

**Water Transactions
CLE in Colorado, Inc.
April 3, 2009**

APPRAISAL OF WATER RIGHTS

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Your client just knows that the water right he or she inherited must be worth a mint—maybe it is, maybe it's not. My purpose today is to describe the process of appraising a water right so that you can best advise your client. The appraisal of water rights is a field that requires specialized knowledge and experience including hydrologic and water rights expertise along with appraisal experience.

In Colorado, and in many western prior appropriation states, water rights are property rights that can be severed and sold separately from the land. The state of Colorado has the most active water rights market in the country and also has some of the highest priced water in the country.

A. Appraisal Standards

In the 1980s, there were some poor lending practices by savings and loan associations and other federally insured lenders. Many of these bad decisions were based on bad or fraudulent appraisals that lenders or developers needed to close their deals. Many savings and loan associations and other federally insured lenders took advantage of the weak or non-existent regulatory oversight.

In response to the savings and loan crisis of the late 1980s, Congress passed the *Financial Institutions Reform, Recovery and Enforcement Act* of 1989 (FIRREA). This Act identified minimum standards for appraisers and required states to establish licensure and certification requirements. However, the legislation did *not* require states to regulate appraisers performing non-federally related appraisal assignments, such as estate valuations, condemnation assignments, and property tax protests. Along with FIRREA came Congress' adoption of the *Uniform Standards of Professional Appraisal Practice* or USPAP as it is commonly referred.

The Colorado laws addressing real estate appraisals set up four licensing levels from the beginning Registered Appraiser to the Certified General Appraiser level with attendant examinations, continuing education, and experience requirements. The continuing education requirements include a mandatory 7-hour class in *Ethics and Standard of Practice* every two years.

The state of Colorado's legislation for appraisal licensing in 1990 excluded the appraisal of water rights or of mineral rights from requirements for licensing (C.R.S.12-61-702(5)(b)(V)). While an appraisal license is not necessary for the appraisal of water rights, the standards outlined in USPAP provide valuable discipline and structure for the valuation of water rights.

In the last several years, Colorado has been a hotbed for mortgage fraud. The valuation of conservation easements has attracted the attention of the Internal Revenue Service (IRS). The IRS has had many agents in the state investigating appraisals. As a result of this scrutiny, the Colorado Division of Real Estate has stepped up its own enforcement actions.

Many of these investigations have involved a donation to a nonprofit entity with an income tax deduction claim. With conservation easement donations, many times a water right is donated along with the land because water can be integral to the conservation value. Water rights donations can also be made to the Colorado Water Conservation Board (CWCB) to preserve or to improve the stream environment.

If a taxpayer claims a deduction for a donation, IRS regulations generally require a "qualified appraiser" to prepare an appraisal for a donation with a claimed value above \$5,000. A "qualified appraiser" is an individual who (1) regularly performs appraisals, (2) has the qualifications as described in the appraisal to perform an appraisal for the subject type of property, (3) is not a relative of the donor or an excluded individual, and (4) understands that he or she may be liable for an intentionally false overstatement of value. Form 8283 must be completed and attached to the tax return. The appraiser must sign IRS Form 8283 and is subject to payment of a penalty for an incorrect appraisal.

USPAP gives requirements for the items that must be included in the appraisal report, gives standards for record keeping, requires that the confidentiality be maintained, and stresses that the valuation results must be credible and not misleading.

B. Items the Appraiser will Need

When you engage an appraiser, the appraiser will need the following items in order to perform the appraisal:

1. Client
2. Explicit identification of water right or water interest to be appraised
3. Intended use or purpose of the appraisal
4. Intended user
5. Date of appraisal value if specific date is required

The client is the party or parties that engage the appraiser. The identification of the water right is a topic in and of itself and is discussed in more detail following. The intended

user is the client and other parties identified by name or type in the engagement such as lenders, attorneys, accountants, or the IRS. The intended use or purpose of the report is stated because use of the report for another purpose may be misleading. If the valuation as of a particular date is needed, the appraiser must be informed. When a particular date of valuation is not required, the date of a site inspection, if made, is often used.

It is desirable to include the above items in an engagement letter with the appraiser, and often the engagement letter is included in the appraisal exhibits. If there are specific appraisal standards the appraiser is to meet, these requirements should be communicated to the appraiser. For instance, an appraisal for a federal agency may need to follow the *Uniform Appraisal Standards for Federal Land Acquisitions*, also referred to as the Yellow Book Standards (<http://www.usdoj.gov/enrd/land-ack/yb2001.pdf>).

There are different types of reports your appraiser can discuss with you to decide which is appropriate, depending on its intended user and intended use. The report types include:

1. Self-contained report
2. Summary report
3. Restricted use report

The opinion of value will not change with the three report options, but the amount of detail provided in the report does vary, as does the cost of the appraisal. A self-contained report provides the greatest detail with all supporting information included. A summary report may refer to supporting information but not include the actual information in the report. A restricted use report is the most limited in detail and is only for use by the client, not other intended users.

C. Identification of Water Interest

Identification of the water right or water interest to be valued is another piece of information that is to be provided to the appraiser. Sometimes it may be as simple as providing ditch certificates for a certain number of shares or a straightforward water rights decree. Other times there may be complex contracts and exchanges. It is recommended that the water right to be appraised be identified in writing by the client in the engagement letter. The water property interest must be defined. The water interest could be a decreed water right, or it could be contract water or lease water. For convenience, the term “water right” is used in the following text, but the appraisal could be of another specified type of water interest.

Before purchasing water rights, a due diligence evaluation as described by others today is recommended. The water rights due diligence, if available, will likely provide the appraiser with some of the needed analyses of the subject water rights. The appraiser will want to satisfy him or herself as to the accuracy of this information if not involved in the preparation of the due diligence investigation. If available information is not sufficient to

complete the appraisal, the appraiser may need to delay the work until it is available, undertake to acquire what is necessary herself, and/or supplement what is available

In addition, unless the selected appraiser is qualified to analyze the yield and reliability of the water right, it may be necessary to enlist the services of a qualified individual, such as a water engineer or hydrologist.

The measure of quantity for a water right is very often the historic consumptive use of the water right in acre-feet per year, but in some areas of the state, the diversion yield is used.

D. Appraisal Process

1. Identification of the Problem and Scope of the Valuation

The appraisal report should summarize or detail the work tasks performed in the preparation of the appraisal. The scope of work preparation necessarily involves problem identification, the type of property, who is the intended user, what use will be made of the appraisal, the effective date, the opinion objective, the assignment conditions, and the type of value to be appraised. The outline of the scope of work is generated by the appraiser and is what the appraiser deems necessary to produce a credible valuation. The description of the scope of work is included in the appraisal report.

2. Neighborhood Description

The neighborhood description describes of the area of influence on value. The neighborhood is the area where comparable sales and other appraisal methods will be investigated. For water rights valuation, a neighborhood will normally be a geographic area or stream system. This will necessitate a general understanding of the stream regime. Is a stream over- or under-appropriated? What is the typical calling senior water right by season? Is there exchange potential on the stream? Do reservoir operations impact stream flow? Are there in-stream flow requirements? These are some of the factors that impact the value of water rights. The neighborhood selection provides the foundation from which the valuation develops.

3. Highest and Best Use Analysis

The highest and best use analysis requires meeting four tests, i.e. is the use of the water right: (1) Legally permissible, (2) physically possible, (3) financially feasible, and (4) maximally productive (USPAP Glossary).

- 1) Legally Permissible. Water rights have specified decreed uses such as irrigation use or municipal, industrial, piscatorial, and augmentation use. Water rights can generally be changed in point of diversion, in place of use, and in type of use by filing an application with the Water Court and demonstrating that the change does

not injure other water rights holders. However, some ditch company bylaws do have restrictions on changes of water rights. The appraiser should assess the likelihood of a water rights change and provide evidence in support of the opinion.

- 2) Physically Possible. The appraiser should analyze whether the water can be physically changed or delivered to the proposed new place of use. Is the water physically available? Are improvements or facilities needed to make the physical change?
- 3) Financially Feasible. Is there a market for water? Is there a current demand, a ready market, or will there be an absorption period for other preferred or less expensive supplies? If there are competing water supplies, what are their costs? What are the costs to change a water right, to deliver the water to the place of use?
- 4) Maximally Productive. Assuming the three previous tests have been passed, the maximally productive use is the use that provides the highest economic return.

The realistic and objective potential uses control the valuation. The appraiser must establish a reasonable probability that the water right would be so used in the near future. Speculative potential uses must be avoided. In some instances, a hypothetical condition may be used in an assignment, with full disclosure of the assumption. A hypothetical condition is a condition contrary to what exists but is supposed for the purpose of analysis.

If land is included in a transaction along with water, the highest and best use for the subject water and land should also be considered. Are the uses for land and water compatible? Is water needed with the land for the land to have its highest and best use? This is an area where it is vital for the water professional and real estate appraiser to communicate. The appraisal must also insure that the water value is not being considered twice, for instance, by valuing the land as irrigated rather than a dry land farm, in addition to separately valuing the water right. Double counting must be avoided.

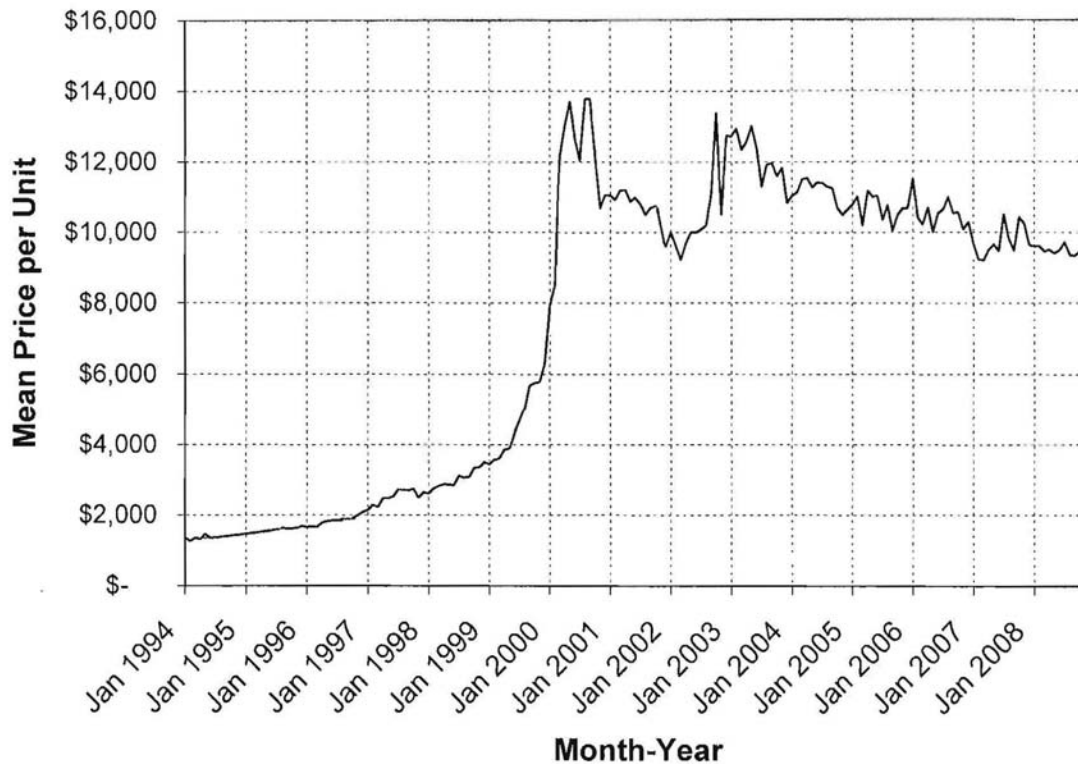
E. Approach to Value (Three Methods to be Considered)

The three approaches to value are to be considered. Depending on the particular water right, not all methods may be applicable. If this is the case, the appraiser should state so.

1. Sales Comparison Approach

Water sales are different from real estate transactions in that, unlike land transfers, water sales are not required to be recorded in county records. Some areas have active water markets with frequent sales. An example of a very active market is the Colorado-Big Thompson units.

History of Colorado-Big Thompson Unit Prices from January 1994



In other areas, very few or no water sales can be located. To locate water sales, the appraiser should contact persons who deal directly or indirectly with water. Examples of persons to contact for leads on water sales include: water engineers, local government officials such as the public works or utilities director, water attorneys, the water commissioner, water brokers, real estate agents and particularly those who deal in farm and ranch properties, other appraisers, and ditch company personnel. The appraiser should gather all normal course of business available information such as seller, purchaser, amount of water purchased, sales price, date of sale, and terms of sale. This can be tedious. Often in the purchase of water rights, the amount of water will be contingent on the amount of consumptive use that is quantified in water court.

Once comparable sales are identified, the transactions must be analyzed. For some water rights or contract water, comparable sales of the same right or from the same system will be available. If this is the case, then analyzing the comparable sale is simplified, with the date of sale and terms of sale being the primary factors to be considered.

When other water rights are used as comparable sales, it is important to have a common unit of measurement. Comparable sales are best expressed in terms of price per acre-foot of consumptive use, or in some instances, price per acre-foot of diversion. This will depend upon the prevailing method of water sales in the neighborhood.

While the expression of sales price in terms of price per acre-foot of consumptive use goes a long way in making water rights comparable, adjustments to sale prices are nearly always required. In addition to the date of sale, adjustments may be required to address items such as priority of water right, location of water right in relation to demand, storage availability, yield in a dry year, exchange potential, water quality, and previous transfers.

Some transactions do not need a water rights valuation. For instance, depending on the highest and best use analysis, for farm and ranch properties with land and water rights, there may not be a need to value the water rights separately; comparable property (land and water) sales should be available. Farm and ranch appraisers are well versed in irrigated versus non-irrigated land values. This difference is also useful in judging the approximate value of water rights alone—that is, the difference in value between irrigated and non-irrigated land.

While there may be ditch bylaws restricting movement of water from lands, bylaws can be amended to permit changes.

If there are special financing terms, the comparable transaction should be analyzed on an equivalent cash basis. Time-of-sale adjustments are best supported by a “paired share” analysis. In this analysis, water sales of like or similar water rights at different dates are evaluated to determine the rate of change in value, often in an annual percentage.

As with real estate, for water rights, a key component to value is location, location, location. Seniority is also a major consideration. Expressing value in terms of acre-feet of consumptive use addresses priority in part. However, a premium may be paid for a water right that has dry-year yield; an adjustment may be required.

Adjustments are made to comparable transactions to make them equivalent to the subject water right. For instance, if comparable number 1 is superior to the subject water right in that comparable number 1 has a very senior right with excellent dry year yield, a negative adjustment is made to make it more similar to the subject. Location is a key item, and an adjustment may be required to get the water to the market.

Once adjustments are made to all the comparable sales, the next step is reconciliation. The appraiser considers the comparable transactions and judges which comparables are most applicable to the subject. Perhaps the more weight is given to the most recent sale or perhaps to the comparable that produced a similar yield quantity. There can be multiple sales that are judged to give a good indication of value. The appraiser determines an indicated value for the sales comparison approach and describes and supports the selected indicated value.

2. Cost Approach

The cost approach may be applicable in some situations. As an example, water might be purchased on a contract basis and delivered to the place of use via the stream system or through a pipeline. The cost approach would determine the cost of pipeline transmission

facilities plus other costs such as pump stations, right-of-way costs, and engineering and legal fees. The present worth of annual operation and maintenance (O&M) costs would be added to the capital costs. The total cost could then be expressed in terms of dollars per acre-foot annual delivery.

As an example, the South Metro Water Authority, in a 2007 report, presents estimated costs to deliver water from the South Platte River downstream of the Denver metropolitan area to the Douglas County area as follows:

Annual delivery of 32,820 acre-feet (AF/Yr)	
Cost of transmission \$122,200,000/32,820 AF/Yr	\$3,723 per AF
Annual O&M is \$222 per AF/Yr	
Present Worth Annual O&M for $n = 50$ yrs and a net discount rate = 3.5 percent	<u>\$5,207</u>
Total Cost	\$8,930 per AF \$9,000 per AF (rounded)

The cost to deliver the water is approximately \$9,000 per acre-foot from the cost approach.

3. *Income Approach*

In the income capitalization approach, the current potential income value for the subject water is shown. The prospective net operating income is estimated. An applicable capitalization method and appropriate capitalization rate are developed and used in computations that lead to an indication of value. A history of various interest rates and change in consumer price index rates are given in the following table. The value per acre-foot of water from the income approach is very sensitive to the selection of the capitalization rate. For this reason, it is a good idea to perform a sensitivity analyses to fully understand the importance to the capitalization rate selection.

Income Approach—Sensitivity Test

Net Income of \$300 per AF
Term of 50 years

Net discount rate	2%	3%	4%	5%	6%
Present worth factor	31.4236	25.7298	21.4822	18.2559	15.7619
Present worth	\$9,427	\$7,719	\$6,445	\$5,447	\$4,729

The income approach may also involve projections of water demand and associated income. This is another task to approach with caution and understand the sensitivity to the demand assumptions.

F. Reconciliation—Final Value Estimate

The appraiser should reconcile the values indicated by the different approaches, with the most reliance placed on the method that is judged to give the most accurate value. Indications of value from the methods used can not simply be averaged. With the reconciliation, the appraiser brings together all the various facts and analyses to support the value conclusion.

G. Practices to Avoid (Practical Tips)

Water rights have decreed amounts expressed in cubic feet per second (cfs) or in acre-feet (AF) per year. The decreed amount is not the same as the historical use of a water right, and the decreed amount should not be used as the amount of water being appraised.

Another practice to avoid is basing the value of the water right on the amount of money charged by a nearby municipality for a tap fee, system development charge, or water service. This leads to an unreasonably high value per acre-foot. Such an approach ignores the fact that charges or cash in lieu of a water rights fee often include other system costs, such as treatment plants and distribution systems. Municipalities can incur significant costs and uncertainty in changing agricultural water rights to municipal use. Such costs can include engineering, water court litigation, and capital facilities to deliver the water to its new place of use. Additionally, tap fees are set by ordinance, not by the market. Finally, the amount of water associated with a single tap is relatively small and can be thought of as being a “retail value” as opposed to a “wholesale value.” In contrast, municipalities purchase agricultural water rights for their use at wholesale, for resale to their customers.

One must be aware of the cost of a dam and reservoir and the value of land underlying the reservoir when valuing storage rights. The value of a storage water right is highly influenced by the physical structure needed to create the storage pool.

Consideration must be given to the dry-up potential of the irrigated land. One cannot assume that removing irrigation water from the land will eliminate its burden on the stream. In some instances, a high water table will cause the land to continue to have at least some consumptive use after the water is removed.

When valuing groundwater, one must especially consider location. The location relates to the distance (cost) to deliver water to the market. Even with a common aquifer, the value of the water is highly dependent on the pipeline and pumping plant cost to deliver the groundwater to its place of use. Some groundwater rights have little or no value for municipal use because of the high transportation cost to bring the water to market. For instance, Denver basin non-tributary water at, or adjacent to, a point of use is far more attractive than Denver basin water 10 miles distant. Water more distant from market will have a diminished value.

Comparable Sales Adjustment Grid

Transaction No.	1	2	3	4	5
Water	Permanent Consumable Water	Westminster FRICO-- Standley Lake Division	Jones Ditch	Lemen Ditch No. 1; Barnes Ditch; Christiansen Wells and Spring	Parmalee Ditch 2 & 3, Flume Ditch
Seller	City of Westminster	Carlsons	Edward C. Levy Co. (d/b/a Centennial Materials, Inc.)	Mahoneys	Dozier
Purchaser	City of Brighton	City of Westminster	Cherry Creek Project Water Authority	Cherry Creek Project Water Authority	Upper South Platte Water Conservancy District
Date	Dec 2008	Oct-08	Aug 24, 2007	Sept 14, 2006	Aug-06
Stream	At or above confluence of Big Dry Creek and South Platte River	Clear Creek	Cherry Creek	Cherry Creek	Deer Creek, tributary to North Fork South Platte
Water District	2	2	8	8	80
County	Adams	Adams	Douglas	Douglas	Park
Location	At or above Sec 7, T1N, R66W	Sec 21, T2S, R69W & Sec 26, T3S, R70W	Sec 15, T8S, R66W	Sec 3, T7S, R66W	Sections 5 and 7, T7S, R72W
Administration No.	Not Applicable	19055.00000	5995.00000	5996.00000 12874.00000 35525.00000	6330.00000
Quantity, AF CU	38	24.0	25	75	36
Price per Acre-Foot	\$ 17,500	19,167	16,000	\$ 16,000	\$ 14,629
Adjustments:					
Price in Jan 2009	\$	\$	\$	\$	\$
Decree Use					
Location					
Reliability					
Other					
Total	\$	\$	\$	\$	\$
Total (Rounded)	\$	\$	\$	\$	\$

Interest Rates ¹ and CPI Change ²						
Year	Bank Loans to Business Prime Interest Rate	Moody's aaa	Bond 20-bond Index	30-year Conventional Mortgage	Gov't Securities 10-yr Constant Maturity	Change in Consumer Price Index
1979	12.67%	9.63%	6.52%	11.19%	9.43%	11.22%
1980	15.26%	11.94%	8.59%	13.77%	11.43%	13.58%
1981	18.87%	14.17%	11.33%	16.63%	13.92%	10.35%
1982	14.85%	13.79%	11.66%	16.08%	13.01%	6.16%
1983	10.79%	12.04%	9.51%	13.23%	11.10%	3.22%
1984	12.04%	12.71%	10.10%	13.87%	12.46%	4.30%
1985	9.93%	11.37%	9.10%	12.42%	10.62%	3.55%
1986	8.33%	9.02%	7.32%	10.18%	7.67%	1.91%
1987	8.21%	9.38%	7.64%	10.20%	8.39%	3.66%
1988	9.32%	9.71%	7.68%	10.34%	8.85%	4.08%
1989	10.87%	9.26%	7.23%	10.32%	8.49%	4.83%
1990	10.01%	9.32%	7.27%	10.13%	8.55%	5.39%
1991	8.46%	8.77%	6.92%	9.25%	7.86%	4.25%
1992	6.25%	8.14%	6.44%	8.40%	7.01%	3.03%
1993	6.00%	7.22%	5.60%	7.33%	5.87%	2.96%
1994	7.15%	7.97%	6.18%	8.35%	7.09%	2.61%
1995	8.83%	7.59%	5.95%	7.95%	6.57%	2.81%
1996	8.27%	7.37%	5.76%	7.80%	6.44%	2.93%
1997	8.44%	7.27%	5.52%	7.60%	6.35%	2.34%
1998	8.35%	6.53%	5.09%	6.94%	5.26%	1.55%
1999	8.00%	7.05%	5.43%	7.43%	5.65%	2.19%
2000	9.23%	7.62%	5.71%	8.06%	6.03%	3.38%
2001	6.91%	7.08%	5.15%	6.97%	5.02%	2.83%
2002	4.67%	6.49%	5.04%	6.54%	4.61%	1.59%
2003	4.12%	5.66%	4.75%	5.82%	4.01%	2.27%
2004	4.34%	5.63%	4.70%	5.84%	4.27%	2.68%
2005	6.19%	5.23%	4.40%	5.86%	4.29%	3.39%
2006	7.96%	5.59%	4.40%	6.41%	4.80%	3.24%
2007	8.05%	5.56%	4.40%	6.34%	4.63%	2.80%
2008	5.09%	5.63%	4.86%	6.04%	3.66%	3.85%
Feb-09	3.25%	5.27%	5.13%	2.87%	2.52%	0.24%
Avg 1999-2008	6.46%	6.15%	4.88%	6.53%	4.70%	2.82%
Avg 1989-2008	7.36%	7.05%	5.54%	7.47%	5.82%	3.05%
Avg 1979-2008	8.92%	8.49%	6.67%	9.24%	7.44%	4.10%

Use Interest Rate 6.5%
Inflation Rate 3.0%
Net Discount Rate 3.5%

¹ <http://www.federalreserve.gov/Release/h15/data.htm>

² http://inflationdata.com?Inflation/Inflation_Rate/HistoricallInflation.aspx