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Kent L. Jones, P.E.
State Engineer
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Subject: Weber River Operations and Deer Creek Paper Spill Criteria

Dear Mr. Jones:

This letter documents the anticipated Provo River Project (PRP) diversions from the Weber, Provo, and Duchesne River Systems, the ability for Deer Creek to temporarily store water on a space available basis, and the potential to spill this temporary storage water upstream to other Bureau of Reclamation projects. These water operations were gleaned from planning documents, contracts, water right files, and discussions with the Weber River Water Users Association (WRWUA), Provo River Water Users Association (PRWUA), Central Utah Water Conservancy District (CUWCD) and the Weber Basin Water Conservancy District (WBWCD).

Space Available Storage in Deer Creek Reservoir

Temporary (sometimes called 3rd party) storage in Reclamation's reservoirs is a common practice in the State of Utah. This temporary storage can occur formally under agreements such as the Deer Creek/Jordanelle Operating Agreements or informally (usually for a short period of time) as reregulation under the direction of the River Commissioner to facilitate water deliveries. An important principle of Space Available Storage at Reclamation facilities is that it cannot interfere with the normal reservoir operations. This non-interference means the reservoir is allowed to claim, under its primary storage rights, the same quantity of water as before the temporary storage occurred. If there is insufficient space in the reservoir for both new-year water and the temporary storage, the temporary storage water spills out to make room for the new-year storage. When there are multiple entities temporarily using a Reclamation reservoir, the order in which the different temporary storage waters spill is usually governed by contract or historical precedence.

Deer Creek Reservoir has three distinct blocks of space available storage:

Warren Act Contracts

Warren Act contracts are contracts entered into with the United States, their project partners, and an outside 3rd party to convey or store non-project water in Reclamation Project Facilities. Deer

Creek Reservoir currently has two Warren Act Contracts that allow storage on a space available basis, which include Echo Shares held by Provo Reservoir Water Users and the Ontario drain water. When the reservoir fills, as dictated by contract, the Warren Act water is the first spilled from Deer Creek Reservoir.

Central Utah Project, Bonneville Unit Water

The 1994 Deer Creek/Jordanelle Operating Agreement (Operating Agreement) coordinates and optimizes the operations of the Bonneville Unit of the Central Utah Project (CUP) and the PRP. This agreement allows all Provo River System water available to the CUP water rights, including the condemned Olmsted Power water rights that flow into Deer Creek Reservoir to be stored temporarily for the CUP. Additionally, CUP storage released to meet in stream flow requirements below Jordanelle Reservoir can also be recaptured and temporarily stored at Deer Creek Reservoir. Temporary CUP stored water in Deer Creek can be exchanged back upstream as PRP water rights, including import water, are captured in Jordanelle Reservoir. By contract, CUP Temporary storage spills after the Warren Act Storage but before the holdover storage.

Deer Creek/Jordanelle Operating Agreement

The PRP was designed to concurrently use its water rights in the Duchesne, Provo, and Weber Rivers to fill Deer Creek Reservoir. This practice is formalized in the Operating Agreement (Contract No. 94-07-40-R1690) that states "PRWUA will store all waters available from the Provo River under the PRP Water Rights…and all waters available from the Weber River drainage and Duchesne River drainage under the PRP Water Rights until Deer Creek Reservoir initially fills."

Even though the Operating Agreement requires the full diversion of PRP water rights it also states that PRWUA and the CUWCD "will use [their] best efforts to minimize adverse impacts of the Weber River Project and Weber Basin Project water rights."

Holdover Storage

In the 1936 repayment contract with PRWUA the United States allowed a holdover provision in the contract "*to encourage the economical use of stored water from the Deer Creek Reservoir and the accumulation thereof for use in times of greatest need stockholders of the Association shall be permitted to hold over in Deer Creek Reservoir any stored water, to which they may be entitled, in any year or years for release in future years.*" This storage represents water that has been allocated for use to shareholders during previous water years which they elected to hold on a space available basis in Deer Creek Reservoir. The 1936 repayment contract does not allow the PRWUA to take back the holdover water, therefore to make room for new-year storage, this holdover water is spilled in a similar manner to other temporary storage contracts.

Holdover water is subject to certain conditions per the agreement such as:

1. Holdover storage water remains allocated for use by the shareholder who did not call for the release and delivery of the water previously without regard to the total of the amount accumulated so long as the reservoir does not spill;

2. Holdover storage water spills incrementally in such a manner that no shareholder is allowed to have more available space per share; and
3. Holdover storage water is charged a pro rata share of reservoir evaporation and seepage losses.

As Deer Creek fills, the holdover water spills after all of the Warren Act and CUWCD water have spilled out of the reservoir.

Pertinent Project Water Rights

(1) **Water Right No. 35-8740 (A9580).** The Weber Provo Canal (WPC) was first built as a feature of the Weber River Project (WRP). Operation of this canal is articulated in the December 16, 1926, Repayment Contract between the United States and WRWUA. According to the contract, this right can be diverted into the WPC from May 1st to August 1st at a flow rate up to 210 cubic feet per second (cfs) as long as the Provo River flows at Vivian Park are below 510 cfs. The conditions attached to this water right significantly limit its operation. However, when the proper conditions exist, the 1926 Contract gives this direct flow diversion priority ahead of Water Right Nos. 35-8737 (A9569) and 35-8739 (A9568). This water right is for the beneficial use of Extension Irrigation Company in Wasatch County and Provo Reservoir Water Users Company and is only stored in Deer Creek Reservoir on a space available basis as a Warren Act Contract.

(2) **Water Right No. 35-8739 (A9568).** This is the storage right for Echo Reservoir. It is operated as more senior than the WPC water right for PRP on the Weber system and is entitled to capture all Weber River water available under the August 25, 1924, priority date until the reservoir fills. Of the 74,000 acre-feet of volume in Echo the Weber River Commissioner may elect to store water that would have been captured at Echo Reservoir in upstream reservoirs to allow greater system flexibility. If Echo Reservoir water is stored in other reservoirs, Reclamation asks that this storage be carefully tracked and the accounting made available to Reclamation and its project partners.

(3) **Water Right No. 35-8737 (A9569).** This is the primary water right that allows PRP to divert Weber River water to the Provo River drainage. Up to 1,000 cfs, as it is available under an August 25, 1924, priority date, is authorized to be diverted through the WPC. It is important to note that this water right shares the same priority date as the Echo storage right under Water Right No. 35-8739 (A9568). However, in distributing the waters of the Weber River for these Reclamation rights and in accordance with historical practice, priority is to be given to filling Echo Reservoir every year. Therefore, if necessary, Water Right No. 35-8737 should be restricted as needed to fill Echo Reservoir. Per the Certificate of Appropriation, Water Right No. 35-8737 has a limit of 136,500 acre-feet. Water under this right is diverted until either it is not available in priority or until Deer Creek has filled.

(4) **Water Right No. 43-341 (A12230).** This water right allows PRP to divert up to 550 cfs of water available under a June 26, 1936, priority date on the Duchesne

River through the Duchesne tunnel. This water right has an annual limit of 49,500 acre-feet.

(5) **Water Right No. 43-343 (A12229).** This water right allows PRP to divert 50 cfs of water available under a June 25, 1936, priority date on the Duchesne River through the Duchesne tunnel. This water right also allows the storage in Deer Creek Reservoir the water diverted from Little Deer Creek.

(6) **Water Right No. 43-344 (A16063).** This water right allows PRP to divert 21 cfs of water available under an August 31, 1944, priority date on the Duchesne River through the Duchesne tunnel. This water right also allows the storage in Deer Creek Reservoir the water diverted from Little Deer Creek.

(7) **Water Right No. 55-295 (A16642).** This water right is for the natural flow of the Provo River to be stored at Deer Creek under the Provo River Project. It has a priority of June 11, 1945, and is limited to a volume of 100,000 acre-feet.

(8) **Water Right No. 35-8756 (A12141).** This Water Right has a September 12, 1936, priority date which is the most junior of the rights to divert water through the WPC. As such, water is only diverted under this right when Echo and Deer Creek are full and water remains available by priority to divert through the WPC. If there is water available under this priority date, then the WPC can divert 1,000 cfs (up to 37,200 acre-feet annually) to be stored in Utah Lake to enable PRP water right exchanges from Utah Lake for Provo River natural flow water.

(9) **Water Right No. 35-828 (A27609).** Rockport (Wanship) Reservoir is junior in priority to both Echo Reservoir and the PRP diversions through the WPC. Rockport has a priority of October 8, 1955, to store 60,000 acre-feet annually. Since Rockport is located upstream of Echo, WRP water is sometimes stored in Rockport for greater system flexibility.

(10) **Water Right No. 55-4494 (A40523).** This water right allows CUWCD to store up to 300,000 acre-feet of Provo River water at either Jordanelle or Deer Creek Reservoir. The water stored at Deer Creek Reservoir is on a space available basis as mentioned above and includes accretions to the Provo River at the axis of Deer Creek Dam that can be later exchanged up to Jordanelle. This water right has a priority date of March 18, 1971.

(11) **Water Right 55-262 (A12144).** This water right allows PRP import water in Utah Lake to be exchanged for Provo River System water captured out of priority in Deer Creek Reservoir. This unperfected water right was filed April 3, 1936, as an Application to Appropriate Water but it was acknowledged by both Reclamation and the State Engineer's office as being an exchange of water. Forms for exchanging water had not been made available by the State Engineer when this application was filed. Rather than continue to have records of the State Engineer reflect this as an appropriation, it is recommended that it be administratively converted to an exchange application to be consistent with the findings of the staff of T. H. Humphrey's in the memorandum dated December 6, 1938.

This application and the quantification of the return flow was the subject of an administrative hearing before the State Engineer on October 30, 2015. A response from the State Engineer addressing this issue remains pending. The Commissioner of the Provo River has allowed water to be exchanged to Deer Creek based on this filing. The quantity of water that is able to be exchanged varies each year and should be based on the amount of water actually imported into the Provo River drainage from the Weber and Duchesne River systems that ends up in Utah Lake either by a physical spill or by project water return flows in Utah County.

1938 Power Contract

The 1938 Power Contract is a water right interference agreement that allows the PRP and the WRP to store water ahead of early 1900's hydropower water rights at the mouth of the Weber and Provo Canyons. The water rights accounting and administration of the power contract are examined closely in an August 30, 2013, letter from Reclamation to the Utah State Engineer. In essence, this interference agreement allows a portion of the water diverted and stored under Reclamation project water rights the senior priority date of the hydropower water rights as long as 3rd parties are not impaired. The 1938 Power Contract also allows temporary storage of PRP water in Echo Reservoir on similar space available terms as for Deer Creek Reservoir.

Olmsted Power Plant Condemnation

The Olmsted Power Plant condemnation provides a similar water rights interference arrangement as the 1938 Power Contract. This condemnation allows the Bonneville Unit project water rights to store water in Jordanelle and Deer Creek Reservoir ahead of the senior Olmsted Power Plant water rights. This storage is above and beyond the water right interference allowed by the 1938 Power Contract and allows additional water to be stored in Deer Creek Reservoir for the CUP. This Olmsted Power water is part of the CUP, Bonneville Unit temporary storage in Deer Creek Reservoir.

Deer Creek Paper Spill Operations

Paper Fill versus Physical Fill Accounting

As mentioned above the Operating Agreement allows water under Deer Creek water rights to be stored in Jordanelle Reservoir and vice versa. The Provo River Commissioner keeps detailed records of how much water is credited to each reservoir and only considers Deer Creek Reservoir full when the PRP water stored in both reservoirs reaches the storage capacity of Deer Creek Reservoir.

Due to the Operating Agreement and the Holdover Storage Deer Creek reservoir often holds significant volumes of Temporary Storage water. Therefore, even when it is nearly physically full, very little of this water may belong to the PRWUA and be available to its shareholders as new-year water. In order for the PRP to be made whole, there needs to be a process where the temporary water is "spilled out of the reservoir to facilitate regular PRP storage. One way this spill could occur is to physically release the temporary storage down the Provo River as new-year PRP water flows into Deer Creek Reservoir. This spill could benefit the Provo River Project by providing more import water in Utah Lake that can be exchange to Deer Creek

Reservoir under Water Right No. 55-262 for Provo River System water captured out of priority. However, this physical spill would also limit the overall storage potential of the Provo and Weber River systems.

Therefore instead of physically spilling Deer Creek Reservoir downstream, it is often preferable that the spill occur on paper through exchanges that are tracked by the River Commissioners. The ways a paper spill can occur include the following:

Paper Spill to Jordanelle Reservoir. The PRP water rights continue to divert water, but instead of delivering this water to Deer Creek it is captured in Jordanelle Reservoir. A like amount water in Deer Creek is then converted from temporary storage to new-year water available to the PRP. On paper, the temporary storage in Deer Creek is shown as spilling upstream to Jordanelle Reservoir.

Paper Spill to Wanship Reservoir. In a paper spill scenario, the PRP reduces their diversions through the WPC and this undiverted water is allowed to be stored in Wanship Reservoir. Similar to the other paper spills, a like amount of Deer Creek water is then converted from temporary storage to new-year water. On paper, the temporary storage in Deer Creek is shown as spilling upstream at the WPC diversion dam.

Other Paper Spills. This paper spill concept could be used to move water to several other upstream reservoirs and diversion dams. However, given the locations and historic operations of Reclamation projects, the above described paper spills are the most needed.

Third Party Contract Spills

Warren Act Storage. As mentioned above, this temporary storage spills first from Deer Creek Reservoir. This block of temporary storage is relatively small and includes a maximum of 3,000 acre-feet of Ontario Drain Tunnel water and 5,000 acre-feet of Echo Share water. These temporary storage pools do not allow holding water past October and are limited to same-year water storage. Consequently these contracts are generally not exercised when Deer Creek Reservoir is at significant risk of spilling. To the extent there is Warrant Act Storage, Reclamation generally believes it should spill to the hydrologic basin the water originated from.

CUP Water Spill. As mentioned above, the Olmsted Power Plant Condemnation allows Deer Creek and Jordanelle Reservoirs to store additional water under the senior priority dates of the Olmsted hydropower water rights. The additional water is part of the CUP Temporary storage in Deer Creek Reservoir.

Additionally, the CUP is required to maintain a 125 cfs minimum flow in the Upper Provo River. During non-irrigation season when the natural flows of the Provo River is low, Jordanelle Reservoir is required to release some of its carry over storage to meet this instream flow target. These Jordanelle carry over storage releases are captured in Deer Creek Reservoir and are a significant part of the CUP Temporary storage.

The Water Supply Appendix of the 1988 Definite Plan Report contemplates the need for exchanging water from Deer Creek Reservoir to Jordanelle Reservoir and stated that "considerably more of the surplus water is measured at Deer Creek Dam than at Jordanelle

Dam... as it is possible to store in Deer Creek Reservoir, the surplus inflows below Jordanelle Dam that are in excess of project demands in exchange for Provo River Project imported water stored in Jordanelle Reservoir."

Since the CUP Temporary Storage in Deer Creek is only made possible because of the CUP Operations and because the Operating Agreement allows for upstream exchanges, Reclamation believes all the CUP Temporary Storage water should be spilled upstream to Jordanelle Reservoir, if possible.

Holdover Water Spill. Reclamation believes the proper spilling of the Holdover Storage depends on several factors including which PRP water rights are active, how much out of priority Provo River system water is in Deer Creek reservoir, and how much PRP import water is in Utah Lake.

Since Jordanelle Reservoir was constructed, the Duchesne Tunnel import water has always paper spilled upstream to Jordanelle Reservoir. Reclamation supports continuing this practice as it allows great operational flexibility for the CUP and does not impair the PRP.

Prior to the construction of Jordanelle Reservoir, the PRP Weber River water rights could either cause a physical spill down to Utah Lake or be exchanged upstream and be paper spilled up to the WPC Diversion Dam. The diversion records show historically both practices have occurred but provide little details about the factors that went into these decisions.

Reclamation feels that generally, that PRP Weber River water rights should be paper spilled up stream when Wanship Reservoir is not likely to fill. The exception to this rule is when there is a large block of out-of-priority Provo River system storage is in Deer Creek Reservoir that is at risk of being called for by Utah Lake senior water rights working with our project partners, we will assess this risk by looking at Utah Lake water levels and the likelihood of reaching the Utah Lake Distribution Plan Conversion Line as well as the amount of PRP Import water credit in Utah Lake. The Utah Lake Distribution Plan is enclosed for reference.

Real Time Accounting of Water Diversions

As recommended in our August and December 2013 letter to the Utah State Engineer, to provide more transparency to Weber River water right operations, the natural flows, water delivery data, and any other information used by the commissioner to make water allocation decisions should be made available to water users. Preferably this information would be provided real-time over the internet. This practice will allow water users to understand how water allocations were made and to quickly bring any concerns they may have to the River Commissioner and State Engineer. The Weber/Provo River Commissioners have the responsibility to ensure that water deliveries and storage are consistent with the water available in the river and the priority of the underlying water rights. They should work closely together on the WPC diversions to ensure that appropriate Provo River conditions have been met and that diverted water is appropriately accounted for and delivered.

Please contact Mr. John Mann at 801-379-1096, if you have any questions or concerns regarding the information in this letter.

Sincerely,

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Area Manager

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