Colorado Stream Lines

QUARTERLY NEWSLETTER OF THE OFFICE OF THE STATE ENGINEER
COLORADO DIVISION OF WATER RESOURCES

VOLUME 1, NUMBER 3 SEPTEMBER 1988

TAKE ADVANTAGE OF THE OPPORTUNITY BEFORE IT IS TOO LATE

House Bill 1111 provides that certain "Household Use Only" well permits issued between May 8, 1972 and May 17, 1988, may be amended through June 30, 1990, to allow for watering of user's noncommercial domestic animals. Permits issued pursuant to augmentation plans and within designated Basins **DO NOT** qualify for this amendment. Forms to apply for an amendment are available from the Office of the State Engineer at 1313 Sherman Street, Denver CO 80203, any of the seven Division Offices, and from water well drillers and pump installation contractors throughout the state. The application fee for this amendment is $ 25.00. When applying, a copy of the front page of the existing permit must accompany the application.

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WATER COURT NEWS

The Colorado Supreme Court recently ruled in the case of Kenneth M. Good Irrevocable Trust v. Bell, Case No. 87SA183, that an applicant must have a valid well permit, denial, or evidence of the State Engineer's failure to grant or deny such permit within six-months after submittal of said application, as a prerequisite under Section 37-92-302(2) to have a hearing on the merits for an application for a conditional underground water right that is to be perfected by the completion and construction of a well. This allows for the State Engineer's expertise with respect to wells and ground water to be utilized by the judge or referee as required under Sections 37-90-137 and 37-92-305(6), C.R.S. (1973 and 1987 Supp.).

In affirming the lower court's decision, the Supreme Court states that "section 37-92-302(2)...maximizes the use of tributary ground water by preventing speculation and hoarding of ground water by encouraging the rapid development of wells and by preventing the over-appropriation of ground water resources."

NEW DIVISION ENGINEER

Effective October 1, 1988, Steven J. Witte will assume the duties of Division Engineer for Water Division II, replacing Bob Jesse who retired in June of this year. Steve began his career with the Division in 1978 working in the Water Supply Branch while still a student at the Colorado School of Mines. From 1982 to 1986 Steve was Assistant Division Engineer for Water Division III, and in July 1986 was promoted to Division Engineer in Water Division VI, replacing retiring Wes Signs. Steve has the necessary technical, administrative and decision making talents to effectively ran an extremely complex area such as Division II, and I hope you will join me in welcoming Steve to the Arkansas Valley.

On June 13, 1988, Dr. Thomas Vernon appointed Glenn A. Bodnar to serve as the Health Department's representative on the Board of Examiners of Water Well Construction and Pump Installation Contractors. Mr. Bodnar replaces Michael Liuzzi who served on the Board for seven years.

AN OVERVIEW OF WATER DIVISIONS IN THE STATE OF COLORADO

In upcoming issues of Streamlines each of the seven water divisions within the State of Colorado will be contributing articles with regards to the makeup and specific issues effecting each division. This article is the first in that series and is provided as an overview of the duties and responsibilities of the Division of Water Resources.

The State Engineer receives authority for administering the waters of the state by statute. In general, he, along with the assistance of each of the Division Engineers and his staff, is responsible for the administration and the distribution of the waters of the state; promulgating rules and regulations to assist in such administration; the collection and study of data on water supplies (both surface and ground water); interstate compact commitments and administration between states; and the enforcement of laws imposed either by statute or the water courts.

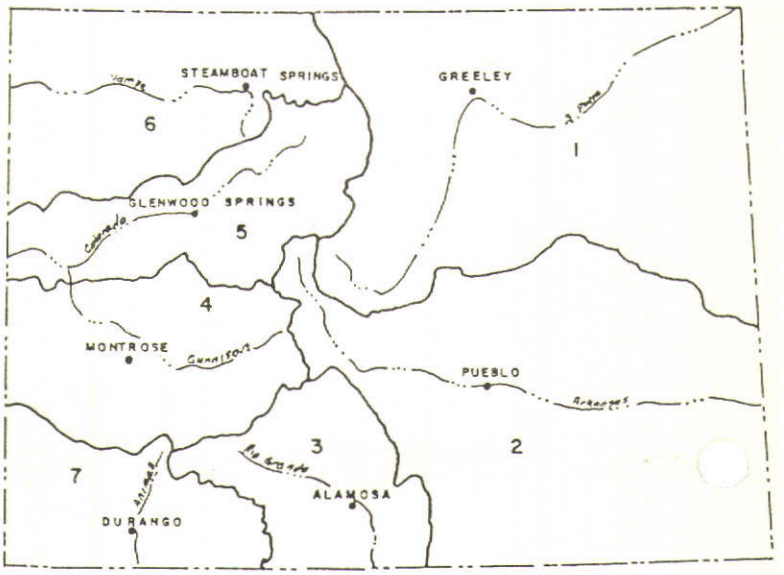
The State Engineer appoints one Division Engineer for each of the seven water divisions within the state. The division boundaries generally follow along the major river basin lines. The Division Engineers are required to assist in the performance of the State Engineer's duties, including all functions specified by statute and judicial law. The Division Engineer is responsible for the day to day administration of the waters within his or her specified division.

Through the Division Engineer, field offices are created which are staffed by Water Commissioners for the various districts that may reside within each division (currently 80 districts statewide). Their responsibilities include the hands on administration of water rights and the collection and recording of data from the field.

All of the officials mentioned above are specifically required to see to it that the waters of the state are available for the use and benefit of the people of the state to further growth, enjoyment, prosperity and welfare. To carry out this responsibility, statutory enforcement powers have been instituted to assist in the control of the waters of the state, which range from cease and desist orders or headgates to injunctive relief within the court system.

Below is a map showing the seven water decisions within Colorado, the major drainages and the location of the division offices.

WATER DIVISION BOUNDARIES



Division 1 Greeley	(303) 352-8712	
Alan Berryman	Division Engineer	
Division 2 Pueblo	(719) 542-3368	
Steve Witte	Division Engineer	
Division 3 Alamosa	(719) 589-6683	
Steve Vandiver	Division Engineer	
Division 4 Montrose	(303) 249-6622	
Tom Kelly	Division Engineer	
Division 5 Glenwood Springs	(303) 945-5665	
Orlyn Bell	Division Engineer	
Division 6 Steamboat Springs	(303) 879-0272	
	Division Engineer	
Division 7 Durango	(303) 247-1845	
Chuck Lile	Division Engineer	

GROUND WATER IN THE LOWER DAWSON AQUIFER, EAST CENTRAL DOUGLAS AND WEST CENTRAL ELBERT COUNTIES, COLORADO

by
James R. Hall
and
George D. VanSlyke

GENERAL INFORMATION

Over the past year, it has come to the attention of this office that the material in the Lower Dawson Aquifer has very little sand and that the hydraulic conductivity is very low in the area of T. 7 S., R. 65 W. and T. 8 S., R. 65 W. (see figure 1). Wells drilled in this area have produced either very limited quantities of water or are essentially dry. This has caused considerable difficulty for persons desiring wells in the Lower Dawson aquifer. It has also caused this office to require well tests prior to recommending approval of subdivisions in this area based on water supplies from this aquifer.

Persons unable to obtain a successful well in the Lower Dawson aquifer have been forced to construct a deeper Denver aquifer well. The base of the Denver aquifer is at a depth of approximately 1500 feet in this area. In contrast, the base of the Lower Dawson aquifer is at a depth of only about 600 feet. The cost difference between a fully penetrating Lower Dawson and a Denver aquifer well can easily be $10,000. For this reason, people are quite reluctant to construct Denver wells. Therefore, it is important to inform both developers and prospective lot purchasers of the potential for low yield wells in the Lower Dawson aquifer.

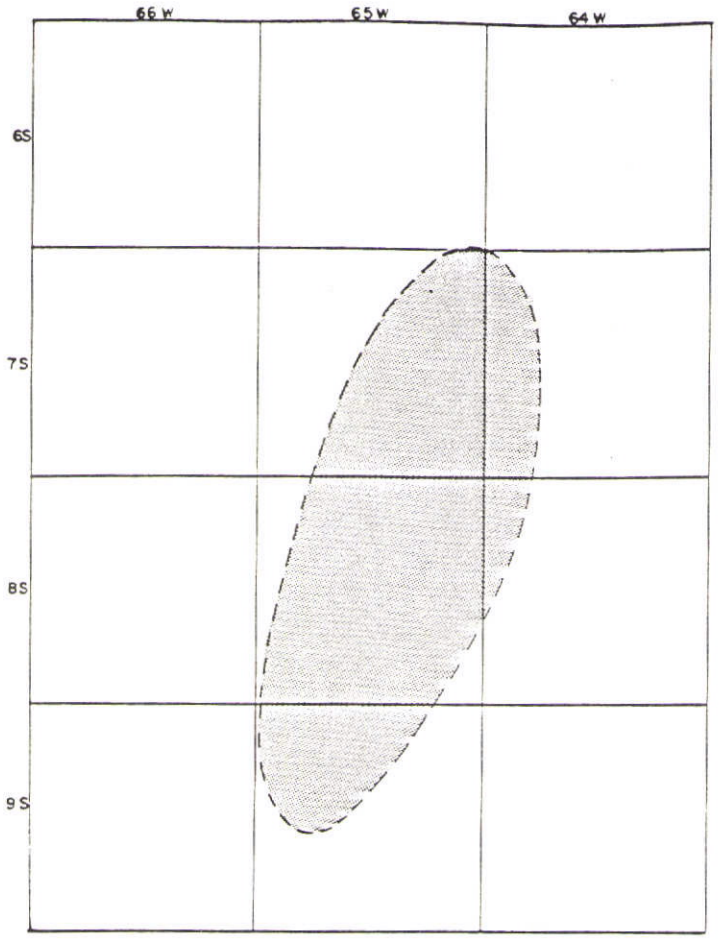


Figure 1.
AREA OF POSSIBLE POOR YIELD WELLS
IN THE LOWER DAWSON AQUIFER

PHYSICAL SYSTEM

The recognition of the Lower Dawson aquifer was first made in the area immediately to the south of the Cherry Creek Reservoir. In this area there was

a definite break between an Upper Dawson unit containing about 250 feet of predominately sandy material and a similar Lower Dawson aquifer unit. Between the two is a separating unit of up to 150 feet of predominately shaley material with little to no sand present. This distinction is quite prevalent in northern Douglas and southern Arapahoe counties as well as near the Front Range throughout most of Douglas County. The extension of these aquifer distinctions to the south and east shows marked changes and in fact separate upper and lower aquifers cannot be distinguished in the area from Perry Park south into El Paso county or east of central Elbert county.

Figure 2 shows a comparison of two geophysical logs approximately 14 mile apart. The western (left) log is located in Douglas county close to the Front Range and shows a typical Lower Dawson aquifer below a separating shale layer. In this well the Lower Dawson aquifer is about 350 feet thick with a net sand thickness of about 250 feet. The eastern (right) log is located in western Elbert county and shows a thickness for the Lower Dawson aquifer of only about 150 feet with a net sand thickness of only 40 feet. In addition, the sands are much more silty than those to the west. These characteristics result in lower transmissivities and potentially very low well yields. Typically, the western wells produce 20 to 200 gallons per minute while the eastern wells produce only a few gallons per minute with one gallon per minute not being uncommon.

A number of possible explanations for these changes in aquifer characteristics have been examined. At present, the most plausible explanation appears to be that of the depositional environment of the Dawson aquifer. A recent masters thesis by Bob Crifosi from the University of Colorado (Stratigraphy and Alluvial Architecture of Laramide Orogenic Sediments: Denver Basin, Colorado, 1988) examines the affects of dominant directions of alluvial sedimentation. This thesis suggests that areas of enhanced sediment accumulation occur along the major drainage channels. The areas between these major channels received less accumulation of sediment with finer grained material predominating. The channels, the areas of thickest accumulation appear to be related to regional lineations in the older basement rock exposed to the west of the Denver Basin.

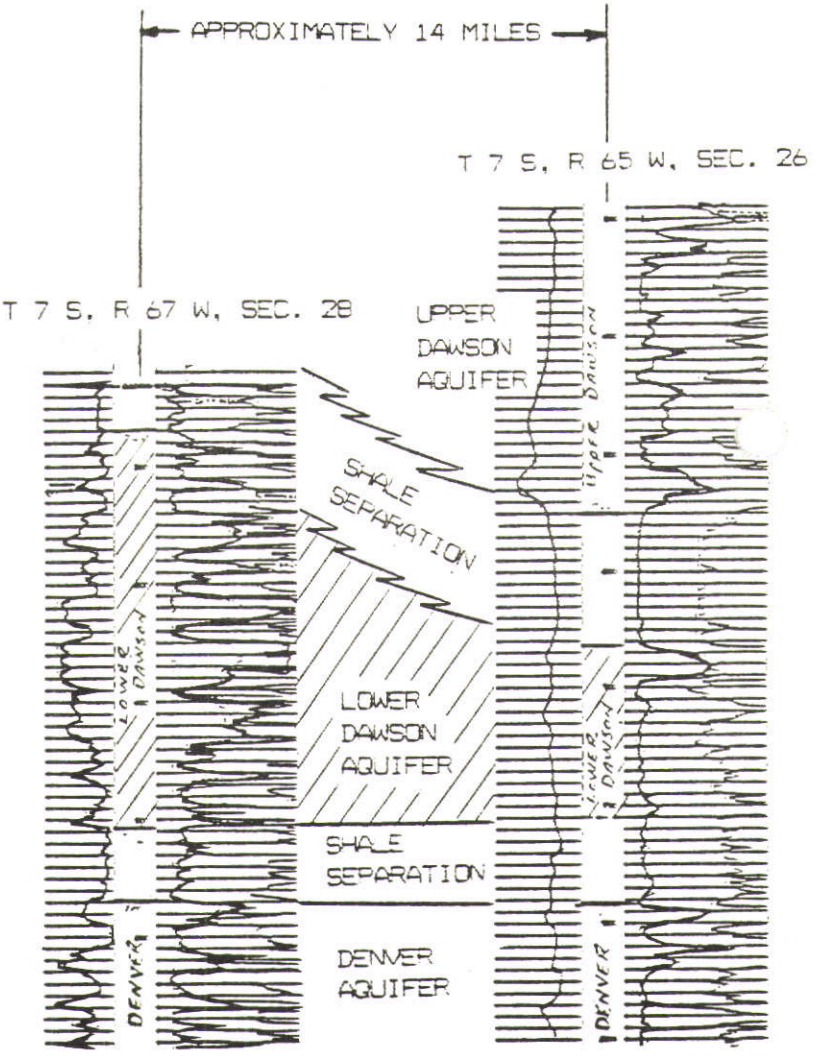


Figure 2
COMPARISON OF GEOPHYSICAL LOGS
LOWER DAWSON AQUIFER

PUBLICATIONS

Several new publications have become available since the last **Streamlines**. A complete list of all publications of the Division is available from the Records Section free of charge. You can pick one up in any of the Division's offices, or by phoning the Records Section, (303) 866-3581, and requesting that one be sent to you. New publications include:

DENVER BASIN BEDROCK AQUIFER WATER LEVELS FOR 1988 by J.C. Romero & H.C. Bainbridge. This report includes water level measurements for approximately 150 deep bedrock wells in the Denver Basin. Wells were measured in May 1988. Also included are sample hydrographs and maps of the Potentiometric surface for each of the four principal aquifers. This report sells for $5.00

WATER WELL CONSTRUCTION AND PUMP INSTALLATION RULES, Effective 8-1-88
These are the newly adopted rules covering construction of water wells; test and monitoring holes; installation of pumping equipment; grouting procedures; and procedures for abandonment of wells and test holes. The price for this is $3.00

CHERRY CREEK REPORT
The report is an evaluation of water resources, water use practices, water administration practices, operation of Cherry Creek Reservoir and water rights upstream of Cherry Creek Reservoir. The purpose of the report was to determine if a call on the South Platte could be passed upstream through the reservoir and, if curtailment of junior upstream water rights would result in additional water to the South Platte to satisfy the senior call. Bound copies of the report are available for $15.00. Data used for the report are available on 5 1/4" disks for a cost to be determined (estimated to be $30.00)

1988 WATER RIGHTS TABULATION
The official 1988 tabulation of water rights and various water right reports are now available either as "hard copy" or on 5 1/4" disks. For information concerning ordering and price, please contact Mrs. Millie Wanca at (303) 866-3581.

BRAZILIAN STAFF VISIT

Recently, Dr. Paulo Escondino spent six weeks with the Division staff. Dr. Escondino is a professor of geology at two brazilian universities and a government employee responsible for development and use of ground water in the Brazilian state of Minas Gerais. The purpose of his visit was to gain first-hand knowledge on how Colorado administers its ground and surface waters, and to gain experience in how the State Engineer's staff assures proper water well construction, utilizes ground water models, conducts geologic studies, inspects dams for safety, develops and uses computerized data bases, participates in court trials and works with water users. While here, he worked with many of the DWR staff, attended numerous meetings, went on a number of field trips and visited the U.S. Geological Survey, the School of Mines and Colorado State University.

Dr. Escondino's visit forced us to think about many of the things that we often take for granted. He also shared with us his knowledge and experience. We are grateful for the opportunity for professional exchanges such as this.

DAM SAFETY UPDATE

Final rules and regulations for dam safety and construction were adopted by the State Engineer on August 26, 1988, and approved by the Attorney General on August 29th. The rules were filed with the Secretary of State and published in the September 10, 1988 issue of the Colorado Register. The rules become effective on September 30, 1988.

EMPLOYEES OF THE MONTH

Join us in congratulating the following employees for their outstanding work:

August: **Dick Stenzel**, Chief of the Water Management Branch

September: **Chris Fredrich**, Word Processing Operator, Dam Safety Branch

October: **Jim Hall**, Senior Engineer, Water Management Branch

CALENDAR UPDATE

OCTOBER

October 4 — Board of Examiners of Water Well Construction and Pump Installation Contractors. Room 821, Centennial Building, 1313 Sherman Street, Denver, CO 8:30 a.m.

NOVEMBER

November 18 — Colorado Ground Water Commission. Room 220, Centennial Building, 1313 Sherman Street, Denver, CO 9:00 a.m.

DECEMBER

December 4-6 — Colorado River Water Users Association Annual Meeting, Las Vegas, Nevada

December 6 — Board of Examiners of Water Well Construction and Pump Installation Contractors. Room 821, Centennial Building, 1313 Sherman Street, Denver, CO 8:30 a.m.

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