Information Concerning South Platte Alluvial Wells That Have Limited or No Pumping Allowed in 2008

Current Situation

There are certain agricultural or other high capacity alluvial wells in the South Platte basin that currently do not have a plan to operate in 2008 and, therefore, are not allowed to pump; or the details of the plan they do have will limit their pumping to some portion of their full desired amount. Those wells fall into three general categories:

- **Group 1 - Wells in the Central Colorado Water Conservancy District, Well Augmentation Subdistrict** ("Central WAS" or "WAS") – The Water Judge for Division 1, Roger Klein signed the decree for the plan for augmentation, Case No. 2003CW99, on May 14, 2008. Central has submitted proposed accounting for the plan to the Division 1 office and the Water Court on June 6, 2008. The Division of Water Resources is reviewing this accounting. At this writing, Central has not allocated a quota to allow any pumping of member wells in 2008. Replacement in 2008 will be for present depletions created by pumping in years prior to 2008.
- **Group 2 - Wells that have decreed plans for augmentation or SWSPs that allow users to pump, but pumping amounts are limited according to varying conditions** – For example, Central Colorado Water Conservancy District, Groundwater Management Subdistrict ("Central GMS" or "GMS") has a plan limiting pumping to a quota in accordance with their decreed plan for augmentation.
- **Group 3 - Wells with no current water court-decreed augmentation plan or SWSP and thus cannot presently be pumped** – Well owners may or may not have organized and some may have had past approval of an SWSP allowing pumping. But because of difficulties, for example, maintaining adequate replacement water, the wells have not gotten approval of a plan to operate during 2008.

Terms

Water Court-Decreed Augmentation Plan – Strictly speaking, it is a plan to increase the flow of the river. However, in the context of the South Platte River alluvial wells, it is a plan that acknowledges and quantifies depletions caused by well pumping, identifies sources of water that can be used to compensate for the out-of-priority depletions caused by well pumping, and outlines an approach to use the replacement water to replace out-of-priority depletions to the stream such that no other water right is injured. The entire operation is approved by the Water Court.

SWSP (substitute water supply plan) – It is a temporary version of a Water Court-decreed augmentation plan. An SWSP relies on an application to the Water Court as its basis and is a subset of that application. While court approval of the augmentation plan is pending, state statutes allow for temporary operation of the proposed plan through an SWSP approved by the State Engineer. SWSP approvals allow for one year of operation. SWSPs that will operate for more than one year must obtain annual renewals.

Replacement Supplies – An augmentation plan or SWSP that acknowledges depletions to the stream system must use water to replace those depletions at times when they are injurious to surface water rights. The sources of water used for replacement purposes fall into five different categories.

- Ditch or reservoir rights that were decreed for irrigation or other purposes but have been legally changed to be used to replace pumping depletions.
- Fully consumable effluent from a wastewater treatment plant. This water is leased or purchased from water districts or municipalities; only that portion that originates from fully consumable (that is, nontributary, changed in-basin, or trans-mountain) sources can be considered available for augmentation purposes.
- First use transbasin water (for example, Colorado-Big Thompson water)
- Junior water rights; water rights acquired more recently, whose allowed uses include the replacement of depletions in an augmentation plan.
- "Free river" water; water that may be taken from the river when all decreed water rights are satisfied.

These sources of water may be used immediately, at the time they are running in the river; stored in surface reservoirs for later use; or recharged (usually by gravity, not injection) to the alluvial aquifer for later use.

Complexity of Augmentation Plans and SWSPs

A primary factor that complicates the engineering, planning, operation, and accounting of augmentation plans and SWSPs in the South Platte River basin is the delayed depletive effect of well pumping on the surface stream. A water user may make a surface diversion from the South Platte River or one of its tributaries and the impact to the river is felt immediately. Even a surface diversion from a tributary will impact the flow of the South Platte River miles downstream relatively quickly, that is, within days. However, ground water diversions, in contrast to surface water diversions, impact the river with a delay that can range from weeks to years, depending on the nature of the aquifer and the well's distance from the river. This is a result of the manner in which water travels through the ground. The delayed effect that well pumping has on the river has been understood for many years and is the basis for the South Platte Rules that were approved by the Water Court in 1974.

Similarly, the augmentation plans are complicated by the delayed additive effect of recharge on the surface stream. This delayed phenomenon has a converse effect to that of well pumping.

Considerations that Influence the Wells' Ability to Pump in 2008 and in the Long-Term

- Group 1 - Central WAS
    - 2008 – The terms and conditions of 2003CW99 guide the process to determine what if any portion of the wells' full pumping amount will be allowed. The allowed pumping will be influenced by the factors identified for the short term pumping for Group 2 wells (see below).
    - Long-term – the allowed pumping for Group 1 in the long term will be influenced by the factors identified for the long-term pumping for Group 2 wells (see below).
- Group 2 - Wells with approved augmentation plans or SWSPs
    - 2008 – Each individual wells' pumping is currently limited by the accounting for its plan. In the Central GMS plan, this limit is called a "quota", according to the provisions of the decreed augmentation plan (2002CW335). The quota is a limit to well pumping that represents some portion of the amount of coverage expected for that well. The various plans must be managed to replace depletions to the river that occur in a monthly (or more frequent) time step. During any one month, the depletions that actually impact the river during that month may result almost entirely from pumping that took place in the past. This is due to the delayed effect caused by underground water's slow travel velocity, as described above. The plans for the Group 2 wells must use available replacement water to first replace those ongoing depletions that result from past pumping before any new pumping will be allowed. New pumping then is allowed only according to projections that compare planned replacement water amounts to the known depletions. The difference is available to be applied to new pumping. The plan's decree provides details on how these calculations and projections are to take place. However, due to the fact that well pumping characteristically has a delayed depletive effect on the river, decisions to allow new pumping must be based on the amount of replacement water that will be available in the future, when the depletions will impact the river. The water available in 2008 will have a small impact on pumping allowed in 2008 unless that water can be put into storage or recharge. That will allow a forecast of additional replacement water hitting the stream in subsequent months or years, which will allow greater pumping in 2008 with the confidence that the delayed depletions from that pumping will be replaced by water that is already known to be available. In summary, the allowance for pumping on the short-term has, to a great extent, been decided by past actions: acquisition of firm replacement water that will be dependably available in 2008 and in future years.
    - Long term – The allowed pumping in future years is being decided in 2008 for these wells and is dependent largely on water that is available or acquired today. If the plan operators can obtain new supplies of water that is available only this year (resulting from junior water rights and free river water that is available due to high runoff, or short term leases of fully consumable effluent), that water can be used to a small extent to allow additional pumping in 2008, as described above, but to a larger extent, for future years by putting

this year's water into storage or recharge for future use. On the other hand, if the plan operators can obtain new supplies of water that is permanently available (resulting from changed ditch and reservoir water, tranbasin and nontributary water, and long-term leases of fully consumable effluent), that water can be used to plan an approach of direct and delayed replacement to the stream. The plan operators can use that water that is dependable over the long-term to balance the delayed out-of-priority depletions to the stream caused by well pumping.

- Group 3 - Wells without plans
    - These wells face all of the challenges that the Group 2 wells face in terms of assessing the amount of replacement water they have available at any one time and planning for pumping. However, they are faced with the additional challenge of developing an organization, getting legal representation and engineering consultation services and acquiring even enough water to replace depletions that are occurring from past pumping so that they can initiate a plan that is at least viable for their current situation

Frequently Asked Questions

1. How will better than average runoff affect the ability of my well to legally pump during 2008?

   Answer: For wells in Groups 1 and 2 that currently have a plan in place to work with, better than average runoff may translate to more water available to junior water rights than is normally available. Further, it may translate to, more "free river" days with greater amounts available under the free river. If an augmentation plan or SWSP has the legal approval and has the physical infrastructure available, the organization may be able to store water or deliver it to recharge. This will enhance their forecast contribution to the river and as a result, allow increased pumping. However, the simple fact that there is more water in the river does not translate to an increase in allowed use from wells because of the complicated "delayed depletion" aspect of well pumping. For wells in Group 3, it is unlikely that they would be able to react in time, both in terms of an organized plan and in terms of physical infrastructure, to take advantage of the immediate nature of greater than average runoff.

2. Can we allow irrigation wells not included in augmentation plans or SWSPs to use water from the alluvial aquifer during drought conditions? This suggestion is based on a notion that (a) the benefits (that is, return flows to the river) from irrigation well pumping far exceed any damage that may be done to senior surface water rights because wells produce return flows to the river, and (b) any depletion or "hole" that might result from well pumping will be replaced or "filled" with higher than average runoff during 2008, leaving no net effect at the South Platte River.

Answer:

(a) The South Platte River alluvium does contain a large amount of water, but it is part of a dynamic system that is always reacting to maintain equilibrium. Long before the Ground Water Management Act of 1965 and the Water Rights Determination and Administration Act of 1969, scientists understood that ground water in the South Platte alluvium is connected to the surface water in the South Platte River and that removing water from or adding water to that stream system will cause the system to react to maintain that state of equilibrium. That reaction is predicted through the use of ground water models. This science was understood well enough and given such consensus in the late 1960's and early 1970's that new laws were enacted to acknowledge this interaction between surface and ground water and to incorporate the use of ground water into Colorado's prior appropriation system. To provide interpretation of the laws, the Division 1 district court approved and published the *AMENDED RULES AND REGULATIONS OF THE STATE ENGINEER* ("South Platte Rules") on March 15, 1974. The South Platte Rules apply to all tributary underground water of the South Platte River and its tributaries. The South Platte Rules require that wells pumped in the South Platte River and its tributaries do so under a plan that replaces the delayed depletions to the stream system. The South Platte Rules also state that they "shall remain in effect unless modified or amended in accordance with law." Therefore, while well pumping and the resulting irrigation use may provide some return flow to the river, the net effect of using a well for irrigation or other purposes is to reduce the flow in the river. It would be counter-intuitive to claim that return flows from well pumping travel through the ground to positively affect the stream while not acknowledging that pumping water from the same ground also has a depletive effect on the stream. Further, those claimed benefits (return flows from un-consumed pumped water) are an integral part of current augmentation plans and SWSPs and are already used in the accounting to decrease the replacement obligation of the plan.

(b) While it's true that any depletions or "holes" that are created in the alluvial aquifer may actually be replaced or "filled" by stream flow, the net effect of filling these holes is to reduce the flow in the river. Ironically, such an occurrence helps underscore the importance and need for augmentation plans and SWSPs. If water flowing in the stream is taken out of the base flow by filling "holes", that water is no longer available to a senior water right. That is the injury that augmentation plans and SWSPs are intended to prevent.

In summary, even if a water user takes the notion that ground water use impacts the river differently than is contemplated in the South Platte Rules; the State Engineer has no authority to act outside of the law or the direction of court-approved rules.

3. Why must well users bear the burden of replacing depletions from previous years' pumping? I've heard that some well users have to replace depletions from pumping before 1974.

Answer: The burden that a water user bears is to replace depletions that have yet to impact the stream. As stated above, water travels slowly through the ground and creates a "lag" or delay effect. Depending on the distance from the river, well pumping can deplete the flow of the river for months or years after the pumping took place. It is this depletion that the water user must replace.

For example, for a well that is several miles from the river, if the well owner were to pump 100 acre-feet in 2008, the depletions to the river would be only a fraction of an acre-foot during 2008. During 2009 and following years, the depletions to the river would be only a few acre-feet each year and the depletions would continue in that amount for many (20 or more) years. The State Engineer does not require that the depletion to the stream that occurred in past years be replaced if it was not replaced then; the State Engineer has no authority to require that. It is only for the depletions from past pumping that will impact the stream "this year" that a well user must make replacements.

The Division 1 Water Court judge affirmed this requirement, especially for pre-1974 pumping, in a July 12, 2006 order regarding the Central WAS augmentation plan. In that order, the judge found that the "(a)pplicants shall replace all injurious ongoing depletions resulting from pre-1974 pumping."