WATER SUPPLY ISSUES : CHALLENGES AND OPPORTUNITIES
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I. INTRODUCTION

The timber we use in construction; the natural gas that heats our homes, movie theatres and office buildings; the petroleum we put in our vehicles, boats and snowmobiles, are all natural resources used and often times abused in the normal course of our daily lives. Luckily, timber, natural gas and petroleum, with proper management, are either renewable resources or have adequate alternatives that presently exist or their development is imminent.

Water, on the other hand, often referred to here in the West "as our most precious resource", and is more valuable than gold or the over-priced gas we regularly pump into our SUVs. With good reason - for water there is no substitute. The comedian Steven Wright best put it: *"I once bought powdered water…but didn't know what to add"*.

The supply of water in the West, or anywhere for that matter, is fickle at best. The supply is consistently inconsistent based on frequently varying factors such annual rainfall, snowpack, drought, use and the ever-present population increases both on the Front Range and the Western Slope, and we always seem to need more than what we have.

Picture the water practice in the mid-1970s a mere 30 years ago (I can)…when instream flow water rights were first recognized in Colorado. Could one envision the importance to water supply planning that they do today? Then step back a bit further ago…could one envision the growth and water demands that would occur in Nevada, which was allocated but a token amount of water in recognition of how little usage was anticipated? And step back just a bit further, to 1922, just 80+ years ago, when everyone contemplated that the base flow of the Colorado River would safely yield 15 MAF. The problems that have occurred because of that incorrect assumption exemplify the need for realistic assumptions and predictions in water supply planning.

The water practice is a bit like geology…100 years is but a blink of the eye. And if we close our eyes to bad assumptions we suffer those consequences. An assumption and acute challenge for water supply planning will be the impact of Global Warming and its impact on weather patterns.

Even being as right wing as I am, I can't ignore, and it is perhaps malpractice for practioners to ignore, that we all predicate our water supply planning on the past. Engineers told

us that we should select 1954 and 1977 as the dry year event horizon to plan for. Well, the first few years of the 21st century has pretty much proven that standard wrong.

When Colorado became a State in 1896, there were approximately 26,000 people calling it "home" on both the Front Range and the Western Slope[1], and more than enough water from our then abundant rivers, lakes, streams, ditches and reservoirs to satisfy the needs of all. Today the population has swelled to over 4 million[2] and the increased water demands – from both within and outside the State – continue to stretch an already over-burdened system. The Drought of 2002 underlined this undeniable fact. So now engineers tell us *to plan ahead by looking back* to 2002. But is that really prudent? As water supply planners, should we only look to the past, or look to the future?

In 1992, the UN Framework Convention on Climate Change warned of the alteration of weather patterns. Amazingly, nearly every country (except the US) within a mere 5 years had forged a consensus of what the world would look like unless certain steps were taken. The Kyoto Conference and numerous papers and presentations since 1997 have predicted:

- 50-90% of all European Glaciers will be gone by the end of this century
- Snow levels in the European Alps will rise from an average of 1200m to 1800m *within just 15 years*. Resorts such as Kitzbuhel, Cortina and Arlberg may no longer be viable.
- In the US, low resorts (base areas of less than 5500 feet in the Sierras…less than 8000 feet in the Central Rockies) may face similar conditions.

And the central focus will be on water for these resorts:

- Increased snow making
- Potential temperature preclusion of snowmaking
- Reduced Snowpack
- Increased summer usage (an expansion of the growing season)

From the studies I have reviewed, it appears though that global warming may impact on a site-specific basis, with increased precipitation in some basins (albeit accruing as snow pack only in higher elevations). This may result in basin yields being normal or perhaps even elevated and higher resorts could benefit, while lower resorts could be adversely impacted by water supplies coming in the form of rainfall rather than snowfall with the resulting change to stream regimes and water supply planning.

Water providers plan for 40-60-100 year supply horizons. We are required to consider, predict and guess what supplies will be available, what new demands will be brought on-line and how climate changes will impact seasonal delivery requirements. Perhaps the most alarming fact is that municipal providers relegate these daunting tasks to lawyers and engineers, two professions that are notoriously the least equipped to creatively "think outside of the box".

Given these points, municipal water providers are becoming increasingly creative in order to meet new demands while ensuring that their existing constituents are not unduly burdened. Municipal suppliers are also increasingly scrutinizing the type, quality, location and nature of growth before committing to serve.

II. REPERCUSSIONS OF THE 2002 DROUGHT

In 2002, Colorado experienced a drought that presented conditions even more severe than "the 1954-56 and 1977 droughts, which had been historically used by water planners for estimating the 'firm' yield of their water supplies."[3] Reservoirs hit record lows – some have yet to fully recover –and municipal water providers were forced to implement significant water use restrictions. Agriculture, the environment and recreation suffered serious hardship and there was concern whether our rivers could supply downstream states with their compact requirements.

A number of other conditions occurred during the 2002-2003 drought that presented unique new challenges, which need to be considered in the future including:

A. Lower stream flows in certain areas of the Colorado River Basin and its tributaries as compared to previous droughts;

B. Problems with the Green Mountain Reservoir including exhausting the historic users pool (HUP) and the impact of the Heeney slide (which prevented full use of the reservoir's available storage);

C. Denver Water reduced its by-pass flows past their Moffat Collection System, significantly reducing stream flows in the Fraser River Basin;

D. Changes to the administration of the Shoshone Call due to agreements between water users and Excel Energy;

E. Denver Water has nearly exhausted its Williams Fork Reservoir supply and resorted to use of Dillon Reservoir to augment its Fraser River diversions.[4]

Compounding the ill effects of the 2002-03 drought on the present population is the fact that by 2030 it is projected that approximately 2.8 million more people will be calling Colorado "home". Although most of these transplants are expected to settle in the Front Range, it is anticipated that the greatest percentage increases will be in the mountain communities and the Western Slope.[5] These new residents will need water, more than is available today; but how much will they need and where will we get it?

III. CHALLENGE OR OPPORTUNITY: SHOULD THIS GROWTH BE SERVED?

Historically, water has been a poor growth control tool. To deny service, for whatever reason, often leads to the establishment of independent water systems, creation of new Water

Districts, and multiplication of service providers within a region. Nevertheless, a municipal water provider has the ability to scrutinize to what extent it wishes to serve new growth outside its municipal limits.[6] *Jackson v. Byrn*, 393 S.W.2d 137 (Tenn. 1965); *Coursen v. City of Sarcoxie*, 124 S.W.3d 492 (Mo.App. 2004*); Fairway Manor, Inc. v. Board of Com'rs of Summit County,* 521 N.E.2d 818 (Ohio 1988); *Town of West Jefferson v. Edwards*, 329 S.E.2d 407 (N.C.App. 1985), *compare City of El Paso v. State Line, Inc.,* 570 S.W.2d 409 (Tex.Civ.App. 1978) (once a municipality served water extraterritorially it could not discriminate between properties); *Burger v. City of Beatrice*, 147 N.W.2d 784 (Neb. 1967) (serving one property extraterritorially does not mean that it must serve all properties). However, within the municipal limits of a town, a municipal provider is generally compelled to serve new development, absent a utility related reason. *Robinson v. City of Boulder*, 547 P.2d 228, 232 (Colo. 1976), *overruled on other grounds*, *Board of County Commissioners of Arapahoe County v. Denver Board of Water Commissioners*, 718 P.2d 235 (Colo. 1986); *see also City of Attalla v. Dean Sausage Co.,* Inc., 2003 WL 21569481 (Ala.Civ.App. 2003); *Torsoe Bro. Const. Corp. v. Board of Trustees of Inc. Village of Monroe*, 366 N.Y.S.2d 810 (N.Y.Supp. 1975); *compare Shadburn v. Tishomingo County Water Dist., Inc.,* 710 So.2d 1227 (Miss.App. 1998); *State ex rel. Cox v. City of Raymore*, 723 S.W.2d 910 (Mo.App. 1987) (decision to serve newly annexed property was discretionary but could not be arbitrary and capricious).

Reciprocally, a municipal water provider may serve development without annexation (extraterritorial service) subject to its Charter, relevant State laws, and usually a requirement that, after service, there remains an adequate supply to meet the needs of customers inside its service area. *Colorado Open Space Council, Inc. v. City and County of Denver*, 543 P.2d 1258 (Colo. 1975); *City of Englewood v. City and County of Denver*, 229 P.2d 667, 672 (Colo. 1951), *overruled on other grounds*, *Board of County Commissioners of Arapahoe County v. Denver Board of Water Commissioners*, 718 P.2d 235 (Colo. 1986); *see also Sende Vista Water Co., Inc. v. City of Phoenix, 617 P.2d 1158 (Ariz.App. 1980); Edris v. Sebring Utilities Commission,* 237 So.2d 585 (Fla.App. 1970); *Satrom v. City of Grand Forks*, 163 N.W.2d 522 (N.D. 1968).

A. Conditions of Service by a Municipal/Provider

Many communities have begun to impose water right dedication policies or ordinances. These ordinances are predicated upon the basic rate theory approach to establishing water rates and tap fees. Under traditional rate theory, tap fees represent a consumer's proportionate cost of "buying into" the existing infrastructure of the potable water system; these cost centers are the capital costs of the system less depreciation, etc. Correspondingly, water service charges represent the consumer's proportionate amount of the operations and maintenance costs of the system. Water dedication ordinances are designed to require a new water user to dedicate, or pay a fee representing the municipality securing water adequate to meet the raw water demands (providing wet water within the pipes) being made upon the system by the new growth.

The quantity of water to be dedicated (or funds in lieu of water dedication to be paid) will be a function of State water laws and geography. In many instances, such as the

Western Slope of Colorado, adequate physical supplies exist but the legal ability to divert such waters is scarce. Colorado follows a doctrine of prior appropriation and concept that the measurement of a water right is its decreed and historic use, measured in terms of the quantity of water consumed by the application of the water to its decreed beneficial use (with the inherent characteristics season of use, timing of use, return flow characteristics, etc). *Santa Fe Trail Ranches Prop. Owners Assn. v. Simpson*, 990 P.2d 46, 56 (Colo. 1999); *Williams v. Midway Ranches Prop. Owners Association*, 938 P.2d 515, 522 (Colo. 1997); *Pueblo West Metro. Dist. v. Southeastern Colo. Water Conservancy Dist.,* 717 P.2d 955, 959 (Colo. 1986). *See also*, *State Engineer v. Bradley*, 53 P.3d 1165, 1169 (Colo. 2002).

The amount of water diverted is composed of two parts: 1) the amount consumed in the course of the application of the water to its decreed beneficial use (consumptive use); and 2) return flow of the water diverted but not consumed (return flow). The return flow water is merely "borrowed from the stream" and is not considered capable of ownership. As such, many water right dedication ordinances require a dedication of a quantity of water that equals the consumptive use of whatever demands are placed upon the system. In other instances, such as where senior water rights must be satisfied between the point of diversion and the place of return flow, ordinances recognize that the full demands/diversions of new development must be dedicated.

Flexibility, however, is the key. Municipalities should draft their ordinances in a manner, which rewards a developer to make infrastructure improvements that increase the overall yield or capacity of the system to serve instead of simply requiring the dedication of water. Annexation Agreements for areas outside of the boundaries of a provider is another vehicle by which water dedication and infrastructure improvements can be a condition precedent to service.

B. Considerations Related to Timing of Dedications and Demands

Development of large projects involves phased growth, often resulting in years or even decades of phased development permits and even longer "build-out" (or the actual tap connections and water use). To a municipal provider, this means "reserving capacity" and often acquiring water resources and installing infrastructure that may not be used for decades. To a developer, the idea of dedicating water resources as an "up-front" development cost well before such service is required, seems unreasonable. Both are, to a degree, true, and both sides can be accommodated.

In order to maintain historic usage of water rights and private derive use of the water resources before they are reasonably anticipated to be used by the municipal provider, raw water leaseback agreements can be employed. In this manner, the municipality can acquire title, be assured that the resources will be in the municipal portfolio and shepard the water resources the water rights through any required change of water rights proceedings to enable the municipality to incorporate the rights within its system, while private usage by a developer is allowed.

In instances in which funds, in lieu of water resource dedication, is provided to a municipality, municipalities are well advised to credit the developer, on a dollar basis, as opposed to connection or water quantity basis. This acknowledges that a developer has dedicated an up-front payment to the municipality to secure water resources for a development, while protecting the municipality from the burden of inflation of the price of water resources for a development which may take decades to be phased in or built-out.

C. Acquiring Water Resources

In some areas of the country, reliance for municipal supplies is placed on groundwater, not treated as interconnected with a surface stream.[7] While a finite resource, or one which is mined or is not annually replenished is a dangerous resource to be relied upon except as buffering underground storage or as a conjunctive usage tool. Yet other municipal providers rely upon federal and state water projects. However, the majority of municipal providers need to secure their own renewal resources from surface streams. In mandating that a developer dedicate water to a provider, the developer has options for acquiring resources which are site specific, dictated by the needs, infrastructure of the municipal provider and topography of the land.

The constant in modern water supply planning for a developer is to buffer or balance out peak day and peak seasonal demands so that the quantity of water to be dedicated and used is reduced. This can be done in a myriad of ways:

- Day storage for irrigation demands (particularly important for golf and open space irrigation);
- Raw water irrigation systems and plans to reduce peaking impacts to treated water infrastructure;
- Multiple use facilities (such as combining aesthetic ponds with day storage/irrigation needs); and
- Conservation tools:

    - Restricted watering schedules and times
    - Water conserving features and plumbing
    - Drought resistant species and landscaping features

- In recognition of this creative approach to meeting drought conditions some State laws have been revamped to acknowledge temporary uses of water and allow eased administration of such arrangements. *See*, C.R.S. § 37-83-105.

D. <u>The State Water Supply Initiative (SWSI)</u>

In 2001, the Colorado Water Conservation Board, through its strategic planning process, became very proactive in seeking to determine how Colorado uses water, how it will use its water in the future and evaluating how well we are prepared for drought.[8] This initial work

provided the impetus for an 18 month study commissioned by SWSI to explore, basin by basin, existing water supplies and existing and projected demands through the year 2030 as well as a range of potential options for meeting that demand.[9]

- Began with series of Basin Roundtable Discussions with the public to find out essentially *What is important to people in Colorado when they consider how water should be used and managed?*[10]

- Roundtable participants were members of: agricultural and ranching community; business, development and civic organizations; environmental interests; various Federal agencies (USFS, BOR); local govt's not directly providing water; municipal water providers; recreational interests; water conservancy/conservation districts; CWCB Board Members; technical support provided by the SEO, DOW and State Parks.[11]

  The major findings of the SWSI are:[12]

  1. Competition for water will increase due to significant population increases compounded agricultural water needs and an increased focus on recreational and environmental uses.

  2. Municipal and Industrial (M&I) providers are implementing plans or planning to implement plans that have the ability to meet approximately 80 percent of the State's M&I needs through 2030.

  3. To the extent that No. 2 above is not successfully implemented, Colorado will see a significantly greater reduction in irrigated agricultural lands as M&I water providers seek additional permanent transfers of agricultural water rights to provide for demands that would otherwise have been met by specific projects and processes.

  4. Supplies are not necessarily located where the demands exist. Localized shortages exist, especially in hard water areas, and compact entitlements in some basins are not fully utilized.

  5. Increased reliance on non-renewable, non-tributary groundwater for permanent water supply brings serious reliability concerns in some areas, especially along the Front Range.

  6. In-basin solutions can help resolve the remaining 20 percent gap between M&I supply and demand, but there will be trade-offs and impacts on other uses – especially agricultural and the environment.

7. Water conservation (beyond Level 1) will be relied upon as a major tool for meeting future M&I demands, but conservation alone cannot meet all of Colorado's future M&I needs. Significant water conservation has already occurred in many areas.

8. Environmental and recreational uses of water are expected to increase with population growth. This supports tourism in our State, but without a mechanism to fund such enhancements beyond the project mitigation measures required by law, conflicts between M&I, agricultural, recreational and environmental users will likely intensify.

9. The ability of smaller, rural water providers and agricultural water users to adequately address their existing and future water needs is significantly affected by their financial capabilities.

10. SWSI only evaluated water needs and solutions through 2030. Very few M&I water providers have identified supplies beyond 2030. If current trends continue, logic dictates that water needs beyond 2030 will increase and such growing demands will require more aggressive solutions.

E. Upper Colorado River Study

In 1998, The Upper Colorado River Basin Study (UPCO) was initiated to identify and investigate water quantity and quality issues in Summit and Grand counties on Colorado's Western Slope related to expected increases in Front Range and Colorado River headwater demands associated with continuing growth and economic development.[13] Summit and Grand Counties had already experienced the loss of significant quantities of water through exportation to the Front Range and are targeted for additional losses so that the growing masses in Denver and Colorado Springs can be served. Phase I, completed in 1998, involved the preparation of a detailed scope of work for the development of information and analytical tools and the preliminary analysis of water quality and quantity issues. Phase II involved the implementation of the Scope of Work developed in Phase I.[14]

UPCO studied existing hydrology and ran several different scenarios of additional water development to assess the impacts, and Phase II represents the most comprehensive water planning and hydrologic evaluation to date for the headwaters of the Colorado River. The major results of this Phase II are detailed quantifications of water supplies, stream flows, and reservoir levels for various locations in Grand and Summit Counties including the Fraser River Basin both above and below the Town of Fraser; the Colorado River Basin both above and below the Fraser River confluence; Blue River above Dillon Reservoir; Tenmile Creek above Dillon Reservoir; Snake River above Dillon Reservoir; Dillon Reservoir and the Blue River below Dillon; and Green Mountain Reservoir and the Blue River below Green Mountain.[15] While a detailed analysis of UPCO Phase II is beyond the scope of this paper, the general result is that while most water providers have sufficient supplies to cover the current levels of demand, under future

conditions, nearly two-thirds of the providers are expected to have demands that exceed their current water rights and/or water availability. The Fraser River upstream of Tabernash, the Blue River upstream of Dillon Reservoir, the Snake River upstream of Dillon Reservoir and Tenmile Creek upstream of Dillon Reservoir are predicted to have the largest shortages.[16]

While the ultimate outcome of the issues raised in the study is uncertain, the UPCO process has been heralded widely as an excellent effort to get many affected parties to the table and to consider the impact on future water diversions in both the basin of origin and the basin of ultimate water use.

F. South Metro Study

Southern and eastern suburbs of the Denver metropolitan area are also continuing to expand rapidly growing almost 200 percent between 1990 and 2000[17] and along with this growth water demands are expected to double from 42,000 acre-feet to 92,000 acre-feet between 2000 and 2040.[18] These areas currently rely heavily on non-tributary groundwater, but there is a slow and steady depletion of this water source and, as a result, pumping costs are projected to grow dramatically in the future.

A few years ago, a dozen communities banded together to commission a study of future water supplies and management. The result is a slate of five alternative scenarios relying, to varying degrees, on continued groundwater pumping, conservation, re-use, and acquisition of surface supplies. The report examines closely options related to "conjunctive use" of groundwater, wherein water would be imported from the South Platte River (Front Range) and Blue River (West Slope) in wet years—when surface supplies are plentiful—and potentially used to recharge Denver Basin Aquifers, which would form a significant portion of the water supply in dry years.

The overall findings of the Study indicate that continued reliance on the deep ground water aquifers to meet urban demands in the South Metro Area will result in very large increases in capital and production costs in the near future possibly accompanied by the loss of ground water as an economically viable resource. The Study further emphasizes the fact that expected declines in artesian pressure and ground water levels will seriously impact the provider's ability to efficiently produce deep ground water supplies. Under ever alternative discussed in the Study, the artesian pressure will be depleted or reduced to a minimum over the next 20 years thus requiring more and more wells to produce the same amount of water. Infrastructure costs necessary to meet future ground water pumping demands will be extremely costly therefore any effort to reduce ground water pumping will result in significant savings.

The Study concludes, from a water management perspective, that the South Metro Denver region could drastically reduce its future level of reliance on Denver Basin ground water by aggressively pursuing a combination of water conservation, augmentation and resuse, surface water development, storage, and aquifer recharge initiatives.

IV. RESOLVING THE ISSUE OF SUPPLY VS. DEMAND

In Colorado, determining who gets what when supplies are low, populations expand or demand increases can be an arduous and conflict-laden process. Trade-offs and difficult choices have to be made and likely no one will ever be fully satisfied. With this in mind, the SWSI undertook to analyze the technical information in light of the management objectives as prioritized by the Roundtable Basin participants to come up with options and alternatives to meet these needs .[19] Some of those options are:

A. Conservation Options

i. Active M&I Conservations Measures

- metering
- increasing water rates
- rebates for efficient water usage
- incentives for reducing high water use landscaping
- restrictions on lawn size

ii. Agricultural Efficiency Measures

- Ditch lining
- Conversion of flood irrigation to gated pipe
- Installation of sprinklers

B. Agricultural Transfers

i. Permanent Agricultural Transfer. The acquisition of agricultural water rights and the cessation of irrigation on these historically irrigated lands. Water rights are transferred to other uses. Severe impacts to the basin of origin often accrue such as in the Arkansas basin. While mitigation measures may be mandated or imposed, mitigation often does not address cultural losses or indirect impacts.

ii. Interruptible Agricultural Transfer. An agreement with agricultural users that allow for the temporary cessation of irrigation so that water can be used to meet other needs.

iii. Rotating Agricultural Transfer (Fallowing) with Firming for Agricultural Use. An agreement with a number of agricultural users that provides for the scheduled fallowing of irrigated lands on a rotating basis so that the water not irrigating fallowed lands can be put to other uses. Includes a set aside and storage of some of the yield to provide a pool for use by the agricultural users during below average water supply years.

iv. HB05-1215: Concerning the temporary transfer of the use of water rights (Sponsored by Hodge)

This Bill was introduced in the House, assigned to the Committee on Agriculture, Livestock & Natural Resources and at the present time has been postponed indefinitely.

The Bill defines a "Fallowing Agreement" as an agreement between an owner or group of owners of irrigation water rights and a water provider whereby the irrigation water rights owners agree to stop use of a portion of the water rights for a specified length of time and the water provider is authorized to use the water right for the water provider's purposes. Designates the following districts as program management districts that may establish and manage fallowing programs for the specified program areas: the northern Colorado water conservancy district, for the program area comprising the South Platte river basin downstream of the Denver-Adams county line; the lower Arkansas valley water conservancy district, for the program area comprising the lower Arkansas river basin downstream of Pueblo reservoir, excluding Fountain creek upstream of the city of Fountain; the Colorado river water conservation district, for the program area comprising one or more of the following complete subbasins: the Colorado river mainstem; the Gunnison river; the Yampa river; and the White river; the southwestern water conservation district, for the program area comprising the San Juan river basin. Allows a program management district to establish a fallowing program upon the request of one or more water providers detailing the amount of water requested, the minimum and maximum amount of water acceptable on an annual and on-call basis, the term of the agreement, and the proposed payments per acre-foot to owners of irrigation water rights. Requires the program management district to seek input from the owners of irrigation water rights in the program area prior to establishing a fallowing program to determine if there is an interest in participation in a fallowing program. If the program management district decides to establish a fallowing program, requires the district to negotiate the terms and conditions of the program with the water providers interested in leasing water from fallowed land in the program area. Specifies the information that is to be included in a fallowing program and the conditions under which interested parties may enter into fallowing agreements under the program. Allows the state engineer to temporarily approve fallowing programs pending approval by the water court under specified circumstances and allows expedited appeals of decisions of the state engineer. Requires the state engineer to establish a fallowing program notification list whereby interested parties in a program area can be included on a list of persons notified of applications for approval of fallowing programs in the program area. Requires applicants seeking approval of a fallowing program by the state engineer to pay a fee to the state engineer to cover costs related to processing the application.

iv. Water Banks. A mechanism where water users can announce they have unused supplies that can be leased and used by others. *[Similar to the provisions of HB05-1039 regarding Loans of Water Rights for Instream Flows which was introduced by Rep. Curry and Sen. Isgar and signed into law by Governor Owens. This law eliminates the requirement that the Governor declare an emergency before loans of water right may be provided to the CWCB for use as an instream flow. These loans are limited to 120 days and may not be exercised more than three years in a ten-year period.]*

C. Development of Additional Storage

i. Development of New Storage Facilities. Construction of new storage facilities. Storage options include on channel and off-channel reservoirs and gravel lakes.

ii. Enlargement of existing Storage Facilities. Increasing the available storage in existing storage facilities. Options include raising dam embankments, dredging and raising spillway levels.

D. Conjunctive Use of Surface Water and Groundwater

i. The diversion and well injection of surface water supplies into a bedrock aquifer during times of surplus surface water and extraction of groundwater during times of insufficient surface water supplies. The intent is to extend the life of non-renewable groundwater resources.

ii. Alluvial Aquifers. The recharge of alluvial aquifers through diversion and infiltration of surface water supplies during times of surplus surface water and extraction of groundwater during times of insufficient surface water supplies.

E. M&I Reuse

i. Water Rights Exchanges. The exchange of legally reusable return flows for water diverted at a different location.

ii. Non-Potable Uses. The capture and use of legally reusable return flows for the irrigation of urban landscapes or for industrial uses.

iii. Indirect Potable Reuse. The capture of legally reusable return flows and reintroduction of these captured flows into the municipal raw water supply.

F. How does this affect our clients?

The SWSI was a momentous undertaking but little if anything has been done to implement its recommendations and the report itself admits that more study is needed.

Additionally, public review has been mixed. While some have welcomed the implementation of Basin Roundtables, others have criticized it as an "expensive exercise" but adding that it "was a credible effort to engage the entire state and have them more fully understand the challenges of state water development and the opportunities that come from working together."[20]

V. HOW SECURE IS YOUR DECREED WATER SUPPLY

Harmony Ditch Co., et al., v. The Ground Water Management Subdistrict of the Central Colorado Water Conservancy District, et al., (Harmony Ditch) Case No. 05SA205, Colorado Supreme Court.

The Harmony Ditch case presents issues which are critical to the enforcement of decreed augmentation plans and the authority of the State Engineer and Division Engineer to curtail out-of-priority diversions. Specifically, Section 37-92-305(8) of the Colorado Revised Statutes states that "decrees approving plans for augmentation shall require that the State Engineer curtail all out-of-priority diversions, the depletions from which are not so replaced as to prevent injury to vested water rights." In the lower court case, the State Engineer and the Division Engineer for Water Division 1 claimed that this provision authorizes the State Engineer to curtail out-of-priority diversions made under a decreed augmentation plan if he concludes that operations under the plan are injuring other water users, *even if the operations are in full compliance with all terms and conditions of the decree*. To secure his right to exercise this authority, the State Engineer also asserted that the language of the statute must be included *verbatim* in all augmentation plan decrees[21].

The opposer's argued that this statutory provision must be read in harmony with the entire Water Rights Determination and Administration Act of 1969 and particularly in context with the sentences that precede it in § 37-92-305(8), to require the State Engineer to curtail out-of-priority diversions *when a water user is not in compliance* with the terms and conditions of its decreed augmentation plan. The Division 1 Water Court ultimately ruled that it had "no facts before it on which to make an informed decision" on this issue and therefore directed that the subject augmentation plan decree incorporate language directly from the statute as urged by the State Engineer. Many assert that the State's position leaves water users that have fully decreed plans for augmentation in limbo by subjecting their plans to discretionary review and challenge by the State Engineer; with the result, that having a "final decree" becomes potentially meaningless.[22]

- status of briefing schedule
- involvement of amici curiae
- pros and cons of legal issues on both sides

VI. CLOSING

The following are indisputable facts: (1) the population of the State of Colorado is growing, and growing rapidly; (2) agriculture, municipalities, industry, recreation, and the environment all need water; (3) Colorado's water supply is unpredictable and sometimes finite depending upon nature and the elements; (4) we need to protect and conserve this resource and our client's rights to their water supplies now and in the future.

But how best to accomplish this? That, as they say, is the $64,000 question.

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[1] Colorado Water Conservation Board, *Statewide Water Supply Initiative* (SWSI), Executive Summary at 1 (November 2004).
[2] *Id.*
[3] Hydrosphere Resource Consultants, Inc., *Upper Colorado River Basin Study Phase II Final Report (UPCO Phase II)*, at viii. (May 29, 2003).
[4] *Id.*
[5] SWSI, Executive Summary at 2. Colorado is unique in that approximately 80 percent of the population lives in the Front Range while nearly 80 percent of the renewable water supply is located on the Western Slope.
[6] Or service area, in the event a Service Area has been designated and actions taken to exert monopolistic service within an identified area.
[7] In Colorado, a presumption exists that groundwater is hydraulically tributary with a surface stream. *Platte Valley Irrig. Co. v. Buckers Irrigation, Milling & Improvement Co.,* 53 P. 334 (Colo. 1898); *Medano Ditch Co. v. Adams*, 68 P. 431 (Colo. 1902); *see also*, Ramsey L. Kropf, Colorado's Groundwater Law: Colorado's System-Integration (or Not) of Groundwater and Surface Water, 49 Rocky Mt. Min. L. Inst. 7B-1 (2003). Non-tributary groundwater is an incident of land ownership and is permitted to be withdrawn at the rate of 1% per year (100 year useful life). Colo. Rev. Stat., § 37-90-103(10.5) (2005). Some other states have chosen to ignore the physical realities of geohydrology and created legal fictions of what groundwater withdrawal impact surface streams. For example, Oklahoma defines groundwater as "…fresh water under the surface of the earth regardless of geologic structure in which it is standing or moving outside the cut bank of a definite stream". 82 O.S. Sec. 1020.1(A). Arizona defines what is connected to a surface stream through a technical determination by the Arizona Department of Water Resources (ADWR) called a subflow zone. *In re the General Adjudication of all Water in the Gila River System and Source*, 9 P.3d 1069 (Ariz. 2000).
[8] SWSI, Executive Summary at 2-3.
[9] *Id.*. CWCB determined not to include an analysis of transbasin diversion issues in the SWSI because of the highly controversial nature of these issues and is slated to be addressed in a subsequent phase of the initiative.
[10] *Id.* at 6.
[11] *Id*.
[12] *Id.* at 7.
[13] UPCO Phase II at 1.
[14] *Id.* at 3. Phase III, which is yet to be completed, is targeted as a collaborative effort among the parties to identify solutions to the issues isolated in Phase II.
[15] *Id.* at 63-67.
[16] *Id.* at 63-76.
[17] Black & Veatch et al., South Metro Water Supply Study (December 2003), Executive Summary at 2.
[18] *Id*. at 3.
[19] SWSI, Executive Summary at 29-30.
[20] CWCB Board Member Ray Wright to the Valley Courier (online),date unknown.
[21] This is pet-peeve of mine, in so much that restating the law in each decree is a waste of paper, renders decrees longer and longer and begs the rule of construction question as to what is the effect of recitation of some parts of the

Water Right Determination Act in a Decree but not others? Then, do practitioners have to amend or modify Decrees when statutory law changes?

[22] A similar decision was recently reached in a Division 5 Water Court Case No. 03CW211, *Application of Eagle Park Reservoir Company*.