

Water District Raising Tap Fee
Central Weld County District will raise tap fees by \$2,000
in August, 1988 to pay for infrastructure improvements needed
to cope with rapid growth. ~~is~~ than tap fee \$4,200
Seen as growth management. But not.
Source: Donovan Henderson (1988) Water District Raising Tap Fee
 Greeley Tribune 7/31/88

Pine River Irrigation District plans 130 miles of pipeline
has entity (Centerpiece) called the Vallecito Water Company
County of La Plata approved master plan. 20 July 1988
Recent Project received \$5^{MM} loan from U.S. D.A. - Rural
Development for Phase I
Entire project expected to cost \$17^{MM} for 2,000 acft.
Supposed to serve 6,000 to 7,000 acres
Irrigated .39 acre-foot per tap serves 5,128 taps
[Tap fee \$3,315 at 5,128]
Had tied to transfer of Vallecito Reservoir.

Taylor Dams (Kenney Reservoir) facing a crisis - siltation
5 miles east of Rangely built in early 1980's as backup
water source. after 13 years turning to taxpayers for help
Rio Blanco Water Conservancy District.

Taylor Dams is hydropower facility - Moon Lake Electric pays
District \$450,000 an average water year - about \$175,000
is spent on maintenance and operation. Bonds on revenue
bonds tied to electrical power production. District's
current mill levy is .623 and proposed increase to 2.377
In 1986 District asked for tax increase and voters defeated.
oil Companies will pay more than \$537th of the \$675th the
District is asking for.

A business with assessed valuation will pay \$87th of \$100,000
District. Residential will pay \$29.20

Source: Dan Chesnet (1988) Man, Nature Battle For Future of
Rangely Dam Rangely Times 10/23/87 pages 1 and 6.

Water Bank for Subdivision

Greely soon to offer water incentives - water bank created
to buy excess water from lands annexed to town

Bank then sell water to prospective industries at cost
plus interest. - expected cost ~~about~~ about 1/2 less

than Colo Big Thompson water City gets taxes from business

Greely now has 10% more water than need in 100 year drought

Problem - what criteria for need

what criteria for drought

Board approved purchase of 425 acft for \$314,500
as money is available.

Source: Jared Fife (1998) Water Bank May Draw More Business
Greely Tribune 5/29/98

COLORADO-BIG THOMPSON PROJECT

Land irrigated: 629,631 acres

Value of crops in 1987: \$219 million

Cumulative value of crops since 1957: \$5.3 billion

Principal crops grown: Corn, hay, dry beans, sugar beets, vegetables

Counties in project area: Larimer, Boulder, Weld, Morgan, Washington, Logan, Sedgwick

Population of project area:

1957	125,000
1987	425,000

Cumulative electric power sales: 23.33 billion kilowatt hours

Average annual water delivery: 225,000 acre-feet

Water ownership, 1957:

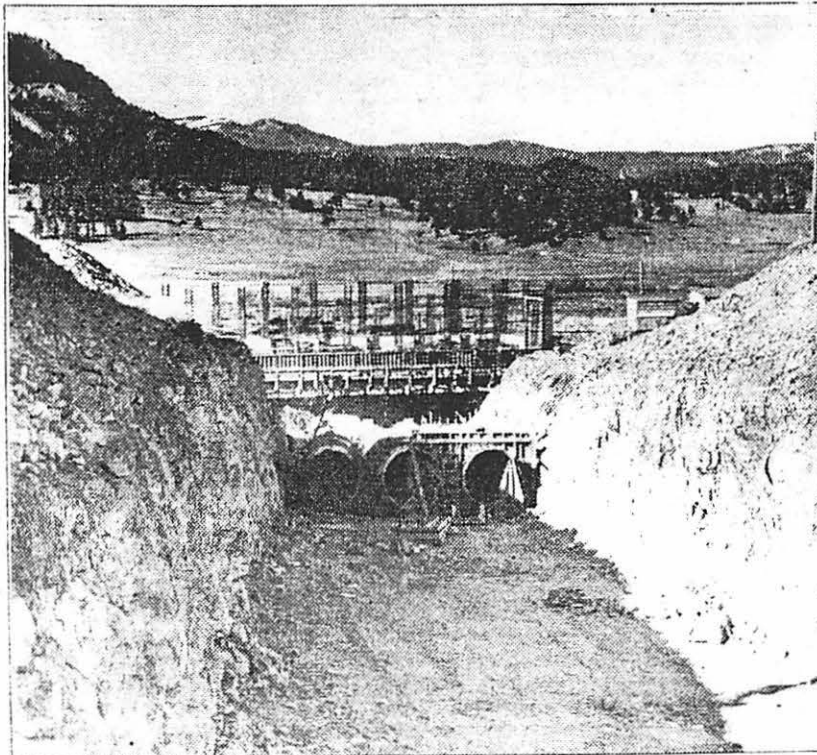
Agricultural interests	85 percent
Municipal, industrial interests	15 percent

Water ownership, 1988:

Agricultural interests	59 percent
Municipal, industrial interests	41 percent

Capacity of major reservoirs:

Lake Granby	540,000 acre-feet
Horsetooth Reservoir	156,000 acre-feet
Green Mountain Reservoir	152,000 acre-feet
Carter Lake	112,000 acre-feet



Denver Post File Photo

CONSTRUCTION: A half-dozen power plants on the Eastern Slope generate electricity with water that travels through the Alva Adams Tunnel from the Western Slope. This 1949 photo shows construction under way on a power plant near Estes Park.

Capital

Reservoir Permit Work Under Way

Ellen Miller AP, Montrose Daily Press March 1, 1990, p. 2
working toward 9404 permit for Richard Reservoir near Kremmling on
Muddy Creek 7 miles upstream from confluence with Colorado River
60,000 acft reservoir; \$25^m of which \$10.2^m is settlement with
front range developers. as compensation for transmountain
diversion. \$10.2^m to be used to secure financing

? 25 year lease agreement to sell water to Denver is part of package
Northern Conservation District will have the \$10.2 to use
on new reservoir. Denver lease up to 30,000 acft per year
but not more than 45,000 acft in any three years for at
least 25 years. Project would fulfill requirements
under Windy Gap Settlement of 1985

Denver would pay \$3.5^m a year for 15,000 acft per year
water not leased available to Western Slope and same for rest of
water after 25 years

\$233 per
acft
plus

Water would also be used to supply releases for Fawcett Services
- endangered species.

Mitigation to preserve wetlands

Water Use

Canadians on average use 5,000 liters of water per person
per day, while the British use 840 liters and the
Swiss 350. (Here is clear evidence that we ought to
lobby for municipal water metering. Calgary, where
residential water is only partially metered, uses twice as
much as Edmonton, which fully meters its water ~~consumption~~
consumption.)

Source: Am. The Greening of a Nation, Supplement to
Harrowsmith (Canada) No 90, March/April 1990

Setterson County should sell Westview land to build
reservoir to protect it from Rocky Flats' pollution
so an improvement, needing 475 acres \$1.1 million
to catch pollution above Stanley Lake.

Bill Mc Bean (1994) Panel/Backs land Sale for Reservoir D.P. 21 Jan 84/99^{no}

~~This is a test of Judy's present~~

State of Colorado hopes to tap Land and Water Conservation Fund for \$700,000 to buy a 52 acre tract in the Warren Lakes area of the White River National Forrest north of Aspin. Also wants \$900,000 to buy a 2,050 acre Thomas family ranch about 30 miles southwest of Gunnison; \$500,000 to buy water rights near Alamosa to make the Blanca refuge a protected wetland and \$350,000 to buy a mile long tract in the Arapahoe National Forest on the west side of the Rocky Mountain National Park.

Source: The Associated Press (1997) State Hopes To Tap Land, Water Fund, Daily Sentinel, October 21, no page.

=====

Pueblo's water utility will spend \$1m to expand its land holdings near Leadville as future site of midsized dam. Purchase of 1,100 acres to add to 1,132 already purchased for a 28,000 ac-ft reservoir. Pueblo uses about 32,000 ac-ft a year. Earlier Pueblo leased water to Aurora - \$9m for 5,000 ac-ft per year of raw water for 15 years. Previously Pueblo had leased Aurora water for \$200,000 a year. This was done to put the water to work. Property near Leadville is owned by Twin Ark Valley Ltd., a Denver real estate investment group. U.S. 24 runs beside the Leadville property for about 2 miles.

Source: Dennis Darrow (1997) Pueblo Utility To Pay \$1 Million To Expand Leadville Dam Site, Pueblo Chieftain, October 22, no page.

~~This is a new test of Judy's present~~

Groundwater beneath 24,000 acres of the old Lowery Bombing Range near Denver is enough to supply 30,000 homes for 100 years. Amount estimated at 3 million acre-feet. Land is owned by State Land Board. Canadian mining company - International Nickel, the Pure Cycle Co, and Tom Lamm [brother of Dick Lamm] and local water development group known as the Rangeview Metropolitan District are negotiating to pump this water from wells 800 to 2,000 feet deep in Denver Basin aquifer. Water is non-tributary. Could supply Highlands Ranch, Arapahoe County and location is just east of Aurora reservoir. Royalties on pumping would provide about \$25 million at year to state schools through Land Board. About 10,000 acre-feet a year could go to off-site uses through International Nickel development. Some say water use should be based on permanent water supply - not on extraction of 1 one hundredths per year of a non-renewable supply. Colorado has agreed in previous lease to development of water. About \$25 million in bonds sold by district but list of bond holders not available [Is this not public if a metro district?]. State says Rangeview has right to develop.

Source: Bruce Finley (1994) State, Developers Set To Tap Groundwater Bonanza, The Denver Post, December 9, pp. 1A and 16A.

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Mayor Wellington Webb of Denver wants South Platte to run like river again. More water needed for aesthetic value, habitat, potential for wildlife, and recreational values. Key to development of Central Platte Valley project features such as Coors Field for baseball, Elitch Gardens amusement park. Highwater goal is for 10.5 mile reach. Often now a trickle. Source: Brian Weber (1994) Webb Wants South Platte To Run Like A River Again, The Denver Post, December 16, pp. 4A and 6A.

=====

Multinational Resources Water and Power Inc. of Vancouver wants to sell 1 million acre-feet of surplus British Columbia water to California. Would supply province with renewable income estimated at \$350 to \$500 million annually. Water to be diverted from headwaters of Fraser to Columbia through 21.5 mile tunnel near Valemont, B.C. and stored in McNaughton Lake. Water could generate electrical power as it flows through dams on the Columbia to a point in Oregon where it would be pumped up for delivery to California. Estimated cost is \$4 to 5 billion. Received skeptically in 1990 but has advanced to pre-construction and permit phase with costs of \$5 million for completion in 1996.

B.C. watersheds produce about 655 million acre-feet annually in 19 river basins. Has among the highest per capita use of 175 gallons per capita. [this from Greeley writer - compare with CO] California has 9.2 million acres in agriculture requiring 3.5 acre-feet to irrigate.

Bill Jackson (1994) U.S. - Canada Water Deal Worth The Time, Money?, The Greeley Tribune, December 4, pp. C1 and C4.

- p. 10 Every acre of land in the Uncompahgre Project is assessed \$22.95 for delivery or irrigation water. The revenue is used to operate and maintain the system.
- p. 11 The Uncompahgre system needs to be retrofitted but the costs are too high for the farmers.

The AB Lateral project will require diversions up to 850 cfs through the winter to be economical. Historic diversions have been up to 1,135 cfs.

- p. 10 Winter flow in the Uncompahgre River has been about 200 cfs.
- p. 1 Sithe Engineering will pay royalties to Uncompahgre Water Users at a minimum of \$150,000 a year.

Sandra Boyce Rusby (1996) Water Users Await Corps Approval Say AB Lateral Project Is Viable, MONTROSE MORNING SUN, Aug 9 Aug 96, pp. 1,10,11.

- p. 3 City of Delta is undertaking its own hydropower project. UVWUA wants to have 41 megawatts. Delta is wanting three 500 kw plants for total of 1.5 mw. Go into operation in Nov of 1997 and be operated for a period of 20 years supplying electricity to city at 4.5¢ per kwh and paying 10% of gross power revenues to city. Based on 20 mile pipeline to city from Grand Mesa. Pipeline abandoned when water came from Project 7. In 1993 Cool Water Hydro approached City of Delta. Delta County Commissioner, Jim Coan, also proposed such a plan but nothing came of it.

Paul Stamsen (1996) Delta To Get Grand Mesa Hydropower - Finally, MONTROSE MORNING SUN, 9 Aug 96, p. 3

- ? \$4.5 million flood control project near Montrose on Shavano and Coal Creeks. Built by Soil Conservation Service. Last of kind. Stricter environmental controls and cost / benefit analysis will limit future projects just for flood control. Funding approved in 1966 but not allocated until 1992. Three years to build 3,000 foot long, 30 foot high dike for 100 year floods. from water shed 18 miles long and 4 miles wide. Cost was to be \$65,000 and went to \$650,000 and finally \$.5 million, including value of donated land for the dam.

Sean Jackson (1996) Dam Project Near Montrose Last Of Its Kind In Colorado DAILY SENTINEL (Grand Junction, CO) 8 Aug 96.

In a letter to Editor of Durango Herald - March 16 -
said that 2,270 surface acres would evaporate
6,412 acre-feet per year or 60 barrels per day per acre

U.S.G.S. says Florida Measa evapotranspires
59,000 acre-feet per year over 39 square miles
[is 2.36 acre

Source:

from letter to Editor by Kevin L. Bjella Durango
A Second Look At Evaporation Rates
Durango Herald 27 March 1987 no page

Alamora leases 1,350 acre North Thomas Ranch
Purchased for \$1 million for water for City
leased for 2 years for \$15,000 for 1,200 acres
Ranchers plan to graze 200 head on 750 acres
and grow hay on remainder
ranchers will clean ditches, haulers, and
pay assessment City retains 80 acres for rec.

Source:

Erin Smith (1987) Alamora Leases Ranch that
Came With Water. Pueblo Chieftan
19 April 97 no page.

Animas-LaPlata costs have gone up with inflation. Benefits do not include supply of water to Ute Tribes. Benefits are expected to exceed \$42 million a year. Value of Indian water right settlement. Water supplied to Ute tribes in manner that permits continued co-existence with non-Indian communities in Four-Corners Region. [Yes, Anglos use first and without pipelines]. Provides certainty to non-Indian water claims in southwest Colorado. Environmental considerations to protect squawfish and razorback sucker. Colorado under Romer committed \$60m to construct project. Delay, Delay is what Sierra Club wants in arrogant paternalism. They break trust with Indians once again.

Frank E. (Sam) Maynes (Durango Attorney for Tribes and Water District) (1992) Animas-La Plata Project's Time Has Come, Rocky Mountain News, March 25, p. 56.

Animas - LaPlata cost climbs to \$640 million, now states most expensive water project. this is 4.8% increase over last year \$611.3 million for entire project.. Initially cost was to be \$117.9 in 1970. Power customers who purchase power from CRSP will pay \$17 million of the \$29.4 million increase. Construction cost allocated to irrigators fixed at \$20.4 though irrigation features are expected to cost \$478m, an increase over \$456 million last year. First Phase is \$440m for irrigation of 42,815 acres on Indian and non-Indian land. which includes Ridges Basin Reservoir and Durango pumping plant and pipeline. Second Phase is Southern Ute Reservoir at \$154m to be funded by Colorado for irrigation of 24,645 acres. Benefits are \$1.50 to \$1.00 at interest rate of 3.25%. Estimated repayment capacity is \$47.30 per acre for irrigation. Annual operation and maintenance costs are not fixed and are expected to be \$37.40.

The \$640.8m to be paid by: irrigators - \$20.4m; ad valorem taxes - \$27.8m; municipal and industrial users - \$84.m; cost sharing - \$222.3, including non-federal funds of \$154m for Phase II; Upper Colorado River Basin Fund revenues from the sale of power at other water projects \$242m; contributed funds - \$254,000; Leavitt Act (federal law allowing payments for Indian irrigation to be deferred as long as land is in Indian ownership - \$6.3m; non-reimbursable costs for recreation, wildlife, and cultural resources protection and enhancement - \$37.m.

The price of the Deloris Project increased 8.5% last year to \$567.6m making this project the second most expensive water project in Colorado's history. Increases in this project attributed to inflation and \$33.4m of construction for irrigation facilities. Deloris farmers will pay \$7.4m for \$366.2m of irrigation work.

Source: Amy Malick (1992) Animas - La Plata Cost Climbs To \$640 Million, Durango Herald, Durango, Colorado, February 18; article credits assistance of Associated Press.

It's Coming!
The Mesa County
Water Association
Fall Film
Festival
November 1998

COLORADO RIVER WATER DEALS

The Colorado River Water Conservation District has two buyers interested in 40-year leases of Wolford Mountain Reservoir water at \$105-155/af/yr. The District can lease up to 10,000 af/yr. Also, Denver Water is considering paying off its \$33 million debt to the District for its share of the Wolford Mountain Project. This would allow the District to pay off its \$15.5 million construction loan from the Colorado Water Conservation Board and reinvest the net proceeds in other water projects. The Eagle Park Reservoir is one such project. The District is involved in a consortium with Vail Assoc. and Eagle County water supplies in acquiring this \$12 million converted tailings pond from Cyprus Climax. Once the new reservoir fills and tests clean, the consortium expects the water to sell at \$420-610/af/yr.

Prior to entering into any water marketing contracts, agency review must be completed. The final Biological Opinion for the Wolford Mountain Project has been signed and issued by the U.S. Fish & Wildlife Service. The Corps of Engineers has modified the project permit and the Bureau of Land Management is proceeding with amending its Plan of Development, the notification period expired in mid-April. For more information contact Dave Merritt, CRWCD Chief Engineer at (970) 945-8522.

Meetings on the calendar

July 21 - Colorado River Water Conservation District Quarterly Board Meeting, Hotel Colorado, 526 Pine Street, Glenwood Springs. Call(970) 945-8522 for agenda.

July 21 - Mesa County Water Association Technical Lecture Series - Jim Lochhead (see Page 1 article) 750 Main Street, Grand Junction, Mesa County Commissioner's Hearing Room.

July 25-26 - *Confluence of Caretakers: Organizational Workshop for Watershed Groups* in Albuquerque, New Mexico. Sponsored by the New Mexico Environment Department, Surface Water Quality Bureau and the U.S. EPA. Contact Neal Schaeffer, NMED-SWQB, PO box 26110, Santa Fe, NM 87502, (505) 827-2912, <neal_schaeffer@nmenv.state.nm.us>.

July 29-31 - 24th Annual Colorado Water Workshop, *World Water Lessons for a Changing West: On Management, Conservation and Public Education* in Gunnison, CO. With keynote address by water legend, Floyd Dominy, former Commissioner, US Bureau of Reclamation from 1959-69. Cost: \$225. Contact Robin Helken 970 641-6215 between 1-5pm M-F Colorado Time.

September 27-30 - *Peaks to Prairies: A Conference on Watershed Stewardship*, in Rapid City, South Dakota. Keynote speakers for the event, which will include hands-on interactive participation, are Fee Busby, Deputy Chief for Technology, Natural Resources Conservation Service, and Wayne Olmore, National Riparian Service Team Leader, Bureau of Land Management. Among the topics on the agenda are grazing, flood plain management, wetlands, urban watersheds, GIS, GPS, TMDL, and source water protection. Contact Throne Ecological Institute at (303) 499-3647.

October 8-9: Copper Mountain Resort, CO Fourth Western Regional Instream Flow Conference. *Water for Fish vs Water for People: A Real Conflict?* Contact the Western Regional Instream Flow Conference, 190 E. Ninth Ave., Ste. 120, Denver, CO 80203, 303 837-9383 <WesternISF@aol.com>.

Rancher Aaron Woodward sold water rights on ranch for \$485,000 reportedly one of the largest water deals in the Piceance Basin. Walraven Ketellapper of Thornton bought rights and approached others on Piceance Creek according to Grand Junction Daily Sentinel. This is an investment. Purchase is 14 cfs from top of basin along Colorado 13 and 35 acres to hold 62 acft reservoir. Rights date to 1880's
 Amount depends on consumption on ranch, can not injure downstream users counting on return flow.
 Deal is leaseback until water might be used for oil shale. Sale made on August 29 ?. probably around 1986 to 1990.
 Source: Anon. A. P. wire (?) Rancher Sells Water Rights For \$485,000 (?)

Good business opportunity for City of Colorado Springs
 1984 summer dry, City earning \$50,000 by selling water to farmers and rafters in Arkansas River Basin
 Latest sale \$10,000 to Catlin Reservoir
 The 1000 acre-feet came from Turquoise Reservoir transferred on July 29 and July 30 to provide higher flows for rafters
 Evaporation and absorption of water into bank accounts for 10% transect loss
 Colo Div of Parks and Rec will reimburse city for this
 Colo Div of Parks Wildlife paid \$250,000 for 25,000 acre-feet to fill a reservoir in southeast Colo. to become Colorado Springs largest water buyer

Transect loss
 ←
 Value of water

Ann - Springs Making Cash Selling Surplus Water
Daily Sentinel (Grand Junction, CO) Aug 10, 1984
 no. page.

Denver Water Board and Willows Water District to try pumping water underground 1,500 feet to Arapahoe Aquifer. Does not face environmental opposition fro water storage. Will start with 500 acre-feet (needs for 2,000). Experiment financed with \$1.7 million from BoReclamation. A way to use peak flows. Concept used extensively in California. Uli Kappas is consultant and eventually hope is for 100,000 ac-ft of storage or equivalent to Two Forks.
Anon. (1992) Two Forks Dead So Water Interests Go Underground, Alamosa Valley Courier, Mar 21.

Flows on Arkansas River through Arkansas Headwaters Recreation Area to be managed for fairly constant flow according to Steve Norris. Possible reduction of calls from Labor Day through Oct 15th to improve feeding opportunities for Brown Trout. in 1991 there were 336,500 visitors and in 1990 there were 292,000 visitors making it the most heavily used commercial whitewater river in the United States.
Anon. (1992) State Suggests Few Changes In Flow For Arkansas River, Daily Sentinel, April 19.

Arkansas flows affect irrigators, fall storage, rafters, fisheries, and [municipalities]. 1992 program not to hold back native water; to maintain a year round minimum of 250 cfs for fishery; incubation flows (Nov - Apr) not more than 5 inches below river height during spawning season; maintain flows at 350 to 400 during egg hatching and fry emergence; maintain flows as close to 700 cfs between July 1 and Aug 15 for rafting and Parks will pay for evaporative loss from augmentation; avoid dramatic fluctuation; reduce flows from Labor Day through Oct 15 to improve Brown Trout feeding.
Dean Preston (1992) Arkansas Will Flow Pretty Much As Usual, Pueblo Chieftan, April 17.

CU doing computer study and modeling to better manage the South Platte. Aurora can lose 200 acre-feet in rain storm - enough for 1,000 - because summer rains can send water past headgates. No one dares divert water from raging river because someone downstream might claim he needs it all. South Plattte is very over appropriated river and "operates with the efficiency of a Soviet grocery store". "Rule of thumb has always been that anything your neighbor knows can be used against you in water court. Ironically, the hide-everything approach lands everyone in water court. Programs starts with satellite photos of every tiny stream, stream gages and snow platforms to send out information, software can produce zooms of parts of riverbasin, and sort out water rights and immediate needs. Minutes after rainstorm hits everyone hooked up can be alerted to consequences. CU Center for Advanced Decision Support for Water And Environmental Systems developed programs with money form Colorado Water Resources Research Institute and six water users.
Bill Scanion (1992) Trying To End S. Platte River Wars, The Rocky Mountain News, April 19.

Rising costs of maintenance for Trinidad Dam. In 1981 dam began operations with agreements between Bureau of Land Reclamation and CoEng, and 11 ditch companies for repayment of construction and 20% operating and maintenance. Payments made to Purgatoire Water Conservancy District. Original payment in 1981 was \$15,000 and this year \$129,000, meaning the dam costs \$657,000 a year to operate. Objectors to costs told BoR estimates fee, CoE estimates fee, and then there are actual costs. Rising costs are caused by inflation. " ... [C]osts rose substantially in 1985-1986 after the conservancy district asked for an audit of charges by the general accounting office." [sic]. It found CoE not charging enough. Many farmers on edge of bankruptcy and this promotes conflict with conservancy district which is under obligation to collect fees and pass them along to federal government. Final answer is legislative.
Pam Pemberton (1992) Costs of Trinidad Dam Operation And Maintenance Angers Farmers, Pueblo Chieftan, April 11.

Closed Basin Project in San Luis Valley - Project produced 20,000 ac-ft sending about 17,000 ac-ft downstream last year. This year estimates are 40,000 ac-ft and sending down 30,000 ac-ft.
Erin Smith (1992) Watchful Eye Kept On Water In Rio Grande, Pueblo Chieftan, March 27.

Mine owner wants to pump out of mine 5 million gallons estimated to be worth \$250,000 and give water to Central City if City builds \$250,000 treatment plant. Central City has placed moratorium on new building permits because it can not supply enough water for new casinos. Estimate is a casino with 300 gaming devices needs 19,000 gallons per day so that mine would provide 263 days worth of water.
Steve Caulk (1992) Miner Wagers 5 Million Gallons, The Rocky Mountain News, April 28.

Animas-La Plata project expected to now cost \$7,000 per irrigated acre to subsidize irrigation on land worth about \$2,500 per acre. Will pump water 700 up to flow down again with 6% evaporation loss. Need for less costly alternatives. Does not have Clean Water Act permits - BoRec says its above the law. Water for municipal use from project is above heavy federal drinking water standards in three metals. Decision have been made in secret. Would devastate rafting, blue ribbon trout fishery, mountain bike area, elk winter range, and popular hunting and threatens endangered fish species. Claim to meet Indian Tribes needs is contradicted by fact project now contains no pipelines to deliver any water to reservations. How much more money to boondoggle? Lets rethink Animas-LaPlata.
Lori Potter and Andrew Caputo (Sierra Club Legal Defense Fund) (1992) Water Project Arguments Riddled With Holes, Rocky Mountain News, March 25.

5 mile long pipeline for water in Pueblo to cost \$10-12M

214 CSS

capacity for 140M gallons per day

Now steel pipe 6' in diameter in sections of 20 or 40 feet.

and will follow river.

Pueblo Board of Water works

Source: Peter Roper (16 Aug 2000) Pipeline will be new obstacle on

nature trail, ~~The Pueblo~~ (The Montrose) daily press) wrong title

The Pueblo Chief/Train

Drought - defined as precipitation of less 30% below
normal for 3 consecutive months

Durango Herald 11 Aug 2000 see drought book

Steve Benson Feb 'now official: We are in a drought.

Fin.

\$7 million plan to irrigate 4,000 acres in Dolores and Montezuma Counties by Dolores Water Conservancy District.

50 land owners representing 13,000 acres without irrigation want to sign up

\$6^m loan from CWCB plus \$2^m from DWCD

Repayment of \$1^m of loan from farmers

at \$250 per acre. Earlier beneficiaries

of project Ma Phee Dam do not have to pay that

2.46 ac/ft
per acre

DWCD to purchase 8,000 ac-ft from MVIC

(Monte. Valley Irr. Co) for \$2.2^m [$\frac{\$275}{\text{per ac-ft}}$]

Pumping for additional 1,840 acres (ac-ft)

up 150 feet requires plant costing \$450,000.

Pipelines - pumps to deliver cost \$3^m more

Eng, Admin, Inv. Contingency costs \$1.5^m

Remaining \$5^m of CWCB loan paid from District
User fees collected over 30 years at 2%

1^m loan repaid - \$250 per acre

5^m CWCB - user fees

5.1^m for water

.45 for pumps

3.0 pipeline

1.5 Misc.

\$7^m total

Source: Jim Miniaga (15 July 2000) download "Dolores"
Cortez Journal.

Thornton plans to pipe water more than 50 miles for \$427 million from Fort Collins area for 6 times growth. Present size 65,000 population using 19,000 acre-feet from Clear Creek and South Platte. Expect a population of 378,000. Passed \$96m bond in 1986. Spent \$60m for 100 to purchase 100 farms and water rights in Weld and Larimer Counties. Plan is to divert water through 56 mile pipeline from Cache la Poudre, use and treat water and then return it to South Platte River for farms in Weld and Larimer Counties. Phase I is 48 inch pipeline for delivery of 1,800 acft and 33,200 acre-feet by 2028. Phase II in 2026 is building a parellel pipeline for increasing delivery to 56,900. Phase III in 2034 is building a 72 inch pipeline to take treated water back to farmland and bring capacity up to 67,000 acre-feet a year. Water rates are on high end of scale in metro area but this provides resources.

Mike Patty (1992) Water Plan Aims To Slake Thornton's Thirst, The Rocky Mountain News, May 7.

Thornton considering a 56 mile long pipeline to bring down Cache la Poudre River Water with the Water Storage and Supply Co, ^{set up} an irrigation supply company near Fort Collins. Northern ^{by Thornton} Colorado Water Conservancy District objecting. Source: Anon (1992) Appeal May Be In Works On Thornton Water Deal, Greeley Tribune, April 23.

Northern Colorado Water Conservanchy District objecting to Thornton's plans becasue a specific use for water and power from transfer of ag. to m and i water uses. Source: Bill Jackson (1992) Poudre Water Storage OK'd, Greeley Tribune, April 22.

Thornton says nothing has changed as result of court ruling. Its Northern Project and the Northern Colorado Water Conservancy District's Cache la Poudre Project compete. The NCWCD's Cache la Poudre Project includes the Gray Mountain Reservoir - a pumped storage hydroelectric component. The court gave NCWCD most of its requests. Thornton says the District does not have guarantee water buyers or backers to provide financial support for its project - a contention expressed in court - but the court concluded that NCWCD is a like a municipality and can base plans on anticipated water use within its boundaries on assumptions of a growing population. NCWCD says Thornton has 12 to 15 th ac-ft and wants to divert 67th. Bill Jackson (1992) Thornton: Nothing's Changed, Greeley Tribune, April 25.

Fort Lyons offer for water - \$2,228 per ac-ft for 50,000 ac-ft. Town of Evans near Greeley bought 105 ac-ft for 200 families Plattville bought water for 50 families; Central Weld County Water District bought water for 60 families in many small town and average price was \$1,100. Not a peep for the latter. Since 1956 in Larimer and Weld Counties nearly 75,000 ac-ft gone to urban uses at rate of about 65 transactions a year. Difference is gradual [incremental] transactions, not one big bite, and there is something else to do with land, and water is not piped elsewhere but is to be reused within the basin. Sill may small wolves add up. Jim Carrier (1992) In Water Deals, It Seems Bigger's Badder, The Denver Post, April 1.

Fishing easements being negotiated on South Platt. 26 miles of the South Platgte near Hartsell. Under Senate Bill 167 CDOW got \$5.8 million in license revenues for easements. \$1.8 is for Denver Water Department for access to 5,813 acres and 3.9 miles of South Fork of South Platte. upstream of Antero Reservoir. \$4.million for easement on 22.2 miles on Badger Basin Ranch at Hartsel - 10.87 miles of South Fork; 7.68 miles of Middle Fork; and 3.65 miles of Fourmile Creek. Taken out of bill was \$1.3 million for 4,649 acres and 7.4 miles of Middle Fork called Redhill purchase. Bill does provide fo \$2.0 million to acquire more water for storage in eastern Colorado reservoir- particularly the Great Plains Reservoirs and possibily John Martin. Idea is to purchase from farmers. Bob Saile (1992) Public May Win On South Platte, The Denver Post, May 8.

Wirth initiatives on water ---- Changes in HR 429 (House Omnibus Water Bill ---- AWDI - prohibits fed. agencies from permitting without out first determining no harm to Sand Dunes and Closed Basin Project; Platoro Res. near Alamosa, transfer to local operation and control from BoR for better service to local water users and protection of fisheries and recreation; Leadville Mine Drainage Treatment Plant - completion and better control with cooperation with CDOW; Grand Canyon Protection Act - to hold down increases in electric rates to Ft. Collins, Estes Park, Longmont, Loveland, etc. Secretary of Interior has directed smoothing of large jumps in flows which limit peak-load power and require more expensive generators; to continue agreement on flows and reducing costs ot electrical rate payers by \$20m without losing the protection of the canyon; BoR - eliminating restrictions on payments for rehabilitating recreational facilities at theri reservoirs to keep open Ridgeway; deleting study of deauthorization of Colorado water projects from authorization of Utah projects. Anon. (1992) With Amendments On AWDI, Platoro Pass Senate Energy Committee, Alamosa Valley Courier, March 13.

DAILY SENTINEL
Grand Junction, CO
(Mesa County)

M-F(PM), 31,345; S/Su(AM), 36,648

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Water leaders from Western states to discuss 'banking' deals this week

Weather McGregor
Daily Sentinel

80
When the West's water leaders gather this week in Las Vegas, Nev., much talk will focus on a proposed water-banking deal between Nevada and California water agencies.

Officials from U.S. Secretary of Interior Bruce Babbitt's home state of Arizona, who found their state the odd man out in what apparently were secret talks this fall between Nevada and California, have angrily denounced the idea as an "accounting ruse."

The two-state bargain steps into the forbidden realm of interstate water marketing, Arizona officials contend, and makes use of Arizona's unused entitlement to the Colorado River.

Colorado officials are approaching the deal with some wariness, mindful of the state's own unused share of the river.

Babbitt, who must sign off on the deal to make it work, is to address the seven-state Colorado River Water Users Association on Friday. The deal will be part of his speech, but he isn't expected to take a position yet.

The deal is newly hatched, announced less than three weeks ago by the Metropolitan Water District of Southern California and the Southern Nevada Water Authority.

It calls for Nevada to pay \$53 million, a 45 percent share of the costs of lining the All-American Canal that diverts Colorado River water to Southern California farmers. In exchange, Nevada will be allowed to use 30,000 acre-feet of water, which is 45 percent of the amount expected to be saved by lining the canal.

The water saved in California would be banked for Nevada in Lake Mead, providing Las Vegas

Officials from Arizona have angrily denounced the idea of the proposed deal between Nevada and California water agencies.

with enough water to grow by 150,000 people.

"That's water that is forever, not for a limited-term contract from something like the Roan Creek project" near De Beque, said Eric Kuhn of the Colorado River Water Conservation District, which covers 15 western Colorado counties.

The proposal is consistent, however, with Colorado's long-standing position that water shortages in California, Nevada and Arizona should be solved within those three lower basin states, said Jim Lochhead, director of the state's Department of Natural Resources.

The biggest impact Colorado may feel from the deal is the Metropolitan Water District's desire for the Interior Department to declare more years as "surplus" on the Colorado River. That allows California and Nevada to tap Lake Mead for more water, and in turn requires the U.S. Bureau of Reclamation to equalize the amounts of water stored in Mead and Lake Powell.

Although upper-basin states get credit for the water sent from Powell to Mead, sending water downstream "depletes our bank account for future years," Lochhead said.

Water Water Everywhere? the Bass Brothers Don't Seem to View That as a Likely Scenario

HEARD ON THE STREET

December 14, 1995
By E.S. BROWNING
P. 2C

Staff Reporter of THE WALL STREET JOURNAL
Will water be the oil of the 21st century?

Some money managers who work for two of the billionaire Bass brothers of Fort Worth, Texas, think it could be. And groups led by Sid and Lee Bass have made at least two investments along those lines.

This may sound a little like the plot of the movie "Chinatown," but their bet appears to be that water could become scarce and expensive.

Over the past two years, a Bass-led group has built an 11.3% stake, valued at about \$19 million, in Lindsay Manufacturing, a leading irrigation-equipment maker in Lindsay, Neb.

And Western Farms, a closely held Bass-controlled company based in Brawley, Calif., has in the same period spent perhaps \$140 million to amass 40,000 acres in Southern California's Imperial Valley. Their company is one of the biggest participants in a group of local landowners who hope soon to start selling water rights to parched San Diego.

The idea of water as a scarce commodity has been around for years, but growing populations, land development and prosperity are making it scarcer. Places like San Diego and Las Vegas are so worried about shortages that they are trying to secure water supplies for the future.

"The value of the commodity is being bid up," says Prof. Richard Howitt, a water expert at the University of California at Davis. Prices are rising in California, he notes, "and if you look at Asia, Latin America and the Middle East, you've got a looming water shortage."

That doesn't mean water prices are going through the roof. In the Imperial Valley, the Basses are simply hoping to profit from a huge existing disparity between the rock-bottom, subsidized price farmers pay to government agencies for water, and the far-higher prices — sometimes 25 times more — that city dwellers are paying.

One natural brake on prices is that most of the world's water is used by farmers, who often pay low government-set prices and thus have less incentive to conserve. If everyone had to pay market prices, that would put pressure on farmers to conserve more.

Enter Lindsay Manufacturing, whose products help conserve water. Lindsay ranks a strong second, behind Valmont Industries in Omaha, Neb., in so-called center pivot irrigation systems. These are huge, wheel-like rigs that cut water needs as much as 50% by watering crops directly and thus avoiding runoff, says George Loening of Select Equity, a New York research firm.

With cash of \$57 million, or about \$12.60 a share, and no net debt, Lindsay also looks like a prime candidate for a takeover or buyout, some analysts say. It closed yesterday at 38½, up ¾ on the Nasdaq Stock Market. "This is the same kind of play as Chrysler and Kirk Kerkorian," says William Stromberg, an analyst at Baltimore mutual-fund group T. Rowe Price. But he says the Basses haven't yet put any public pressure on Lindsay for a

Lindsay Manufacturing

Daily stock price (Nasdaq symbol: LINZ)



Business: Irrigation Equipment

In millions	1995 ¹	1994 ¹
Revenue:	\$111.8	\$112.7
Earnings:	\$11.7	\$11.9
Share earnings:	\$2.48	\$2.44 ²

Fourth quarter (August 1995):

Per-share earnings: \$0.40 vs. \$0.32

Average daily volume: 11,494 shares

Shares outstanding: 4.5 million

Trailing P/E: 16 Dividend yield: nil

¹Fiscal year ends August 31.

²Includes one-time gain of \$659,000, or \$0.13 a share, for change in income-tax accounting.

deal.

In some ways, the California land investment is the flip side of the Lindsay bet. A multistate water agreement for decades has provided farmers in areas such as the Imperial Valley with virtually free water from the Colorado River; they pay only about \$12 for each 300,000 gallons. Consumers in nearby cities such as San Diego pay 25 times that and more.

So San Diego would like to buy as much as 500,000 acre-feet, or about 163 billion gallons, from the Imperial Valley annually. Imperial Valley officials are studying whether they can conserve that much, and debating who should profit and how much.

Bill Condit, board president of the valley's irrigation district, says the selling price could be anywhere from \$400 to \$800 an acre foot, or \$200 million to \$400 million a year. Of course, that wouldn't all be profit. Farmers would have to install water-saving equipment, or not use the water for crops and thus let some land lie fallow.

Although the Basses own less than 10% of the land in question, they could choose to farm less, or install Lindsay-style irrigation equipment, that would enable them to contribute a disproportionate share of the water that is resold.

But other local people are demanding that landowners share any profit. And the debate could be long and complicated. For example, other states have claims on any extra Colorado River water, and so could try to block the sale. In the meantime, the Basses are thought to be more than covering their costs by farming or renting out the land.

The Basses' water play hasn't escaped the notice of people in the Imperial Valley. Some fear the Basses may let so much land lie fallow to boost their proceeds in a water sale that it could hurt the local economy. Already, some disparagingly refer to the Basses as the Trout brothers.

And while it doesn't appear to have a direct link to the other water investments, Sid and Lee Bass also are helping to finance a Nevada residential and hotel development project — located outside Las Vegas on a huge man-made lake.

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Blndr
EchoB
IvaxC

PRICE

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KimmI
Chyron
KaneB
IntTch
GpEmb
Musclid
Cordlan
HowellC
Atalanta
GlamisG
DeSoto
TriarcA
GloblInc
BTOffP
Westmo
HCCIns
CashAn
LSBInd
Vintagi
AmWa
NASDA
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Longmont officials have been working since 1996 to expand Union Reservoir from its current capacity of 12,780 acre feet to 32,000 acre feet. The reservoir would hold 11.2 billion gallons of water when the expansion is complete.

Water rights on forefront of long-term growth plans for county's cities, towns

BY CLAUDIA HIBBERT-BEDAN

Staff Writer

People in Boulder County probably don't think about it when they turn on the sprinklers for their kids to cool off from summer heat.

Or when they use hoses to wash debris from their driveways.

Or when they just turn the tap for a drink of water.

But the directors of public works departments in the county think about water most of the time. They continually pursue new water rights and storage units for their water supplies, but they really don't worry about having enough water to support the growth in their cities.

Boulder County is the third fastest-growing county in the Denver metro area, but most of the cities here have 10- or even 20-year plans to assure that there will be enough water for current and future residents.

"That's how far we plan ahead," says Dean Rademacher, of Longmont's Water and Wastewater Utilities Department. "Even though we have been experiencing some fairly significant growth in Longmont, our water demands have not been increasing in proportion to that growth."

Rademacher says Longmont officials have been tracking the city's historic water use since 1964, and they have found that the city's per capita usage rate is declining. Rademacher attributes the water usage trend to water conservation initiatives, including low-flow plumbing fixtures in new homes, as mandated by federal, state and local laws.

As Longmont builds out its planning area, water storage projects are in the works, one being the enlargement of Union Reservoir. The city has been acquiring land for the project since 1996, but Rademacher doesn't expect construction to begin for another 10 to 20 years. The plan is to expand the reservoir from its current 12,780 acre feet to 32,000 acre feet, which holds about 11.2 billion gallons of water.

Longmont also supplies water to the town of Lyons, whose administrators recently heard from a consultant who'd been hired to determine whether the town needed more water-storage units and whether the town had sufficient water rights.

The consultant told town officials that adequate storage could cost between \$4.4 million

and \$10 million. Either way, water bills for residents in Lyons will increase, whether Longmont continues to supply the town with treated water or whether Lyons builds its own water treatment plant.

Lyons will get a \$60,000 state environmental grant to pay for a water plan and pilot a microfiltration program this spring. Muddy waters are common in Lyons during spring runoffs, and residents often boil their water to sterilize it.

The ultimate goal of cities in the county is to have a surplus of water rights in case of a drought.

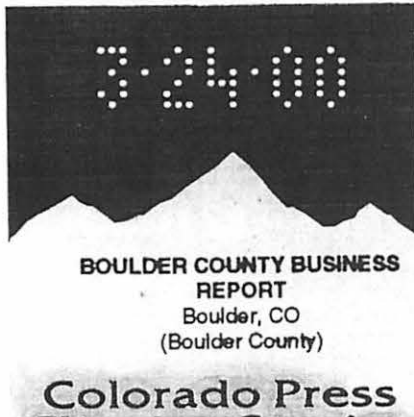
Lafayette Public Works Director Doug Short, who follows research findings about the climate, says a drought could happen at any time. "There have been droughts in the United States and the western United States

> See **Water**, page 26A

"We have enough water to sustain our build-out, which has yet to occur."

Doug Short

**PUBLIC WORKS DIRECTOR,
CITY OF LAFAYETTE**



CHARLIE FELLEBAUM

Doug Short, Lafayette's director of public works, says the city owns about 70 percent of the water in Baseline Reservoir, one of three areas where the city stores its water supply.

WATER from page 24A

periodically all through time. We had a real big one back in the '50s, then in the late '70s we had a little tiny drought."

Water rights, however, are expensive to acquire. One acre foot of water, the equivalent of about 350,000 gallons, which could supply a year's worth of water to three families, costs between \$7,000 and \$10,000 per acre foot.

The city of Boulder will pay \$12.75 million to acquire Barker Reservoir, although the city long had rights to use the reservoir through an agreement with Public Service Co., says Ned Williams, Boulder's public works director. "This (acquisition) will change those rights, so we'll kind of go from a renter to an owner (of the reservoir)," Williams explains. Acquiring the reservoir will add another 1,000 acre feet to Boulder's water portfolio. The city's entire portfolio consists of about 35,000-40,000 acre

feet of water.

Most of the cities in the county get their water from reservoirs, from shares they own in irrigation ditches or from their involvement in the Northern Colorado Water Conservancy District.

Lafayette owns about 70 percent of the water in Baseline Reservoir, one of three areas where the city stores its water.

"Back in the mid-'70s, the city of Lafayette had serious water supply problems," says Short. "In fact, there was a moratorium on water connections, because they didn't have enough supply. That's why the city went out and purchased Baseline Reservoir. We store our water there, then we pump it out of Baseline to be treated.

"We have enough water to sustain our build-out, which has yet to occur," he continues. "We're close; we're not completely there yet."

Liquid Assets

Whether the Basses Strike Gold in Water, The Pressure Is On

Los Angeles Agency Sweats Over Supplies, Gouging, But Some See a Harvest Why Markets Seem Inevitable

By CHARLES MCCOY
And G. PASCAL ZACHARY
Staff Reporter of THE WALL STREET JOURNAL

LOS ANGELES — If you think water is a bland subject, listen to what the billionaire Bass brothers, big time Texas investors, are saying these days about the Metropolitan Water District, the world's biggest utility: "A monopolist. A water thief."

Replies John R. Wodraska, general manager of the agency that serves 16 million urban-dwelling Southern Californians: The Basses are profiteers trying to create a "water cartel" in hopes of making a huge fortune on a resource delivered to them essentially for free. Adds Mr. Wodraska: "This is going to get nasty."

In fact, it already has.

A few years ago, the Basses, with a \$7 billion empire in oil and real estate, raised a few eyebrows when they began quietly buying up \$80 million in irrigated farm land in the sprawling Imperial Valley south and west of here. They were going to raise cattle. But it became clear, soon enough, that the Basses' real interest was in the perpetual federal water rights conferred with the 40,000 acres they acquired. Seen as a long-term arbitrage play, the strategy goes something like this: Eventually, water supplies for this area of vast urban sprawl and water-hogging agriculture will grow tight; those with the water, and the right to sell any surplus, stand to make megabucks.

Whether the Basses' gambit works exactly as planned, their timing coincides with an unprecedented effort by state and federal governments to deregulate utilities of all kinds. Many believe water, long subsidized by taxpayers and ladled out by



Edward Bass

What's News—

Business and Finance

FALCON DRILLING AGREED to merge with Reading & Bates in a pact valued at about \$2.5 billion in stock, a combination that will create a formidable offshore driller. Falcon has the largest fleet of barge rigs in the world and Reading & Bates is known for its deep-water rigs. Shares of both firms rose in heavy trading yesterday before the deal was announced.

(Article on Page A3)

MCI said its losses for entering regional phone markets could hit \$800 million this year, more than double its original estimate. The long-distance firm called for tougher regulatory action to break the Bell monopolies.

(Article on Page A3)

Ousted Apple CEO Amelio said that despite the slide in the computer maker's earnings, market share and stock price, he did a good job in his 17 months as CEO and chairman.

(Articles on Pages B1 and B2)

Boeing is negotiating with Lockheed Martin on a private pact that would safeguard sensitive data they shared as partners, executives familiar with the talks said. Regulators would face the question of whether it is wise to let the dominant defense companies manage their own disputes.

(Article on Page A3)

Investors pumped an estimated \$18 billion into stock funds in June, according to a fund industry trade group, down from May's \$20.1 billion.

(Article on Page C1)

Top retailers' sales bounced back in June, rising 4.6% for stores open at least a year. But analysts worried that heavy markdowns could hurt quarterly earnings for the industry.

(Article on Page B4)

Compaq posted a 58% jump in quarterly profit before an expected acquisition-related charge. The No. 1 computer maker also attacked low-cost rivals with a narrower line of business. PCs carrying sharply lower prices.

World-Wide

NATO FORCES IN BOSNIA killed a Serb war-crimes suspect, seizing a second.

The raid near Prijedor ended long inaction by peacekeeping troops, and is expected to drive top war-crimes suspects Karadzic and Mladic underground. It was carried out by British troops with U.S. support, and the comrade of the man who died resisting arrest was taken to the U.N. tribunal in The Hague. Clinton, who recently hinted such a move was being planned, called the raid "appropriate." (Article on Page A2)

The president visited Warsaw, saying NATO's invitation to join means "Poland is coming home." He travels next to Romania, excluded from the expansion.

REPUBLICANS SPARRED with a Democratic witness during campaign hearings.

In the second day of testimony before a Senate panel, former Democratic finance chief Richard Sullivan continued to insist there was no reason to doubt the legality of any individual donations. Investigators, meanwhile, said they have evidence several people who gave hundreds of thousands of dollars received large wire transfers from overseas around the same time they made their donations. (Articles on Page A16)

Democratic fund-raiser John Huang asked in recent months whether he would still be getting a bonus promised over his \$60,000 salary if he performed well.

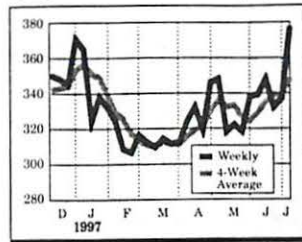
The House voted 217-216 to terminate funding for the National Endowment for the Arts, bowing to pressure from the Republican leadership. The GOP also moved to renew its fight with the White House over the use of sampling in the next census. The issue was central to the recent battle over a disaster-aid bill. (Article on Page A2)

Cambodia's Prince Ranariddh implored the U.N. to act against coup leader Hun Sen, who warned outsiders not to interfere. Security Council chief Peter Oswald met with the ousted co-premier in New York. Meanwhile, the U.S. halted its \$25 million aid program, and Asean postponed indefinitely Cambodia's entry into the regional trade bloc.

A White House report on NAFTA says the pact has had "a modest positive effect" on the U.S. economy, boosting exports and jobs in its first three years. The debate over trade will resume this fall, when the administration asks Congress for "fast track" authority to negotiate new trade accords and to bring Chile into NAFTA. (Article on Page A2)

Jobless Claims

Weekly claims in thousands, seasonally adjusted



INITIAL CLAIMS for state unemployment benefits for the week ended July 5 rose to 377,000 from a revised 337,000 for the week ended June 28, the Labor Department reports.

Little League In Northglenn, Colo., Is No Summer Idyll

The Setting May Be Bucolic, But Stonehocker Park Is A Rowdy Field of Scenes

By BETH BURKSTRAND
Staff Reporter of THE WALL STREET JOURNAL

NORTHGLENN, Colo. — When banker Russell Petrakos moved his family back to this growing Denver suburb from California last year, he wanted his 13-year-old son, Bryan, to play baseball on the same sandlots where he shagged flies 20 years ago.

Even allowing for the tricks nostalgia plays, however, the Northern Lights Little League isn't what 32-year-old Mr. Petrakos remembers from the summer evenings of his youth. The game here is a swirl of off-the-field contention and intrigue. "Everything is in pieces," laments Mr. Petrakos, who isn't sure where his son will play next summer.

As Major League Baseball scrambles to revive interest in the national pastime by building new Little League ball fields, it seems to be counting on places like Northglenn, where milkmen still make morning rounds and tranquil farms coexist with middle-class subdivisions.

From Far and Wide

Long after baseball began losing ground to soccer elsewhere, boys and girls from as far as 25 miles away continued flocking to schools and grocery stores to sign up for Northern Lights. League all-star jackets are still the rage among teenagers. Adults ring the league's dia-

Washington Wire

A Special Weekly Report From The Wall Street Journal's Capital Bureau

CLINTON FUMES that reports on a shrinking deficit don't give him credit.

The president angrily calls aides in Washington from the NATO summit in Spain to complain that news stories are "absolutely wrong" to suggest the strong economy is chopping the deficit on its own. He demands that the White House message get out: Officials dutifully trumpet the 1993 Clinton deficit-reduction package for helping to stoke the economic expansion.

But the president laughs off comments by Canadian Prime Minister Chretien, caught on tape blasting Clinton's wheeling and dealing for NATO votes on expansion. Clinton thought it was "funny," but National Security Adviser Berger was ticked. The next time Chretien wants something, Berger tells aides, "we should send him a copy of the transcript."

New British Prime Minister Blair is planning a late-September visit to Washington.

COHEN FACES a divisive decision over last year's bombing in Saudi Arabia.

The defense secretary is expected to decide by the end of this month whether to mete out punishment in the bombing that killed 19 U.S. service people. Many Army officers believe Air Force Brig. Gen. Terry Schwalier, who was in command, should be disciplined. The Air Force maintains the bombing simply was an act of war.

Air Force Chief of Staff Ronald Fogleman privately has vowed to resign if Cohen punishes Schwalier, officials say. But others worry that the general's stance amounts to an unacceptable ultimatum. Cohen also is close to naming a new Joint Chiefs chairman. The frontrunner now appears to be Wes Clark, a respected Army general who is also disliked by many.

DEMOCRATS GLOAT as campaign-finance hearings get off to a slow start.

They brag that lead witness Richard Sullivan, former Democratic Party finance chief, gave more support for Clinton than fodder for the GOP. Senate Republicans claim they were sandbagged by Sullivan who caved to pressure from Democrats; he denies it. A surprisingly tough defense of the White House by Sen. Glenn is credited in part to input by pollster Mark Mellman.

Democrats take an aggressive approach; the Democratic National Committee twice a day faxes its spin on the proceedings. After Sullivan testified about hiring fund-raiser John Huang, one fax asserted that instead of spending \$66,000 on the day's hearings, senators "could have gotten the same information seven months ago from a 60-cent

Leaders of the Pact

How Seven Individuals With Diverse Motives Halted Tobacco's Wars

One Tailored the Lawsuits, Another Woke the FDA; Dick Morris Came to Play

The Man Called 'Research'

By ALIX M. FREEDMAN and SUEIN L. HWANG
Staff Reporters of THE WALL STREET JOURNAL

Flash back to 1990 and try to imagine Big Tobacco, which was then flicking away opponents like so many ashes, ultimately agreeing to a settlement costing it more than \$360 billion. What a difference seven years, and seven individuals, would make.

Although many other players were involved at every stage — and many received far more publicity — these seven emerged as nothing short of essential. Their motives varied, from economic and political gain to raw revenge. But together, they provided the ideas, the evidence and the strategies that changed the balance of power between cigarette companies and their antagonists and defined the astonishing terms under which they would make peace.

Jeffrey Nesbitt came to Washington in 1981, an idealist still in his 20s. After stints with journalist Jack



Jeffrey Nesbitt

Anderson and Ralph Nader, his childhood heroes, he moved to the Food and Drug Administration as spokesman in 1989.

Two years later, as his father, a heavy smoker, was dying of cancer — and his younger brother was fast becoming devoted to Camels — he began

to pepper his colleagues with a question: "Here's this product that cuts short the lives of millions of Americans, and it's totally unregulated. And here's the premier consumer-protection agency in the world. Why isn't it doing its job?"

Mr. Nesbitt discovered that his relentless badgering elicited surprising unanimity: FDA officials viewed cigarettes as

With an unprecedented effort by state and federal governments to regulate utilities of all kinds. Many water, long subsidized by taxpayers and laddered out by public agencies under programs tilted toward agriculture and against conservation, will be no exception. Thus, the Basses' significant presence simply adds weight to what some think is the inevitable: that water must become a commodity, to be sold at whatever price the market will bear.

"Without water markets, we can't solve the problem of meeting the future water needs of the West," Interior Secretary Bruce Babbitt says.

If the slugfest between the Basses and the Metropolitan Water District is any indication, however, getting there may prove to be a rancorous struggle reminiscent of an old-fashioned water war wherein powerful elites wrested water from others, creating vast fortunes and plotlines for the 1974 film "Chinatown."

The Basses last year fired an opening salvo at the district, known as the Met, when they helped convince the Imperial Irrigation District, an agriculture-dominated water agency, to strike a deal that would pool IID surplus water from its farmer clients, including the Basses, and sell it to the city of San Diego. Surpluses could be created by conservation, switching to more water-efficient crops or even keeping land out of production; nothing in the act conferring the original water rights prohibits their sale. The 75-year contract would fetch prices starting at about 15 times as high as what valley landowners currently pay for the district for the water, which it takes for free from the Colorado River.

San Diego, not coincidentally, happens to be the Met's biggest, and unhappiest, customer. The Met quickly denounced the deal and, more forcefully, brandished a weapon that could stop it. Since the IID's water would have to move through the Met's aqueduct, the Met has already proposed a transport surcharge that would make the deal uneconomical. And it escalated its resistance just two weeks ago when it took the extraordinary steps of appealing to a federal agency that controls irrigation outflows from the Colorado River; what the Met ultimately is asking for is a share of the IID's Colorado River allocation — a move that, if successful, would take water right out of the hide of IID farmers, including the Basses.

The Met doesn't pussyfoot around what is at stake here. Losing San Diego, its biggest customer, would raise costs for its other customers and could eventually lead to the Met's disintegration. "It could be the end of the Met as we know it," says Tim Quinn, the Met's chief dealmaker.

Matters have grown so testy that Mr. Wodraska says, "I'm afraid I'm going to get my nose sliced off," referring to the fate of the hardboiled hero in "Chinatown" when he takes on wealthy water grabbers.

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computer maker also attacked low-cost rivals with a narrower line of business. PCs carrying sharply lower prices.

GE's quarterly profit rose 13% to a record \$2.16 billion, slightly above the expectations of Wall Street analysts.

J.P. Morgan's quarterly profit fell 15%; First Union saw net income climb 11% and First Bank System's net rose 6.7%, excluding a gain a year ago.

R.J. Reynolds Tobacco is dropping its Joe Camel campaign six weeks after the FTC hit the cartoon character with an unfair-advertising complaint.

ValuJet agreed to merge with AirTran Holdings in a bid to make a clean break with its past while expanding.

American Express said it is folding its discount-brokerage business into its money-management operation, confirming the effort was a flop.

The FCC is expected to let winners of wireless telephone licenses pay in annual installments instead of quarterly, a move to help the firms pay billions of dollars owed the government.

MALCOLM SHABAZZ pleaded guilty to the juvenile equivalent of manslaughter and arson in the death of his grandmother Betty, the widow of Malcolm X. The 12-year-old faces 18 months or longer in detention.

THE DEATH TOLL in Venezuela rose to 59 people, including at least 41 schoolchildren, and hundreds were hurt after an earthquake Wednesday. President Rafael Caldera called for three days of national mourning.

THE CENTRAL AFRICAN REPUBLIC reconciled with nearly 300 mutinous soldiers, ending the third rebellion since May 1996 against President Patasse, whose 1993 election ended more than a decade of army rule.

THE SENATE INTELLIGENCE panel voted 19-10 to clear George Tenet's nomination as CIA chief. Quick full-Senate approval is expected to follow. Tenet was tapped after Clinton's first choice, Anthony Lake, withdrew amid close scrutiny by the committee.

TWA-CRASH INVESTIGATORS told a House panel they plan in-flight tests of a 747's center fuel tank. Hearings are now set for December. Few safety programs heralded after the July 17, 1996, crash have actually been implemented.

JUSTICE GINSBURG'S husband sold stock in eight companies after a magazine said the holdings had put her into a conflict of interest 21 times in recent cases involving the companies. The magazine, Insight, based its report on the Ginsburgs' financial-disclosure statements for 1995 and 1996.

AIDS ASSISTANCE has been capped or restricted in 22 states due to cash shortages, a Kaiser Family Foundation study found. The drug-assistance programs, which receive federal funding, include ones to help uninsured patients who can't afford promising new treatments.

NORTHERN IRELAND'S police chief appealed to Protestant and Catholic leaders to prevent violence this weekend. But the Protestant Orange Order refused to reroute parades Saturday in Belfast and Londonderry that risk clashing with Catholic protesters.

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LOCKING TO schools as 25 times as many as in Northern Lights. League all-star jackets are still the rage among teenagers. Adults ring the league's diamonds on game nights and volunteer in droves to make sure that their kids have the biggest and best league in all of Colorado. In the season just ended, Northern Lights had one team advance to the district tournament, which will be played this weekend.

But with fame and money pervading pro ball, the 600-player league's traditions have begun to warp. The trouble started in the heat of a battle to save the diamonds of Stonehocker Park, where Northern Lights teams first took the field in 1968, and where they were still playing this season.

In 1993, the city of Northglenn announced plans to break the league's lease and sell the property to a housing developer. Stunned Northern Lights leaders organized a defense of their home field. During that fall's city election campaign, some worked on behalf of candidates who opposed the sale. Others marched kids in their uniforms through the streets with placards urging voters to let them continue playing ball at Stonehocker.

The efforts seemed to pay off the following spring when Northglenn agreed to pay Northern Lights a \$175,000 settlement and help it find a new home. The league hired a consultant who specializes in fund raising and negotiating projects with local governments. Soon, professional baseball's Colorado Rockies offered to line up construction contractors and arrange a grant of up to \$80,000 for a new facility. The neighboring city of Thornton — home to many Northern Lights players — also stepped up to the plate with a firm offer to contribute \$500,000 and let the league build on city land.

In the ensuing months, the league raised about \$300,000 through a series of fund-raisers at a bingo hall co-owned by the league's president, Cathy Suchey, a soft-spoken 38-year-old mother of five current and former league players. Northern Lights also drew up plans with Thornton for a lavish, 17.4-acre complex that would include seven sodded fields, batting cages, a playground, bike paths and picnic areas. "It's been a long hard struggle, but we finally have a home," Ms. Suchey told *Please Turn to Page A6, Column 1*

TOBACCO MONEY flows as lawmakers take up the proposed tobacco deal. Philip Morris gave \$270,000 in unlimited "soft" money to Republicans in this year's first half and \$100,000 to Democrats, new filing records show. The industry's Tobacco Institute gave \$66,000 to GOP lawmakers and \$47,000 to Democrats. Philip Morris, RJR Nabisco and the institute also were donors to a Democratic Congressional Campaign Committee dinner in Washington this week. U.S. Tobacco was a sponsor for a GOP campaign group's June meeting in Lake George, N.Y. Antitobacco lawmakers, meantime, try to assemble a coalition to toughen the settlement in legislation based on the deal.

The lawmakers consider adopting as part of their own legislation material written by Matthew Myers of the Campaign for Tobacco-Free Kids.

MINOR MEMOS: Man on Mars: Gingrich, commenting on reports that the Red Planet may be more like Earth than was thought, says, "It's going to be a bumper if Mars turns out to be like us." ... Music critic: The rock 'n' roll prepared by Clintonites for foreign leaders at the recent Denver summit was panned by German leader Kohl, who was overheard to say: "I don't know much English, but this is [American expletive deleted]." ... Queen of opera: Aretha Franklin will sing a piece from Puccini's "La Boheme" at the wedding of Karenna Gore, the vice president's daughter, to Andrew Schiff tomorrow.

By RONALD G. SHAFER

Please Turn to Page A8, Column 1

Mr. Nesbitt reiterated that his relentless badgering of surprising unanimity: FDA officials viewed cigarettes as classic regulatory quarry but believed it would be suicidal to wage war on the powerful industry. "There was a sense among many within the agency that you couldn't pull it off, and the last thing you wanted was to tackle something you couldn't pull off and have the agency get killed," says David Kessler, who became FDA commissioner in 1991.

That spring, Mr. Nesbitt brought the commissioner and other top officials together for a brainstorming session. The meeting generated mixed reactions as to whether the FDA should accept the regulatory challenge, and Dr. Kessler made it clear that he had more pressing priorities. Even so, Mr. Nesbitt says, his boss made him the private promise that "this is something the FDA can and will do someday."

A few months later, Mr. Nesbitt, an Indiana native, left to become the communications director for Vice President Dan Quayle, a decision that he says shocked his liberal friends. But Mr. Nesbitt continued to call his former boss to remind him of his commitment.

By the spring of 1994, Dr. Kessler was convinced that the industry deliberately relied on nicotine to hook smokers — and thus that cigarettes could be classified as drug-delivery devices. Evidence he believed showed that the industry intentionally marketed to minors gave him an additional theme: that smoking was a "pediatric disease." He used the term to powerful effect as he unveiled his 1995 proposal to restrict the sale and marketing of cigarettes to underage smokers.

The FDA's move into the tobacco arena — with the latent threat that it might seek to regulate cigarettes out of existence — proved crucial in motivating industry leaders to seek a deal.

These days, Mr. Nesbitt, now 39 years old, is back in the middle of the tobacco controversy. As staff director of a health-advocates' task force, he was at the White House with Dr. Kessler and others on Wednesday, pressing the administration to toughen the settlement's penalties against cigarette makers.

Michael T. Lewis was riding down a hospital elevator after making a final visit to his secretary's mother, a Salem smoker suffering from heart disease, when he hatched an oddball idea for a new kind of lawsuit against cigarette makers.

Mr. Lewis, who runs a personal-injury law practice with his wife in tiny Clarkdale, Miss., had never before taken on the tobacco industry. But by May 1993, he had done enough research into Big Tobacco's track record to know that the dying woman, Jackie Thomson, had almost no chance of winning a conventional lawsuit. The industry had won one case after another by persuading juries that individuals were responsible for their own decision to smoke.

Mr. Lewis's new approach would be different. For the first time, the plaintiffs wouldn't be smokers but wholly blameless victims, the taxpayers of the state. On their behalf, he figured, the Mississippi attorney general could sue tobacco compa-

Please Turn to Page A8, Column 1

TODAY'S CONTENTS

THE INDEX TO BUSINESSES APPEARS ON PAGE B2

THREE SECTIONS

Abreast of the Market	C2	Leisure & Arts	A12
Amex Bonds	C17	Listed Options	C18
Amex Stocks	C11	Marketing & Media	B1,5
Bond Data Bank	C17	Money Rates	C17
Commodities	C14,15	Mutual Funds	C19
Corrections	A2	Nasdaq ADRs	C7,8
Credit Markets	C18	New Securities Issues	C18
Dividend News	C17	NYSE Bonds	C17
DJ Global Indexes	C13	NYSE Highs & Lows	C6
DJ US Ind. Groups	C7	NYSE Stocks	C3
DJ Global Ind. Groups	C12	Odd-Lot Trading	C6
Earnings Digest	C16	Politics & Policy	A16
Economy	A4	Small Stock Focus	C7
Editorials	A14,15	Stock Data Bank	C2
Foreign Exchange	C15	Technology	B1,2
Heard on the Street	C2	Treas./Govt. Issues	C17
Index Options	C11	Who's News	B3
International News	A10	World Markets	C13
Law	B13	Your Money Matters	C1

Directory of Services/Subscription Information B4
Classified: The Mart B5, Real Estate B9-13

YOUR MONEY MATTERS

TAX BENEFIT: Prospective big cuts in capital-gains tax rates spark impetus to profit from gap with ordinary-income rates. Page C1.

HEARD ON THE STREET: EU alchemy transforms 'Club-Med' bonds, C2.

MONEY & INVESTING: Wall Street's support to minority firms, C1.

TRAVEL: A year after TWA crash, flight-safety plans stall, B1.

SPORTS: Japan builds a Winter Olympics in its own image, B7.

THE HOME FRONT: Home prices are soaring across the country, B8.

INTERNATIONAL: Foreign firms are wary of India's legal system, A10.

REVIEW & OUTLOOK: Those who blinked at Cambodia's debacle, A14.

OPINION: Antitrust policy increases defense costs, A14.

LEISURE & ARTS: Joe Morgenstern reviews 'Contact,' A12.



Bass Brothers Roil the Western Waters

Continued From First Page

point man in the Imperial Valley: "If they think their normal routine of spreading misinformation and insults... is going to make us hide under our tractor, they have failed to do their homework."

The spat here has enormous policy implications for water use in the West which, like other regions of the country, is governed by a hodgepodge of federal and state regulations. Agriculture consumes about 90% of the region's water, even as its contribution to the urbanizing region's economy is diminishing. If water can be sold freely, the argument goes, farmers will have powerful incentives to conserve and growing cities will have a mechanism for obtaining water. The great practical question, backers acknowledge, is to what degree the public will tolerate the potentially huge profits that markets could mean for some landowners, even when they have their water because of taxpayer-funded dams or other public investments. Some figures suggest that as few as 150 of the Imperial Valley's biggest landowners could reap as much as \$2 billion to \$3 billion in revenues over 50 years—a figure the IID disputes.

"My feeling is that ultimately if you're perceived as profiteering in the sale of water, you're going to unleash a lot of ugly forces," says Don Cox, an Imperial Valley grower and a director of its irrigation agency.

Mr. Cox's view, in fact, highlights a fissure among Imperial Valley landowners themselves, some of whom are leery of the Basses and their plans even though many farmers there stand to make money should the contract with San Diego, or other entities, eventually go forward.

It probably hasn't helped that the Basses, though they initially eased into this desert valley, wasted no time in flexing their muscle. Consider that a 1996 Imperial County review board, a county-appointed investigative citizens panel, found that the Basses appeared to have had "undue influence" on irrigation district decisions; among other things, Mike Clinton, a former consultant whose firm once worked for the Basses, was hired as manager of the IID not long after the Basses arrived on the scene.

The Bass brothers are Sid, Robert, Edward and Lee. Edward and Lee are said to be the main drivers behind the Imperial Valley water play. The investments, however, may be divisive within the Bass camp itself. A lobbyist for Robert Bass recently contacted an opponent of the Bass plan to

assure him that Robert wasn't involved.

Nonetheless, Bass officials are galled by the criticism of their strategy. A spokesman notes that selling water is a concept that had been kicked around in the valley long before the Basses arrived. "This is a real opportunity for the Imperial Valley to do something that is good for the state, good for the economy, good for the environment and will help move agriculture into the 21st century," says Mr. Moore, president of Western Farms & Cattle Co., a Bass-owned California farming enterprise through which the Basses have made their Imperial Valley purchases. As for the Imperial County review panel's report, the Basses say they did nothing improper.

Whatever the case, the Basses have certainly waded into the middle of one of California's longest-running feuds. The Met and Imperial Valley growers are historic enemies. Since its creation in 1928, the Met has eyed with envy the vast water resources of the Imperial Valley, a desert that gets only two-inches of rain annually. Though it has a population of only 160,000, the valley, through the IID, has old water rights allowing it to draw about three million acre feet of water annually from the Colorado River. (An acre foot is 326,000 gallons, or a two-year supply for a family of four.)

Landowners' water rights are held by the IID, governed by a five-member elected board and based in the valley. It gets the water for free, the result of its senior water rights and agriculture-friendly policies dating back decades. It sells it for up to \$12.50 an acre foot to desert farmers who grow alfalfa, melons, lettuce and other crops. Under the Bass scenario, farmers generating a surplus could sell it, pocketing the difference between the \$12.50 and the market price.

The Met, by contrast, sells water for about \$350 an acre foot to its mostly urban users, represented by 27 water agencies spread over six counties. It is allowed to draw only about 550,000 acre feet of water annually from the Colorado River, and gets another 1.5 million acre feet or so from other sources.

But the Met is widely resented in Western water circles. For one thing, it has typically exceeded its Colorado River entitlement by sopping up water not used by neighboring states, a practice resented by the states and one which the federal government is ordering it to stop.

Moreover, for decades the Met has wielded political muscle in heavy-handed ways. One of its members, Los Angeles, engineered the most notorious water

power play ever, practically draining the Owens River valley in the 1920s and leaving farmers there high and dry.

This isn't lost on farmers in the Imperial Valley. "The Met is an 800-pound gorilla," says John Pierre Menvielle, an Imperial Valley grower. "Well, the Basses are our 800-pound gorilla."

Which is what scares others. Louise Willey, a 77-year-old rancher, met with two Bass officials, including Mr. Moore, in the spring of 1995. "They assured me they were just a couple of good ol' boys" who wanted to graze cattle, she says. "I said, 'Whatever you do, don't mess around with our water. They said, 'Oh no ma'am, we wouldn't do anything like that.'"

Mr. Moore says the Basses never misled anyone, but in any case, they had made their plan plain to others. Mr. Wodraska of the Met, for instance, met with Mr. Moore for dinner at the Los Angeles Century Plaza hotel in September 1994. Mr. Moore eventually talked about the IID selling water to the Met. He didn't talk price, but two weeks later, he met with Mr. Quinn, the Met's chief dealmaker. What happened at that meeting is a matter of boiling dispute.

Mr. Quinn says Mr. Moore proposed selling water at \$600 an acre foot — more than three times what Met has ever paid, even in a drought. Mr. Quinn says he bluntly told Mr. Moore: "I don't see a market where you do." Mr. Moore heatedly denies proposing any prices.

In any case, both sides agree that the meeting left hard feelings; a Bass lobbyist even called Mr. Wodraska the next day to complain that Mr. Quinn had treated Mr. Moore brusquely. When Mr. Wodraska called Mr. Moore to talk things over, their conversation turned testy, too, both say.

Meanwhile, in the valley, the Basses' trademark low-profile was giving rise to some strange rumors. At one point, the Basses were said to be growing crops for Russians. In fact, they were running cattle and leasing land to other farmers. But in June 1995, at a public meeting before an overflow crowd in the IID auditorium, Mr. Moore urged growers to take advantage of a historic "window of opportunity."

"We are firmly convinced that water is going to move in the Western U.S.," he said. "The real issue we are trying to figure is how do all of us—and we are going to be involved in this—do it wisely."

Some people enthusiastically backed the plan from the start, but it scared others. "The great paranoia that hit this valley was that the Basses would idle their land and take their water sale money to Fort Worth," recalls Mr. Clinton, general manager of the IID. Indeed, the prospect of following, the "F-word," as it is known here, still rattles some. They fear that as water is drawn off for sales, there will be less for farming, land will lie fallow and the local economy will crater.

"Only a few people will make money, and the rest of us will have to go somewhere else," says Ed Brown, a farm-equipment salesman in the valley.

The Imperial County review panel report, released in 1996 and noting Mr. Clinton's past ties to the Basses, didn't help matters. Mr. Clinton says he told the



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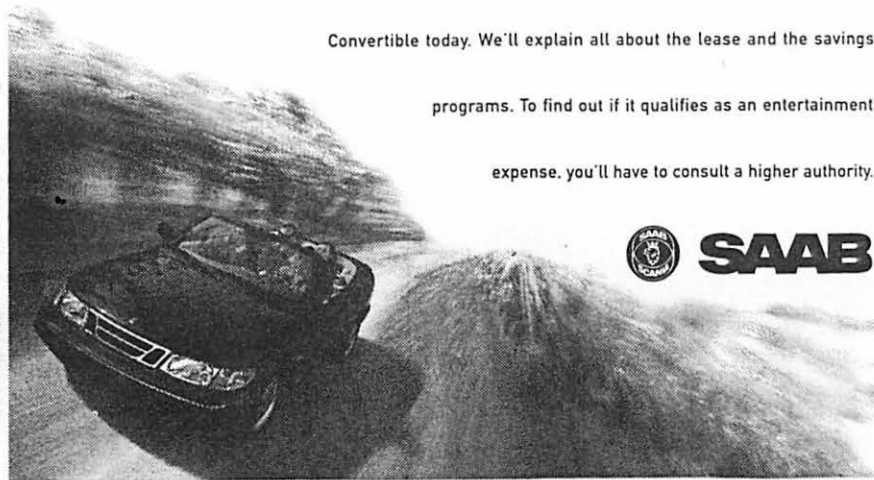
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Falcon Drilling Agrees to Merger

Continued From Page A3

used Falcon, while Morgan Stanley & Co. advised Reading & Bates.

Reading & Bates is among the oil-service industry's premier deep-water drillers. Unlike many of its competitors, it also requires stakes in offshore oil and gas properties, sharing the development risk with clients.

Falcon is the nation's largest operator of drillships. Its dominance of the market

Falcon has benefited from the strong resurgence of drilling in the Gulf of Mexico, particularly the deep water, where improving technologies have pushed day rates for rigs substantially higher over the past several years.

To better serve the deep-water area, Falcon is in the process of converting three recently acquired salvage vessels into drillships and upgrading a semisubmersible rig, projects estimated to cost as much

Falcon is the nation's largest operator of drillships. Its dominance of the market for barge rigs makes it able to easily reduce the supply of equipment on the market in order to prop up daily rates for rigs in a market downturn.

But that hasn't been a worry of late.

Lockheed and Boeing Study Pact

Continued From Page A3

Initiative is to ensure that questions about improper use of proprietary marketing and strategic information are worked out amongst ourselves, as opposed to going to the government and getting a consent decree," said one other executive close to the developments. That executive noted that such a pact would reduce costs and headaches for both the companies and the government.

Among other things, Lockheed Martin officials have been worried about marketing plans already shared with Boeing through their partnership to develop and produce the new-generation F-22 fighter jet for the Air Force. By acquiring McDonnell Douglas, Boeing will have an interest in promoting the F-15 fighter and the F/A-18, established programs that compete for Pentagon funds against the F-22 and Lockheed's F-16.

Similarly, by acquiring Northrop, Lock-

heed Martin would win a major foothold in producing large commercial-jet sections for Boeing. Yet, Lockheed Martin has recently entertained the idea of providing airliner parts for companies that are partners in Boeing's primary commercial-jet rival, Europe's Airbus Industrie.

Lockheed and Northrop officials struck a similar landmark agreement after Northrop agreed to buy the defense holdings of Westinghouse Electric Co. in 1996. Westinghouse was a major supplier of electronics gear for Lockheed's F-16 fighter jet. Lockheed feared it would be compromised, as Northrop produces nearly half of the McDonnell Douglas-built F/A-18 attack plane for U.S. and foreign militaries.

That agreement is said to have worked well so far, and it has been viewed as acceptable by FTC officials, according to industry executives.

—Bruce Ingersoll
contributed to this article.

Field of Scenes in Northglenn, Colo.

Continued From First Page

Denver's Rocky Mountain News in May.

Instead, the league quickly found itself grappling with the unexpected consequences of its ambitions.

In June, five residents of the rural area where the new facility would be situated filed a lawsuit against the league and the city of Thornton in a state court in nearby Brighton. They asked the court to block construction, arguing that, during the planning process, the sprawling Northern Lights facility had been improperly designated a "neighborhood park" and that it would bring far too much noise and traffic to their peaceful area.

Then rifts developed among Northern Lights parents, coaches and directors as some began to question whether the whole effort hadn't gotten out of hand for a league that was supposed to be concentrating on teaching kids to bunt and slide. Quarreling erupted over everything from concession-stand proceeds to the conduct of board elections.

Chris Stockton, an auto mechanic, claims that he was ousted from the board and his 14-year-old son, Christopher, was benched after Mr. Stockton questioned payments to Ms. Suchey's husband, Gregg, also a league director, for maintaining the fields. "You either vote her way, or you will not be on the board or coach a team," Mr. Stockton says.

Ms. Suchey acknowledges that her husband was paid \$1,000 over a two-year period to drag the fields with his truck, but only because no one would volunteer for the job. She adds that Mr. Stockton was asked to resign because of complaints about his coaching, adding, "His kid hasn't been benched."

Leaked copies of the league's budget made local headlines, and the regional Little League's governing body investigated anonymous allegations that Northern Lights had violated various league rules. Northern Lights officials say that no sanctions were imposed but acknowledge that the now-concluded inquiry forced them to review rosters and, for the first time in league history, send letters telling 50 youngsters that, because they lived outside official league boundaries, they wouldn't be eligible for this summer's all-star team and, next summer, won't be able to play in the league at all.

"I've been working hard, playing good. It's not fair," says Jacob Ellingsworth, an ousted 15-year-old pitcher who has been playing in the league since he was nine.

As a result of an anonymous complaint, Colorado's secretary of state is investigating whether Ms. Suchey violated a state law forbidding bingo hall owners from directly assisting with games of chance.

Ms. Suchey says that, if she did do anything wrong in connection with the bingo fund-raisers, it was "unintentional," adding that she has always had the league's best interests at heart. "Northern Lights would have done history three years ago if we didn't do what we did," she says, weeping. "We just wanted to be as good as everybody else."

But even as water lines are being laid for the Northern Lights facility in Thornton, some disgruntled parents have decided not to stick around for any more of the new era. "This has been the ugliest summer of baseball I have ever participated in," says departing coach Larry Leis, who is taking his 12-year-old son Christopher to another league.

port, released in 1996 and noting Mr. Clinton's past ties to the Basses, didn't help matters. Mr. Clinton says he was the IID of his past work for the Basses. "I was hired by them; the agency says I was doing wrong; and a Bass spokesman says the review panel itself was stacked with anti-Bass members.

Whatever its merit, the report fanned anti-Bass sentiment among some in the valley. Bill Condit, a 20-year veteran of the IID board and a supporter of water sales, declined an offer to meet the Bass brothers in Fort Worth. "They wanted to prove to me that they weren't some kind of monsters," he says. But he declined for fear of alienating his constituents.

The Basses are wounded by that kind of commentary, and note that they have plenty of supporters in the valley. "Some people think we have horns, and some don't," Mr. Moore says. He points out that the Basses have significant interests in California real estate, a major stake in Walt Disney Co. and many other investments — and argues that without water transfers, the entire state economy could be jeopardized as urban areas inevitably run short of water.

He is adamant that the Basses are in for the long haul in Imperial Valley, won't fallow land and want the whole community to benefit. Bass supporters also note the Basses have given heavily to the United Way and other local charities, and have proposed earmarking a percentage of any water-sale profits for county services.

The Bass interests say the IID's proposed deal with San Diego, which they helped broker and strongly back, is further proof of their good faith. The original San Diego proposal, announced last fall, calls for the sale of as much as 500,000 acre feet of water a year annually for up to 75 years for prices that start at \$200 an acre foot and climb over time.

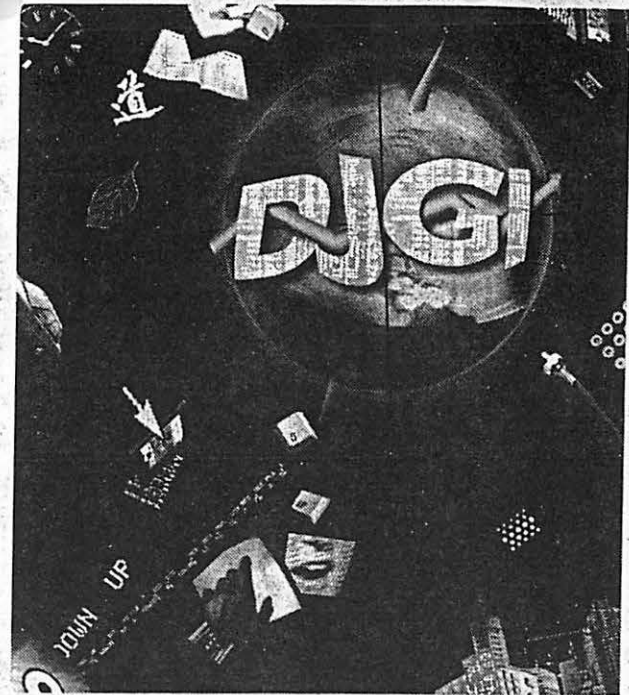
The proposal has other influential backers, in part because it is a shot at the Met's long dominance of urban water. Tom Graff, an Environmental Defense Fund attorney and a frequent critic of agriculture's water practices, nonetheless welcomes the Basses' role. "They've got the toughness and aggressiveness" to overcome the Met, "which is not a trivial opponent," he says.

Still, the Basses' promise to hang in for the duration is likely to be put to the test. San Diego and the IID have reopened negotiations on the terms of their proposed deal because of concerns by some valley farmers; the talks are so tough that Abraham Sofaer, a former Mideast envoy, has been called in to mediate. Any deal is almost certain to produce lawsuits. Some experts doubt the matter will be resolved for years.

And the talk only gets tougher. Mr. Quinn, the Met's dealmaker, goes over the math that he says shows that the Basses, and other valley landowners, would reap enormous profits, even if they plowed back huge amounts of their water sales into improvements and conservation measures. "The math is staggering," he says. "The rich get richer."

The Basses insist profits wouldn't be anywhere near windfall levels and say that markets themselves will create competition and equitable pricing. Of the Met, Mr. Moore observes: "Communism has been tried and it failed."

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analysis from engineering perspective and did not address legal obstacles, costs of implementation, and mitigating factors; (3) change in point of discharges would require new water rights for Mt. CB Water and San. (4) can not compel cooperation of senior water rights and third parties; (5) taxpayers would resent loss of past expenditures; (6) legally impossible for District to mitigate water rights impacts -- so no alternatives are feasible expect for each entity to have own facility.

Suit filed against Animas LaPlata water project. New costs estimated at \$640.7 million providing irrigation of 80,000 acres, drinking water to Durango and two Indian Reservations, two reservoirs, 240 miles of pipelines, 7 pumping plants, 34 miles of electrical transmission lines. Design for project started in 1968. President Jimmy Carter put it on "Hit List" as price escalated. Suit says environmental impact studies are out of date, were completed 12 years ago.

Source: Obmascik M. (1992) Suit Seek To Halt Hudge Water Project, *The Denver Post*, February 26, pp. 1B and 5B.

Animas-LaPlata to be built with 65% federal and 35% state and local split of \$222.3 m for state and local costs. This may be too costly says David Walker and the project will never be built.

Source: Obmascik M. (1992) Pro-Dam 'Water Buffalo' Days Over, *The Denver Post*, March 8, pp. 1C and 6C.

Underground water storage tested by Denver and Willows Water District of Arapahoe County. Concept is to injection water 1,500 feet down into aquifer. If succeeds, would provide close by storage and reduces need for Two Forks. Question is cost. Denver to supply 500 acre-fet or enough for needs of 2,000 residents. Willows will pump it into Arapahoe Aquifer. Project financed with \$1.7 million grant from Bureau of Reclamation. Uli Kappass is contractor and says if found feasible, then metro area could store 100,000 acre-feet with no environmental damage.

Source: Obmascik M. (1992) Underground Water Storage Tested, *The Denver Post*, March 22, pp. 1C and 6C.

Options sought from farmers for sale of 16 billion gallons [49,094 acre-feet] from Fort Lyons Canal in Lower Arkansas Valley. Colorado Water Supply (CWS) wants to buy at \$2,200 per share with each share equalling about 1 acre-foot. CWS is sister company to Colorado Interstate Gas [and part of Coastal Corp. group of utility companies]. Total price offered is \$110 million. CWS wants control of 51% of canal company to protect stake in \$300 to \$400 million project to deliver this water to metro Front Range by pumping and pipeline. One farmer says he expects to lose several thousand farming and could make more than \$1.m from sale of water.

Source: O'Driscoll P. (1992) Arkansas River Valley Water-Sale Decision Near, *The Denver Post*, February 23, pp. 1C and 5C.

Fight for control of water supplies in California. Governor Pete Wilson wants the U.S. to transfer ownership of the \$3 billion Central Valley Project to California. It is state's largest water supplier. Now management of water in dispute. Endangered species protection for chinook salmon vs farmers wanting continued flows of inexpensive water in delta irrigation canals. Pres. Bush announced deliveries to farmers - said he would not see either [??] economies and jobs hurt or loss of water for refuges and wetlands. About 7,000 farmers, 1/3rd of those served by project, will get no water in part to leave water for endangered fish. So signs made saying, " People, Not Fish."

Source: Geissinger S. (1992) War Of Water And Words Continues In California - (AP wire), *Gunnison Daily Times* March 9, p. 7.

Eight years ago Aurora reseeded more than half the 4,100 acres of farms it purchased to dry up below the Rocky Ford Ditch in the lower Arkansas Valley. Restoring native grasses on these farms will take at least another five years. Monitoring will continue for 20 years. It takes 3 to 5 years to establish a field and spot reseeded of about 200 acres is needed each year according to Douglas Kemper of Aurora's water department.

About 52.4% of the project is now complete. Aurora's ability to take water from the Rocky Ford Ditch depends on its success at revegetation of native grasses. The city signed a 22 year, \$13 million, contract with Pueblo in 1990 to provide additional water for revegetation.

Aurora paid \$24 million for 8,200 acre-feet of Rocky Ford Ditch water in 1986 and will invest at least \$4.6 million in revegetation.

In 1986 Aurora also purchased water from farms below the Colorado Canal in Crowley County. This is the last year of reseeded for on these lands and Aurora plans to use all the water in 1995. It will be put into storage since the city of 240,000 is no where near maximum potential growth - 700,000 people. The city added 3,500 water taps in 1979 but growth dropped to just 29 taps in 1989. Recently growth has picked up to about 800 taps a year.

Aurora has no plans to lease its water to Arkansas Valley farmers, even in light of possible consequences from the Kansas v. Colorado case. The city will develop all its water supply toward ultimate demand. It has budgeted \$100,000 to \$150,000 to maintain the land.

Source: Chris Woodka (1994) "Reseeding Project Hits Halfway Mark", The Pueblo Chieftain, November 22, no page given.

Milliken, Colorado, began construction on a new pipeline to connect to Greeley. 16 inches for \$2.5 million [distance is about 10 miles] - Source: Milliken Break Ground For New Water Pipeline, Greeley Tribune 12/23/99

Jackson Lake State Park near Denver surrounds Jackson Lake (reservoir) owned by Jackson Lake Co. Serving water users in Fort Morgan. State paid owners a little more than \$7,000 a year and farmers want \$60,000 a year or about \$.20 per visitor. Visitation was 237,000 in 1998. Colorado DNR says appraisal value of lease is \$26,680 a year. Last year Harvey Gap State Park was closed for 4 months when reservoir owners wanted more money [near Grand Junction] Source: Michael Booth State Parks in Limbo, The Denver Post, 1/13/00.

Diversions from Western Slope to the Arkansas River. 40% of water delivered to homes in Pueblo comes from Western Slope. Colorado Springs has to pump over ½ its supply but Pueblo is in the drainage. Transmountain water is valuable because it can be used to extinction. Native water can be stored and used once.

Columbine Ditch 13 miles north of Leadville on Fremont Pass - 2 miles long, 5 by 15 feet collects 1,770 ac-ft on average a year, purchased in 1953 for \$15,000 and estimated current worth is \$10 million.

Wurtz Ditch and Wurtz Extension Ditch, 15 north and west of Leadville on Tennessee Pass by Ski Cooper, drains 9.12 sq mile area, 6 miles, 6 by 20 feet and collect average of 2,880 ac-ft a year, purchased in 1938 for \$50,000 and present value is \$16.7. Extension is 6.5 miles completed in 1953.

Ewing Placer Ditch built in 1880, drains 5 sq miles of Piney Gulch along Eagle River. 1 mile long and bought as part of \$2.7 million package for Clear Creek Reservoir. Current value is \$6.5 million.

Busk Ivanhoe System is 12 miles west of Leadville over Hagerman Pass and has one small reservoir Ivanhoe Lake, tunnel 1.3 miles and empties into Turquoise Lake, bought ½ in 1971 and 98% of other half sold to Aurora in 1988. Average yield to Pueblo is 5,000 ac-ft and worth currently \$15 million.

Homestake System - Pueblo share provides 2,500 acre-feet, rest owned by Colorado Sprinals and Aurora. Water comes through Homestake Tunnel and held in Turquoise Lake. No value given.

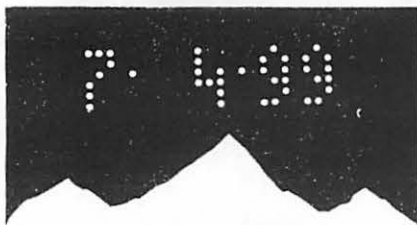
Fryingpan-Arkansas System - Pueblo has rights to 7,000 ac-ft and 31,200 ac-ft of storage space in Lake Pueblo. Space is used ut no water from project delivered to date in Pueblo.

Twin Lakes Reservoir and West Slope Collection System - 14 miles south of Leadville. Owned by Bureau of Reclamation. Collection system jointly owned by Pueblo, Colorado Sprongs, and some Arkansas Valley farmers - Twin Lakes Reservoir and Canal Company in Rocky Ford. Built in 1940's. 60,000 to 70,000 ac-ft collected and sent through 4.8 mile tunnel to Twin Lakes Reservoir.

Clear Creek Reservoir and Ewing Placer Ditch bought in 1955 from Otero Canal Company for \$2.7 million. Built in 1902 to store water from western slope and covers 406 acres. Drainage area is 67.7 sq. miles.

Source: Loretta Sword, Where Does Our Water Come From, The Pueblo Chieftain, 12/25/99, pp. 1C, 2C

John Martin Reservoir draws about 300,000 visitors a year, 50 years old. Water usage in lower Arkansas River basin estimated at 2 million ac-ft Source: Dennis Darrow, John Martin Reservoir Harnessed River's Power, The Pueblo Chieftain, 12/3099, pp. 1A and 2A.



DURANGO HERALD
Durango, CO
(La Plata County)
M-F(PM), 9,704; Sun(AM), 9,117

Colorado Press Clipping Service

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Reservoir planned for growing Parker area

The Associated Press

PARKER – The Parker Water and Sanitation District has announced plans for a large reservoir to meet the needs of the fast-growing town southeast of Denver.

District officials said Friday they plan to build the Rueter-Hess Reservoir on Newlin Gulch about three miles southwest of Parker. They hope it will be finished by 2005.

The earthen dam would be half a mile long and 120 feet high. Its reservoir would cover 385 acres and hold up to 15,000 acre-feet of water – more than Cherry Creek Reservoir's 12,000 acre-feet capacity.

An acre-foot is about enough to supply a family of four for a year.

Officials estimate the reservoir could cost about \$20 million. District fees would cover most of the cost, project manager Bruce Lytle said.

"It's not meant to promote future growth," Lytle said. "It's meant to meet the current needs."

The reservoir would serve as a recreation area and provide water to the Parker District's 7,000 households and 20,000 residents in northern Douglas County.

DVP

Reservoir Permit Work Under Way

Ellen Miller AP, Montrose Daily Press March 1, 1990, p. 2
working toward 9404 permit for Richard Reservoir near Kremmling on
Muddy Creek 7 miles upstream from confluence with Colorado River
60,000 acft reservoir; \$25^m of which \$10.2^m is settlement with
front range developers. as compensation for transmountain
diversion. \$10.2^m to be used to secure financing

? 25 year lease agreement to sell water to Denver is part of package
Northern Conservation District will have the \$10.2 to use
on new reservoir. Denver lease up to 30,000 acft per year
but not more than 45,000 acft in any three years for at
least 25 years. Project would fulfill requirements
under Windy Gap Settlement of 1985

Denver would pay \$3.5^m a year based on 15,000 acft per year
water not leased available to western slope and same for rest of
state after 25 years

Water would also be used to supply release for Fawcett Services
- endangered species.

Mitigation to preserve wetlands

233 per
acft

plus

Water Use

Canadians on average use 5,000 liters of water per person
per day, while the British use 840 liters and the
Swiss 350. (There is clear evidence that we ought to
lobby for municipal water metering. Calgary, where
residential water is only partially metered, uses twice as
much as Edmonton, which fully meters its water customers
consumption.)

Source: Ann: The Greening of a Nation, Supplement to
Harroway with Canada No 90, March/April 1990

HCM 20 Dec 02/4 Farmers in Central Valley \$4.5⁰⁰/yr 440 acres \$10,000
Redirect development to city - [3 story apt - inner city
walk-ups.

HCM 20 Dec 02/6. Ed Manton ^{Europe} [West pitted against image of and its
refugee] [Ranching is changing by within S.] ^{tax} ^{aid}
[private property values taking - giving] [recovery savings]
allies of ranchers - trusts but tax games, need for capital
and investments} [Ranchers do not reap - neo-tropicals}
[plow up willows] [what happens with land use
change} 40 acres and a shed [but Montrose Co -
retirement industry - restructuring the economy totally

HCM 9 Dec 02/7 Ranchers John Horning - Word say choice is
cow or condom - Ranching not economically viable enough
to prevent sprawl. \$500⁰⁰ a year for 170,000 sq miles.
\$4.59 an acre subsidy - Tax per acre?
#21,000 families \$23,800 per family per year. - plus damage
[Intensive livestock raising - off shore out of country]
Need to find another western culture.
What is its shape.

Improved storage at Pueblo Reservoir is part of a plan to enlarge the fountain Creek pipeline from the reservoir to Colorado Springs based on having an additional 19,000 acre-feet in the reservoir. The Fountain Creek Authority entity wants an additional 12,500 ac-ft. This would be conditional storage in dry years. The city of Colorado Springs would get storage at \$67 per ac-ft compared to a cost of perhaps \$1,500 per ac-ft or more to build a new storage reservoir.
Source: Margie Wood (29Apr02) Water, Water ... The Pueblo Chieftain, pp. 1A and 2A.

Aurora is filing to access millions of ac-ft of groundwater. Drilling wells can easily cost up to \$500,000 each to reach aquifers with enough water to serve Aurora's size. Shallower wells for residents to the Denver and Dawson aquifers can cost \$20,000 to serve 2.5 acres.
Source: Sheba R. Wheeler (10Jul02) Aurora neighbors see "water grab", Denver Post, p. 3B.

Chris Paulson argues that we do not need to subsidize dams anymore. Agriculture is no longer the prime water customers, residents are and local governments can afford to build dams and charge their customers accordingly. The crop we are growing in Colorado is people.
Source: Bill McAllister (17Jun02) From dam builders to "to water managers" Denver Post, pp. 1B and 3B.

The Colorado-Big Thompson Project has 12 reservoirs, 700 miles of transmission lines, 95 miles of canals, and serves 30 cities. Designed to collect 310,000 acre-feet of water annually. Actual yield is closer to 2230,000 acre-feet and enough to supply 1 million [about 3.8 people per acre-foot]. -p 2a Cost of most recent pipeline of 53 miles to Fort Morgan is \$45m [\$.84m per mile] and \$34m for 32 mile pipeline going southward [\$1.06m per mile]. Projected cost of pipeline from Pueblo Reservoir to Lamar is \$160m to \$200m.
Source: Margie Wood (2Jun02) Pipe dream come true, The Pueblo Chieftain, pp. 1A and 2A.

Legislation may provide federal funding for Pueblo Res. To Lamar pipeline. Estimated cost \$160 to \$200m. It is about 150 miles in length [\$1.33m at \$200m total]. Municipalities on lower Arkansas River now have to put in reverse osmosis plants to treat water.
Source: Mary Jean Porter (7Jun02) Feds may fund Pueblo-to-Lamar pipeline, The Pueblo Chieftain, pp. 1A and 2A.

Proposed water extension near Durango would have \$4,500 tap fee and a \$40 per month charge for the first 3,000 gallons and \$4.00 for each additional 1,000 gallons. Another payment option would be a \$6,500 tap fee and a \$30 per month charge for 3,000 gallons and \$3.00 for each 1,000 gallons over that.
Source: Jennifer Kostka (3Jul02) County discusses water service, Durango Herald, pp. 1A and 12A.

Repair of existing old reservoirs can cost \$5,000 per acre-foot and construction of new reservoirs can cost \$800 to \$5,000 per acre-foot. Repair may not be cheapest approach but sites have already been trashed.
Source: Ed Quillen (14Jul02) We could start by fixing what we've got, Denver Post, no page.

Animas-LaPlata Water Conservancy District set mill levy at .319 so that owner of home worth \$200,000 would pay \$6.00 to District. Total revenue for District is \$150,000 for 2002. Source: Bob Schober (13 Dec 2001) Diversion of Animas water see opposition, Durango Herald, pp. 1A and 10A.

Five years of financial losses for Lake Durango Water Co. means water rate going up 45% to \$26.92 a month which includes a \$5.50 meter charge. Residential rate is \$3.57 per 1000 gallons. In Durango first 2000 gallons is \$5.82 and after that \$1.24 per 1000 gallons [now going up to \$1.33 per 1000]. Source: Bob Schober (15 Dec 2001) Water rates may go up for Lake Durango, Durango Herald, pp. 1A and 10A.

Greeley water rates to rise to average of \$34.10 per household and sewer at \$17.42. Source: Jesse Fanciulli (22 Dec 2001) Water rates may be on rise, Greeley Tribune, pp. A1 and A16.

From: Roderick Nash <canyondancer@ATT.NET>
To: RMC-CONS-WATER@LISTS.SIERRACLUB.ORG <RMC-CONS-WATER@LISTS.SIERRACLUB.ORG>
Date: Sunday, July 13, 2003 10:11 PM
Subject: Re: Farmers Leasing Water

Nice essay. Hooray for March blizzards. How about a little personal PS on something like this. XO Rod

----- Original Message -----

From: Lisa Force <lforce@LIVINGRIVERS.ORG>
To: <RMC-CONS-WATER@LISTS.SIERRACLUB.ORG>
Sent: Friday, July 11, 2003 5:25 PM
Subject: Farmers Leasing Water

- > Farmers' market: Lease water to cities
- > By Coleman Cornelius, Denver Post Northern Colorado Bureau, June 30, 2003
- >
- > A cool, wet spring has slaked the thirst of much of drought-stricken
- > Colorado, yet cities foreseeing more thirsty times ahead have a tool to
- > help: water leasing.
- > Short-term rentals of water rights, which allow farms and cities to cash
- > in
- > on a valuable resource in a dry climate, are not new in Colorado. But
- > under
- > a law signed this month by Gov. Bill Owens, the agreements are expected to
- > become more common throughout the state, especially as cities scramble to
- > meet the needs of growing populations.
- >
- > "The concept is good - let's try to maximize the use of this very valuable
- > resource we have that has a finite supply," said Rep. Diane Hoppe,
- > R-Sterling, who sponsored the legislation. "By allowing flexibility,
- > hopefully we can keep more people in business in both the cities and in
- > the
- > rural areas."
- >
- > In March, the city of Fort Collins made leasing deals with two irrigation
- > companies, deals that allow about 400 northern Colorado farmers to lease
- > their water rights to the city for one year. Those deals were negotiated
- > privately, not using the statewide system that Hoppe's legislation set up.
- > Even so, they show how water leasing works and what it can mean.
- >
- > The deals also offer a window on the nerve-racking task that farmers and
- > cities constantly undertake to assess water risks and benefits in a dry
- > climate - and along a Front Range where municipalities are working to
- > serve
- > expanding populations.

7/14/2003

- >
- > Fort Collins Utilities leased the water rights before the March blizzard
- > and subsequent rainfall, when the city forecast a 30 percent shortfall in
- > the water it needed to get through the year - the biggest water shortage
- > the city had ever faced.
- >
- > Fort Collins, where water managers said the leased water rights are still
- > needed as insurance while the city recovers from a four-year drought, will
- > pay nearly \$1 million, the most the city has ever spent to rent water.
- >
- > The agreements mean residents in the city of 130,000 can water their lawns
- > twice a week instead of once a week this summer. And they mean that many
- > farmers will earn money for renting their rights to irrigation water for
- > municipal use - up to \$40,000 each in some cases - instead of using the
- > water to grow crops such as vegetables, alfalfa hay, sugar beets and corn
- > for livestock feed.
- > "You could realize more income out of renting your water than using it to
- > raise a crop," said Gary Simpson, president of North Poudre Irrigation
- Co.,
- > whose shareholders took part.
- >
- > Some farmers leased their water rights to Fort Collins because they didn't
- > think meager supplies would be enough to raise a crop. Early this year,
- > North Poudre Irrigation Co. told farmers that they might get irrigation
- > water for no more than two weeks of the growing season.
- >
- > "You cannot farm that way," said JoAnn Baland, 71, who runs her
- > fifth-generation family farm near Wellington and leased her water rights.
- > "You kind of got to go with a sure thing."
- > The wet spring, which began with the whopping blizzard in late March, has
- > greatly improved the water outlook for the northern half of the state. In
- > fact, many farmers will have unexpected irrigation water for crops.
- >
- > But even while some rivers have flooded and summer watering restrictions
- > have been eased in Denver and elsewhere, reservoirs statewide remained 45
- > percent full on average at the end of May, according to the most recent
- > estimate by the Natural Resources Conservation Service.
- > The statewide drought will continue until critical supplies are recharged,
- > which could take a few years of average or better precipitation, said Jack
- > Byers, deputy state engineer.
- > "We need to think of drought not as an event but as a process," Byers
- said.
- > "Yes, we are still in a drought. Yes, we still have issues with water
- supply."
- >
- > That's where water rental comes in. Cities need permanent water sources.
- > When Mother Nature is stingy, as in Colorado, cities turn to short-term
- > water leases to help meet demand, said Ronald Hellbusch, president of the
- > Colorado Water Congress.
- >
- > The congress, which provides water education and advocates state water
- > policy, does not track the number of cities leasing water rights. But many

- > water managers see drought-time rentals as an option that can help keep
- > water flowing to municipal taps without forever drying up farmland,
- > Hellbusch said.
- >
- > "It serves everybody," he said. "It allows the farmers to recoup some
- > income that they would not receive with the loss of a crop, and it helps
- > cities cope in these drought conditions."
- > On June 5, Owens signed into law HB 1318, which will create statewide
- water
- > banks meant to make it easier for farmers and ranchers to temporarily
- > lease, loan and exchange their water rights without severing rights from
- > the land. The law, aimed at water-use flexibility and signed into law
- along
- > with a host of other water legislation, gained support from
- > agriculturalists and environmentalists.
- >
- > Leasing deals illustrate water's role as a commodity, a vital resource in
- a
- > semi-arid climate that is often bought, sold, rented and traded. In years
- > past, it was more common for cities to lease the rights to excess water to
- > farms, but the reverse is true this year, water managers said.
- > These days, water for municipal use is often sold on the Front Range for
- > \$11,000 to \$13,000 an acre-foot and recently has been rented for \$300 to
- > \$500 an acre-foot, said Ted Carlson, a broker with Austin & Austin Real
- > Estate in Greeley, a company that handles farms and ranches. Such firms
- > often are involved in the buying and selling of water rights.
- >
- > Before the current drought, the cost to rent water rights was typically
- > about \$25 an acre-foot; the more recent prices represent a twentyfold
- > increase that speaks to demand in dry times, Carlson said.
- >
- > An acre-foot is about 326,000 gallons, or enough to supply two average
- > households for a year.
- > "We live in a desert, and with low supplies of water, it doesn't take long
- > for that commodity to really go up in price," said Simpson of North Poudre
- > Irrigation Co. "Most people have no idea what water is worth. Water in the
- > desert is worth quite a little."
- >
- > Farmer Baland said she grudgingly leased to Fort Collins, in part because
- > she thinks sending water from farms to cities, even for a short term,
- > signals the eventual demise of agriculture along the fast-growing Front
- > Range. "We're like dinosaurs. We're a dying breed," she said.
- >
- > Baland said she wants to do all she can to keep the farm founded in 1916
- by
- > her grandfather, James Elder, and that this year, her water is the most
- > profitable commodity she has to help do that. Her decision followed a year
- > in which her crop yields plummeted and Baland was forced to sell nearly
- all
- > her cattle because she didn't have feed for them, she said.
- >
- > "The drought has taken its toll on me," said Baland, who lives in the

house

- > where she was born. "It's been horrendous. In all my life on this planet,
- > I've never seen anything like it."
- > Her decision to lease was born of the harsh facts of drought. Yet in Fort
- > Collins, water rights leased from Baland and hundreds of other farmers
- will
- > help city dwellers avoid grim realities.
- > "Without taking some actions, it would have meant very severe restrictions
- > that could have been very tough, or even devastating, on the landscape of
- > Fort Collins," said Dennis Bode, water resources manager for Fort Collins
- > Utilities.
- >
- > The city rented the rights to 2,500 acre-feet of water for \$400 per
- > acre-foot to boost its supplies from the Cache la Poudre River and the
- > Colorado-Big Thompson Project. The project collects water from the Upper
- > Colorado River Basin and delivers it to northern Colorado through a system
- > of reservoirs, tunnels and canals.
- >
- > The rented water, 8 percent of that normally used in the city, was part of
- > a plan to cope with water shortages by addressing both supply and demand.
- > The city also bought water, enacted watering restrictions and encouraged
- > conservation.
- > Despite spring precipitation, the city still needs the water it rented,
- > chiefly because of low reservoir levels.
- >
- > "I look at this as an insurance policy," Bode said, "and it's pretty cheap
- > insurance for making sure we have a reliable supply and making sure we can
- > meet a reasonable demand."

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Colorado Big Thompson water to become more costly - 20% rise to build up reserves. Rates for ag. water to go from \$4.50 to \$5.40 per unit while municipal water to go from \$10.50 to \$12.50 per unit and industrial water to go from \$16.25 to \$19.50. One unit is roughly equal to one acre-foot.

Just under half the 310,000 units available of the C-BT are sold by open-rate contracts, said Darell Zimbelman, associate general manager of the Northern Colorado Water Conservancy District. Rest sold at fixed rate which remain with the original water user and carry rate of \$1.50 per unit until 2002.

District wants to avoid bonded indebtedness for facility repair and to be cash-funded up front. 1992 revenue expected to be \$11.1 million of which \$4.1 is from property taxes and \$1.6 from water sales. Rest is from other sources such as federal money and interest revenue. Greeley owns 18,00 to 19,000 units but only 3,794 are on open-rate contracts.

Source: Bob Kretschman (1991) C-BT Water To Become More Costly, Greeley Tribune (Colorado), August 13, pp. A1 and A12.

=====

Colorado - Big Thompson makes a difference. Water flowed in 1955. Instead of 80 or 90 bushels per acre of corn before C-BT, get 180 or 190 bushels now. Not all due to water.

65% of nations farm land not irrigated. Colorado has 40% of farmland irrigated, or 80% excluding wheat.

Without C-BT no Kodak, IBM, Anheuser-Bush. Greeley would still be a little town.

In 1934 engineers reported it possible to divert 300,000 acre-feet from Colorado River through a tunnel to Big Thompson River. Western Slope objected and so did eastern Congressmen. Water grab and high cost for only supplemental water. Northern contracted to repay \$25 million of \$44 million construction cost.

Privately owned reservoirs contain 70% or irrigation storage in Colorado and 8m ac-ft storage - "... excluding the Curecanti power project," said Jeris Danielson, the state water engineer."

Source: Bartell Nyberg (1988) Water From 'Big T' Giving Farmers A Drought Safety Net, The Denver Post, July 10, no p.

=====

Price of raw water increased during past 18 months in Northern District. C-BT selling for \$1550 per unit and as high as \$1600 as compared with \$1100 a unit a year ago. In mid-1987 they were \$650. In a typical year is 7/10's of acre-foot. The low figure of \$650 was at time of high interest rates and with 40,000 ac-ft from Windy Gap coming on line


Storage water is following price - North Poudre Irrigation Co. water at \$5,500 to \$6,000 per share of 4 ac-ft per share.

Reason for attractiveness is potential demand from northern suburbs of Denver. Their alternatives are \$8,000 to \$9,000 per ac-ft. BUT market is very shallow - actual quantity of water market is very limited.

1,300 ac-ft of Windy Gap exchanged to Broomfield from Greeley-Loveland Canal for 1,300 ac-ft plus \$435,000 from Broomfield and Broomfield to assume payments on Greeley's \$6.7m bond on 1,300 ac-ft of Windy Gap water.

Bill Jackson (1990) Raw Storage Water Prices Continue To Climb, Greeley Tribune (Colo.) Tribune, November 5, no p.

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GREELEY TRIBUNE
 Greeley, CO
 (Weld County)
 M-F(PM), 25,051; S-Su(AM)25,093

Colorado Press Clipping Service
 tion. CO80204

80

NCWCD has water to rent

LOVELAND — The Northern Colorado Water Conservancy District and its municipal subdistrict has made 8,000 acre-feet of water available for rent.

The water is being diverted from the Colorado River by the Windy Gap Pumping Plant and made available to farmers and domestic water suppliers in northeast Colorado. The water will be rented from a list that is being compiled until the 8,000 acre-feet is depleted.

To be added to the rental list, a water user can call the NCWCD operations at 1-303-667-2437. Users will have three working days within which to provide payment in order to be allotted the water.

The charge will be \$15 per acre foot.

— Staff Reports

Colorado Big Thompson water to become more costly - 20% rise to build up reserves. Rates for ag. water to go from \$4.50 to \$5.40 per unit while

12.13.97

ROCKY MOUNTAIN NEWS
Denver, CO
(Denver County)
AM, 355,644; Sun, 411,924

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80 Rocky Mountain News, Sat., Dec. 13, 1997

Colorado River plan would keep San Diego County flush

By Paula Story

Associated Press

SAN DIEGO — A multibillion-dollar deal to ship Colorado River water through the Imperial Valley could quench San Diego County's thirst for generations and become the model for Western conservation efforts.

Two years in the making, the proposed 75-year contract would allow San Diego to buy water from the Imperial Irrigation District, which takes water free from the Colorado River and sells it to farmers in the fertile Imperial Valley.

Under the tentative deal reached Thursday, San Diego

would initially pay about \$250 per acre-foot, compared with the more than \$400 it pays the Metropolitan Water District. An acre-foot is 326,000 gallons — enough water for two average Southern California households for a year.

The agreement, which could have water flowing to San Diego County as early as 1999, offers the county a declining discount that would start at 25 percent and end at 5 percent in the 17th year.

California takes about 5.3 million acre-feet of water a year, although it is allotted only 4.4 million acre-feet. Proponents lauded the pact as a historic model for a law requiring the state to reduce the amount it may take from the river.

Mesa Reservoir are raised accordingly. These targets were set to avoid ice jams upstream but easements upstream of the reservoir in anticipation of ice jam were acquired decades ago. Additionally, the current practice of releasing water in winter months to achieve a Second Fill of Taylor Reservoir changes the thermodynamics of reach between the reservoirs in a manner that reduces the potential for ice jams to occur.

5. Cooperation to provide a more appropriate natural hydrograph to the Black Canyon of the Gunnison River along with call protection could result from partnering with the Uncompahgre Valley Water Users Association to support construction of a run-of-river power hydroelectric power generation facility at the weir diverting water to the Gunnison Tunnel diversion. An example of this concept was provided in the WET Report. This example specifically references and is based upon the re-licensing application and federal environmental impact statement prepared by the Federal Energy Regulatory Commission for the Pillage Project of Minnesota Power and Light (FERC Project 2663-04, 17 October 1997). The operating height for this power plant is 20 feet and river flows are comparable. Based on the FERC estimate for a replacement cost and the cost estimates for the AB Lateral Project, such a project would now cost around \$2 million. While promoting a more natural hydrograph through the Black Canyon such a facility could provide a small revenue source. It might also commit both the District's and the UVWUA's water rights in a manner that might attract federal funding assistance.
6. Within the Upper Gunnison Basin, the District could help existing water users cope with dry years, when they occur, by improving irrigation efficiency. Research on buried drip or weep systems shows their durability and practicality. The objective is to apply water when needed only within the root zone and have a dry surface and no water lost below the root zone. With the piping buried 14 to 24 inches, irrigators successfully hay and forage with 2.5 acre-feet or less of water applied per acre irrigated. While some reports have indicated a cost of around \$800 to \$900 per acre to install this technology, a more reasonable cost estimate would be \$1,500 per acre. This amount does remain less expensive than now constructing reservoirs and canals such as described in the District's decrees. For example, the far end of the Ohio Creek Canal with a capacity of 129 cfs would be 20.2 feet wide at the highwater line, 10 feet wide on the bottom and 3.4 feet deep at high water.
7. Should the District provide additional water or assistance with investments in irrigation technologies, a provision should be made that the whole of the benefiting property be placed in a conservation easement, that water cannot be sold off from the property, and that existing water rights be fully used when water is plentiful wet years to as to sustain riparian vegetation and recharge aquifers. In some situations, use of the drip or weep technology for irrigation has reported to have been so much easier and required so much less water that water rights were sold off the property. This is contemplated along the Front Range as a source for water.

Should more information on these thoughts be helpful, please contact me.

Respectfully:

Ralph E. Clark III

c. to others

Service, and National Park Service lands, is often noted in real estate advertisements as something that greatly enhances a particular property's attractiveness and value. This would appear to be for two reasons. The first is that the public land will remain open and not be developed thereby diminishing the view and value to a buyer. Second, with adjacency, the property owner can control access to public lands and open space. Those of the public not owning property adjacent to public land may have to travel many miles so as to gain access to federal lands because access is denied across the narrow strips of private land along the valley bottoms. If open space requirements are reduced, equivalent provision and dedication of public access trails should be provided as a "quid pro quo."

Review Process — Provision should be retained to extend the time allowed for decisions when proposed developments present more than "routine" issues.

Adequate and Reliable Water Supply — The following references offer useful answers to many questions raised during the Planning Commission's recent discussion of this matter:

Richmond T. (1994) *The Intersection of Water Law and Land Use: The Arizona Experience in The 12th Annual Water Law Conference - Course Materials*, tab G with 18 pages and appended material, published by the American Bar Association, Chicago, Illinois. At this time, Richmond was Chief Counsel for the Arizona Department of Water Resources.

Golany G., ed. (1982) *Desert Planning: International Lessons*, The Architectural Press, London, 164 pages.

?
Water — During this past dry year there has been much discussion within communities across Colorado about minimum water requirements. The Upper Gunnison River Conservancy District appears to be basing its augmentation program from Meridian Lake on somewhat different requirement criteria but these criteria are for dry periods. The District's planning for domestic use is 100 gallons per day per person plus irrigation requirements for 10,000 square feet of lawn per household amounting to 1.83 acre-feet per year (2003, Water Management Plan, p. 6-12).

Comments on Proposed Amendments to Gunnison County Land Use Resolution

Topics:

Mobile Home Community — From the perspective of a lender, the basic principals of real estate property evaluation used in appraisal suggest that the purpose for this proposed amendment - facilitating finance as a single family residence and experiencing greater investment return - will be difficult to achieve (see the 6th edition of The Appraisal of Real Estate published by the American Institute of Real Estate Appraisers). Major issues include spacing, depreciation, and residential compatibility. Also an issue is the need to define what is a

"mobile home" and how it may differ from a "manufactured home." For example, must wheels be kept in place upon the frame to insure mobility, would use of an older 25 foot Airstream trailer qualify as a mobile home, does an easily set up and relocated [?] such as for a yurt [?] qualify, and would a dwelling made of two or more insulated 10 by 40 foot sea-container boxes qualify? A reason for this concept not being frequently done in the past is that lack of a means to assure compatibility among dwellers and dwelling units may affect property valuation. Detail on how these and other issues will be address^{ed} requires explanation as for example, with respect to covenants, homeowner association rules, etc..

Aesthetic Fuel Burning Devices — Large open fireplaces are said to be among the most inefficient fuel-burning devices and consequently can be major contributors to air pollution. Notification and enforcement of "no-burn days" in resort areas can be difficult.

Legal Lots, Subdivision, and Residences per Legal Lot — In combination, approval of these proposed changes would appear to immediately increase the amount of "approved" housing development within the county. Of the more than 15,000 separate tax parcels or tracts in the county, over 5,000 might qualify for a residence or perhaps two. This proposed pace and location of development would be contradictory to the expressed purposes of the LUR.

Secondary Structures and Residential Building Size — Recent studies conducted within Gunnison County and elsewhere show a direct relationship between the square footage of house size and employment for construction and property maintenance. Property taxes upon large residences are not commensurate with their total impact imposed for supporting infrastructure related to resulting employment and maintenance. If house size were to be unrestricted, a requirement should be that beginning with primary residential space of 4,000 square feet there would be construction or funding of 1,000 square feet of affordable secondary housing along with proportionate funding of infrastructure requirements and that for every 4 feet of primary residential space over 4,000 square feet and additional 1 square foot of affordable secondary housing would be constructed or funded along with proportionate funding of infrastructure requirements.

Wetlands — The words proposed to be added to the section are helpful. The words proposed to be struck, however, provide general guidance to someone not familiar with the latest federal interpretations and regulations in that the description identifies land not suitable for building and generally locations where land disturbances should be avoided. Therefore, the proposed new wording should be connected to the existing wording with an "and."

New Commercial and Expansion of Existing Commercial Use — The proposed change is to consider as minor impact any expansion and new structure for commercial and industrial use with a structure up to 10,000 square feet. Commercial and industrial projects with 10,000 square feet of structure are not comparable in scale with other land uses listed to be reviewed as "minor impacts." Structure and industrial or commercial activity at this scale usually can result in associated outside storage of products and material, parking of tucks, quantities of stored

Land Clearing — The proposed language would appear to allow large amounts of land to be cleared for many purposes such as storage, parking, commercial composting, rock concerts, racing track, etc. If the focus is only upon clearing land for roads then this should be made clear.

Respectfully:

Ralph E. Clark III

hazardous materials, and other associated issues which can be very significant. Nearby and more distant properties can be adversely affected because Gunnison County does not have zoning and potentially such land use changes can appear anywhere with permission. The expediting of this kind of development at this scale is unwise and unwarranted.

Stream Side Buffers — The objective for having inner and outer buffers is to protect existing stream conditions and to avoid the public expense, or enforcement of private stream corridor restoration. What is done within the defined buffer zones and beyond can affect others above, below, and across the streams. Many of the actions leading to the necessity for restoration are not covered in state and federal regulations. Land within buffers is often more appropriately left in its natural state, or restored, if needed, to a natural state.

Open Space Requirements — Reasons and effects of the proposed changes appear to suggest that provision of open space for affordable housing, mobile home projects, and high-density project would be reduced because provision of open space is too expensive to provide. However, such development projects need and deserve perhaps more open space than projects where each dwelling unit is surrounded by an acre or more of land. Open space is not an amenity, it is a necessity. Again, it should be noted that high-end development often advertises and privatizes open space by closing off public access to public lands such as BLM and Forest Service lands. The dedicated open space can for example include land within restrictive buffers and setbacks. Provision of it does not appear to be a burden but an asset for the development. Provision of open space within around commercial and industrial development also appears to add to project value, attractiveness to buyers and employees, and to community acceptance.

Water Impoundments — The proposal to eliminate the requirement for a land use change permit for dams and impoundments of water over 99 acre-feet is very ill advised. This is a dry year. However, several years ago prospects of flooding from small dam failures prompted inspections and emergency planning across Colorado and Utah. For example, locally in 1997 a dam failure released 400 acre-feet and resulted in a 5 to 12-foot wall of water washing down 10 miles of Leroux Creek in the basin of the North Fork of the Gunnison River. The dam was mis-operated by the Leroux Creek Water Users Association. In 1998 fifty dams in Larimer County were rated as “high hazard” and posed threats to thousands of lives and millions of dollars in damages should one ever fail. The proposed 10,000 acre-foot capacity figure as the limit under which impoundments would be exempt from the Land Use Change Permitting process should be compared with the Upper Gunnison River Water Conservancy District’s dam proposal called Monarch No. 5. It was to be located just below Whitepine and to have a capacity of 12,000 acre-feet and to have projected cost of \$144 million dollars. Implications of a project proposal deserve consideration. Every dam and impoundment proposal, and certainly those over 99 acre-feet of capacity, should be evaluated for consequences of failure and inundation using the methodology set out in Guidelines for Defining Inundation Areas Downstream available from the Bureau of Reclamation Dams. The Emergency Preparedness Brief (1997) for Taylor Park Dam offers an example. It also suggests cautions about near stream development within the flood plain and the need to have emergency response plans.

Mesa Reservoir are raised accordingly. These targets were set to avoid ice jams upstream but easements upstream of the reservoir in anticipation of ice jam were acquired decades ago. Additionally, the current practice of releasing water in winter months to achieve a Second Fill of Taylor Reservoir changes the thermodynamics of reach between the reservoirs in a manner that reduces the potential for ice jams to occur.

5. Cooperation to provide a more appropriate natural hydrograph to the Black Canyon of the Gunnison River along with call protection could result from partnering with the Uncompahgre Valley Water Users Association to support construction of a run-of-river power hydroelectric power generation facility at the weir diverting water to the Gunnison Tunnel diversion. An example of this concept was provided in the WET Report. This example specifically references and is based upon the re-licensing application and federal environmental impact statement prepared by the Federal Energy Regulatory Commission for the Pillage Project of Minnesota Power and Light (FERC Project 2663-04, 17 October 1997). The operating height for this power plant is 20 feet and river flows are comparable. Based on the FERC estimate for a replacement cost and the cost estimates for the AB Lateral Project, such a project would now cost around \$2 million. While promoting a more natural hydrograph through the Black Canyon such a facility could provide a small revenue source. It might also commit both the District's and the UVWUA's water rights in a manner that might attract federal funding assistance.
6. Within the Upper Gunnison Basin, the District could help existing water users cope with dry years, when they occur, by improving irrigation efficiency. Research on buried drip or weep systems shows their durability and practicality. The objective is to apply water when needed only within the root zone and have a dry surface and no water lost below the root zone. With the piping buried 14 to 24 inches, irrigators successfully hay and forage with 2.5 acre-feet or less of water applied per acre irrigated. While some reports have indicated a cost of around \$800 to \$900 per acre to install this technology, a more reasonable cost estimate would be \$1,500 per acre. This amount does remain less expensive than now constructing reservoirs and canals such as described in the District's decrees. For example, the far end of the Ohio Creek Canal with a capacity of 129 cfs would be 20.2 feet wide at the highwater line, 10 feet wide on the bottom and 3.4 feet deep at high water.
7. Should the District provide additional water or assistance with investments in irrigation technologies, a provision should be made that the whole of the benefitting property be placed in a conservation easement, that water cannot be sold off from the property, and that existing water rights be fully used when water is plentiful wet years to as to sustain riparian vegetation and recharge aquifers. In some situations, use of the drip or weep technology for irrigation has reported to have been so much easier and required so much less water that water rights were sold off the property. This is contemplated along the Front Range as a source for water.

Should more information on these thoughts be helpful, please contact me.

Respectfully:

Ralph E. Clark III

c. to others

*Continued Comparison
on page 2*

Source: City of Aurora, Utilities Department (1984) The Development of Aurora's Water Supply, City of Aurora, Aurora, Colorado, 15 pages; exhibit in water court case. Pages not numbered; identified by numbering for court case.

page identification (pi) 400341
1981 saw completion of 54 inch Rampart Parallel Pipeline. Completion of Homestate Phase II and participation in Metro Denver Water Agreement, plus other water rights are projected to provide 21,000 ac-ft to Aurora and enough for serving 320,000.

pi 400342
15 inch precip. average.

pi. 400343
Table 3 - "Average Annual Yield of Aurora's Water Rights" ac-ft

Homestate Phase I	14,300
Twin Lakes	2,360
South Platte Rights Above Spinny Mountain Reservoir	15,300
Spinny Mountain Reservoir	3,491
Other South Platte Rights	9,958
Cherry Creek Wells	2,000

Total	47,979

pi 400344
Table 4 - Aurora's Reservoir Storage Capacities; in ac-ft.

Homestate Reservoir	22,000
Turquoise Lake	15,000
Twin Lakes	2,630
Spinny Mountain Reservoir	54,000
Jefferson Lake	1,670
Strontia Springs Reservoir	700
Rampart Reservoir	1,250
Quincy Reservoir	2,750

Total	100,000

Water Use in Aurora - Average use since 1970 is per capita per day is 145; one of the lowest rates in the Denver Metro region. Use is primarily residential - 84.5% with commercial 12.3%, and with government 3.4%

Of single family residential use: 50% for landscaping at 73 gpcd; 31% at 45 gpcd for bathroom; 8% gpcd 11 for kitchen; 11% at 16 gpcd for misc.; and giving a total of 145 gpcd.

Penetration Tap Fees below

1987

Average Single Family Residential Billing
Water Bill \$2.52 service charge + \$1.27 per 1,000 gals.
Sewer Bill \$5.84 per month
Storm Drainage Fee \$ 3.33 per month
Average annual utility bill - \$311.56
based on single family at 370 gal per day

.41 ac ft per year

pi 400354 [correct page]
Monthly Water Rates As Of January 1, 1984 [correct date]

Service Charge:
Meter Size (in.) 3/4 1 1.25 1.5 2 2 3 6
Monthly Charge \$ 2.30 3.90 7.05 10.20 19.65 52.70 292.30

Rate Per 1,000 gallons used:
Residential \$1.19
Multifamily \$1.08
Commercial \$1.12
Park Irrigation \$1.34

Average Single Family Residential Billing
Water Bill \$2.30 service charge + \$1.19 per 1,000 gals.
Sewer Bill \$5.35 per month
Storm Drainage Fee \$ 3.05 per month
Average annual utility bill - \$329.04 [dif. is more use]

Conservation Programs:
1981 ordinance limiting amount of bluegrass lawns.
1961 ordinance requiring organic matter mixed in lawn soil
to increase moisture retention.
1977 ordinance requiring low-flow plumbing fixtures.
publication of landscaping guides.

pi. 400353 [correct page]
Service Connection Fees - 1984
Meter Size Residential Multifamily Commercial
3/4 \$4,000 \$3,680 \$4,375
1 8,250 7,560 9,000
1.5 18,250 16,675 19,750
2 29,625 35,000
3 69,000 81,750
6 324,000
or MF 1st unit \$3,680 and \$1,375 @ additional

*Penetration Tap Fees 1990
for comparison -
for City Hall conversation
March 29, 1990*

*Based on fifteen units
average home has 18 units
\$38 dollars per unit
for water connection \$684.00
\$64 - dollars per unit
for sewer tap 896.00
usually 14 on home 1580
(dig is outside drive)*

For economic stability: fees differ for user class due to costs
in serving; since the utility must be able to serve the maximum
demand, the connection fees are in proportion to the size of the
connection; operating costs are paid in monthly bills with
service charge to finance ongoing, non-quantity dependent, costs
such as meter reading.

Table 5 - "Historic Water Use in Aurora, Colorado - 1970-1983"

Year	Pop. ths	Total Water Supplied mil. gals.	GPCD as Average annual use
1970	78.3	3,625	126
1971	85.7	4,012	128
1972	93.1	4,204	123
1973	99.7	5,119	141
1974	105.6	6,254	162
1975	112.4	5,600	136
1976	119.95	5,863	134
1977	127.85	6,362	136
1978	136.55	8,109	163
1979	147.15	8,064	150
1980	159.9	9,678	166
1981	170.3	8,604	139
1982	183.5	9,953	149
1983	195.1	10,256	144

pi 400347

Homestake Phase I water is diverted under the Continental Divide to Turquoise Lake. From there via the Mt. Elbert pipeline to Twin Lakes to allow for the generation of electrical power. From Twin lakes to Otero Pumping Station it flows in the Arkansas River. It is pumped out of the Arkansas and flows through a 66-inch 50 mile pipe line to Colorado Springs with turnout valves for diversion of Aurora's water to Spinny Mt. Res.

pi 400350

Waste Water Treatment Sewage flows to both the Metro. Denver Sewage Disposal District and Aurora's Sand Creek plant. Latter built in 1963 and expanded in 1982 to be a reclamation facility providing water for irrigation of golf courses and parks. Current capacity is 2.5 mgd equivalent to a flow of 1.8 gal per minute. From Sand Creek water is either diverted into a holding reservoir for further tertiary treatment before to golf course and parks irrigation or released into Sand Creek.

pi. 400352

Monthly Water Rates As Of January 1, 1986 [correct date]

Service Charge:

Meter Size (in.)	3/4	1	1.25	1.5	2	2	3	6
Monthly Charge \$	2.52	4.26	7.70	11.13	21.42	57.51	319.18	

Rate Per 1,000 gallons used:

Residential	\$1.27
Commercial	\$1.29
Park Irrigation	\$1.54

ENI

Source: City of Aurora (no date - circa 1988) Aurora Housing and Population Estimates and Projections, City of Aurora, Aurora, Colorado, 20 pages; exhibit in water court case. Pages also identified with 500001 - 500026 numbering for court case.

p.1

		% of reg. population	% of reg. pop. ann. increase
1980	154,900	9.6%	44.5%
1981	166,400		
1982	177,000		
1983	190,000		
1984	203,300		
1985	216,900	12.0%	26.8%
1986	221,300		
1987	225,800		
1990	238,200	12.0%	16.4%
2000	341,300	14.6%	29.0%
2010	407,212	15.5%	22.8%

source: DRCOG and Aurora Pl. Dept.

p.5

Vacancy trends: [vacancies increasing]

Year	SFdet	SFatt	MultiF	MobiH	Total Units
1980	2.0	4.4	6.2	2.4	3.3
1985	2.5	7.7	11.9	3.6	6.1
1986	3.3	7.6	10.3	6.9	6.4
1987 April	4.1	10.0	14.5	9.0	8.6
10 year av. '78-87	2.2	6.3	9.0	4.6	4.8
5 year av. '83-87	2.8	8.0	11.6	5.2	6.3

source: Aurora Pl. Dept.

p. 6

Population Densities in 1987

Total acres in city - 39,950; pop. - 226,200; density of people / acre - 6.2; housing units - 98,051; households / acre - 2.7.

(figures do not include annexations after 1984).

p. 7

Land Area, Population, and Residential Density Trends

Year	Sq.Miles	Pop.	Pop./SqM	Housing U.	Den. U/acre
1950	5	11,000	2,200	3,825	1.20
1960	11	49,000	4.455	13,273	1.89
1970	20	74,000	2,552	22,947	1.24
1975	55	108,600	1,975	43,740	1.24
1980	61	154,900	2,539	62,804	1.61
1985	66	216,900	3.266	90,898	2.14
1986	66	221,300	3,326	95,480	2.24
1987	93	225,800	2,427	98,051	1.65
1987Aug	126	227,400	1,793	98,592	1.21

Source: Aurora Pl. Dept.

p. 8

Housing and Population Estimates By County

Year	Adams C. pop.	% of Aurora	Arapahoe C. pop.	% of Aurora	Total Aurora Population
1980	29,193	18.4%	129,395	81.6%	158,588
1981	30,300	17.8	140,100	82.2	170,400
1982	30,100	16.7	150,200	83.3	180,300
1983	29,300	15.2	163,900	84.8	193,200
1984	30,400	14.6	177,900	85.4	208,300
1985	30,600	13.9	192,800	86.1	219,600
1986	30,500	13.7	192,800	86.3	223,300
1987	29,200	12.9	197,000	87.1	226,200

Source: Census of Population 1980 and Aurora Pl. Dept.

p. 11

Population Projection Assumptions

1985 to 2010 increase of 815,000 in six county Denver Metro Area.

DRCOG estimates 50% to Arapahoe and Adams Counties.

Aurora to capture 175,000 by 2010.

Average household size: 1987-2.57; 1990-2.5; 2000-2.3; 2010-2.25

1985 to 2010 increase in employment of 690,000 in metro area.

50% of increase of jobs in Adams and Arapahoe Counties.

New airport result in 18,000 direct jobs.

Centennial Airport area increase in 50,000 jobs.

p. 12

Aurora reservoir completed by 1990.

p. 13

Infill assumption of 35,000 or 15,000 DU's by 2010.

Market will dictate where development occurs.

p. 15

Population and Housing Forecasts 1985 - 2010

City Total of

Year	Population	Households
1985	234,046	91,897
1990	258,930	98,845
2000	341,300	148,393
2010	407,212	179,358
Buildout	715,000	317,778

Source: Aurora Pl. Dept.

Note given: Area includes entire boundary of Urban Growth and therefore 1985 estimates are greater than estimates which include population only in the Aurora City Limits.

p. 16

Conversion of Population and Acreage to Square Footage
uses 3 units per acre

Central Arizona Project - pumps water at 4 miles per hour uphill. Cost is \$3.6 billion - too expensive for farmers. Construction costs much higher than expected. Means days of cheap water over.

Now trading, marketing, and competing for water.

Scottsdale spent \$11.6m for ranch near CA border. Mesa spend \$30m for 13 cotton farms.

Will be significant social impact.

Phoenix paid \$8.00 per acre-foot (- NOTE - enough for average family for two years) Salt River Project water - so little it was not factored into local water bills. CAP water will cost about \$200 per ac-ft to deliver.

Scott McCartney (1986) Searching With Checkbook Rather Than A Divining Rod, Sunday Times Call (?? Greeley, CO) October 5, no page given.

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Op-Ed by Larry Simpson to Rocky Mt. News?

HB 1151 is not special interest bill. Not give veto power to water sale in Colorado.

"What HB 1151 really addresses is the extent to which an entity can raid the stable reserve water supplies of an area without paying the true cost of that water."

In 1937 Act requiring any conservation district exporting water from Colorado River Basin to design, construct, and operate facilities so that present and prospective water users not impaired nor experience higher costs. For C-BT 100,000 ac-ft reservoir [Green Mountain]. Southeastern CO provided similar mitigation for Frying Pan-Arkansas. Windy Gap required payment of \$15m in various forms of mitigation .

Now northern cities on Front Range tapping these reserves. They did not plan adequately. They take advantage of downturn in farming and did not want to do mitigation.

HB1151 merely requires on Front Range what was applied to Colorado River Basin fifty years ago.

Thornton purchases exactly what farmer owns - a share in water right that lets farmer irrigate under ditch. To change point of diversion or use disrupts return flow. There must be no injury to remaining water users. Thornton's project will dry up farmland eventually and will cause economic impact. No plan offered that is economically or technically feasible to avoid this. Thornton would dry up beautiful greenbelts of agriculture - An Owens Valley story.

Northern not a special interest group - Northern and its citizens just interested in future and have planned for it.

Source: Larry D. Simpson (1988) Water Purchase Could Dry Up Northern Colorado - Speak Out / Letters, Rocky Mountain News, [??], February 29, 1988, no p.

American West is hydraulic sophisticated society. Water laws, convoluted litigation, heritage of conflict said J. W. Powell in 1893. Water Law Canons - First Come First Served; Use It Or Lose It. Interstate Compacts, Native Rights Claims, Federal Reserved Rights, Federal Reclamation Law stated simply to get water to farmers to cultivate the land and get more settlement to follow. Balance of influence shifting to cities - little money in cattle. Alfalfa irrigation giving water to golf course irrigation.

Colorado - Big Thompson opened in 1954 with 130 miles of plumbing for 310,000 units from federally subsidized \$187 million project. Unit is 7/10 of acre-foot or 228,000 gallons. Farmer charged \$1.50 per unit but prices topped \$2,400 two years ago [??] Now at \$750.

Need to own Waterworks before buying Park Place in Monopoly

In most western states water rights are decided administratively by a State Engineer. In Colorado by a water court.

"State Engineer Jeris Danielson said the water courts routinely overturn his office's decisions on water permit requests. "Our decision bears no relevance in water court unless my attorneys defend it, and we only have the resources to do that about 1 percent of the time," Danielson said. "The courts therefore continue to award water rights to over-appropriated rivers." Despite repeated legislative attempts to change Colorado's court decree system of deciding water rights, the method remains intact."

Source: Tad Bartimus (1990? Jeris Danielson is State Engineer) Tangled Water Law Reflects Special Interests (?? Greeley, CO ??, no date or page. *Sunday Times Call ?*

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"Every drop of water that runs to the sea without rendering a commercial return is a public waste," Commerce Secretary Herbert Hoover said 60 years ago.

There is going to be a water crunch said a farmer in CA. which makes OPEC look like a tea party. U. S. Senator Paul Lexalt likened ending a water war to achieving peace in the Middle East. Lawsuits replaced guns. Immediate demands far exceed supply. Exhausted alternatives so emotions run high.

History of the Truckee-Carson Irrigation District and the Lahontan Cutthroat. Pyramid Lake dropped 70 feet from 1902 to 1981.

Salt Lake County to need 50,000 acre-feet a year by 2000 and water to come from alfalfa. Scottsdale in 1984 paid \$11.6 million for ranch near California that gave it rights to 13,500 acre-feet of water. Mesa in 1986 paid \$30 million for rights to 30,000 acre-feet. In Reno-Sparks area an acre-foot sold for \$50 to \$100 ten years ago and now \$2,500 with rumors as high as \$5,000.

Sierra Pacific Power Co.'s Water Resources Plan identified 17 possible water sources for Truckee Meadows but expects prolonged litigation. Users will pay for \$3.6 billion CAP.

Colorado - 80% live on Front Range but 80% of water on West Slope. David Getches says it in wrong place at wrong time. Colorado trying to reduce dependence on ground water because of depletion

Severe shortages in the West may be six years away.

Source: Lisa Levitt Ryckman (1986) Watering The West, Sunday Times Call (?? Greeley, CO) September 28, 1986. no p.

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File

Wilderness Workshop. The board had received a water court order in 1980 declaring that a minimum streamflow of 12 cfs was necessary in Snowmass Creek year-round in a 17-mile stretch of the creek from Snowmass Lake to the Roaring Fork River to preserve the environment. But in 1992, because of additional development in the Aspen area and a request that the figures be reexamined, the board decided the 1980 decree was based on a computational error. The result was a board decision that would allow for reduced streamflow during the winter months but provide for some increases during the summer. That would also allow the Aspen Skiing Co. to divert more water for snowmaking from Oct. 15 to Nov. 3. A majority of the court ruled that the board must first return to water court to show a lesser streamflow was sufficient. The case has been sent to the state water court for further proceedings.

Source: *Rocky Mountain News*, 6/20/95

USBR Offers Ruedi Reservoir Water

The USBR has buyers lined up for its second round of water sales from Ruedi Reservoir. It has offered 38,650 acre-feet of water from the reservoir on the Fryingpan River east of Basalt. About 20 potential buyers, mostly towns and water conservancy districts, have offered to buy 16,951 acre-feet, according to the Bureau. Many of the present and potential buyers use Ruedi water for augmentation plans. They have a well or diversion elsewhere, and rely on a release of water from Ruedi to meet downstream needs and make up for the water they have taken. But in May, Colorado River Basin Water Judge Thomas Ossola rejected a plan filed by Aspen Highlands developers to use Ruedi water to augment diversions from Maroon Creek for snowmaking. Ruedi water contracts will also be constrained by minimum streamflow water rights filed to protect trout fisheries. USBR won't augment a diversion that would dry up a stream or damage the fishery. It plans to allocate the remaining 21,699 acre-feet of unsold Ruedi water to boost flows in the Colorado River west of Palisade for endangered fish for the next 15 years.

Source: *Grand Junction Daily Sentinel*, 6/23/95



WATER RATES

Palisades Subdivision Residents Left High and Dry by Developer

Residents of Palisade's Five Iron subdivision pay \$35 a month for trash pickup and water, but when they use more than 18,000 gallons of water the bill goes up. Residents don't receive irrigation water, so they are forced to use city water to maintain their yards, with water bills ranging from \$60 to \$120 per month. The responsibility for distribution of water within subdivisions lies with the developer, who sometimes fails to provide access to water or systems to distribute it. The Five Iron developer left the Five Iron Architectural Control Committee the "right to manage, distribute and control all irrigation water." A member of the Palisade Irrigation District says water is available, but the residents will have to pay for pipe to be laid and pavement to be cut. Early cost estimates were \$100-150 per resident. To prevent similar situations, the irrigation district asked the Palisade planning commission to make sure developers build irrigation reservoirs for subdivisions.

Source: *Grand Junction Daily Sentinel*, 6/10/95

Greeley Water and Sewer Board Approves New Rates

The Greeley Water and Sewer Board unanimously has approved new water rates for metered Greeley households. Starting July 1, residents will pay \$7.15 as a base rate plus \$1.38 for each 1,000 gallons. On Jan. 1, 1996, the base rate will increase to \$8.10 for the first 1,000 gallons plus \$1.43 for each 1,000 gallons. Based on average customer use of 20,000 gallons every two months, the average monthly bill was \$28.40 in 1994. That will increase to \$34.75 starting July 1, and \$36.70 in 1996.

Source: *Greeley Tribune*, 6/23/95



WATER ALLOCATION, SALES AND TRANSFERS

Nevada Wants More Colorado River Water

Southern Nevada officials plan to draw on Arizona's unused share of Colorado River water in the face of a growing water shortage. Officials say the water would help get the booming Las Vegas Valley by until the year 2030, with the hope that other sources of water could be found during that period. In addition, Nevada wants to draw surplus river water that flows downstream from the upper basin states of Colorado, Wyoming, Utah and New Mexico.

Source: *Montrose Daily Press*, 6/15/95

Developers Plan New Boom for California

Plans for 33 giant developments up and down California illustrate that its population boom, stalled during the past few years, is about to resume. None of the 33 new towns on the drawing board has yet secured a water supply, which has led to an attempt by a Central Valley legislator to ensure that sufficient water is available before new developments are approved. The California Building Industry Association is trying to kill the bill, arguing that it will limit growth and hurt business by giving water agencies power over development decisions. Governor Pete Wilson's administration opposes the bill. The California Farm Bureau Federation and the state's water agencies, the bill's leading supporters, say that approving development without a sure water supply will bring trouble to a state whose water resources are chronically stressed. Among the 33 new towns, 20 are counting on water from the State Water Project, which barely delivers enough water to supply its contractors in wet years, or the Central Valley Project, whose supply is fully committed.

Source: *San Francisco Examiner* (in *Denver Post*) 6/4/95

Water Rights Owners Polled in Arkansas Valley

Arkansas Valley water owners are being asked what water rights they would be willing to sell or lease and for how much in order to set guidelines for water transfers. A subcommittee of the Arkansas River Coordinating Committee will compile the answers and give them to organizations and people who want to buy water, particularly well-owners' associations. The subcommittee is creating the database and will list all water rights for sale or lease that yield more than 500 acre-feet of annual water, or at least 250 acre-feet of consumptive use water. The listings will not be confidential nor will they be binding.

Source: *Greeley Tribune*, 6/3/95

*Sedimentation,
S. Transport*

.75 million loan for water well users

ter Management As-
buy replacement wa-
Kansas while still
rigation, municipal
a water to its 150

ion has an option
10 million worth of
the XY Ranch near
stream from the
Reservoir, and two
aces of replacement

want to protect the
the basin," said
director of the state
eration Board. "On
up, some regulations
place."

ate's bill requests
the water user as-
the well-pumping data
engineer.

said the data will tell
uch water well users
under his new rules.
e information will be
meter readings of the
er used to pump the

At the state engineer's request,
Rizzuto's bill calls for a water
court fine of up to \$500 a day for
well users who violate the new
pumping rules, including failing to
supply the data.

The proposed fine raised some
flags for legislators.

"I think that's outrageous,"
Sen. Dave Wattenberg, a north-
western Colorado rancher, said.
"A guy forgets to turn in his data
and you're going to fine him \$500
a day."

Duane Helton, a water engineer
consulting the users association,
said the farmers don't intend to
violate the rules. Besides, he said,
the threat of a \$500 fine is prefera-
ble to a Supreme Court order
shutting down well-pumping alto-
gether.

Just in case, however, the bill
would provide the state engineer
with nearly 10 additional employ-
ees to oversee the new rules and
the attorney general with three
more lawyers to prosecute viola-
tors in Pueblo water court.

The bill also requests \$150,000

for the state to contract with the
Army Corps of Engineers for a
channel restoration study of the
Arkansas.

Simpson said sediment has built

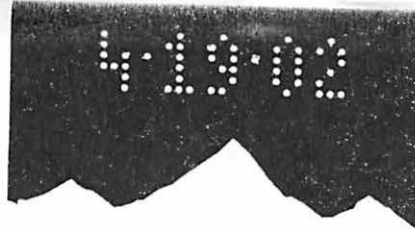
up in the channel over the years so
that now La Junta storm drains
are six feet below the stream bed.

Source:

Tom McAvoy 19 Jan 1986

*Sen. Rizzuto proposes \$3.75 million
loan for water well users*

Pueblo Chieftain



PUEBLO CHIEFTAIN
Pueblo, CO
(Pueblo County)
Daily, 52,267; Sun, 54,567

Colorado Press

Trinidad in good shape for water, says planner

By MIKE GARRETT
The Pueblo Chieftain

TRINIDAD — The Trinidad area is expected to get its share or more of Colorado's anticipated 1.5 million population growth over the next 10 to 15 years.

But much of that growth will primarily depend on the city's future water consumption, storage, delivery and treatment capacity, according to Trinidad City Planner Karl Gabrielson and Water and Utilities Superintendent Jim Fernandez.

Both updated an audience of around 125 people on the area's future growth and water usage prospects at a Wednesday Trinidad-Las Animas County Chamber of Commerce luncheon.

Regardless of what state demographers are projecting as an annual Trinidad area growth rate of between 2.5 to 3 percent a year over the next 20 years, Gabrielson said growth "is less about what we think as planning professionals and more about what you think as a community and what you all think about growth."

He said Trinidad (with a 2000 census of more than 9,000 residents) has been on the tail end of Colorado's recent rapid growth curve. But demographers are anticipating "that we'll catch up quite rapidly."

With four new Trinidad subdivisions in various planning stages, Gabrielson outlined what that development could mean to the community, particularly with the future addition of Stone Ridge's planned 2,000-acre, 1,742 home sites.

"They (state) report that 100 single-family homes result in

almost 250 full-time construction and related jobs generating approximately \$7.9 million in annual wages and \$4.25 million in federal, state and local revenues and fees," said Gabrielson, adding that 100 multifamily units generates more than 100 jobs, \$3.34 million in wages and \$1.8 million in revenues.

"It's imperative that the community makes growth pay its own way. We're working on that right now trying to develop a new tax package and assessments to help the community adjust as new development comes in," said Gabrielson.

Fernandez, a 30-year city employee, said last year's \$5 million city wastewater treatment plant expansion doubled its capacity and should meet all of the city's current and future water treatment needs over the next 10 to 15 years.

"We can serve twice the population we now have." But he acknowledged that the city may eventually have to build a new water treatment plant based on current population growth projections.

Fernandez said the city is blessed with a bountiful water supply from North Lake 40 miles west of Trinidad and no current problems with water rights in delivering water to 4,000 city system customers and 20 water associations with 800 additional customers scattered throughout the area.

Fernandez said he doesn't anticipate any need for water-use restrictions in the foreseeable future, unlike Walsenburg, which is again severely rationing its water supply due to area winter drought.

- dup?*
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Appendix 1. Community Response to Water Crisis: The 1986-1992 California Drought

The 1986-1992 drought in California was severe for many cities in the state. Santa Barbara, for example, was dependent on local sources for its water supply. Based on their study of Santa Barbara's response to the drought, Loaiciga and Renehan (1997) found that:

- Water use dropped 46% at the height of the drought relative to pre-drought water use; and water use remained (in 1997) at 61% of the pre-drought level.
- Average cost of water rose by \$3.08 per unit (100 cu.ft.), largely because of investments aimed at supply augmentation and conservation mitigate future drought. The rise includes part of the cost of hedging against future drought risks.
- The gap between average cost of supply and average revenue per unit of water rose in real terms from \$0.14 per unit in 1986 to \$0.75 in 1996; this is a disturbing development, since it limits the ability to build up funds for future hazards to water supply.

Fish passage opens Colorado River habitat

By HEATHER MCGREGOR
The Daily Sentinel

PALISADE — The Grand Valley Irrigation Co. has opened the new fish passage around the company's diversion dam in the Colorado River, offering year-round passage for fish to three miles of the river upstream.

The new fish passage, which drops three vertical feet over a distance of 400 feet, is a passive structure made of basalt boulders quarried near Collbran.

It's a channel of descending S-curves that weave down in a series of pools and riffles from a notch in the top of the diversion dam.

Grand Valley Irrigation Co. built the structure under a \$600,000 contract with the U.S. Bureau of Reclamation.

At high water, the whole thing will be

underwater. At low water, Reclamation will send water, set aside in Ruedi Reservoir for endangered fish, downstream for the fish passage.

On the Colorado River, this structure was the first and by far the easiest in an effort to offer native and endangered fish passage to historic habitat 50 miles eastward to Rifle. Another passage was built in 1996 at Redlands Dam, opening Gunnison River habitat to Delta.

The next two obstacles on the Colorado, the 8-foot-high Price-Stubbs diversion dam and the 12-foot-high Grand Valley Project "roller" dam, are more formidable. Reclamation engineers and hydrologists have already begun looking at the options.

The big question is whether to remove the Price-Stubbs dam, which hasn't been used in 90 years, or build a passage around it.

"The public might think we're crazy putting

in a passage around a dam that is no longer used," said Bob Norman, planner for Reclamation.

If cost were the only factor, the choice would be easy, he said. A rough estimate from a demolition contractor pegs removal at \$400,000. A fish passage would likely cost \$1.5 million.

There's another advantage. Removing Price-Stubbs would reopen a stretch of the Colorado River to boaters, who could launch at Island Acres and take out at Corn Lake.

But there are four problems with the idea. Solutions would bring the cost of removal closer to the cost of building a passage.

■ Ever notice the little building between Interstate 70 and the river, just upstream of the Price-Stubbs dam? That is Ute Water Conservancy District's emergency pumphouse.

Take out the dam, and the pump is left high

and dry. Solutions include excavating a lower intake, building a small diversion dam, or moving the pumphouse to the other side of the river where the channel is deep.

■ Remember when the railroad excavated a shelf on the south side of Mt. Garfield? It was taking weight off a slope that is prone to slide onto the tracks below. Removing Price-Stubbs could improve or worsen slope stability.

Lowering the water level would dry out the toe of the slope and harden it. On the other hand, the river would soon scour out a century of sediment trapped behind the dam that now pushes against the toe of the slope. Norman has asked Union Pacific officials to take a look at the situation.

■ There's a hidden problem: Reclamation's

See FISH, page 11A ➤

Fish ladder facts



Colorado squawfish

Redlands Fish Passage piscatorial statistics

OPEN:

- June 24 to Oct. 25, 1996
- March 27 to Oct. 27, 1997

USE IN 1996:

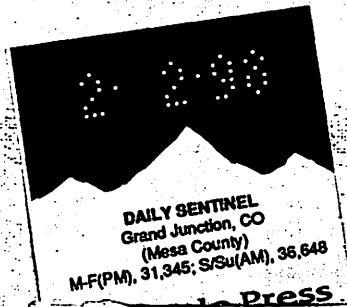
- Colorado squawfish - 1
- Other native fish - 7,800
- Non-native fish - 500

USE IN 1997:

- Colorado squawfish - 18
- Other native fish - 11,500
- Non-native fish - 700

Source: U.S. Fish and Wildlife Service

ROBERT GARCIA/The Daily Sentinel



FISH: Passage opens some Colorado River habitat

➤ Continued from Page One

siphon that crosses under the Colorado River 3,000 feet upstream of Price-Stubbs. The pipe could be scoured out and exposed if the river returned to its native channel and velocity, requiring a new siphon deeper underground.

■ The push for passage may also lead Eric Jacobson of Telluride to either fish or cut bait on his plan to build a hydropower plant at Price-Stubbs. He has agreed to allow

construction of a fish passage, and building the two at once would be most efficient.

Upstream at the Grand Valley Project roller dam, a fish passage is the only option. There is no way the historic structure, which diverts irrigation water for almost all Grand Valley farmers, would be dismantled.

The eye-pleasing structure is also listed on the National Register of Historic Places. A fish passage will have to meet architectural standards.

The question is whether to build a passage on the north or south side of

the dam. It's estimated to cost \$2.5 million.

A north side passage would be like the fish passage at Redlands Dam on the Gunnison River: a concrete channel swinging around the dam, which baffles fish could navigate.

But it would have to intersect the Grand Valley canal, and fish would swim in the canal as part of their journey.

For a south side passage, engineers propose removing the seventh bay of the roller dam and building a passage in its place.

Bureau of Reclamation (2000) Animas-LaPlata Project, Colorado – New Mexico, Final Supplemental Environmental Impact Statement, vol 2 Attachments of the FSEIS, Upper Colorado Region Office, Salt Lake City, multiple sections.

Feasibility Design and Cost Estimate for the Animas-LaPlata Project, Attachment E
p. E-21 Cost estimates. Feasibility studies based on construction quantities measured in preliminary design drawings and on unit prices selected from similar work. Also provides: contingency of 20% considered as appropriate for the preliminary design level and this is listed within the itemized costs and reflected in the totaled field cost as opposed to being given separately. Then 30% was added to the total field cost (investigations – 4%; design and specifications – 8%; construction and inspection – 12%; legal and administrative 2%; environmental compliance 4%).

p. E-23 Pumping units selected to permit integration of available flow over duration of probability curve in hydrological model. Maximum pumping capacity linked to active storage capacity of reservoir. For active storage of 90,000 ac-ft the maximum pumping rate determined as 280 cfs. (p. E-25) Static lift is 511 feet and maximum dynamic head loss is 40 feet for maximum total head of 550 feet. Selected pumps were single stage, low speed, and commercial design. Determined maximum flow could be obtained with five horizontal centrifugal pumps, each rated at 550 total head. To accommodate lower flows, two intermediate sized pumps (at half capacity of larger) and two smaller pumps (at half capacity of intermediate) were selected. These would also provide standby capacity should one of the larger pumps become unavailable.

p. E-32 Total cost for Durango pumping plant is \$36.3 million with contingencies.

p. E-34 Pipeline is for head of 540 feet plus surge pressure of 15% and a 280 cfs flow. Economical operating diameter and pressure is in range of steel pipe of 66 inches. And length would be 11,200 feet. Pipeline with contingencies of 20% is \$4.8 million and total cost for Ridges Basin Dam Inlet Conduit is \$8.7 million with 30% contingency.

p. E-35 Navajo Nation Municipal Pipeline is 28.9 miles and would deliver 4,680 ac-ft a year (p. E-36) but be designed for peak flow of 12.6 cfs. At two times average annual flow. Pipe size reduces from 24 inch to 16 inches with turnouts along route. (p. E-38). 24 inch pipe is \$92 per foot placed. 16 inch pipe is \$52 placed. Total pipeline cost is \$24m with allowance for the 20% plus 30% contingencies.

p. E-42 Operating costs Electrical power rate based on Colorado River Storage Project is \$3.44 per month per kW demand or 8.1 mills per kWh. for operation of the Durango Pumping Plant and \$15.40 per month per kW demand of 18 mills per kWh for operation of the Navajo Nation Municipal Pipeline. Operating costs for the pipeline would be \$1.14 per 1000 gallons. For the Durango Pumping Plant the energy costs would be \$13.51 per acre-foot and operating costs would be \$14.21 per acre-foot.

END

Bureau of Reclamation (2000) Animas-LaPlata Project, Colorado – New Mexico, Final Supplemental Environmental Impact Statement, Technical Appendices, Upper Colorado Region Office, Salt Lake City, multiple sections. Technical Appendix 4 – Mitigation

Opportunities Report for the Animas-La Platta River Corridor; Huntington Ranch, Southern Ute Indian Tribe, Taylor, and Boyle Properties – Draft Report, by Bio/West, Logan Utah, prepared August 1997.

p. 54 Creation of riparian-wetlands on low terrace. Area not frequently flooded and is elevated several feet over the water table. Area is about 150 acres. Option would be to apply water by ground water or diversion to pond configurations. This requires a water rights and long term maintenance and development of a less natural ecosystem environment. Alternatively, an option is to lower the upper surface of terrace to allow for occasional flooding and to reduce the depth to the water table to allow for subirrigation. The meandering of the river is cutting banks and doing this over a long period of time. Earth removal is for 3 or more feet to reach floodplain level and for creation of artificial oxbows and side channels. Removal is for 5,000 cubic yards or more per acre of riparian-wetland created. Cost is \$30,000 per acre to design, construct, maintain, and manage.

Bureau of Reclamation (2000) Animas-LaPlata Project, Colorado – New Mexico, Final Supplemental Environmental Impact Statement, Technical Appendices, Upper Colorado Region Office, Salt Lake City, multiple sections. Technical Appendix 1 – Water Use Scenarios For Southern Ute and Ute Mountain Ute Indian Tribes, Colorado prepared by David M. Dornbusch and Co., San Francisco, CA June 7, 1999

p. 3 300 room hotel, conference center, 18 hole golf course and casino. – hotel would use 30afy at 75% occupancy, 2 people per room, and 60 gallons per person per day (EPA source). Golf course would use 520 afy assuming 140 acre irrigated at 2.6 acre-foot per acre and 70% application efficiency (source is Water Wiser). The 50,000 square-foot casino would use 10 afy based on experience at other casinos. Assuming is additional 10% of diversions for miscellaneous and transmission losses for total of 620 afy.

p. 4 20,000 acre ranch with dude ranch operation of 100 guests for 4 months, 50 staff, and 200 horses would require 5 afy.

p. 2 400 unit housing development with centralized and metered water supply a use rates typical of the West for indoor, landscaping, laundromats, restaurants, car washes, system losses, etc. requires for each 100 units – 70 afy or for 400 unit 280 afy.

p. 5 Coal mining – 1000 MW power plant consuming 2,900,000 tons of coal per year. Mine would use 415 afy for dust suppression and power plant would use 13,500 afy for cooling. (p. 6) A gas fired combined cycle power plant of 200 MW would require 2,300 afy for cooling.

p. 6 Livestock – 10 to 15 afy

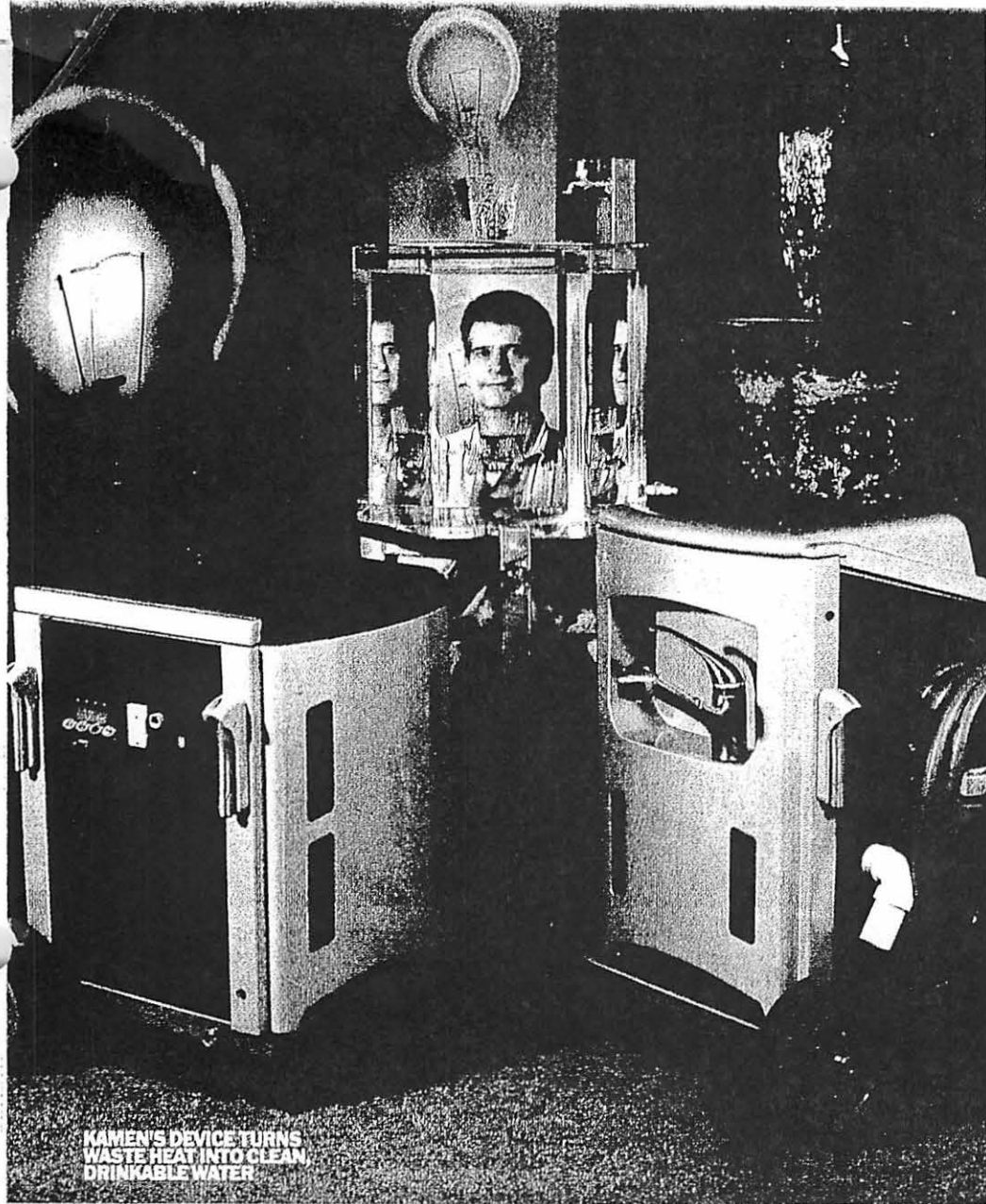
BY LEV GROSSMAN

AT THIS POINT DEAN KAMEN IS used to being called naive. "I'm getting neurotic about people overhyping things," he says, "so let me tell you what it *doesn't* do." Kamen's caution is understandable.

He invented the overpublicized, underperforming superscooter known as the Segway—and was responsible for some of that hype. So when it comes to his latest invention, a low-cost, low-power water purifier designed for the Third World, he wants to be clear: he has no idea how to market it or get it to the people who need it. He just knows it works.

What it does is simple. A few years ago, Kamen was working on an electric generator for use in underdeveloped villages when he noticed that it produced about 1,000 watts of waste heat. Kamen decided to try to use that heat to make clean water. There are 6,000 deaths from contaminated water every day, according to the U.N., and safe water is one of the world's more urgent problems. Kamen's device uses that extra heat to distill water—boil it and condense it. Nothing new about that—Kamen has invented lots of things, but he didn't invent distillation. The trick is to do it using as little energy as possible. However, 1,000 watts of heat won't boil much water, so Kamen developed a closed system, powered by whatever fuel is at hand, that traps the energy released when the boiled water vapor recondenses. Essentially, he's recycling heat. Result: a low-power, low-maintenance device that will cost around \$1,000 to manufacture and makes 10 gal. of drinkable water an hour.

Kamen knows major health organizations probably won't buy into unproved technology, so he's taking his invention on the road. He's exploring distribution strategies in Bangladesh, and later this month he'll head to Africa to meet with Rwanda's President. He knows he has a lot to prove. "I have no credibility," he admits. "We have to get them in the field and document that they work." He believes, perhaps innocently, that he can save a lot of lives. Sometimes when you want to change the world, it helps to be a little naive. ■



KAMEN'S DEVICE TURNS WASTE HEAT INTO CLEAN DRINKABLE WATER

water R U N N E R - U P purifier

Thousands die every day for lack of clean water. Can the man who invented the Segway save them?

JASON GROW FOR TIME

TIME, NOVEMBER 17, 2003

No page number - about page 65

engines cost about \$3,000 to manufacture and more research is needed to bring the cost of fuel cells down to that level.

Can I use a fuel cell to power my home?

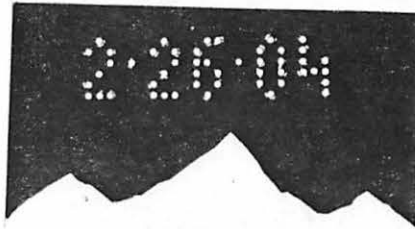
Fuel cells are ideal for power generation, either connected to the electric grid to provide supplemental power and backup assurance for critical areas, or installed as a grid-independent generator for on-site service in areas that are inaccessible by power lines. Since fuel cells operate silently, they reduce noise pollution as well as air pollution and the waste heat from a fuel cell can be used to provide hot water or space heating.

There are three main components in a residential fuel cell system - the hydrogen fuel reformer, the fuel cell stack and the power conditioner. Many of the prototypes being tested and demonstrated extract hydrogen from propane or natural gas. The fuel cell stack converts the hydrogen and oxygen from the air into electricity, water vapor and heat. The power conditioner then converts the electric DC current from the stack into AC current that many household appliances operate on. Fuel Cell Technologies Ltd. (FCT) estimates the expected pay back period on a residential fuel cell for a typical homeowner to be four years. The initial price per unit in low volume production will be approximately \$1,500 per kW. Once high volume production begins, the price is expected to drop to \$1,000 per kW, with the ultimate goal of getting costs below \$500 per kW. Fuel cell developers are racing to reach these cost targets.

H Power is joining forces with energy companies all over the world, and has signed an \$81 million contract with Energy Co-Opportunity (ECO), a consortium of rural electric cooperatives, to market its fuel cells exclusively through more than 900 cooperatives. ECO has agreed to buy 12,300 of H Power's 10kW fuel cells for \$10,000 each, with installation to start in the second half of 2001. The two companies are working to manufacture and ship units to power-starved California within the next several months, for about \$8,000 per unit. Prices are expected to drop to between \$3,000 and \$4,000 in seven years.

Plug Power and GE MicroGen have joined to form GE Fuel Cell Systems, LLC, and are building a network of qualified regional distributors to market, install, and service their residential fuel cell. A public utility has already agreed to purchase 75 of Plug Power's first fuel cell systems, a \$7 million agreement, commencing this summer. The HomeGen 7000 is capable of serving an entire household's energy needs. Several different commercial models are going to be introduced that can operate on natural gas, propane, or methanol and are expected to achieve 40% electrical efficiency. Excess heat generated by the fuel cell can be captured and used for hot water or heating, increasing overall efficiency to over 80%. GE has signed an exclusive distribution agreement with New Jersey Resources for deployment of the fuel cells in New Jersey and DTE Energy Technologies will distribute these units in Michigan, Illinois, Ohio and Indiana. KeySpan Technologies has signed on as well to purchase and test 30 fuel cells at selected locations in New York City and Long Island.

Global Thermoelectric Inc., a solid oxide fuel cell (SOFC) manufacturer, has developed a 2.3 kW residential fuel cell system that is designed to cover the base load of an average North American home. The first prototype, running on natural gas, has been delivered to Enbridge Inc., who will be testing the system to evaluate performance characteristics including heat recovery to meet residential hot water needs. The results of the testing will be incorporated into subsequent prototype designs.



PUEBLO CHIEFTAIN
Pueblo, CO
(Pueblo County)
Daily, 51,408; Sun, 54,355

Colorado Press
Clipping

80
Lower Arkansas group ponders leasing water

By **ANTHONY A. MESTAS**
THE PUEBLO CHIEFTAIN

ROCKY FORD — The Lower Arkansas Valley Water Conservancy District is weighing several offers to lease its Twin Lakes water, and the water acquisition committee met Wednesday to discuss its options.

Julie Scaplo, district manager, was authorized to evaluate possible leases of the district's 40 shares in Twin Lakes.

The Colorado Water Protection and Development Association, which specializes in well augmentation, has submitted an offer to the district to lease all of its shares in Twin Lakes for \$50.50 per acre-foot. (The same group also offered to lease the district's Colorado Canal water at \$11 per share, Scaplo said.)

Scaplo said that the district does not want to lease all of its

water to just one entity. "We want to spread these leases around fairly," she said.

Scaplo said that Arkansas Groundwater Users Association is also interested in leasing shares in Twin Lakes, although it hasn't made a formal offer. Scaplo said that the group indicated it could not afford more than \$50 a share.

"I am trying to allocate based on the number of wells each of the two augmentation groups have and the amount of acreage that is irrigated so that they have a fair split based on their customer base," Scaplo said.

Scaplo said she is awaiting information from both associations as well as the state engineer.

The owner of a new gravel pit in Pueblo County is interested in leasing 37 acre-feet from Twin Lakes this year and 55 acre-feet in 2005. Scaplo said

that starting-point negotiations with the gravel pit are \$500 per acre-foot per year.

The transportation test center in Pueblo is also interested in leasing Twin Lakes water but Scaplo has not made contact with its officials.

Scaplo said that the town of Fowler has shown interest in leasing 100 acre-feet from the district as well.

"We can certainly take care of our Twin Lakes water if we can come up a way to spread it across to the people who are asking to lease," Scaplo said.

Some board members said that they want to look at the higher leasing values first, but Loretta Kennedy of Pueblo County cautioned that the district needs to prioritize according to its mission statement.

"I know we need to make plans to purchase more water, but we need to remember why we were formed. I have a great

deal of concern if we change our focus to make money. I think we need to go out for our bond issue to be able to purchase shares," Kennedy said.

Committee chair John Singletary said that the district is going to be as fair as possible when it comes to leasing agreements.

Scaplo will also evaluate lease options for the district's 50 shares in the Fort Lyon Canal and its 15 shares in the Colorado Canal.

In other business, Scaplo announced that the district has been asked to buy shares in the Bessemer Ditch. The board authorized Scaplo to come up with an agreement plan with a Bessemer Ditch shareholder before the next acquisition meeting.

Scaplo said that the district also has been approached about purchasing shares from Holbrook Reservoir.

DENVER POST
Denver, CO
(Denver County)
AM, 247,053; Sun, 411,793

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80 City OKs annexation despite farmers' pleas

By Kirk Mitchell
Denver Post Staff Writer

The Bennett City Council voted unanimously Tuesday night to annex land for a golf course and 300-home complex that farmers fear could threaten their fragile water supply and their livelihoods.

City officials say that change is inevitable as metropolitan Denver creeps east, but that the 635-acre project by Keystone Development will not steal farmers' water and does not signal the end of agriculture.

On Tuesday night, the council listened to residents debating the future of their eastern plains community 35 miles east of Denver.

Nearly all citizens opposed the annexation.

"I totally resent this," said Jesse Lewis, who lives near the development. "You ought to reconsider."

'We have no say'

Currently, the property is zoned for one house on 35-acre plots, and Keystone proposes putting homes on 1- or 2-acre lots and building an 18-hole golf course.

Farmers say Keystone's project could hurt farms and ranches that have been owned by the same families for several generations.

"This property is surrounded by wheat fields," said Peggy Jacobs, whose family owns a cattle ranch across the road from the 635 acres owned by Dennis Church. "The town is coming out here and dictating what we do with our land, and we have no say."

The property that council members from Bennett, which is in Adams County, are considering annex-

ing is in Arapahoe County.

Because the town is considering annexing only Church's property and 2 miles of Kiowa-Bennett Road, none of Church's neighbors would become Bennett residents.

Bennett City Planner Jim Calvery said city leaders are aware of the concerns of farmers, who shop and do business in the town of 2,000, and will take steps to lessen any impact.

Annexation is only Keystone's first regulatory step, he said. Before it can dig its first irrigation trench, the company must jump through numerous governmental hoops, including obtaining city building permits and water rights from the state engineer.

\$3,751 per home for schools

The city can dictate the size of the project if water resources are deemed a problem and also impose building restrictions that protect neighboring farmers, he said.

Keystone has offered the Bennett School District \$3,751 per home to help pay for schools and \$1,000 per home to the Bennett Fire Protection District. The developer would also build a water-storage facility for firefighting, Calvery said.

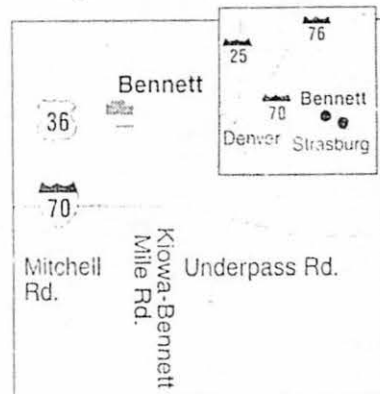
The state engineer, who will hold a public hearing Aug. 17 on water issues, will not allocate water rights to Keystone at the expense of farmers, Calvery said.

Water consultants and state engineers, who have done preliminary tests, say there is ample water for the golf course and homes, he said.

Will Chase, chairman of the Regional Economic Advancement Partnership, said the development

Golf development proposed in Bennett

The Bennett City Council heard debate Tuesday night about a plan to build a golf course and 300-home development south of Interstate 70.



The Denver Post

makes sense economically. "If all the safeguards are met, this will be a good development," he said.

Helen Converse, who has lived next to Church's property since 1948 and whose family bought the property in 1918, said she has seen the water table fall as other families moved into the area. Her family has had to drill four new wells since the 1950s.

Water has always been scarce near Bennett, forcing water-conservation measures nearly every summer, Jacobs said. A development could dry up surrounding wells used for farming, she said.

Farmers also are concerned that once the homes are built, their new neighbors could object to dust kicked up by plowing, slow-moving tractors or the smell of hundreds of cows. Government officials could be pressured to impose restrictions on farms that would make farming unprofitable, Jacobs said.

But perhaps the biggest worry is that the development could change the way of life, Converse said.

Last year southern Calif. cities leased water from Calif. farmers at \$125.00 per acft. Calif did not specify any specific price to pay upstream farmers in leasing from Colorado. Romer wants leases to be credited to escrow account.

Source: Mark Obmascik (10-24-91) The Denver Post, p. ?

San Luis Valley vs AWDI San Luis got \$96.m from Feds. to *builld Closed Basin Project for 32 billion gallons per year because of overdraft on Rio Grande Compact. Water users pay \$6.m and federal tax payers pay \$102.5m. Farmers voted to spend \$472.000 to defeat AWDI but this is small in comparison with fed. assistance. Last year SLV received \$2.m in crop subsidies for wheat and barley paid to 120 farmers or \$16,667 apiece. SLV "poured" 120 billion gallons into 220,000 acres of hay. This is enough water for 1.5 urban users. Hay worth \$40.m. Every year 40,000 SLV residents use 4 times water of 891,000 people served by Denver Water Board.*

Source: Mark Obmascik (10-19-91) San Luis Farmers No Minnows - They're Water Buffaloes, "The Denver Post"

Animas LaPlata Project to irrigate 80,000 acres, provide water to Durango, Southern Utes, Ute Mt. Utes, and Navajo. Has 2 reservoirs, 240 miles of pipelines and canals, and 7 pumping stations and 34 miles of leectrical tranmsmission line. Price up 418% from 1970 estimate. Now taxpayers will pay \$395.3m of \$611.3m.

Mark Obmascik (10-24-91) Animas Water Project On Brink Of Approval, The Denver Post, pp. 1B and 4B.

General US comparisons from Zero Population Growth:
78% of pop. in US in urban areas; average water use is 150 gals. per person per day; 3.3 pounds of food consumed per person per day; 120 gallons of sewage per person per day; 3.4 pounds of garbage per person per day.

Source: Rose Gutfield (18-Apr-91) El Paso, Texas, Finishes Last InTest of Urban 'Livability'; The Wall Street Journal, p. B1.

Currently water storage in California is at 56% of normal or 12.67 million acre-feet. "An acre-foot covers one acre of land one foot deep in water - or enough to supply about three families for one year." (- now figure is up to three families -)
Article written in context of continuing drought in California and expectation of six years extending for much longer based on tree ring studies.

Source: Frederick M. Muir and Virginia Ellis (1992) Unprecedented 7th Year of State Drought Forecast, The Los Angeles Times November 17, 1992, p. A1, A23, A24

A24

3 families per acre-ft.

Water Development

State CCDC
Structure of buying \$7M
20,000 acft for
H. McNeer, Daily Journal
Jan 21, 83 no p.
see 8x5 acft

Ruedi Reservoir cost \$9. m to build, completed in 1968. To pay for construction water was to be sold. Now in 1982 there are the following prospective purchasers: Exxon - 6000 acft for Colny; Battlement Mesa - 1250 acft for new town; Basalt - 500 acft for municipal; and West Divide Conservancy District - 100 acft; total of 7850 acft. Bureau of Reclamation is prepared to sell 50,000 from 100,000 acft storage reservoir. Requests for 80,000 acft. Water wanted as backup supplies. Exxon to pay \$15 per acft if not use water and \$55 to \$85 if do use. Argument: water should be priced to reflect the real value rather than the $\frac{1}{2}$ payback costs. By Bof Rec. holds that sales prices would not go much higher - can probably by agricultural water at \$100. per acft of useable industrial water (after reduction). Cost for company water development would be less than \$50. for construction of storage.

Cost in
Battlement
\$90/acft

Source: Ed Marston (1982) Oil Shale and Recreation Compete for Water Western Colorado Report, April 12, v. 1 n. 4, pp. 10 - 11.

The current price of water in the Southwest is 3 to 30¢ per thousand gallons. If water costs increase above a range of \$3.60 to \$5.90 per thousand gallons, it becomes more profitable to use less water by employing intermediate wet cooling for the power plant. ... If intermediate wet cooling is used even though water costs \$0.25 per thousand gallons, the cost of electricity would increase 1 to 2 cents per kilowatt hour.

Source: White I. L., Chartock M. A., Leonard R. L., and others (1979) Energy From The West: Impact Analysis Report - Volume II, Site Specific and Regional Impact Analysis, Environmental Protection Agency, National Technical Information Service, Springfield, VA, p. 422.

325,900 gallons per acre foot --- at .25 per 1000 gal
1 acre foot costs \$81,47; at \$3.60 cost is \$1173.24;
at \$5.90 it is \$1922.81.

California Peripheral Canal

Water cost now \$35. with canal \$600. - 500 acft by 2000
and keeping it cheap water for
water to farms and over 160 acres
Some farms now pay as little as \$2.00 per acft - though cost to government
is \$50.
New House of Rep. proposal to raise limit to 760 acres
and all farms with more than 10 share holders would pay more
for water. amount to about \$375. m in 17 western states
in 5 years. at market rate for water \$800. m in 5 years.

Economist May 22, 1982
check

about
.63 acft per 10

Aurora Colo. water purchase

8,150 acft for 45,000 residents for average cost of \$2250. per acft
but pay \$24M after escalator clause
Purchase of Arkansas River Water - and 4,640 acres of farm land goes out
of production near Rocky Ford

Part of settlement in water rights trial
Schneider, Michelle (1986) Aurora Repeatedly Settles Water Suit, Rocky Mt. News
Oct 28, 1986, p. 6.

Denver Water Board supplies 891,000 customers - city and suburban. Board must increase rates with inflation up 20% since 1987. Denver residents now pay \$.71 per 1000 gallons with rise to \$.89 for every 1000 gallons over 30,000 in two month billing period.

Suburban customers pay up to twice amounts. 1990 DWB consumed 72. billion gallons.

DBW financial surplus amassed for \$500 to 1,000 Two Forks and now consumed by higher operating costs to between \$100 and 95 million.

Denver Started using surplus to install meters. Remaining 30,000 undmetered homes to be metered in 1992.

Source: Mark Obmascik, (10-19-91) Denver Post, pps 1B and 6B

Colorado River has smaller flow. Biologic studies show need for big spring peaks to scour cobble, flood backwaters, and flush exoitc bait fish that gobble squawfish.

Flows needed at state line are 30,000 to 40,000 cfs five years out of ten, and at least 20,000 cfs in remaining years. By comparison peak flows at stateline in 1984 was 69,800 and in 1991 18,400 cfs.

These recommendations are for CWCB instream flows. Pre-1930 flows once topped 40,000 cfs 5 years in 10; topped 30,000 cfs about 3 years in 10; topped 20,000 cfs 2 years in 10 [??]. Since 1966 40,000 cfs less than 1 year in 10 and never reached 20,000 cfs 4 years in 10.

Recommendations for the 15 Miles Reach from Palisade to the Gunison River are 20,000 cfs for 5 years in 10 and above 14,000 for the other years.

If the water is not ther, we can not manufacture it [but salvage]

Source: Heather McGregor (10-20-91) Agency Calls For Spring Runoff Return, Daily Sentinel, pp. 1B and 2B

A federal plan to protect endangered fish may make it impossible to build new dams to develop the water Colorado is entitled to says spokesperson for the CRWCB. Desire is for one day spring time flow of at least 14,800 cfs in 15 Mile Reach and the peak in 1990 was 10,200. A one day flow of 14,800 cfs is 9.6 billion gallons or enough for 118,400 urban residents.

Mark Obmascik (10-27-91) Rare Fish May Halt New Dams, Denver Post, pp. 1A and 13A

Consumptive water use per acre in the San Luis Valley: from .8 per acre on the Conejos River to 1.8 per acre on the Rio Grande. Depletions are .04 acer-feet per year on the Alamosa - La Jara streamflow to 44.54 acre-feet per year on San Luis Creek in Saguache County. 3.78 acre feet on the Conejos and 4.59 on the Rio Grande.

John Hill (10-8-91) AWDI Files Decree Based On Non-Tributary Claim, Alamosa Valley Courier, pp. 1 and 8.

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JFC

Colorado Springs plans \$15m intake pipeline from Lake Pueblo. 5 miles long for 84 inch pipe with capacity of 248 million gallons per day. Cost based on approved bid. Source: Peter Roper (9Sep2000) Springs joins water board in Lake Pueblo pipeline, The Pueblo Chieftain, Pueblo CO, page 3B.

Greeley residents will pay \$150 a year for all the un-treated they want or about one-fourth of the cost of watering with treated water. This is based on dual water system with colored pipes and no hose hookups for untreated water. Result is treated water consumption at 21% of normal neighborhood. The reason is that the price for Big Thompson water has gone from \$7,000 to over \$15,000 per acre-foot so that people are looking for alternatives. Source: Dan England (3Sep2000) Idea: Soak lawns with irrigation water, Greeley Tribune, Greeley CO, pp. A1 and A10.

Cost of reduction of forest and range fire danger is \$1,000 per acre for work done by Denver Water near Cheeseman Reservoir. Cost of fighting fire at Buffalo creek near by in 1996 was \$2,000 per acre. Contractor that did work lost \$45,000 and project generated \$43,000 in revenue for material hauled off. Small diameter material hauled to Montrose, 300 miles for processing. Wood products manufacturing facilities are needed on Front Range. Source: Editorial (3Sep2000) How to afford fire safety, The Denver Post, p. 4-I

Transactions Update

... continued from page 13

Reservoir (9,522 af), and American Falls Reservoir (2,433 af). The biological opinion of the National Marine Fisheries Service calls on Reclamation to acquire a total of 427,000 af per year for flow augmentation. The plan has caused concern among other Idaho water users (see WIM September 1995).

BuRec also rented 255,000 af through the Upper Snake River Water Bank, which reported on its 1995 activities as follows:

Acquirers: 44 entities including canal companies, irrigators, Idaho Water Resources Board, and BuRec

Suppliers: 43 suppliers through the Upper Snake River Water Bank

Water: 587,509 af of Snake River water stored in Jackson, Palisades, and American Falls Reservoirs

Purpose: Irrigation, instream flows, and ground-water recharge

Terms: \$2.95/af with \$2 to supplier, \$0.75 to Water District #1 for administrative costs and \$0.20 to Idaho Water Resources Board (no change from last year's price)

Status: Complete

MONTANA

Acquirer: Montana Department of Fish and Wildlife

Suppliers: a) 10 irrigators; and b) U.S. Forest Service

Water: Long-term leases for instream flows

Purpose: a) Long-term leases to augment instream flows on Jefferson, Yellowstone, and Bitterroot Rivers; b) long-term lease to augment flows on Yellowstone River

Terms: a) Various one-time or annual payments; b) \$1/year

Status: Complete

The Montana Department of Fish and Wildlife has leased instream flows from 10 irrigators and from the U.S. Forest Service for terms ranging from 5 years to 20 years. The water will be used to augment flows on the Jefferson, Yellowstone, and Bitterroot Rivers to improve the spawning conditions for cutthroat and rainbow trout. Some of the irrigators will use the proceeds from the leases to invest in more efficient irrigation systems, others were no longer able to take delivery of their water. The U.S. Forest Service is leasing the

rights from a ranch it acquired several years ago to improve winter range for elk.

NEVADA

Acquirers: a) City of Reno; b) City of Sparks; and c) Washoe County

Suppliers: Westpac Utilities and developers

Water: a) 51 dedications totaling 344.57 af of Truckee River surface water and 110.44 af of adjudicated groundwater; b) 15 dedications totaling 111.53 af of Truckee River surface water; and c) 6 dedications totaling 29.77 af of Truckee River surface water

Purpose: Dedicated rights in exchange for right to water service

Terms: Water acquired for \$2185-\$2340/af from Westpac Utilities or appurtenant to land to be developed

Status: Complete

During the past year, the Cities of Reno and Sparks and Washoe County have been dedicated a total of 685.87 af of Truckee River surface water and 110.44 af of adjudicated groundwater from developers in exchange for the right to water service for new developments through a total of 72 dedications. The dedicated water rights were either appurtenant to the land to be developed or were acquired from Westpac Utilities. Westpac charged \$2185-\$2340/af for adjudicated groundwater rights.

The Public Service Commission for Nevada has approved Sierra Pacific Power Company's new water demands. The result of this change is a reduction in the demand for single family residences and apartments along with lowering the drought factor for an acre foot of Truckee River water rights from 1.72 (or 58 percent yield) to 1.11 (or 90 percent yield). The difference between the old and the new drought yield is paid into a water meter retrofit fund plus a tax gross-up on facilities.

OREGON

Acquirers: a) Stanfield Irrigation District; b) Westland Irrigation District

Supplier: Bureau of Reclamation

Water: One-year renewable contract of Umatilla Project water stored in McKay Reservoir to be applied to a) 230.99 acres and b) 7,023 acres of out-of-boundary lands

Purpose: For irrigation of land outside ID boundaries

water spreading

Terms: a) and b) agree to provide additional water for instream flows; b) one time fee of \$56,284

Status: Complete

The Bureau of Reclamation has contracted to supply Stanfield and Westland Irrigation Districts with Umatilla Project water to be applied to land outside the acquirers' boundaries. Stanfield has a total allotment of 21,636 af/year, 3,606 af/year of reserved water, and has used up to 2,366 af/year of residual stored water. Project water is stored in McKay Reservoir, near Pendleton. Westland has an allotment of 21,636 af, receives an annual average of 7,380 af of reserved water, and has received up to 3,549 af of residual water.

The districts have long engaged in "water spreading" — supplying project water to users outside their recognized boundaries. The practice has been subject to the protests of the Confederated Tribes of the Umatilla Indian Reservation who claim it violates the terms of their treaty. Stanfield, Westland, and Hermiston (see "Transactions Update," WS Summer 1995) have all applied to have the "historically irrigated" land included within their district boundaries.

In exchange for the contracts, Stanfield has agreed to provide 500 af of its contract water for instream use as well as an additional 200 af for instream use before it delivers any water to out-of-boundary lands, and to pay \$6,000 toward the cost of developing a return flow model of out-of-boundary lands. Westland paid a one-time fee of \$56,284, \$99,120 toward the costs of the modeling project, and has also agreed to release 10 percent of its stored water, 10 percent of its reserved water, and 100 percent of its residual water for instream use on the Umatilla River.

UTAH

Acquirer: Micron Technologies, Inc.

Suppliers: a) U.S. bankruptcy court trustee on behalf of orchard owner; and b) 2 orchard farmers;

Water: Total of 1,933 af of groundwater rights

Purpose: Manufacturing

Terms: a) \$1.55 million for 360 acres and the appurtenant 1,212 af of groundwater rights; b) not available

Status: Awaiting permit for change of location from state

Micron Technologies, Inc., a computer chip manufacturer, has purchased a total of 1,933 af of groundwater rights to meet the demands of a new factory it is constructing near Lehi, Utah. The \$1.3 billion facility requires 2,000 gallons per chip — or about 2 million gallons per day. For the 360 acres of land and the appurtenant 1,212 af of groundwater

rights acquired from an orchard farmer through a U.S. bankruptcy court trustee, Micron paid \$1.55 million. The price of the other 721 af is not available.

Micron plans ultimately to recycle 90 percent of the water it uses but initially will be able to recycle only about 30 percent. The acquired rights will meet the demands of the plant. To use the groundwater, title must be transferred to northern Utah County where new wells will be drilled. Micron will apply for a change application from the Utah Division of Water Rights.

Litigation Update

... continued from page 10

based on a specific treaty, statute, or agreement? (2) Did the Attorney General have discretion in deciding not to file the claim?

DECISION. (1) No. Indian reserve rights originate from the U.S. creating a reservation by withdrawing lands from the public domain. The court noted that the tribe's claim does not pertain to land on its reservation nor did it derive from a withdrawal of land from the public domain. The U.S. does not hold any recognized off-reservation water right in trust for the tribes. (2) Yes. For the filing of suit to be non-discretionary, the Attorney General's duty must be required by law, not simply authorized. The tribes identified no statute or other restriction limiting the Attorney General's discretion. Article IV of the treaty does not require the United States to litigate the off-reservation claim. The court said, "the Tribes have a conditional hunting right as against the United States, not a right to demand that the Department of Justice act as its attorney for any and all claims the Tribes consider worth filing in state court." The federal government only had a duty to evaluate in good faith the claim before rejecting it.

IMPLICATION. While the decision does not require the Attorney General to file the claim, the tribes may pursue the claim on their own behalf.

LITIGATION UPDATE

Each quarter, *WS* analyzes court decisions that add new or reaffirm old legal principles that shape western water policy.

The U.S. Supreme Court overruled exceptions to a Special Master's report concerning the apportionment of North Platte River waters. A U.S. Court of Appeals held that the U.S. trust responsibility to tribes does not require the Attorney General to file a claim for off-reservation water rights.

Interstate Apportionment

Nebraska v. Wyoming
132 L.Ed.2d 1

For the third time since 1987, the U.S. Supreme Court ruled on exceptions to a Special Master Report concerning the 1945 decree apportioning water from the North Platte River.

FACTS. In the 1945 decree, the U.S. Supreme Court apportioned the waters of the North Platte River among Colorado, Nebraska, and Wyoming. The Court enjoined Colorado and Wyoming from diverting or storing water above prescribed amounts (meant to reflect existing uses) on the river's upper reaches. It set priorities among Wyoming canals that divert water for Nebraska irrigators and federal reservoirs in Wyoming that store water for Wyoming and Nebraska irrigation districts. It apportioned natural irrigation-season flows in the "pivotal reach" between Guernsey Dam in Wyoming and Tri-State Dam in Nebraska. It also held that any party could apply for amendment of the decree or for further relief.

In 1986, Nebraska sought additional relief from an alleged threat from planned projects in Wyoming. After the Court partly granted motions by the United States and Nebraska in 1993, Nebraska and Wyoming sought to amend their pleadings, which resulted in a Special Master's Third Interim Report on the matter. Both states filed claims and cross-claims involving the impact of water uses on their respective rights under the 1945 decree.

ISSUES. (1) Is Nebraska violating the decree's equitable apportionment by demanding natural flow and storage from sources above Tri-State Dam in excess of the beneficial use requirement of pivotal reach irrigators? (2) May the Master consider evidence on injury to downstream irrigators and wildlife and wildlife habitat when deciding whether to enjoin Wyoming's development? (In an earlier decision, the Court denied that there was an affirmative obligation to protect wildlife.) (3) Would depletion of return flows caused by Wyoming's developments warrant injunctive relief? (4) Can Nebraska allege that the depletion of the river's natural flow caused by Wyoming's increased groundwater pumping constitutes a change of condition posing a threat of significant injury, even though Nebraska fails to regulate pumping within

its borders? (5) May Wyoming allege that federal management of reservoirs has contravened federal and state law as well as individual water user contracts?

DECISION. (1) No. Wyoming's scheme to replace proportionate sharing provisions would fundamentally modify the 1945 decree without alleging any change in conditions creating a substantial injury entitled to relief. (2) Yes. The effect on wildlife is but one interest to be balanced in determining whether the decree should be modified. (3) Yes, if the demonstrated injury to Nebraska is a sufficient change in conditions. (4) Yes. Wyoming alleges no injury caused by downstream pumping in Nebraska. Whether Wyoming pumping injures Nebraska is a question suitable for trial. (5) Yes. Although the 1945 decree did not apportion stored water, the decree assumed that the United States would adhere to stored water contracts.

IMPLICATION. As water becomes increasingly valuable, parties have an incentive to amend or seek further relief in open-ended decrees. To successfully find additional water supplies in the Court, parties must demonstrate sufficient injury from significantly changed conditions to warrant remedy.

Indian Water Right Claims

Shoshone-Bannock v. Reno
56 F.3d 1476

The U.S. Court of Appeals for the District of Columbia held that the U.S. Attorney General did not violate her trustee responsibility to the Shoshone-Bannock Tribes of the Fort Hall Indian Reservation in Idaho when she did not file a claim for off-reservation water rights in the Snake River Adjudication.

FACTS. In 1990, The Fort Hall Indian Water Rights Agreement settled on-reservation water right claims of the Shoshone-Bannock Tribes (for background, see "Innovation Through Negotiation," *WS* July 1990). The agreement did not settle a tribal claim for off-reservation rights based on Article IV of the Treaty of Fort Bridger, which gave the tribes the right "to hunt unoccupied lands of the United States so long as game may be found thereon." In the late 1980s, the Bureau of Indian Affairs conducted studies to quantify the instream flows necessary to preserve fish and other natural resources potentially protected by the treaty.

In the early 1990s, the Department of Interior considered whether, as a matter of law, the tribes had a valid claim. After presentations from tribal attorneys and its own investigation, Interior decided in early 1993 against filing. The tribes sued on the grounds that the Attorney General violated her trust responsibility.

ISSUES. (1) Do the tribes have a recognized water claim

continued on page 15...

TRANSACTION UPDATE

Each quarter, *WS* reports on purchases, leases, and exchanges of water in western states' water markets.

A total of 28 transactions (including annual summaries of water bank activities) were reported in 8 states during the third quarter of 1995. As usual, the greatest number of transactions was in Colorado, with 13 leases and acquisitions involving CBT water and three transactions involving other types of water. Activity in Idaho and Montana was concentrated on acquisitions for instream flow purposes.

ARIZONA

Acquirer: City of Scottsdale
Suppliers: a) City of Prescott; b) City of Nogales; c) Rio Rico Utilities; d) Cottonwood Water Works Systems, Inc; e) Camp Verde Water Systems, Inc; and f) Mayer Domestic Water Improvement District
Water: Total of 17,323 af of CAP M&I water rights
Purpose: Municipal supply to substitute for existing groundwater and to support future development
Terms: \$1,100/af
Status: Pending approval by BuRec, Arizona DWR, and Central Arizona Water Conservation District

The City Council of Scottsdale has adopted a resolution to spend \$19,055,300 buying Central Arizona Project M&I water rights from Prescott (7,127 af), Nogales (3,949 af), Rio Rico Utilities (2,683 af), Cottonwood Water Works (1,789 af), Camp Verde Water System (1,443 af), and Mayer Domestic Water Improvement District (332 af). The acquisitions, for a total of 17,323 af, have been under negotiation for about 12 months and will be executed at an exchange value of \$1,100/af. The water will help to meet the city's projected growth needs in the future and reduce the city's dependence on groundwater. Last year, Scottsdale residents used about 57,000 af of water and annual growth of consumption averages about 6,000 af. Together with the city's plans to reclaim sewage effluent for landscape irrigation, the acquisition is expected to meet the city's needs at least until the year 2003.

The sellers have no way of accepting delivery of their CAP entitlements unless they invest in additional conveyance facilities. Under CAP rules, sellers must use the proceeds of the sales to purchase alternative water supplies.

The acquisitions will be funded from the proceeds of water resources development fees paid by developers. The city had collected about \$28 million in fees when they were

challenged by developers in court. The money was freed up when the city threatened a moratorium on new permits and developers withdrew their opposition.

CALIFORNIA

Acquirer: Central Coast Water Authority
Supplier: Bureau of Reclamation
Water: Right to store or convey up to 13,750 af of non-Cachuma Project water in Cachuma Project facilities
Purpose: Municipal
Terms: One time administrative fee of \$5,000 plus \$15/af for non-Cachuma project water stored in Cachuma facilities plus \$43/af deposit in trust fund to be used for environmental purposes
Status: Complete

Central Coast Water Authority has leased the right to store and/or convey up to 13,750 af of non-Cachuma Project water in Cachuma Project facilities from the Bureau of Reclamation's Cachuma Project Authority. Under the agreement, Central Coast will pay the Bureau a one-time administrative fee of \$5,000 as well as \$15 for each acre foot of water stored or conveyed through the facilities. It will also pay \$43/af into a trust fund to be used for environmental restoration of the Santa Ynez River and watershed, wastewater reclamation projects, water conservation projects, innovative water management programs, and Cachuma Project improvements. A memorandum of agreement establishing the trust fund was signed by Central Coast and the Cachuma Project Authority in July 1995.

Central Coast Water Authority supplies the cities of Buellton, Carpinteria, Goleta, Guadalupe, Montecito, Santa Barbara, and Santa Maria, the Santa Ynez River WCD, and Summerland County with Santa Ynez River water through the Cachuma Project. The Project includes Bradbury Dam, Lake Cachuma, Tecolote Tunnel, Lauro Reservoir, and South Coast Conduit facilities. The project was completed in 1949, but diversions from the river can no longer meet projected growth of demand for the service area. The Cachuma Project Authority and Central Coast consider it in the public's interest to use the existing facilities to store and wheel non-project water — including State Project water — rather than build new conveyance facilities.

The contract becomes effective on the date that the first non-project water flows through the project and will remain in effect for 25 years from that date. Negotiations to renew the Cachuma Project contract are scheduled to begin soon.

continued on page 12...

Transactions Update

... continued from page 11

Acquirer: City of Needles
Supplier: Atchison, Topeka and Santa Fe Railway Co.
Water: Right to divert 1,260 af and consume 273 af of Colorado River water
Purpose: Municipal
Terms: \$2.6 million (including acquisition of 21 acres of land in San Bernardino County together with wells, pumps and other equipment)
Status: Pending approval from Bureau of Reclamation for assignment of rights

The City of Needles has purchased the present perfected right to divert 1,260 af of Colorado River water, for consumptive use of 273 af/year, from the Atchison, Topeka and Santa Fe Railway Company. The water had originally been used for steam locomotives and has been leased to different entities in recent years. The price was \$2.6 million, including 21 acres of land in San Bernardino County along with all wells, equipment, and water rights appurtenant to the land. Needles also acquired 627 acres of desert land in San Bernardino County and some land in Topock, AZ, along with 2

wells used to pump river water (and some other property). Needles also acquired the conditional right to acquire the El Garsis Hotel if Atchison's negotiations with a present buyer fall through, and an easement from Atchison to extend a street within the city on railway property.

COLORADO

A total of 13 transactions involving Colorado Big Thompson (CBT) units occurred during the third quarter of 1995 (see Table 1). Each CBT unit yields an annual average of 0.7 af. Four transactions were for farming irrigation (totaling 45 units), and the rest for municipal use or landscape irrigation (totaling 1210 units) — including the purchase of 902 units by the City of Broomfield and 154 units by the City of Greeley; a total of 1255 units changed hands. The average price was \$1,612.50 — up from the \$1,595/unit average during the second quarter. Prices are edging upward.

Acquirers: 45 irrigators, towns, water districts, and industrial users
Supplier: Bureau of Reclamation
Water: a) 16,851 af of Frying Pan River water stored in Ruedi Reservoir; b) 5,261 af of Blue River water stored in Green Mountain Reservoir

Table 1
Third Quarter 1995 Colorado Big-Thompson Unit Transactions

Date	Acquirer	Supplier	Purpose	Prior Use	Units	Terms
July	Town of Hudson	Irrigator	municipal	irrigation	22	\$1600/unit
August	North Weld Cty. Water District	Irrigator	municipal	irrigation	13	\$1550/unit
August	St. Vrain and Left Hand WCD	Irrigator	irrigation	irrigation	10	\$1625/unit
August	Little Thompson Water District	Irrigator	municipal	irrigation	2	\$1600/unit (transfer for taps)
August	a) Irrigator	Irrigator	a) irrigation	irrigation	a) 20	a) \$1660/unit
	b) City of Fort Morgan		b and c) municipal		b) 56	b) \$1650/unit
	c) Little Thompson Water District				c) 11	c) \$1640/unit (transfer for taps)
September	Irrigator	Irrigator	irrigation	irrigation	10	\$1650/unit
September	City of Broomfield	7 irrigators	municipal	irrigation	902	\$1600-1650/unit
September	Irrigator	Irrigator	irrigation	irrigation	5	unknown
September	a) North Weld Cty. Water Dist.	Irrigator	a and b) municipal	irrigation	a) 20	a) \$1550/unit
	b) East Larimer Cty. Water Dist.				b) 30	b) \$1550-1600/unit
September	City of Greeley	Irrigator	municipal	irrigation	154	transfer for taps

Purpose: 128 af for irrigation; 5,855 af for industrial use; 15,977 af for municipal use; 400 af for recreation; and 13 af for multiple use
Terms: a) municipal users pay \$27/af + O&M; industrial users pay \$45-\$55/af + O&M; b) municipal users pay \$10/af; industrial users pay \$55/af for up to 2,000 af, \$75/af for up to 4,000 af, then \$95/af; irrigators pay \$6/af
Status: Pending environmental review

The Bureau of Reclamation has leased 16,851 af of water stored in Ruedi Reservoir and 5,261 af of water stored in the Green Mountain Reservoir to a total of 45 acquirers through 25-year contracts. These leases bring the total amount of water leased from the two reservoirs to 44,621 af and 10,225 af respectively. BuRec began leasing the water during the 1980s but the process was delayed because of concerns raised by the U.S. Fish and Wildlife Service about impacts on endangered species. Those concerns have now been alleviated, allowing BuRec to continue the process. These contracts are undergoing environmental review.

The Frying Pan River water stored in the Ruedi Reservoir was leased for \$27/af to 27 municipal water users (a total of 11,716 af) and between \$45/af and \$55/af to 2 industrial users (a total of 4,735 af). The remaining 400 af was leased for recreational purposes. The largest acquirer was the Colorado River Water Conservancy District (5,000 af). Lessors must also pay O&M costs.

Blue River water from the Green Mountain Reservoir was leased for \$10/af to 1 municipal and 7 domestic users, and to 2 industrial users and 2 irrigators. The price for industrial users depends on the quantity leased: they pay \$55/af for up to 2,000 af, \$75/af for the next 2,000 af and \$95/af for amounts in excess of 4,000 af. Irrigation users pay \$6/af.

Acquirer: Colorado State Parks Department
Supplier: City of Colorado Springs
Water: 1,000 af of western slope water diverted to reservoirs on the headwaters of the Arkansas River
Purpose: Augment stream flows on Arkansas River
Terms: \$10,000
Status: Complete

The City of Colorado Springs leased 1,000 af of water for \$10,000 to the Colorado State Parks Department. The water was diverted to reservoirs at the headwaters of the Arkansas River to augment flows on the river. The lease was financed with revenues from the Colorado lottery.

Acquirer: Mancos Rural Water Company
Supplier: Mancos Water Conservancy District
Water: 25-year lease for up to 200 af/year of Jackson Gulch Dam and reservoir water
Purpose: Domestic
Terms: \$2,400/year for the first 80 af (under a take-or-pay contract); additional water may be purchased for \$600 per 20 af (or fraction); plus "fair" proportion of O&M charges
Status: Complete

Mancos Rural Water Company has leased up to 200 af/year from Mancos Water Conservancy District to supply its 380 members (including 330 households). The Company will pay \$2,400/year under a take-or-pay contract for the first 80 af and \$600 per additional 20 af (or fraction thereof), plus a "fair" proportion of O&M costs which vary each year.

The Company is funding the lease from user fees: residents using up to 2,000 gallons per month pay \$14.00. Those using more pay \$3.00/1,000 gpm.

IDAHO

Acquirer: Bureau of Reclamation
Supplier: a) Canyon View Irrigation Company; b) Irrigator
Water: a) 15,877 af of storage rights on Snake River; b) one year lease for 670 af of surface water on Knapp Creek
Purpose: a) and b) to increase flows on Snake River to improve conditions for salmon migration
Terms: a) \$2,203,633.00; b) \$13,400
Status: Awaits state approval for change in use

The Bureau of Reclamation has made two acquisitions to help meet its obligation to augment Snake River flows to avoid jeopardy to Idaho salmon listed as endangered under the Endangered Species Act. It has completed the purchase of entitlements to 15,877 af of storage space on the Snake River from the Canyon View Irrigation Company for \$2,203,633 and leased, for one year, 670 af of Knapp Creek surface water from an irrigator for \$13,400.

Canyon View had acquired the rights several years ago with the intent of developing desert farming. But rising energy costs rendered the project uneconomic. The Bureau must now seek state approval for a change in use of the stored water in order to use its new acquisitions for flow augmentation. The purchase involves space in three Snake River reservoirs: Jackson Lake Reservoir (3,922 af), Palisades

continued on page 14...

Financial from papers:

Rates for service to Durango West subdivisions for water to quadruple for 800 customers to \$12 per 1000 gallons plus monthly charge of \$5.50 per customer. Another expert recommends \$1.80 bulk and \$2.47 retail per 1000 gallons for service from Durango Lake. Tap fees totalling \$1.6 million seem to have disappeared after going to subdivision office. Source: AP, Durango Water Rate Increase Rejected, Daily Sentinel, 9-25-97.

Wheat Ridge, Lakewood, and parts of Jefferson County propose \$10m Fortune Reservoir for 9,000 acre-feet of storage with 100 foot high dam and covering 160 acres up to 20 feet deep. Enough water for 36,000 people. Water would be piped in for storage. Source: Stacie Oulton, Western Arvada Reservoir Proposed, The Denver Post, 9-27-97, no page.

Water storage in Arvada along pipeline. Private water company wants to rezone 160 acres for \$10m raw water storage of 9,000 acre-feet behind 100 foot high dam. Consolidated Mutual Ditch Company. Named Fortune Reservoir after Norwest Corp. local bank president W. Fortune. Consolidated buys 70% of its water from Denver Water. 30% for rights on Clear Creek. Kinnear Ditch Pipeline cost \$28.9m to protect Stanley Lake from Rocky Flats contamination. Source: Gary Gerhardt Reservoir Proposed Near Flats, Rocky Mountain News, 10-6-97, no page.

Pueblo's Board of Water Works considering lease of 5,000 ac-ft for 15 years to Aurora at \$125 an ac-ft. Would produce \$9m. Allows 10 year extension option. Board also leases to farmers and cement company Transit Mix. Board has rights to 13,500 ac-ft it could lease and then get it back in 15 to 20 years. \$9m to help pay for new \$28m treatment plant. \$125 per ac-ft is below cost to Pueblo customers of \$1.40 per 1000 gallons or \$456 an acre-foot. City not making profit at \$456. Lease is temporary in nature. Aurora could not assume ownership. Source: Gail Pitts, Pueblo May Lease Water To Aurora, Pueblo Chieftain, 10-21-97, no page.

Water Values

Denver Company auctioning 924 million gallons, about 2,928 acre-feet and enough for 3500 new homes. Water is under Fiddleback Ridge in Douglas County and more than 18 miles from nearest proposed pipeline. Price is expected to start at \$1,500 per acre-foot and go as high as \$10,000 an acre-foot. Source: Anon. (8May02) For sale: 924 million gallons of ranch water, Greeley Tribune, no page number.

Offering from ranch in Elbert County may be largest groundwater sale in Colorado's history. The 924m gallons per year for 100 years or 2928 ac-ft is enough for 3,500 homes and lawns. Water could go anywhere including California, Arizona, or Texas. Well levels have been dropping about 30 feet a year in Douglas County. Source: Deborah Frazier (7May02) Water going up for bids in Elbert County, The Rocky Mountain News, pp. 7A and 13 A.

City of Lafayette is willing to pay farmers for their water. Supply is less than 25% of normal. But city chose not to participate in pipeline from north that opened a secondary source of water for neighboring Louisville. Louisville may spend over \$10m on the Southern Water Supply Project to bring water from Carter Lake near Loveland. Lafayette chose to put water from South Boulder Creek in reservoirs such as Baseline Reservoir. Source: Robert Sanchez ad Owen S. Good (17May02) Farmers offered money for water, The Rocky Mountain News, pp. 5A and 28A.

Drought declaration would allow ranchers with land set aside in federal Conservation Reserve Program to use land for grazing if willing to take 25% cut in annual program payment which is typically \$40 per acre. Source: Tim Flowers (17Apr02) Water woes could impact fishing, Alamosa Valley Courier, pages 1 and 3.

Allocation for Northern Colorado Water Conservancy District from Colorado-Big Thompson Project set at 70% quota. Average quota over 43 years is 73%. Last year it was 80% with 10% added in July. Source: Tim Flowers (17Apr02) Water woes could impact fishing, Alamosa Valley Courier, pages 1 and 3.

Aurora acquired about ½ the Rocky Ford Ditch about 15 years ago. Colorado Springs sells water to ag. users, last year about 14,000 ac-ft. Colorado Springs would get 19,000 ac-ft from expansion and reoperation of Pueblo Res. And others on Fountain Creek Valley would get 12,500. Colorado Springs wants to expand pipeline to Pueblo Res. And Aurora supports HR 3881 before Congress. With enlargement of Turquoise Res. the Fountain Creek Valley users would get 35,000 ac-ft of storage at a cost of \$67 per ac-ft as compared to \$1,500 per acre-foot to build new storage reservoirs. El Paso Count pays about 72% of Southeastern Water Conservancy District's revenue. Source: Margie Wood (29Apr02) Water, water, The Pueblo Chieftain, pp. 1A and 2A.

DRCOG predicts a shortage in 9 county area of 207,568 ac-ft by 2025. There are 20 water suppliers. Denver's average annual need is 285,000 ac-ft and it has available 375,000 ac-ft but is expected to need 450,000 by 2050. [Why don't other entities plan so far ahead?] Source: Charlie Brennan (10May03) Metro area facing a watershed, The Rocky Mountain News, pp. 5A and 31A.

Arkansas River Corridor Legacy Project in Pueblo will cost \$4.2m and Great Outdoors Colorado is providing \$2m and the city and county \$400,000 each. Design is for 500 cfs in summer and 100 cfs in winter. Source: Peter Roper (19Apr02) City, Army sign river legacy contract, The Pueblo Chieftain, no page.

Colorado's 250 golf courses soak up 192m gallons of water on average summer day [about 590 ac-ft]. About equal to entire city of Denver on hot day. Use is about 8,000 gallons per acre per day over the 24,000 acres of golf courses. Average Colorado person uses 160 gallons per day which includes lawn watering. Golf course members pay "green" fees. Source: Nancy Lofholm, Coleman Cornelius, and Erica Draper (9May 02) Drought to rough up fairways, The Denver Post, pp. 1A and 16A.

The Town of Blanca (in San Luis Valley) is placing a moratorium on water exportation. Town has been overusing water allocation. As of May 1 no water other than 10 gallons can be sold or given for transport outside boundaries. Town has rights to 200 ac-ft a year. Usage was 207 in 2000 and 215 in 2001. People outside the city limits have been purchasing water from the RV park not only for domestic use, but to water gardens and livestock. 10 gallons per day is considered enough for routine domestic needs such as drinking, cooking, washing clothes and bathing. Source: Sylvia Lobato (12Apr02) Blanca bans water export, Alamosa Valley Courier, pp. 1 and 3.

Greeley has 30,000 acre-feet of water in storage or about a year's supply and has excess water. The city typically leases 5,000 acre-feet and this year will lease an additional 2,000 ac-ft and also 4,000 ac-ft to the Larimer and Weld reservoir Co. Source: Bill Jackson (19Apr02) Greeley leases water to irrigation companies, The Greeley Tribune, pp. 1A and 12A.

Angry landowners near Milliken, CO (north of Big Thompson River) want water promised. Developer does not now have water; sold them to Greeley and after sale of these rights, Greeley voided the contract. Subdivision owners can not irrigate because the land has been "dried up and irrigation desisted." The water system was never activated and the developer leased the water as the project was developed. One lot owner pays \$225 a month to water his 18,000 sq-ft lawn. Source: Julio Ochoa (25Apr02) Owners seek help in fight for water, The Greeley Tribune, pp. A1 and A7

Trinidad expects to grow 2.5% to 3% a year over the next 20 years. Colorado agencies report that 100 single-family houses results in 250 full-time construction jobs generating \$7.9m in annual wages and \$4.25m in federal, state, and local revenue. 100 multi-family units generates more than 100 jobs, \$3.34m in wages and \$1.8m in revenues. Growth must pay its own way in Trinidad. Source: Mike Garrett (19Apr02) Trinidad in good shape for water, says planner, The Pueblo Chieftain, no page.

Pipeline along Arkansas River has projected cost of \$160 - \$200m and federal government would pay 75%. Cost compares with projected \$350 - \$640m municipalities would have to pay for federally mandated water water quality treatment. Source: Tom McAvoy (25Jul02) Sen. Allard seeks federal Funds for pipeline project, The Pueblo Chieftain, pp. 1A and 2A.

COLUMN WRITE

Service Demand

Water requirements for selected energy industries that have economic potential in the Colorado River Basin

Industry	Annual Water Requirements	Source of Information
Coal fueled power plants	16-20 acre-feet/year/megawatt	Josephy, 1971 Finlayson, 1973
Coal gasification	10+or-20 acre-feet/year/ 250,000 cubic-feet daily capacity	Henrie, 1973 Gillette, 1973
Oil shale extraction	79-145 acre-feet/year/1000 barrels oil daily capacity	Hansen, 1972 Deseret News, 1973

(source: "Fossil Fuels and Power Generation in the Colorado River Basin", Kimball T. Harper in Environmental Management in the Colorado River Basin, A. B. Crawford and D. F. Peterson, editors, Utah State University Press, Logan, 1974, page 168; with sources noted in bibliography.)

Water requirements:

coal conversion for high BTU will require 2 pounds of water for one pound of coal of which 1/3 of the water is for the methanation process and 2/3 for cooling.

(source: "Power Generation and the Colorado River Basin", Val A. Finlayson, Utah Power and Light Co., in Environmental Management in the Colorado River Basin, (above), page 186)

Use of Kaiparowits area for gasification project:

\$2.0 billion for coal conversion to methane gas Ariz. Public Service, San Diego Gas, and El., Southern Calif. Edison

Cost of gas delivered estimated at \$4.17 per thousand cu.ft. production by 1985

coal from four mine underground at 52,000 tons per day require 30,000 ac-ft per year of water

power plant would have required 102,000 ac-ft per year.

(source: "Vista", Colorado Business, Jan-Feb., 1977, p. 8)

"Average" residential customer for PSC uses

450 kilowatt hours; cents per kwh
rate 5.2 per kwh for first 30
3.908 for next 70
3.117 for next 900

(source: Bob Jain, "PSC Seeks 8.7 Pct. Rate Hike", Denver Post, Feb. 17, 1977, page 1)

COLUMN WRITE ©

1 2 3

Water Development

water for grains to grow in dry land farming areas of Nebraska yield \$8.00 for every \$1.00 increase in agricultural output, University of Nebraska report. domestic and industrial water use returns 90% or more of the water. 20% runs of sprinkler irrigation and some of this evaporates in Nebraska area.

1 acre of corn absorbs 3,000 gallons of water from the soil per day in Nebraska; need at least a foot of water to raise corn. (source: Joseph W. Winski, "Running Dry; Western Farmers Fear Cutbacks in Irrigation as Water Supplies Fall," The Wall Street Journal, May 31, 1977, pages 1 and 21.)

Acre-foot is 326,000 gallons or: enough water for the domestic needs of a family of five for a year; 19 average ~~six~~ backyard swimming pools; flush 68,631 toilets. (source: Grace Lichtenstein, "The Battle Over the Mighty Colorado", The New York Times Magazine, July 31, 1977, page 12)

Metropolitan Water District of California - property tax for support of \$.12 for each \$100. of evaluation; to provide a budget of \$209.8 million; serves a six county area with assessed valuation of \$51.3 billion; price for filtered water for municipal and industrial use is \$95. per acre-foot for '78-79 and \$99. per acre foot in '79-80; present rate is \$84. per acre foot. (source: "Tax, Water Rates Set", Meter (publication of the Metropolitan Water District of Southern California), September, 1977, page 5)

Water requirements: 3,000 to 6,000 ac/ft annually for 50,000 bl/day shale-oil facility; 18 inch coal slurry ~~pipeline~~ will require about 2,600 ac/ft for movement of 3.2 million tons of coal to operate 1,000 MgW power plant a 1,000 MgW plant will require 15,000 to 27,000 ac/ft annually for cooling requirements (source: Governor Lamm in "Western Resource Wrapup; Chicken-or -Egg Problem Complicates Progress of Energy Developments", The Denver Post January 23, 1978, page 7)

It takes 7 times the amount of water for electrical generation than for coal slurry piping the same amount of coal. (Source: Jerome G. Morse, lecture on Uranium Technology at Western State College, Gunnison, Colorado; Course sponsored by the Colorado League of Women Voters September 7-8, 1979)

10,710 Colorado farmers using Bureau of Reclamation water
figure given by Secretary of Interior Tujan
Source: Mark Obmascik (1992) ~~Text~~ Tujan Isobel Clinton ~~His~~ Environ-
mental Extremist, The Denver Post, October 22, 1992, p. 3

Denver Air port ^{2.7} Billion on 53 square miles
Source: ~~Denver~~ Aviation (1992) Denver Airport: Pollution
Prevention By Design Colorado Water (Colorado Water
Resources Institute, Fort Collins, CO) October 1992
Vol 9 No 5, p. 16 Colo Colorado State University Fort Collins

Agriculture is 2% of Colorado's Economy and owns 80% of water
Steve Horn, Director, Colo Dept of Ag. (1992) Focus Groups
Warding - Agriculture September 1992
The Water Quality Task Force (1992) Report To The General
Assembly Concerning The Organizational Placement of Appendix A
Water Quality Programs Draft (November 1, 1992) 75-9
in Ag. summary.
Appendix A - Detailed Accounts of Focus Groups

*Def for water
Trucking*

Re: Leasing Values of Water

Arkansas Valley

**uses 16,000 acre-feet of Aurora water under lease back after sale;
Pueblo in 1993 leased 13,000 ac-ft earning \$189,500 at \$10 to \$15 per ac-ft;
Southeastern water Conservancy District allocated 37,887 ac-ft of Western
Slope water to farmers and 13,810 ac-ft of Western Slope water to
municipalities at \$8.00;
Colorado Springs leased 22,000 ac-ft of water at \$10.00 to farmers and
25,000 ac-ft of water to the CDOW for \$500,000 or \$20.00 per ac-ft.**

**10% to 15% of the Arkansas River is imported water but by requirements of the
Frying Pan - Arkansas Project 51% of this must go to municipal, industrial and
domestic uses.**

**SOURCE: Chris Woodka (1994) Agriculture Eroding In Ark Valley Pueblo
Chieftain, 28 September, pp. 1A - 2A**

Pinewood Springs Water District in Larimer County

**U.S. Army trucking water from Lyons at \$1,000 a day for 50,000 gallons a
day to "up-scale" community on Little Thompson River.
SOURCE: Anon. (1994) Pinewood Springs - Army Delivering Water The Denver
Post, 21 September, no page.**

Duf

Snowpack on Western Slope has lead to lower reservoir levels. This spring 6,500 ac-ft was diverted by Colorado Springs from Green Mountain Reservoir in Summit Count based on stream flow projections by the U.S. Bureau of Reclamation. The projections turned out to be too optimistic and the reservoir has a water shortage. Now the Colorado Springs water department is looking for 600 ac-ft from the Blue River. Denver has to return 9,400 ac-ft. The Colorado River Water Conservation District contends the excess diversions add to what is a critical water shortage. Rather than returning the water, the Colo. Springs officials are thinking of leasing the water from the CRWCD so as to keep water in its own reservoirs. The lease is at \$205 per ac-ft and totals \$123,000 and requires an agreement between the conservation district, the city, and the Bureau of Reclamation. The CRWCD is urging the cities to plan for how to handle water shortages and the need for storage.

Source: *The Associated Press* (21 July 2001) *Poor Snowpack could cost cities*, *Summit Daily News*, p. 10

Arkansas Groundwater Users Association has a contract to buy 3,895 ac-ft from the Pueblo Board of Water Works but Board cancelled as it imposed water restrictions on Pueblo residents. Now AGUA is seeking replacement water from the Southeastern Colorado Water conservancy District. The AGUA would have to cut off 400 wells with loss to farmers of \$10m to \$15m. AGUA believes Pueblo should recognize agriculture's economic contribution. Residents may have agreed to rationing last May to provide water for farmers. Water District has emergency reserve but some towns downstream also need water. District reserved 4,800 ac-ft for emergencies and about 400 ac-ft now used. Source: Margie Wood (31Jul02) Replacement woes increase for farmers, The Pueblo Chieftain, pp. 1A and 2A.

Doloris Project built in 1980's. Total full service allocation is 55,200 acre-feet to 28,000 acres based on ideal crop rotation of 55% alfalfa, 20% small grains, 15% dry beans, 3% pasture, and 7% corn. Diversion requirement for this allocation is 1.97 ac-ft per ac and farm deliver is 1.72 ac-ft per ac based on consumptive use of 1.76 ac-ft per ac and farm irrigation efficiency of 70%. Average farm delivery is 1.74 ac-ft per ac from 1987 to 2000. Use of Watermark probes found to be better than calculation of water balance to provide appropriate supply at root zone. Source: A. Berrada, T. M. Hooton, M. W. Stack, and others (2002) Assessment of Irrigation Water Management and Demonstration of Irrigation Scheduling Tools in the Full Service Area of the Deloris Project, in Colorado Water (Colorado State University), August, pp. 13 – 15. Source has other useful citations.

Trickle down irrigation. Farmer in La Junta installed underground drip tape irrigation system to provide water at the root level. Cost is \$650 to \$800 per acre at depth of 8 inches. This is center of root zone for most crops. Source: cite to The Pueblo Chieftain, July 11, 2002; in Colorado Water (Colorado State University), August, p. 28.

Denver Water to spend \$29m to protect drinking water supplies from terrorist attacks. Access to reservoirs is also restricted – for example Blue Mesa. Source: Scripps McClatchy Western Service (31Jul2002) Colorado taps cash for drinking water, The Daily Sentinel, page 7A.

Denver Water will study drilling into Denver Aquifer with 3 million acre-feet of water. Depth is 400 to 2,200 feet [reachable with CBM technology] and extract 20,000 acre-feet a year or 1% of Denver's annual needs. Cost for 1,000 foot deep well is \$1m. Denver wants to take the water under the theory that those receiving its services have implicitly given up their right to any groundwater underneath their home business. Source: Theo Stein (23Aug2002) City's water quest goes underground, The Denver Post, page 1B.

Denver will tap 2 aquifers under city by drilling 1,000 feet down to produce 20,000 acre-feet a year at a cost of \$1m per well. Source: The Associated Press (24Aug2002) Denver wants to tap 2 aquifers under city, Durango Herald, no page.

In Denver area water rights now sell for \$4,000 to \$12,000 per ac-ft. Source: Ron Franscell (10Sep2002) Dry years drill home water rights, The Denver Post, no page. These same figures are given. Source Pauline Arrillaga (1Sep2002) Western state's complex water laws are put to test as dry spell worsens, The Denver Post, no page.

City of Golden, Colorado, cut off from water by court ruling. City has population of 19,000 residents and average residential use of 160 gallons per day. Ruling would mean cut back to 40 gallons per person per day. City wants to buy 450 acre-feet from Coors Brewery for \$4m [\$8888 per acre-foot].
Source: Ann Schrader (10Sep2002) Golden to tighten the spigot, The Denver Post, pp. 1A and 8A

The Central Colorado Project (formerly Union Park Project) can build a 1.1million acre-foot reservoir for \$500 million [\$454.5 per ac-ft]. Source: Dave Miller (15Aug2002) On the Big Straw plan that the state's cooked up ..., Aurora Sentinel, letter to editor, no page and letter to Governor Owens (16Aug 2002) in Colorado Statesman, no page.

Rep. Carl Miller says use water available in Denver Basin Aquifer. According to 1998 report, the Denver Basin Aquifers contain 300 million acre-feet of water, 15 times greater than active storage capacity of Lake Powell and the life of the aquifer with careful use may exceed 1,000 years. Source: Tom McAvoy (12Aug2002) Water laws can be changed, Tracey says, The Pueblo Chieftain, no page.

Water is needed for augmentation in the lower Arkansas River Valley in Colorado. The Arkansas Groundwater Users Association is buying water from municipalities at up to \$47 an acre-foot (considered a very high price) for augmentation for 400 wells needing 2,900 or 1,000 acre-feet between mid August and mid September. Source: Margie Wood (14Aug2002) Well augmentation water has high price, The Pueblo Chieftain, no page.

Much of Crowley County had junior water rights from the Arkansas River dating after 1890. Water in the county averaged 1.69 ac-ft per ac when 2.0 ac-ft per ac was considered the minimum for the area. The rocky ford Ditch with an earlier priority produced 5.8 ac-ft per ac. By 1967 the sugar beet factory closed in the county and water began being sold away. Price of Twin Lakes water was \$1,050 a share without land in 1972. Now it is \$20,000 share. Now dry land for cattle is \$300 per acre in Crowley County. Source: Margie Wood (10Aug2002) Water rights and money lure seem to flow together, The Pueblo Chieftain, pp. 1A and 2A.

Domestic water in Trinidad now is \$15 a month for the first 7,500 gallons or about 85 gallons per day per person per household and 4 cents a gallon for water from commercial drive up water spigot. Source: Mike Garrett (9Aug2002) Trinidad domestic water rates rise, along with fears, The Pueblo Chieftain, no page.

Aspen rewards water saving – taps that do not use more than 15,000 gallons per month will get \$90; taps with use between 15,000 and 30,000 gallons get \$60, and over 30,000 get nothing. This is in contrast with Denver Water which faces a budget shortfall because of conservation. Drought surcharges are expected to provide \$11m next year for Denver Water. The idea of rebates for low water use was not received well in Denver.
Source: Ellen Miller (26 Sep 2002) Water use: When it wanes, it pays, The Rocky Mountain News, no page.



DURANGO HERALD
Durango, CO
(La Plata County)
Daily, 10,040

*Water hauling
cost*

over

80

A new Solution

Southeast
La Plata County
can no longer
depend on
wells for water

*Water
hauling
cost*

The first person here did not advertise for neighbors. Who knows how long it took the second person to figure it out? La Plata County old-timers now observe that many newcomers do their best to shut out newer-comers.



Some people appreciate that their livelihood depends on that growth. Some people smile wistfully and go about their work. And some use any means to preserve La Plata County as it was when they first saw it.

La Plata County's population grew about 36 percent in the



La Plata County's population grew about 36 percent in the 19... (U.S. Census Data). The area population growth is likely to continue at least that fast.

Some folks appreciate that, and some fight it.

The number of water wells in southeast La Plata County has more than doubled since 1976. Traditional flood irrigation, the major recharge for most of those domestic wells, has diminished. Farmers have replaced ditches with sprinklers that deliver water to crops more efficiently, and subdivisions have replaced some crop land.

Wells that had produced plenty of drinking water began to go dry. New residents drilled more and more wells into the same shallow aquifers. Some drilled and drilled, only to find no water or water too hard, even unsafe, to use. The process is a diminishing spiral.

We cannot continue to depend on drilling even more wells to supply present southeast La Plata County residents, let alone to provide necessary water for newcomers. We need a new solution.

Neighboring counties provide excellent examples of working rural domestic water systems. Montezuma Water Company serves a larger area than La Plata Archuleta Water District proposes and has created neither sprawl nor uncontained growth. Because the water district will be a taxing district, not an enterprise or a water department, it does not require density to be successful; in fact, not one more home is required to be built for the water system to be successful.

There are many existing Title 32 Special Districts in southeast La Plata County including fire protection, sanitation and mosquito districts. All of these were established by vote; and their boards are elected.

A task force of about 15 volunteers devised a plan for the La Plata Archuleta Water District to serve the area bounded by the Animas and Piedra rivers, the New Mexico state line and a line about three miles north of U.S. Highway 160.

The size of the district was dictated by the demand for a reliable domestic water throughout southeast La Plata... organizers set bound-



Courtesy Ann McCoy

Bayfield resident Cindy Wilson fills a water tank at a Bayfield water dispenser Wednesday. A number of rural La Plata County homeowners, like Wilson, depend on cisterns and hauling water for their domestic water supplies. Others depend on wells that supporters of the proposed La Plata Archuleta Water District say are becoming increasingly problematic as flood irrigation and farming diminish.

aries that make geographic and engineering sense.

Seeing the increasing number of water tanks that people use to haul home water bought from dispensers in Durango, Bayfield and Ignacio reinforced the volunteers' observation of the need. Trucking companies charge about 4 cents per gallon to deliver water, compared with about 4 cents per 10 gallons from the La Plata Archuleta Water District.

The amount of water that the district plans to secure is 2,000 acre feet per year (1 acre foot will serve about three homes for a year). Based on past growth rates, 2,000 acre feet is enough water for 25 years.

The water district has filed for water rights on the Animas, Pine and Piedra rivers. The average annual flow leaving Colorado from these rivers is about 1 million acre feet from which only 2,000 acre feet are needed.

There are folks satisfied with their present wells, even the woman who said she doesn't run the washing machine on the same day as the dishwasher. There is no requirement they buy a La Plata Archuleta Water District tap. The eventual board of directors, democratically elected, will set policies likely to include how and when

It is one of countless w
God endeavors to get
tention.

Scientific discoveries
vances are other ways.
imple, ancient archae
discoveries continue to
iate biblical events. T
merging physics theor
s string theory, propo
xistence of multiple

Web sites of interest

I am convinced that the information in the
pages below would be very beneficial to stock-
holders, if brought to their attention.
"The compelling Real DJIA, 1924-now" at
<http://>
"Th
<http://>

More questions on bicy

Kudos to the gentleman reminding us that bicyclists are on the road and that drivers should be aware. (Letters, *Herald*, April 6.)

However, what do we do when a pack of Fort Lewis College or Durango Wheel Club

riders run the stop s
Trimble Lane and we
slam on the brakes?

Giving a pack of ride minutes to fall into sir and allow cars to pass happen.

I am also curious as to

Health care

Clinic to accept Medi

We are so lucky to live in Durango. On March 26 we at-
thanks to some very de-
doctors and health-care
do have donated co

Lunceford: No land-use powers for district

Continued from 1C

property owners might get service.

The district will follow county planning rules and will provide taps only to legal lots of record. The number of taps for any parcel will comply with La Plata County land-use regulations including density restrictions. These provisions mean there will be no speculation on taps.

The La Plata Archuleta Water District will have no land-use powers. Planning decisions that control the density of

growth are the responsibility of the La Plata County Planning Commission and county commissioners. Provisions will be recommended for the Service Plan to require water service from the district to comply with county land use regulations. It is the hope of the task force that the relationship of a rural water utility to development decisions will be akin to that of a rural electric utility.

Formation of the La Plata Archuleta Water District requires a vote of eligible registered voters within the pro-

posed district. The voters will also elect the board, approve the mill levy and approve borrowing authority. The earliest an election can occur is Nov. 2; the next opportunity is November of 2005.

More information is available at www.laplawd.org, and a public meeting will be held at 7 p.m. Monday at the Ignacio Elementary School

Dick Lunceford is chairman of the La Plata Archuleta Water District task force. He is a former avalanche forecaster and has lived in La Plata County since 1982.

diversion. It simply makes more sense for alternatives to new transmountain diversion a really is really necessary.

*** CARP "returns" water for reuse to the b and Colorado Rivers from the Colorado - Utah water has first flowed down from the headwat doesn't removing water from the upper headw economic, and social problems for those dow**

*** CARP "returns" annually 280,000 or mo over 2,000,000 people with conservation. This It is water that Colorado is entitled to use - bu pumped back through a pipeline running unhi The pipeline delivers it to the headwaters of th Arkansas River Basins.**

*** "Water wars" in Colorado pitting West against Urban should become history. Trans headwaters removes downstream flows and th communities. That is just no longer acceptab transmountain diversion in Colorado's future, offers fairness to all regions and communities and it simply makes more economic, environ**

Power plants on the Gunnison and Colorado River are offered money by Colorado River Water Conservation District to offset value of power production from winter water. The federal Grand Valley Power Plant and Redlands Water And Power Co. are the plants. Last summer payment to Redlands for not using 150 cfs of 750 cfs water right amounted to \$70,000 to \$85,000 as compensation for lost revenue. The amount of water for Grand Valley is 5 to 10 cfs but District has no plans for winter compensation on Colorado.

$\frac{\$70,000}{150 \times 2 \times 60 \text{ days}} = \$4,722$

Aurora and Thornton are trying to acquire water from 11 ranches in South Park and bids are \$12,000 to \$15,000 per acre-foot. By contrast bids for Rocky Ford Ditch water in the lower Arkansas are \$5,600 per acre-foot.

Source: Editorial (16Sep02) Help's on the way, The Pueblo Chieftain, no page.

Penrose will purchase about 300 acre-feet for \$15,000 from the Colorado Division of Wildlife. It will be released from the Division's Skagway Reservoir to flow downstream to the rush Hollow Reservoir near Penrose with expectation of 60% transportation loss but will still be 4.5 months of supply for town for 3,300 water users.

Source: Tracy Hamon (14Nov02) Penrose boosts water supply, The Pueblo Chieftain, p. 7A.

City of Rocky Ford is paying \$30 per acre-foot for production of well water.

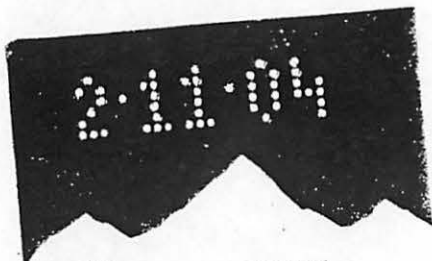
Source: Anthony A. Mestas (14Nov02) Rocky Ford adds water restriction,, The Pueblo Chieftain, p. 7A.

Water rights on the Fort Lyons Canal are \$4,000 per acre-foot and 20% of shareholders have committed their water. The High Plains A&M Company wants to buy an additional 35,000 shares (each for 1 acre-foot). Purchase contract calls for immediate transfer of voting rights for each share before payment, an option to purchase extending a year at a time for ten years and in that time the ditch company bylaws could be altered. The \$4,000 in years from now is \$2,400 to \$2,800 today, there is no interest. Not much more than farm land is selling for now. The purchase price offered by High Plains works out to be \$3,750 per acre-foot of consumptive-use water assuming 1.5 acre-feet per acre from the Fort Lyons diversions. That is said to be not much considering Front Range cities are paying \$10,000 per acre-foot for consumptive use water. High Plains can opt out any time; so farmers are taking the risk.

Source: James Amos (10Nov02) Attorney: Fort Lyons Canal offers sounds all wet, The Pueblo Chieftain, pp. 1A and 3A.

In Weld County, Platteville leased 165 shares from Firestone for \$4,950. Amount depends on how quota is set but at 100% then 1 share equals 1 acre-foot. Shares can go at \$13,000 each. Allocation quota was 70% in 2002 and could be 50% in this winter. The Northern WCD sets the quota. In addition the Northern charges \$19.44 per share for administration. Greeley has carryover of 21,000 acre-feet and most other towns are storing as much as possible..

Source: Annie Hundley (3Nov02) Towns take look at water needs, Greeley Tribune, pp. A1 and A14.



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STUDY / continued from page 1A

crowd of county commissioners who had gathered in Pueblo on Tuesday to learn more from him about ways of protecting the river basin.

The state is still an objector in a related Aurora water exchange case, filed in Division 2 water court.

"My interest there is making sure we are protecting the water rights and the water quality of the users," Salazar said.

The attorney general said the state should reach a decision on what to do in that case in the next few weeks.

Salazar used the meeting to update the audience on another major Arkansas River case in which his office is involved. "Perhaps what is most ominous for us all ... is the proposed

Fort Lyon transfer under the High Plains applications," the attorney general said.

High Plains is asking the court to change the use of recent Fort Lyon water it has purchased from agriculture to municipal/industrial. The change, affecting 32,000 acres of farmland, would enable High Plains to market an amount of water to Front Range cities that is almost equal to the entire flow of the Arkansas River at Lamar.

The investment group has admitted it lacks a buyer at this time, drawing charges from critics that the change request is speculative in nature and therefore in violation of state law. Salazar sided Tuesday with the

critics and said the state has good legal grounds to oppose the change of use request.

"Because it is, from my point of view, an application that is speculative," Salazar said. "They don't have an end user that is in place."

Even if the speculation argument is successful, Salazar indicated it would only be a temporary setback. He predicted a long, drawn-out legal contest in the case — one he said his office would pursue over the remaining three years of his term.

- * The Bureau of Reclamation's Upper Gunnison Project, Colorado, Concluding Report prepared in 1973 indicates that local farm budgets were developed but not used in the study (p. 12). The report refers to estimates prepared for determining irrigators' payment capacity. However, these were not presented because no irrigation units or projects were found to be justified for development (p. 15). The report also summarizes benefit - cost financial analysis data for the various alternatives for water development considered in the study. Current discussions and planning would benefit from obtaining such background material and determining what has changed over the years to now justify economic feasibility for public investment.

7 —
 The Bureau's 1973⁷ gave a summary of a land classification done for the Upper Gunnison Basin. This could help justify a determination of equivalency so as to enable delivery of Bureau water to benefit a greater acreage under the requirements of the Reclamation Reform Act and related laws (p. 15).

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 It should be noted that the Alternative Ohio Creek Unit concept (pp. 33 - 40) did involve development of both municipal water for the City of Gunnison and irrigation water for the lower part of Ohio Creek. The irrigation component was focused on the Paragon Canal which is essentially the Taylor Canal now being discussed. The Paragon canal was estimated to cost \$2,018,000 in 1973 (p. 39) though it would have been a little smaller in capacity than the Taylor Canal. The determined irrigation requirement for land under the canal was given as 4.0 acre-feet per acre irrigated, given the soils and irrigation practices for the 3,560 acres which could be served directly from the canal (pp. 36 - 37). Recently expressed requirements for irrigation water per acre irrigated are for many times the amount used in the Bureau's report. The Bureau's concluded from its benefit - cost financial analysis that the Paragon Canal irrigation component of this Alternative Ohio Creek Unit was unjustified because separable irrigation costs exceeded estimated justifiable irrigation expenditures (p. 40). Obtaining more detailed cost estimates and analysis from the Bureau's archives would be helpful in answering current questions regarding feasibility.

- * Finally, the Dolores Water Conservancy District is encountering financial problems. Projected demands and revenues are not as expected and costs have become greater. It appears that the Dolores District is looking for grants and making up the shortfalls. Contacting this district for lessons learned from its experience with its WETPACK project would be useful.

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 Respectfully:

Ralph E. Clark III

c. to others