



COLORADO
Division of Water Resources
Department of Natural Resources

Division 3
1313 Sherman Street, Room 821
Denver, CO 80203

May 1, 2019

Cleave Simpson, General Manager
Rio Grande Water Conservation District
8805 Independence Way
Alamosa, CO 81101

**RE: 2019 ANNUAL REPLACEMENT PLAN APPROVAL: SPECIAL
IMPROVEMENT SUBDISTRICT NO. 2 OF THE RIO GRANDE WATER
CONSERVATION DISTRICT**

Dear Mr. Simpson:

Thank you for your April 15, 2019 submission of the Special Improvement District No. 2's proposed Annual Replacement Plan (ARP) for the 2019 Plan Year (**May 1, 2019 through April 30, 2020**).

My staff and I have reviewed the proposed ARP and its appendices. A number of the referenced documents will not be attached to this letter but are available on the DWR website at:

<http://water.state.co.us/DivisionsOffices/Div3RioGrandeRiverBasin/Pages/SubdistrictARP.aspx>

All information and data related to this approved ARP are available on our website.

Enclosed, please find my approval of the 2019 ARP.

Very Sincerely,

Kevin Rein, P.E.
State Engineer
Director of Division of Water Resources

cc: Division 3



Subdistrict No. 2 ARP Approval: Plan Year 2019

Review, Findings, and Approval of Subdistrict No. 2's 2019 Annual Replacement Plan

Background

Special Improvement District No. 2 (“Subdistrict”), a political subdistrict of the Rio Grande Water Conservation District (“RGWCD”), formed through Rio Grande County District Court in Case 2015CV30050, timely submitted its proposed Annual Replacement Plan (“ARP”) pursuant to its Plan of Water Management (“PWM”) approved by the State Engineer and noticed through Division No. 3 Water Court in Case No. 2018CW3010.

The 2019 Plan Year ARP and its appendices were available for download through a link on the RGWCD website. The ARP, its appendices, and resolutions were provided to the State and Division Engineers on April 15, 2019. Copies of the ARP were made available for viewing at the State and Division Engineers’ offices. The ARP, its appendices, resolutions, the Subdistrict’s Response Functions, and this letter are posted on DWR’s website. There were no letters, comments, or other objections submitted regarding the 2019 ARP. My staff and I have conducted this review of the ARP in accordance with the operational timelines specified in the Rules Governing the Withdrawal of Groundwater in Water Division No. 3 (the Rio Grande Basin) and Establishing Criteria for the Beginning and End of the Irrigation Season in Water Division No. 3 for all Irrigation Water Rights (“Rules”), Case 2015CW3024. The Rules were approved as promulgated by the March 15, 2019 ruling of the Division No. 3 Water Court.

DWR Review

As set forth in the Rules, I must determine whether the ARP presents “sufficient evidence and engineering analysis to predict where and when Stream Depletions will occur and how the Subdistrict will replace or Remedy Injurious Stream Depletions to avoid injury to senior surface water rights.” (Rules 11.3). Also, “the ARP will include: a list of Subdistrict Wells that will be covered by the ARP; a projection of the groundwater withdrawals from Subdistrict Wells during the current Water Administration Year; a calculation of the projected stream depletions resulting from ground water withdrawals from Subdistrict Wells; a forecast of the flows for the Rio Grande; detailed information regarding the methods that will be utilized to replace or remedy injurious stream depletions during the ARP Year, including any contractual agreements used for replacement or remedy of injurious stream depletions that will be in place; any information regarding the fallowing of Subdistrict Lands; and, documentation that sufficient funds are or will be available to carry out the operation of the ARP.” (Subdistrict PWM, Section 6.1.2). Finally, I must review the ARP pursuant to the statutory mandates, constitutional requirements, rules and regulations adopted in Division No. 3, and any letters, comments, or other objections submitted by water users regarding the adequacy of the ARP.

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With the foregoing in mind, I turn to a review of the ARP. It would be unwieldy to include in my review every detail of the thorough ARP, so for the purpose of this letter, I incorporate it and its supplements by reference.

Database of ARP Wells (Section 1.0 of the ARP)

A comprehensive list of wells included in the ARP is necessary in order to allow DWR to verify which wells are authorized to operate in accordance with the ARP. To that end, the Subdistrict submitted the most current tabulation of the structure identification number (WDID) of each well included in the Subdistrict (see Appendix A of the ARP). The Subdistrict also supplied a spreadsheet to DWR of the list of Subdistrict Wells on April 25, 2019 as a supplement to the 2019 ARP. Appendix A lists 237 wells, the majority included in the Subdistrict ARP Well List by petition when the Subdistrict was formed 3/1/2016, one replacement well and one new well on existing Subdistrict lands and five wells included by contract. One WDID was removed from the list because it had been abandoned. This leaves a total of 236 ARP Wells for 2019.

Augmentation Wells (Section 1.1 of the ARP)

The ARP Well List includes some wells that are either fully or partially augmented by an approved plan for augmentation which is administered separately of the Subdistrict's PWM. These plans for augmentation associate surface rights with these Subdistrict Wells and other non-Subdistrict wells to remedy some portion or all of each well's injurious stream depletions. These wells are included in the Subdistrict's ARP Well List, and if any portion of their legally decreed groundwater withdrawals is not remedied by an individual plan for augmentation, it is subject to Subdistrict fees and the Subdistrict will remedy injurious stream depletions and post-plan injurious stream depletions attributable to the non-augmented portion of a well's total groundwater withdrawals as part of this ARP. "The Subdistrict and this Plan of Water Management or ARP cannot be used as a source of water for new or expanded plans for augmentation or other replacement plans." (PWM at 2.4.6)

A review of Appendix A and Appendix B of the ARP indicates two wells serving the Town of Del Norte were contracted into the Subdistrict for inclusion in the 2019 ARP. These two wells, WDIDs 2005157 and 2006456, are operated by the Town pursuant to a decreed Plan for Augmentation, Case W-3754. The wells are considered fully augmented through the terms of the decree.

Upon request, the Subdistrict supplied a copy of the participation contract made with the Town of Del Norte. Paragraph 7 of the contract states that the Town will continue to operate these wells under the W-3754 plan to remedy injurious depletions while participating by contract with the Subdistrict. Inclusion of the wells in this manner leaves too many unsettled issues about depletion calculations and appropriate use of the Response Functions. For this reason, the groundwater withdrawals and associated return flows are excluded from the Response Function depletion calculations for purposes of approval of this ARP.

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I have reviewed Appendix A and Appendix B of the ARP and consulted with staff and, with the exclusion of the Town of Del Norte wells, find it to be an accurate inventory of Subdistrict Wells that meets the requirements of Rule 11.1.1.

Total Irrigated Acres (Section 1.2 of the ARP)

The Subdistrict ARP Wells are projected to irrigate approximately 9,200 acres during the Plan Year including 8,200 acres irrigated by center pivot sprinklers and 1,000 acres irrigated by flood application. The Subject made this projection is made based on a review of the breakdown of acres within the Rio Grande Alluvial Response Area under each irrigation type prepared by DWR for inclusion in the RGDSS Groundwater Model.

Calculations of Projected Plan Year Stream Depletions Resulting from ARP Well Groundwater Withdrawals (Section 2.0 of the ARP)

Section 2 of the ARP presents the data utilized to project stream depletions to the Rio Grande as a result of the Plan Year's groundwater withdrawals from Subdistrict ARP Wells. The Response Function's outputs identify total projected stream depletions for the Plan Year, a breakdown of the monthly stream depletions for the Plan Year for each of the three reaches of the Rio Grande and a projection of the Post-Plan Stream Depletions calculated as a result of the Plan Year groundwater withdrawals from Subdistrict ARP Wells. The Subdistrict was directed by DWR to use the current 6P98 Response Functions to calculate projected stream depletions for this ARP.

2019 Stream Flow Forecasts (Section 2.1 of the ARP)

The April through September streamflow forecasts included in the ARP are made by the United States Department of Agriculture's Natural Resources Conservation Service ("NRCS"). The annual streamflow forecasts included in the ARP for the Rio Grande are those included in the April 4, 2019 Division Engineer's Rio Grande Compact Ten Day Report (Appendix B of the ARP).

2019 Rio Grande Stream Flow Forecast (Section 2.1.1 of the ARP)

The April 1st NRCS forecast for Rio Grande stream flows (projected 50% exceedance streamflow at the Rio Grande near Del Norte gaging station for the period April-September) was used to estimate groundwater consumption attributable to ARP Wells based upon hydrologic conditions for the current Plan Year. In addition to the NRCS Forecast, the Division No. 3 Division Engineer's estimate of the annual flow of the Rio Grande at the index gage identified in the April 4th, 2019 Rio Grande Compact Ten-Day Report was also reviewed to assist Subdistrict staff in projecting hydrologic conditions of the Rio Grande for the current Plan Year.

The NRCS and the Divisions Engineer's forecasts were the same. The Subdistrict estimates the annual flow for the Rio Grande of 815,000 acre-feet for 2019.

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Rio Grande Stream Flow Forecast

Analysis	Apr-Sep Forecast (acre-feet)	% of avg	Estimated Additional (acre-feet)	Annual Estimated Flow (acre-feet)
	(1)		(2)	
NRCS, 4/3/2019	720,000	140%	95,000	815,000
Division Engineer, Ten Day, 4/4/2019	720,000	140%	95,000	815,000

(1) projected 50% exceedance streamflow at the gaging station

(2) January through March and October through December

Projected 2019 Groundwater Withdrawals (Section 2.2 of the ARP)

Response Function output for the remainder of this review reflects the most current DWR diversion records and updated depletion calculations, excluding the Town of Del Norte wells. The revised Response Function output tables are included as an Exhibit to this approval letter. The output discussed here is different than what was submitted by the Subdistrict and the figures in the text are bolded. For Subdistrict ARP Wells listed in this ARP, DWR total metered groundwater withdrawals as of April 30th, 2019, for the 2018 Water Administration Year were **13,070 acre-feet**

The projection for 2019 made by the Subdistrict matched the pumping total of the Subdistrict ARP Wells from 2017, a similar stream flow year to 2019. Using DWR calculations, pumping in 2017 for Subdistrict ARP Wells was **9,050 acre-feet** and this is the projection for 2019. The majority of metered groundwater withdrawals in the Plan Year will be used for irrigation through center pivot sprinklers, **93.6** percent. Approximately **4.7** percent and **1.7** percent of groundwater withdrawals will be applied to flood irrigation and other uses, respectively.

Projected Stream Depletions (Section 2.3 of the ARP)

Subdistrict staff was instructed by the State Engineer's Office to predict stream depletions to the Rio Grande utilizing the response functions developed for the Rio Grande Alluvium Response Area under the RGDSS Groundwater Model Phase 6P98. For the Plan Year, stream depletions attributable to the groundwater withdrawals from Subdistrict ARP Wells were calculated using these Response Functions. A copy of the Response Function spreadsheet was provided to DWR on April 12, 2019 in advance of receipt of the 2019 ARP.

The Response Function spreadsheet was built to be used for the whole Response Area. Two instruction sheets were prepared by DWR for additional inputs to the Response Functions when there is a need to use it for individual or group of wells. The instruction sheet, "How to Use the Application Workbook for a Subset (individual/group) of Wells" (9/23/2015), describes how to adjust the spreadsheet inputs to stream reaches that have been modeled with point source returns to streams. The instruction sheet, "How to Adjust the Application Workbook for use with a Subset of Wells" (10/15/2015), describes how to use the "Ratio Method" for Response Areas where it is necessary to apply this method. Both are included with this letter.

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The first step in using the current 6P98 Response Function is to input data for the whole Response Area, i.e., historical groundwater withdrawals for sprinkler irrigation, flood irrigation, “other” pumping with corresponding “other” consumptive use ratios for the years 2011 through 2018 and predicted values for 2019. DWR met with the Subdistrict to discuss application of the Response Functions and provided preliminary draft historical data for the Response Area February 6, 2019.

The Subdistrict has elected to use the Response Function spreadsheet for the subset of wells represented by the Subdistrict ARP Wells. The Rio Grande Alluvium Response Area requires adjustments for point source return flows, as shown below.

- Rio Grande Alluvium Response Area - Reach 1 (Rio Grande from Del Norte to Excelsior Ditch) from the Town of Del Norte and the City of Monte Vista.

Using the whole Response Area results, adjustments are made on appropriate pages of the Response Function spreadsheet. ***The Response Function calculations will not include the Town of Del Norte wells in the 2019 ARP, so no adjustment is necessary to modify the Response Function spreadsheet for the point source return flow.***

Once these preliminary steps are completed, the next step in calculating stream depletions using the Response Functions is updating Table 2.1 to derive the annual net groundwater consumptive use. The consumptive use ratios for sprinkler and flood irrigation used in the Model are standard factors of 83% and 60%, respectively. The consumptive use ratio for “other” wells is specific to the uses of those wells and can vary widely. The “Other Consumptive Use Ratio” for the whole Response Area is a composite derived from the individual well withdrawals and consumptive uses.

The Subdistrict provided a spreadsheet of “Other” wells included in the Subdistrict ARP Well list as a supplement to the ARP on April 25, 2019. The spreadsheet shows the individual well groundwater withdrawals and consumptive use factors to explain how the composite ratios were determined for the subset wells represented in Table 2.1 of the ARP. Since the Town of Del Norte wells are characterized as “Other” wells in the Response Function, it was necessary to adjust the weighted average Consumptive Use Ratios that had been entered into Table 2.1 by the Subdistrict.

Historical ARP Well groundwater withdrawal values were entered in Table 2.1 for years 2011 through 2018. Projected ARP Well groundwater withdrawal values were used for 2019. The Subdistrict has no Recharge that Offsets Groundwater for calculation of the Net Groundwater Consumptive Use.

Following determination of the Net Groundwater Consumptive Use, the data was incorporated in the ARP Table 2.2 to calculate stream depletions for the Plan Year and projected into the future.

The Response Functions calculated total stream depletions to the Rio Grande during the Plan Year, due to both past ARP Well groundwater withdrawals and the projected Plan Year ARP Well groundwater withdrawals, are **1,738 acre-feet** after exclusion of the Town of Del Norte

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wells. The locations of the stream depletions and monthly quantities are also tabulated in Table 2.3.

Table 2.3 (Corrected)
Subdistrict No. 2 Monthly Stream Depletions for Plan Year
 (Units in acre-feet)

Stream Reach	Rio Grande Alluvium Response Area Total												Total
	2019								2020				
	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Rio Grande Del Norte-Excelsior	128	117	113	113	102	103	106	115	115	105	106	98	1,321
Rio Grande Excelsior-Chicago	50	42	36	24	30	37	38	41	42	39	45	38	462
Rio Grande Chicago-State Line	7	-1	-8	-16	-9	-5	-2	-3	-3	-2	0	-3	-45
	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	185	158	141	121	123	135	142	153	154	142	151	133	1,738

Post-Plan Stream Depletions are estimated to accrue to impacted streams for approximately 7 years. Based on predictions from the Response Functions, the Post-Plan depletions in Table 2.4 are a total of **2,411 acre-feet** after exclusion of the Town of Del Norte wells.

Table 2.4 (Corrected)
Subdistrict No. 2 Post-Plan Stream Depletions
 (Units in acre-feet)

Years (May-Apr)	Rio Grande Del Norte-Excelsior	Rio Grande Excelsior-Chicago	Rio Grande Chicago-State Line	Total
2020-2039	1,676	749	-14	2,411

The Rules require remedies sufficient to also remedy total Post-Plan Stream Depletions caused by current and past years' ARP Wells groundwater withdrawals that deplete the streams after the term of this ARP. The Rio Grande Water Conservation District Board of Directors has passed a resolution to act as a financial guarantee for Subdistrict No. 2 to assure that all Post-Plan Injurious Stream Depletions will be replaced or otherwise remedied if Subdistrict No. 2 were to fail or otherwise be unable to replace Post-Plan Injurious Stream Depletions. A copy of this resolution was supplied as a supplement to the ARP April 25, 2019.

If the Subdistrict were to fail, the individual well owners in the Subdistrict would have to obtain plans for augmentation or take other measures to comply with the Rules. Presumably, those plans would be required to replace Post-Plan Injurious Stream Depletions into the

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future. In the interim, the Subdistrict or the Rio Grande Water Conservation District will remedy Post-Plan Injurious Stream Depletions by supplying water or through agreements pursuant to which injury to water rights is remedied by means other than providing water to replace stream depletions.

Amounts and Sources of Replacement Water for Plan Year (Section 3.0 of the ARP)

The Subdistrict has assembled a portfolio of water supplies for the replacement of Injurious Stream Depletions and remedies other than water. The ARP identifies the water rights, their availability and their amounts in Table 3.1 of the ARP. An application for SWSP was submitted by the Subdistrict for replacement sources described in Sections 3.1 for the use of water for the purpose of replacing depletions as part of the ARP. The SWSP number is noted in the following review of these sections and the approval letter is included as an Exhibit to this letter.

The adequacy of replacement sources for the ARP Year are dependent upon contracted amounts the Subdistrict has acquired as well as the availability of the source to pay depletions in place and time. For purposes of review of adequacy of replacement sources, there are three categories defined.

In Storage: Reservoir water in storage under the control of the Subdistrict. This water is available for release at the direction of the Subdistrict.

In Season: Ditch water that will become available to the Subdistrict when in priority during the 2019 irrigation season in the amount of depletion owed to streams daily by the Subdistrict. For some sources, water not used to pay daily depletions may be stored for Subdistrict use later.

On Call: Remedies, such as forbearance, that are available in the amount of depletion owed to streams daily by the Subdistrict, limited to when the forbearance ditch is the calling water right. I note that forbearance depends on climate and actual days when a ditch is the calling water right and the exact yield per year is indeterminate. It is also noted that the amount of forbearance water usable by the Subdistrict is limited by their depletions owed daily to streams. In addition, several Subdistricts are seeking forbearance agreements with the same ditches. This further complicates the availability of a firm supply under these agreements.

This replacement water or remedy will be available to replace Injurious Stream Depletions as directed by the Division Engineer. A summary of the portfolio items is shown in the Replacement Sources tables on the following pages. I will approve up to the full amount itemized in the Replacement Sources tables and stated in the following sections for use in the 2019 ARP.

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Subdistrict No. 2 Replacement Sources Rio Grande (acre-feet)

Section	Water Right Name	Submitted in 2019 ARP	Approved in SWSP's	Remaining & Approved for 2019 ARP
	In Storage			
3.1	SWSP 6062- Williams Cr Squaw Pass TM - Parker	688	688	
	Total In Storage			688
Section	Water Right Name	Submitted in 2019 ARP	Expected Yield	Remaining & Approved for 2019 ARP
	On Call- Irrigation Season**			
3.2	On Call- Subdistrict No. 1 SMRC			
	Rio Grande Canal			
	Farmers Union			
	San Luis Valley Canal			
	Prairie Ditch			
	Billings Ditch			
	Total On Call- Subdistrict No. 1 SMRC	550	550	
3.3.	On Call- Forbearance			
	Commonwealth-Empire Forbearance	500	122	
	Farmers Union Forbearance	250	48	
	Monte Vista Canal Forbearance	300	72	
	RG Lariat Ditch Forbearance	500	15	
	San Luis Valley Canal Forbearance	200	26	
	Total On Call- Forbearance		283	
	Total On Call- Irrigation Season			Up to 759
3.4	CBP Allocation, March 2019	800	800	
	Total On Call- Non-Irrigation Season			Up to 800

***Note: The On-Call Irrigation Season expected yield has been adjusted to exclude ditches that appear on both the SMRC and Forbearance lists.*

Williams Creek Squaw Pass Transbasin Diversion Currently Held in Continental Reservoir (Section 3.1 of the ARP)

This water right was originally decreed on April 19, 1962 (Water District 29, San Juan River), by Archuleta County District Court as part of Case Nos. 73 and 308. This water is now decreed for municipal (including commercial, industrial, domestic and sewage treatment), recreation and the replacement under a decreed plan for augmentation of stream depletions caused by well pumping for these uses. This transbasin water was stored under the decree held by Navajo Development Company, Inc. in Rio Grande Reservoir, but is currently stored in Continental Reservoir.

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SWSP- 6056 Williams Creek Squaw Pass- Parker	
DATE PURCHASED	AMOUNT (AF)
April 2018	688
TOTAL	688

Subdistrict No. 1 Santa Maria Reservoir Company Shares (Section 3.2 of the ARP)

As of April 1, 2019, Subdistrict No. 1 has a balance of 16,337 acre-feet of fully consumable water held in Santa Maria and Continental Reservoirs. This water was accumulated from the lease of Santa Maria shares from 2011-2019. Subdistrict No. 3 has reached an agreement with Subdistrict No. 1, whereby Subdistrict No. 1 will release Santa Maria Reservoir Company water currently in storage to remedy injurious stream depletions caused by Subdistrict No. 3 ARP Wells when the calling right is a ditch that primarily serves Subdistrict No. 1 and recharges the Closed Basin unconfined aquifer. Subdistrict No. 3 will then pay Subdistrict No. 1 per acre-foot released. This agreement with Subdistrict No. 1 is projected to account for 550 acre-feet of injurious stream depletion replacement during the Plan Year, based on current hydrologic conditions. The agreement is provided as a Memorandum of Understanding as part of the ARP.

Forbearance Agreements (Section 3.3 of the ARP)

Pursuant to section 37-92-501(4)(b)(I)(B), C.R.S., the Subdistrict has reached agreement with six ditches whereby they accept that, subject to the specific provisions of the forbearance agreement, injury to their water rights resulting from the use of groundwater by ARP Wells may be remedied by means other than providing water to replace stream depletions, when they are the calling right on the Rio Grande.

The projected acre-feet of forbearance was based on an analysis of the number of days each ditch was the calling right in years of similar hydrologic conditions as those predicted in 2019. The average number of days each ditch was the calling right was then multiplied by the average daily acre-feet of injurious stream depletions during the Plan Year, excluding months outside the irrigation season. It noted that these agreements allow the Subdistrict to remedy injurious stream depletions under the agreement or by providing water at the Subdistrict's sole discretion.

Closed Basin Project Production (Section 3.4 of the ARP)

According to the information provided in the ARP, the projected production of the Closed Basin Project delivered to the Rio Grande is 8,500 acre-feet during calendar year 2019. The allocation of the Closed Basin Project production in accordance with agreements is 60% to the Rio Grande and 40% to the Conejos River basin over the long term with provision for adjustments in the allocation during individual years. The 2019 allocation of the Closed Basin Project production will be 50% to the Rio Grande and 50% to the Conejos River.

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At a meeting of Rio Grande Water Users Association held on March 28, 2019, the Board of Directors passed a motion to specifically allocate 1,600 acre-feet of the Rio Grande's share of the usable yield of the Closed Basin Project to replace the stream depletions under this ARP and in conjunction with Subdistrict No. 1 and No. 3. Similarly, the Board of Directors of the San Luis Valley Water Conservancy District agreed to the allocation as stated in their letter to the Rio Grande Water Conservation District on April 1, 2019. 800 acre-feet of water is available to Subdistrict No. 2 under this ARP to remedy the injurious stream depletions outside the irrigation season.

A copy of each letter reporting the approval was provided in Appendix G of the ARP. The resolution from RGWCD allowing the Subdistrict to use Closed Basin Project water in the 2019 ARP was provided April 25, 2019 as supplemental information.

After Acquired Sources of Remedy (Section 3.5 of the ARP)

DWR recognizes the Subdistrict will continue to work to acquire additional sources of remedy and may, with approval from the Division Engineer, use those sources to remedy injury under this ARP.

Operation of the 2019 Annual Replacement Plan (Section 4.0 of the ARP)

The Subdistrict's replacement water will be released from Rio Grande, Santa Maria or Continental Reservoirs, located in the Upper Rio Grande, at the direction of the Division 3 Division Engineer, to offset injurious stream depletions on the Rio Grande during the Plan Year. All Plan Year injurious stream depletions will be replaced in the time, location and amount that they occur, beginning May 1, 2019, **according to the depletion schedule shown as revised Table 2.3 of the attached Exhibit C**. The reaches, amounts and time that stream depletions are projected to occur are shown in Table 2.3 above. These releases of water from storage will be performed under the provisions contained in section 37-87-103, C.R.S.

The ARP notes that Sections 37-80-120, 37-83-104, and 37-83-106, C.R.S., allow exchanges to occur between reservoirs without a decree and if recognized by the Division Engineer. Appropriate accounting between the Division Engineer's Office and Subdistrict No. 2 will occur on a regular and routine basis if these exchanges do occur. Any reservoir exchanges done in the Plan Year will be documented and reported in the 2019 Annual Report. The Division Engineer's Office will be notified in advance of any reservoir exchanges.

The ARP provides a Memorandum of Understanding that at times when the calling water right is in either the Rio Grande Canal, Farmer's Union Canal, San Luis Valley Canal, Prairie Ditch, or the Billings Ditch, Subdistrict No. 3 will pay Subdistrict No. 1 to release Santa Maria Reservoir Company water it currently has in storage to remedy ARP Well injurious stream depletions, pursuant to the decree issued in case 2013CW3002.

The ARP provides documentation that the Subdistrict has implemented Forbearance

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Agreements with six major canals located on the Rio Grande for the Plan Year. At its sole discretion, the Subdistrict will exercise these agreements.

The Response Functions did not predict stream depletions to streams other than the Rio Grande in amounts above the minimum threshold to reliably predict injury. Therefore, no replacements to any stream other than the Rio Grande will be made.

The ARP includes a resolution by the Centennial Ditch in Appendix N. The resolution allows replacement water to be carried through the Centennial ditch for delivery when the Rio Grande is dry below the Excelsior Ditch. The water will be measured and delivered directly to the Rio Grande at the point the Centennial Ditch can return water directly to the Rio Grande. That point is above any water right that may be injured while in priority. The Centennial Ditch must be adequate to efficiently deliver water around the dry stretch of river to the satisfaction of the Division Engineer prior to this being considered a viable option. The Centennial Ditch Company's water rights are senior enough to accomplish this carriage in any foreseeable situation (Priority Nos. 32 and 173).

Further, the ARP indicates that at times when there is no requirement to deliver water to the Lobatos Gage to meet the requirements of the Rio Grande Compact, no water will be delivered to the lower reach of the Rio Grande for replacement of Injurious Stream Depletions to the Rio Grande Compact from the Subdistrict. The ARP indicates that the Closed Basin Project may continue to deliver salvaged water to the stream as directed by the CBP Operating Committee or other laws or policies.

In the alternative, the DWR agrees that the Subdistrict may replace these Injurious Stream Depletions after the irrigation season or when Compact deliveries are being made. The only instances where the Subdistrict is not required to replace these Stream Depletions are when there is an excess of 150,000 acre-feet of credit for Colorado or Elephant Butte Reservoir has spilled. In these instances, water passing the Lobatos Gage will not result in Compact credit to Colorado. In all other circumstances, the replacement of Injurious Stream Depletions to the Rio Grande Compact will result in credit being given to Colorado, either for the current year or for future years.

The ARP mentions potential requests for aggregation of depletions between Stream Reaches as part of the anticipated operation in 2019 as well as potential aggregation of depletions owed by other Subdistricts. It is appropriate to provide notice in the ARP that this is the Subdistrict's intention. This Approval Letter includes the depletions schedule produced in Table 2.3 by the Subdistrict with the expectation that the Subdistrict has agreed to the schedule and plans to comply with it for the ARP Year. Should the Subdistrict feel a need to recalculate the depletions or otherwise follow a different schedule, the Subdistrict will make a request for such a change to the Division Engineer, providing details of the request and documentation supporting the need to make a change. The Division Engineer will consider such a request when it is made, under the protocol of DWR and in light of the conditions on the particular stream at the time and, if deemed appropriate, approve the request. The Subdistrict will not adopt any change until after approval by the Division Engineer.

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Progress Towards Sustainability (Section 5.0)

Rule 8.4 of the Rules states that there is no Sustainable Water Supply requirement of the wells that withdraw groundwater from the alluvium of the Rio Grande within the Rio Grande Alluvium Response Area.

Additional Information to Evaluate 2019 ARP (Section 9.0 of the ARP)

The Subdistrict provided separately an electronic copy of the Response Functions used in this ARP to the DWR. After the submission of the ARP on April 15, 2019, the DWR requested additional information as discussed above. **In future ARPs, it would be helpful if the supplemental information routinely needed for the DWR analysis of the ARP is supplied with the ARP in the same submittal package.** The supplemental information requested to evaluate the 2019 ARP and provided to the State Engineer included:

1. Resolution from RGWCD approving the Subdistrict 2019 ARP.
2. Resolution from RGWCD to act as a financial guarantor for the Subdistrict.
3. The list of Subdistrict Wells included in the 2019 ARP in spreadsheet format matching the list presented in Appendix A
4. Resolution from RGWCD to allow the Subdistrict to allocate Closed Basin Project water in the 2019 ARP.
5. Spreadsheet showing the Subdistrict's breakdown of "Other" wells used to calculate the composite Consumptive Use Ratio in the Response Function.

Information provided that was not reviewed:

1. Appendix D- Groundwater Withdrawal Prediction - Regression Analysis.
No analysis supporting the chart provided in Appendix D was provided.

Anticipated Funding for Plan Year (Section 7.0 of the ARP)

The Subdistrict submitted sufficient financial information to document the purchase and leases of replacement water for the 2019 Plan Year.

Findings

Based on the information provided in the ARP and discussed above, I make the following findings:

1. The projected groundwater withdrawals are based upon the inventoried Subdistrict Wells, their historical pumping, and projected stream flows. The inventory of wells is consistent with the information in DWR's databases. ***The Town of Del Norte wells are excluded from the Response Function depletion calculations for purposes of approval of this ARP.*** The historical pumping associated with the Wells is based on diversion records on file with the DWR. The method implemented by the Subdistrict to project groundwater withdrawals for the ARP Wells for 2019 is consistent with historical pumping information and streamflow forecast from the Division Engineer's

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projection and the NRCS Forecast.

2. Projected stream depletions are calculated based on Response Functions generated from RGDSS Groundwater Model runs. The Response Functions are based on the RGDSS Model version 6P98, which was approved by the PRT. DWR directed the Subdistrict to utilize the 6P98 Response Functions in determining stream depletions for the Subdistrict.
3. The ARP identifies the sources, availability, and amounts of replacement water and remedies that the Subdistrict will use to remedy Injurious Stream Depletions during the coming year and demonstrates the sufficiency of such water to remedy such Injurious Stream Depletions:

Rio Grande

- The Subdistrict depletions are 996 acre-feet during the irrigation season on the Rio Grande. The Subdistrict has 688 acre-feet in storage in Continental Reservoir. The Subdistrict indicates they expect to yield 550 acre-feet of Subdistrict No. 1 SMRC water deliverable to Subdistrict No. 1 ditches and 283 acre-feet from forbearance agreements during the 2019 irrigation season. The Subdistrict has forbearance contracts with the Farmers Union and San Luis Valley Canal, two ditches that are also named in the Subdistrict No. 1 SMRC MOU. The availability of these sources depends on the specific ditch being the calling priority and no separate expected yield was described in the ARP for the SMRC sources. It is assumed the yield expected from these two ditches would overlap in their availability, so the amount of expected yield is deducted from the total approved. The total of On-Call replacement sources is 476 acre-feet. The submitted portfolio of water from storage in the 2019 Plan Year ARP indicates there is a deficit of 308 acre-feet of firm water to cover Injurious Stream Depletions *in the unlikely event that no Subdistrict No. 1 SMRC water or forbearance is available*. To resolve this concern my staff reviewed the historical calls on the Rio Grande for Rio Grande Canal, Farmers Union, Prairie Ditch, San Luis Valley Canal, and Billings Ditch during irrigation season 2017, a year similar to that expected in 2019. Generally, each of these ditches sits on a substantial water right volume when they are the calling priority. The number of days each of these ditches was on the bubble was established and the depletion amount the Subdistrict owed determined for the days the ditches were in priority. The total amount of days and depletions was then tallied to derive the potential SMRC or forbearance available to the Subdistrict. A reasonable figure for potential available water under these circumstances is between 350 and 450 acre-feet.
 - The Subdistrict depletions are 742 acre-feet during the non-irrigation season on the Rio Grande. The Subdistrict has 800 acre-feet of Closed Basin Project water available to pay non-irrigation season depletions.
4. The Rio Grande Water Conservation District Board of Directors has passed a resolution to act as a financial guarantee for Subdistrict No. 2 to assure that all Post-Plan Injurious Stream Depletions will be replaced or otherwise remedied if Subdistrict No.

Subdistrict No. 2 ARP Approval: Plan Year 2019

2 were to fail or otherwise be unable to replace Post-Plan Injurious Stream Depletions.

5. Rule 8.4 of the Rules states that there is no Sustainable Water Supply requirement of the wells that withdraw groundwater from the alluvium of the Rio Grande within the Rio Grande Alluvium Response Area.

The Subdistrict has presented sufficient evidence and engineering analysis to predict where and when Injurious Stream Depletions will occur and how they will replace those Injurious Stream Depletions to avoid injury to senior surface water rights under the following Terms and Conditions.

This ARP is hereby approved pursuant to the following Terms and Conditions:

1. This ARP shall be valid for the period of **May 1, 2019 through April 30, 2020**, unless otherwise revoked, modified, or superseded by me, a decree, or order of the court.
2. The Subdistrict must replace or remedy the Injurious Stream Depletions resulting from Subdistrict ARP Well groundwater withdrawals.
3. Deliveries (including transit losses) of stored water made available for the replacement of Injurious Stream Depletions shall be determined by the Division Engineer pursuant to this ARP and associated decrees.
4. If the limit is reached for any particular forbearance agreement, then the Subdistrict will need to begin replacement of Injurious Stream Depletions to that particular ditch or canal.
5. The Division Engineer shall determine on an ongoing basis whether he can administer the operations under each forbearance agreement. If the Division Engineer cannot, then that operation shall cease. General Forbearance Protocols for the Rio Grande River System for 2019 were prepared by the Division Engineer. A copy of the protocols is included with this letter.
6. The Subdistrict shall provide daily replacement water accounting (including, but not limited to diversions, depletions, replacement sources, and river calls) on a monthly basis. The accounting must be emailed to the Division Engineer (Craig.Cotten@state.co.us), the Water Commissioners (sam.riggenbach@state.co.us), and the Subdistrict Coordinator (deborah.sarason@state.co.us), within 10 days after the end of the month for which the accounting applies. Accounting and reporting procedures are subject to approval and modification by the Division Engineer.
7. The Subdistrict must adhere to the terms and conditions of the SWSP(s) incorporated as part of the ARP. The use and inclusion of any new replacement water within the ARP is subject to SWSP approval or approved by the Water Division No. 3 Water Court

Subdistrict No. 2 ARP Approval: Plan Year 2019

for a change of water right. Prior to the use of any new replacement water, the State Engineer will evaluate for use as an amendment under this ARP.

8. All deliveries of replacement water shall be measured in a manner acceptable to the Division Engineer. The Subdistrict shall install and maintain measuring devices as required by the Division Engineer for operation of this approved ARP.
9. The Subdistrict must submit an Annual Review of its ARP pursuant to Rule 12.
10. The Subdistrict must replace or remedy all Injurious Stream Depletions caused by non-augmented pumping associated with Subdistrict ARP Wells.
11. The Subdistrict must comply with the Rules, the Subdistrict PWM, and this ARP.

The approval of this ARP is made with the understanding that if the ARP proves insufficient to remedy Injurious Stream Depletions, the State Engineer has the authority to invoke the retained jurisdiction of the Division No. 3 Water Court.

I want to thank you for your cooperation and compliance with this approved ARP and for your continued cooperation and compliance in the future. Your efforts are greatly appreciated. If you have any questions do not hesitate to contact any of my staff in Denver or Alamosa.

Sincerely,



Kevin G. Rein, P.E.
State Engineer
Director of the Division of Water Resources

Exhibits:

- A: How to Use the Application Workbook for a Subset (individual/group) of Wells, Colorado Division of Water Resources, 9/23/2015
- B: How to Adjust the Application Workbook for use with a Subset of Wells, Colorado Division of Water Resources, 10/15/2015
- C: Response Function 2019 Stream Depletions Tables (prepared by DWR)
- D: SWSP 6062- Williams Creek Squaw Pass TM- Parker
- E: Resolution from RGWCD approving the Subdistrict 2019 ARP.
- F: Resolution from RGWCD to act as a financial guarantor for the Subdistrict
- G: Resolution from RGWCD to allow the Subdistrict to allocate Closed Basin Project water in the 2019 ARP
- H: General Forbearance Protocols for the Rio Grande River System for 2019

Subdistrict No. 2 ARP Approval: Plan Year 2019

ec: Craig Cotten, Division Engineer
Chad Wallace, Assistant Attorney General
David W. Robbins, Hill & Robbins
Peter Ampe, Hill & Robbins
Allen Davey, Davis Engineering Service, Inc.
DWR electronic notification lists
Division 3 Water Court

Exhibit A

How to Use the Application Workbook for a Subset (individual/group) of Wells

The Application Workbook is build to be used for the whole Response Area. If there is a need to use it for individual/group of well(s) either with or without Surface Water Return flow Credits, there are few steps that need to be followed.

1. *Stream Reaches With Surface Water Return Flow Credits*

The five reaches with Surface Water Return Flow Credits are:

- Rio Grande Alluvium Response Area - Reach 1 (Rio Grande from Del Norte to Excelsior Ditch) from the Town of Del Norte and the City of Monte Vista,
- Alamosa/La Jara Response Area - Reach 3 (Rio Grande from Del Norte to Excelsior Ditch) from the City of Monte Vista,
- Alamosa/La Jara Response Area - Reach 5 (Rio Grande from Chicago to State Line) from the City of Alamosa,
- Conejos Response Area - Reach 7 (San Antonio River) from the Town of Antonito.
- San Luis Creek Response Area - Reach 2 (Crestone Creek) from the Town of Crestone and the Baca Water and Sanitation District.

If the individual/group of well(s) ***does not*** have Surface Water Return Flow Credits but is located in the Response Area where Surface Water Return Flow Credits exist, the following steps should be completed:

1. Modify the worksheet "Net CU Worksheet" as follows:
 - a. Columns 2 & 3 change values to individual/group of well(s) Irrigation Pumping.
 - b. Column 4 change the values to the value of individual/group of well(s) Other Pumping.
 - c. Column 5 change to the appropriate consumptive use ratio for each year based on Other Pumping's actual consumptive use ratios.
2. On the "Net CU & Streamflow" worksheet change the historical Net Groundwater Consumptive Use (Jan-Dec) (Column 12) from 1970 to 2010 to the historical Net Groundwater Consumptive Use estimated for the individual/group of well(s) (consumptive use ratios of 83% - sprinkler, 60% - flood, and appropriate ratio – other).
3. On the "Reach [X] Calculations" worksheet, which will need to be unhidden, ZERO out all of the Surface Water Return Flow Credits in cells H161:H653.
 - a. Note "X" refers to the stream reach number where the Surface Water Return Flow Credits are applied.
4. Finally, the net stream depletions caused by individual/group of well(s) are calculated on sheet "Table 2.6" for the Plan Year and sheet "Table 2.7" for the Post Plan.

If the individual/group of well(s) ***does*** have Surface Water Return Flow Credits the following steps should be completed:

1. Modify the worksheet "Net CU Worksheet" as follows:
 - a. Columns 2 & 3 change values to individual/group of well(s) Irrigation Pumping.
 - b. Column 4 change the values to the value of individual/group of well(s) Other Pumping.
 - c. Column 5 change to the appropriate consumptive use ratio for each year based on Other Pumping's actual consumptive use ratios for wells that do not generate returns directly to streams and 100% consumptive use ratio for wells that do generate returns directly to streams.

2. On the “Net CU & Streamflow” worksheet change the historical Net Groundwater Consumptive Use (Jan-Dec) (Column 12) from 1970 to 2010 to the historical Net Groundwater Consumptive Use estimated for the individual/group of well(s) (consumptive use ratios of 83% - sprinkler, 60% - flood, appropriate ratio – other for wells that do not generate returns directly to streams, and 100% - other for wells that do generate returns directly to streams).
3. On the “Reach [X] Calculations” worksheet, which will need to be unhidden, change the Surface Water Return Flow Credits in cells H161:H653 to the estimated individual/group of well(s)’s Surface Water Return Flow Credits.
 - b. Note “X” refers to the stream reach number where the Surface Water Return Flow Credits are applied.
4. Finally, the net stream depletions caused by individual/group of well(s) using Surface Water Return Flow Credits are calculated on sheet “Table 2.6” for the Plan Year and on sheet “Table 2.7” for the Post Plan.

2. Stream Reaches without Surface Water Return Flow Credits

If the individual/group of well(s) is to be evaluated using the Application Workbook to estimate their net stream depletions, the following steps should be completed:

1. Modify the worksheet “Net CU Worksheet” as follows:
 - a. Columns 2 & 3 change values to individual/group of well(s) Irrigation Pumping.
 - b. Column 4 change the values to the value of individual/group of well(s) Other Pumping.
 - c. If the individual/group of well(s) ***does not*** generate return flows directly to the stream, then:
 - i. Column 5 change to the appropriate consumptive use ratio for each year based on Other Pumping’s actual consumptive use ratios.
 - d. If the individual/group of well(s) ***does*** generate return flows directly to the stream, then:
 - i. Column 5 change to the appropriate consumptive use ratio for each year based on Other Pumping’s actual consumptive use ratios for wells that do not generate returns directly to streams and 100% consumptive use ratio for wells that do generate returns directly to streams.
2. On the “Net CU & Streamflow” worksheet change the historical Net Groundwater Consumptive Use (Jan-Dec) (Column 12) from 1970 to 2010 to the historical Net Groundwater Consumptive Use estimated for the individual/group of well(s) (consumptive use ratios of 83% - sprinkler, 60% - flood, appropriate ratio – other for wells that do not generate returns directly to streams, and 100% - other for wells that do generate returns directly to streams).
3. Finally, the net stream depletions caused by individual/group of well(s) are calculated on sheet “Table 2.6” for the Plan Year and sheet “Table 2.7” for the Post Plan.

Exhibit B

Adjusting the Application Workbook for use with a Subset (individual/group) of Wells

In order to properly use the 'Ratio Method' Application Workbooks for subsets of wells within a Response Area, the rounding functions within the Workbook must be adjusted. The steps below illustrate the adjustments needed to properly calculate the Net Stream Depletions for the individual/group of wells. The Response Area and the reaches that need to be adjusted are:

- Alamosa-La Jara: Reach 1 Calculations Ratio, and Reach 6 Calculations Ratio,
- Conejos: Reach 1 Calculations Ratio, and Reach 6 Calculations Ratio,
- Saguache: Reach 1 Calculations Ratio, and Reach 3 Calculations Ratio ,
- San Luis: Reach 1 Calculations Ratio, and Reach 2 Calculations Ratio,
- Trinchera: Reach 1 Calculations Ratio

Steps to Make the Adjustments

1. To avoid unintended errors use an original version of the Application Workbook built for the Response Area
2. Go to sheet "Projected Depletions Annual" and remove the round functions within the cell formulas
 - a. From the Cells "B43:G44" for Alamosa-La Jara, "B43:H44" for Conejos, "B43:D44" for Saguache, "B43:C44" for San Luis, and "B43:E43" for Trinchera Response Area
 - b. From the column 'Total' ("L8:L44" for Alamosa-La Jara & Conejos, "F8:F44" for Saguache & San Luis, and "G8:G44" for Trinchera Response Area
3. Go to "Table 2.5"
 - a. From Cells "D80:I82" for Alamosa-La Jara, "D80:J82" for Conejos, "D80:F82" for Saguache, "D80:E82" for San Luis, and "D80:G82" for Trinchera
 - b. From the Column 12 or 'Total' (L9:I82 for Alamosa-La Jara & Conejos, "H9:H82" for Saguache, "G9:G82" for San Luis, and "I9:I82" for Trinchera Response Area
4. Go to sheet "Table 2.6" and remove the round functions within the cells formulas for the Cells "B13:M13" and "N9:N13"
5. UNHIDE the appropriate sheet "Reach [X] Calculations Ratio" by right clicking over one of the working tabs and selecting unhide to open the required sheet ("Reach [X] Calculations Ratio") from the list
6. Go to sheet "Reach [X] Calculations Ratio" and COPY Cells "AC185:AG189" and PASTE to the same location ("AC185:AG189") as a VALUE instead of the formula
7. Go to "Net CU Worksheet"
 - a. Input the individuals/group of wells irrigation pumping, other pumping, and consumptive use ratio value for the year 2011 - 2015
 - b. For Details Refer: *Notes-How to Use the Application Workbook With or Without SW Credits, CDWR, September 23, 2015*
8. Go to sheet "Net CU & Streamflow"
 - a. Input the Historical Net Groundwater Consumptive Use (NetGWCU) from 1970-2010 to the individuals/group of wells pumping (NetGWCU) values
 - b. For Details Refer: *Notes-How to Use the Application Workbook With or Without SW Credits, CDWR, September 23, 2015*
9. Reformat "Table 2.6" to one or two decimal digits to see the small decimal values
10. Finally, the net stream depletions caused by individual/group of wells are calculated on sheet "Table 2.6" for the Current Year and on sheet "Table 2.7" for the Post Plan Years.

Exhibit C

Table 2.4
Estimated Net Groundwater Consumptive Use
(units of ac-ft)

Year	Rio Grande Alluvium Response Area Total				Recharge that Offsets Groundwater					Net Groundwater Consumptive Use
	Irrigation Pumping to Center Pivots	Irrigation Pumping to Flood Irrigation	Other Pumping	Groundwater Consumption	Recharge Source 1	Recharge Source 2	Recharge Source 3	Recharge Source 4	Total	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
2011	12,387	595	97	10,676	0	0	0	0	0	10,676
2012	13,354	323	89	11,313	0	0	0	0	0	11,313
2013	12,070	321	70	10,239	0	0	0	0	0	10,239
2014	10,818	433	75	9,269	0	0	0	0	0	9,269
2015	10,019	396	87	8,588	0	0	0	0	0	8,588
2016	8,684	443	71	7,502	0	0	0	0	0	7,502
2017	8,467	432	152	7,347	0	0	0	0	0	7,347
2018	12,203	788	79	10,633	0	0	0	0	0	10,633
2019	8,470	430	150	7,348	0	0	0	0	0	7,348
Avg	11,222	419	82	9,598	0	0	0	0	0	9,598

Explanation of Columns

- (1) Calendar Year
- (2) Determined from metered groundwater pumping
- (3) Determined from metered groundwater pumping
- (4) Determined from metered groundwater pumping
- (5) Calculated as $0.83 \times \text{Col2} + 0.60 \times \text{Col3} + \text{Col4} \times \text{Other Consumptive Use Ratio}$ depending on the year (Col5 of Net CU Worksheet)
(0.83 and 0.60 are the consumptive use ratios of total pumping associated with sprinkler and flood irrigation practices, respectively)
- (6) - (9) To be determined by analysis of historic diversions and recharge decrees
- (10) Calculated as $\text{Col6} + \text{Col7} + \text{Col8} + \text{Col9}$

Table 2.5**Estimated Historical and Projected Net Stream Depletions from Groundwater Pumping in Rio Grande Alluvium Response Area**

(units of ac-ft)

Year	Rio Grande near Del Norte Stream Gage (Jan-Dec)	Net Groundwater Consumptive Use (Jan-Dec)	Annual Net Stream Depletions (May-Apr) a)			Total
			Rio Grande Del Norte-Excelsior	Rio Grande Excelsior-Chicago	Rio Grande Chicago-State Line	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1970	561,150	9,369	522	80	-37	565
1971	389,397	9,361	958	253	-52	1,159
1972	373,031	11,498	1,290	377	-64	1,603
1973	755,509	9,353	1,262	445	-46	1,661
1974	270,942	12,386	1,678	455	-114	2,019
1975	730,848	8,610	1,466	504	-56	1,914
1976	512,997	8,615	1,357	453	-53	1,757
1977	163,635	13,329	1,859	492	-123	2,228
1978	340,660	10,731	1,824	573	-80	2,317
1979	886,617	8,114	1,493	542	-47	1,988
1980	672,668	9,069	1,388	471	-50	1,809
1981	310,945	10,197	1,647	479	-97	2,029
1982	572,474	6,916	1,444	485	-56	1,873
1983	578,510	7,384	1,296	441	-46	1,691
1984	652,637	6,985	1,211	417	-42	1,586
1985	864,564	6,877	1,049	385	-31	1,403
1986	865,371	5,957	877	326	-26	1,177
1987	907,650	8,036	863	297	-28	1,132
1988	346,087	10,431	1,115	330	-51	1,394
1989	407,389	10,188	1,319	413	-58	1,674
1990	424,033	9,122	1,363	453	-55	1,761
1991	529,567	7,281	1,276	448	-46	1,678
1992	415,482	8,324	1,256	428	-47	1,637
1993	577,831	6,720	1,188	416	-42	1,562
1994	444,629	10,429	1,317	422	-54	1,685
1995	734,492	5,895	1,131	426	-34	1,523
1996	313,441	12,082	1,545	405	-106	1,844
1997	781,596	7,025	1,329	456	-50	1,735
1998	466,821	9,242	1,285	414	-52	1,647
1999	799,489	5,445	1,076	401	-33	1,444
2000	312,094	12,663	1,561	392	-109	1,844
2001	655,233	8,088	1,515	477	-67	1,925
2002	96,717	15,137	2,054	521	-143	2,432
2003	261,300	12,615	2,309	636	-143	2,802
2004	431,675	8,364	1,922	637	-76	2,483
2005	682,540	7,752	1,607	560	-54	2,113
2006	411,656	7,518	1,422	499	-45	1,876
2007	593,239	7,792	1,332	461	-44	1,749
2008	623,333	5,909	1,176	423	-37	1,562
2009	513,058	6,127	1,065	375	-35	1,405
2010	453,063	6,187	1,018	350	-35	1,333
2011	415,182	10,676	1,228	373	-53	1,548
2012	328,382	11,313	1,452	454	-63	1,843
2013	344,435	10,239	1,521	504	-61	1,964
2014	518,600	9,269	1,486	511	-56	1,941
2015	555,691	8,588	1,416	494	-51	1,859
2016	565,825	7,502	1,313	466	-45	1,734
2017	573,884	7,347	1,235	433	-44	1,624
2018	212,171	10,633	1,567	439	-98	1,908
2019	715,000	7,348	1,319	462	-47	1,734
2020			781	340	-15	1,106
2021			413	193	-2	604

Table 2.5

Estimated Historical and Projected Net Stream Depletions from Groundwater Pumping in Rio Grande Alluvium Response Area
(units of ac-ft)

Year	Rio Grande near Del Norte Stream Gage (Jan-Dec)	Net Groundwater Consumptive Use (Jan-Dec)	Annual Net Stream Depletions (May-Apr) a)			Total
			Rio Grande Del Norte-Excelsior	Rio Grande Excelsior-Chicago	Rio Grande Chicago-State Line	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2022			229	107	1	337
2023			128	58	1	187
2024			72	30	1	103
2025			38	15	0	53
2026			15	6	0	21
2027			0	0	0	0
2028			0	0	0	0
2029			0	0	0	0
2030			0	0	0	0
2031			0	0	0	0
2032			0	0	0	0
2033			0	0	0	0
2034			0	0	0	0
2035			0	0	0	0
2036			0	0	0	0
2037			0	0	0	0
2038			0	0	0	0
2039			0	0	0	0
2040			0	0	0	0
Avg 2001-2015	458,940	9,038	1,502	485	-64	1,922
Avg 2001- 2010	472,181	8,549	1,542	494	-68	1,968
Post Plan Depletion			7,110	2,549	-248	9,411

a) Estimated Net Stream Depletions shown in this table are greater than the Net Stream Depletions that potentially cause injury to surface water rights.

Explanation of Columns

- (1) Year
- (2) Rio Grande near Del Norte Gage streamflow in acre-feet for the NRCS streamflow forecast period of April through September. The 2015 streamflow value was estimated to be the same as in 2014.
- (3) Net Groundwater Consumptive Use (NetGWCU) for January through December. NetGWCU values for 2001 through 2010 were taken from the RGDSS Groundwater Model output. NetGWCU values for 2011 through 2014 were calculated using well meter data and irrigated acreage information. NetGWCU data for 2015 was estimated to be the same as in 2014.
- (4) Net Stream Depletions in the Rio Grande Del Norte to Excelsior Ditch reach for the plan year (May through April) in acre-feet
- (5) Net Stream Depletions in the Rio Grande Excelsior Ditch to Chicago Ditch reach for the plan year (May through April) in acre-feet
- (6) Net Stream Depletions in the Rio Grande Chicago Ditch to the State Line reach for the plan year (May through April) in acre-feet
- (7) Total Net Stream Depletions columns (4+5+6) in acre-feet.

Table 2.6
Rio Grande Alluvium Response Area Monthly Stream Depletions for Plan Year
(units of ac-ft)

Rio Grande Alluvium Response Area Total													
Stream Reach	2019								2020				Total
	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Rio Grande Del Norte-Excelsior	128	117	113	113	102	103	106	115	115	105	106	98	1,321
Rio Grande Excelsior-Chicago	50	42	36	24	30	37	38	41	42	39	45	38	462
Rio Grande Chicago-State Line	7	-1	-8	-16	-9	-5	-2	-3	-3	-2	0	-3	-45
	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	185	158	141	121	123	135	142	153	154	142	151	133	1,738

Notes for columns:

- (1) Stream reach
- (2)-(13) Monthly Stream Depletions in acre-feet
- (14) Total Plan Year Stream Depletions in acre-feet

Table 2.7
Rio Grande Alluvium Response Area Post Plan Stream Depletions
(units of ac-ft)

Years (May-Apr)	Rio Grande Del Norte- Excelsior	Rio Grande Excelsior- Chicago	Rio Grande Chicago- State Line		Total
2020-2039	1,676	749	-14		2,411

Exhibit D



April 15, 2019

Mr. Peter J. Ampe, Esq.
Hill & Robbins, P.C.
1600 Lincoln St., Suite 2720
Denver, CO 80264

**Re: Special Improvement District No. 2 (“Subdistrict No. 2”) of the Rio Grande Water Conservation District Substitute Water Supply Plan
Use of Transbasin Water as a Replacement Source to Replace Injurious Depletions caused by Subdistrict No. 2 Wells, Pursuant to § 37-92-308(5), C.R.S.
Water Division 3, Water District 20
SWSP ID 6062**

Approval Period: May 1, 2019 to April 30, 2020

Contact phone number for Mr. Peter J. Ampe: 303-296-8100; peterampe@hillrobbins.com

Dear Mr. Ampe:

We have reviewed your letter dated February 25, 2019 in which you request approval of a substitute water supply plan (“SWSP”) on behalf of the Special Improvement District No. 2 (“Subdistrict No. 2” or “Applicant”) of the Rio Grande Water Conservation District pursuant to § 37-92-308(5), C.R.S. Notice was provided to all parties who have subscribed to the Division 3 SWSP Notification List on February 25, 2019. No comments were received during the statutory 35-day comment period. The required \$300 filing fee (receipt number 368) has been received.

An application for approval of a change of water right as proposed under this SWSP has not been filed with the water court and the depletions associated with the proposed change of water right will not exceed five years, therefore this request has been submitted pursuant to §37-92-308(5), C.R.S. In accordance with §37-92-308(5), C.R.S., SWSPs may be approved for new water use plans involving out-of-priority diversions or a change of water right, if no application for approval of a plan for augmentation or a change of water right has been filed with the water court and the water use plan or change proposed and the depletions associated with such water use plan or change will be for a limited duration not to exceed five years. This is the first year of operation for this SWSP.



SWSP Operation

Subdistrict No. 2 was established by order of the court in Case No. 2015CV30050. Members of Subdistrict No. 2 are landowners within the Rio Grande Water Conservation District ("RGWCD") who rely on groundwater from the alluvial aquifer for all or part of their commercial, municipal, industrial and/or irrigated agricultural practices within the area defined by the RGDSS Groundwater Model and the Groundwater Rules as the Rio Grande Alluvium Response Area. The principal goals of the Subdistrict are to protect senior surface water rights and avoid unreasonable interference with Colorado's ability to fulfill its obligations under the Rio Grande Compact.

This SWSP is being sought in order to meet the requirements of the Plan of Water Management ("Plan") as approved by the State Engineer in Case No. 2018CW3010. The overall objective of the Plan is to provide a water management alternative to individual plans for augmentation or state-imposed regulations that limit the use of wells within the Subdistrict; that is a system of self-regulation using economic-based incentives that promote responsible groundwater use and management and ensure the protection of senior surface water rights. As part of the Plan, Subdistrict No. 2 must submit an Annual Replacement Plan ("ARP") for the State Engineer's review and approval, showing the portfolio of water rights and other actions Subdistrict No. 2 will take to replace injurious depletions to senior water rights caused by groundwater withdrawal by Subdistrict Wells during the plan year. This SWSP application is intended to provide a part of the water supplies to be used in the Subdistrict's ARP.

This SWSP is for the purpose of changing the use of purchased transmountain diversion water to include augmentation or replacement by substitution or exchange. The changed water will be used as a replacement water source in the ARP as a portion of the water supplies used to augment injurious depletions attributed to well pumping in Subdistrict 2.

Change of Water Rights

The water rights made available to the Applicant and requested to be changed by this SWSP are as follows:

- 1. Williams Creek Squaw Pass Transbasin Diversion stored in Rio Grande Reservoir in the amount of 688 acre-feet:**

This water right was originally decreed on April 19, 1962 (Water District 29, San Juan River), by Archuleta County District Court as part of Case Nos. 73 and 308. This water is now decreed for municipal (including commercial, industrial, domestic and sewage treatment), recreation and the replacement under a decreed plan for augmentation of stream depletions caused by well pumping for these uses. Although the current decreed uses include replacement for the use of this water, Subdistrict No. 2 requests to include this water as part of the SWSP to remove any question regarding the allowable use of this water. However, by including this water in the SWSP, Subdistrict

No. 2 does not waive any future right to show that this water, as currently decreed, may be used to replace injurious depletions as part of the ARP.

The water right listed above, in combination with the other water rights in the water portfolio in the Annual Operating Plan, will be released from storage under the direction of the Division Engineer for Water Division 3. Because the water right listed above has been diverted from one basin to another, there is no requirement to consider the historic return flow patterns from use in the receiving basin and such water is considered fully consumable (*City of Thornton v. Bijou Irrigation Co.*, 926 P. 2d 1 (Colo. 1996); §37-82-106, C.R.S.)

At the direction of the Division Engineer and Water Commissioners, and with agreement with the Colorado Division of Parks and Wildlife, Beaver Park Reservoir may be used as a re-regulating reservoir to more appropriately time replacement water to avoid injurious depletions. Such releases may also be made by exchange from Rio Grande, Continental and/or Santa Maria Reservoir(s) to Beaver Park Reservoir.

To the extent that this water remains in storage and is not used to meet the requirements of the Annual Replacement Plan, this SWSP for this 688 acre-feet need not be renewed.

Conditions of Approval

This SWSP is hereby approved pursuant to C.R.S. § 37-92-308(5), subject to the conditions stated below:

1. This SWSP shall be valid for the period of May 1, 2019 through April 30, 2020, unless otherwise revoked or superseded by decree. Should an additional SWSP be requested, the provisions of § 37-92-308(5)(b), C.R.S., shall apply. The statutory fee of \$300 will be required pursuant to § 37-92-308(8), C.R.S. Any request for an additional SWSP must be submitted to this office no later than February 1, 2020.
2. In accordance with § 37-92-308(5), C.R.S., this SWSP cannot be renewed or approved for more than five years and the depletions associated with the proposed water uses must not exceed five years. This year is the first year of operation under this SWSP.
3. Approval of this SWSP is for the purposes stated herein. Additional diversion structures and/or additional uses for the water that is the subject of this SWSP will be allowed only if a new SWSP is approved for those additional structures/uses. The replacement water, which is the subject of this SWSP, cannot be sold or leased to any other entity during the term of this SWSP without prior approval of the Division Engineer.
4. The Applicant shall provide daily accounting (including, but not limited to diversions, depletions, replacement sources, and river calls) on a monthly basis. The accounting must be emailed to the Division Engineer (Craig.Cotten@state.co.us) and the Water

Commissioners (Sam.Riggenbach@state.co.us, Wayne.Peck@state.co.us and Luis.Heredia@state.co.us), within 10 days after the end of the month for which the accounting applies. Accounting and reporting procedures are subject to approval and modification by the Division Engineer.

5. If any term or condition of this SWSP conflicts with any of the terms and conditions of the Plan, the terms and conditions of the Plan shall control.
6. Transit loss for delivery of replacement water to the point of injurious depletions is subject to assessment and modification as determined by the Division Engineer.
7. For changed water not retained in storage, the amount of water made available under this SWSP shall only be included as a source of water for replacement of injurious depletions as required by the Subdistrict 2 ARP for the term of the approval of this SWSP, or the term of the agreement or other document which evidences the applicant's right to use the water rights for augmentation, whichever is shorter. Any water stored under this SWSP and not used under the 2019 Subdistrict 2 ARP must be used to replace injurious depletions under future Subdistrict 2 ARP's.
8. The name, address, and phone number of the contact person who will be responsible for the operation and accounting of this SWSP must be provided with the accounting forms to the Division Engineer and Water Commissioner.
9. All deliveries for direct replacement or storage shall be measured in a manner acceptable to the Division Engineer. The Applicant shall install and maintain measuring devices as required by the Division Engineer for operation of this SWSP.
10. Release of stored transbasin water made available for the replacement of injurious depletions shall be at the discretion of the Water Commissioners or the Division Engineer.
11. The State Engineer may revoke this SWSP or add additional restrictions to its operation if at any time the State Engineer determines that injury to other vested water rights has occurred or will occur as a result of the operation of this SWSP. Should this SWSP expire without renewal or be revoked prior to adjudication of a permanent plan for augmentation, all use of water under this SWSP must cease immediately.
12. The decision of the State Engineer shall have no precedential or evidentiary force, shall not create any presumptions, shift the burden of proof, or serve as a defense in any pending water court case or any other legal action that may be initiated concerning the SWSP. This decision shall not bind the State Engineer to act in a similar manner in any other applications involving other SWSPs or in any proposed renewal of this SWSP, and shall not imply concurrence with any findings of fact or conclusions of law contained herein, or with the engineering methodologies used by the Applicant. Any appeal of a decision made by the State Engineer concerning an SWSP pursuant to § 37-92-308(5), C.R.S., shall be to the Division 3 Water Judge within thirty days of the date of this decision.

Peter Ampe
April 15, 2019
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Should you have any questions, please contact Melissa van der Poel of this office or Craig Cotten, Division Engineer, in our Division 3 office in Alamosa at (719) 589-6683.

Sincerely,



Jeff Deatherage, P.E.
Chief of Water Supply

cc: Craig Cotten, Division Engineer
Deborah Sarason, Subdistrict Coordinator
David Hofmann, Assistant Subdistrict Coordinator
Pat McDermott, Staff Engineer
Kevin Boyle, Water Rights Researcher
Sam Riggerbach, Luis Heredia and Wayne Peck, Water Commissioners,
Water District 20

JD/mvdp: Subdistrict No. 2 6062 2019-20

Exhibit E

**RESOLUTION OF THE BOARD OF DIRECTORS
OF THE
RIO GRANDE WATER CONSERVATION DISTRICT**

April 12, 2019

**APPROVING 2019 ANNUAL REPLACEMENT PLAN
OF SPECIAL IMPROVEMENT DISTRICT NO. 2
OF THE RIO GRANDE WATER CONSERVATION DISTRICT**

The Board of Directors of the Rio Grande Water Conservation District ("District") at a special meeting held on April 12, 2019, in Alamosa, Colorado does hereby resolve that:

WHEREAS, Special Improvement District No. 2 of the Rio Grande Water Conservation District ("Subdistrict No. 2") was created to conserve and stabilize the water supply and groundwater storage for irrigation, domestic, municipal and other beneficial uses for the water users within the boundaries of Subdistrict No. 2 and to remedy injurious depletions caused by groundwater withdrawals from Subdistrict Wells; and

WHEREAS, Subdistrict No. 2 is operating under an approved Plan of Water Management which requires the development of an Annual Replacement Plan showing, among other things, the predicted injurious depletions caused by Subdistrict Well groundwater withdrawals and the manner in which the Subdistrict will remedy those depletions; and


NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the District on the 12th day of April, 2019 that:

The District hereby accepts and approves the Subdistrict No. 2 2019 Annual Replacement Plan.

ATTEST:

RIO GRANDE WATER CONSERVATION
DISTRICT

By: 
Dwight Martin
Secretary/Treasurer

By: 
Greg Higel,
President

COUNTY OF ALAMOSA)
) ss
STATE OF COLORADO)

Subscribed and sworn to me this 12th day of April, 2019, by Greg Higel, President, Board of Directors of the Rio Grande Water Conservation District

Witness my hand and seal.

My commission expires: 7/16/2021

Linda S. Ramirez
Notary Public

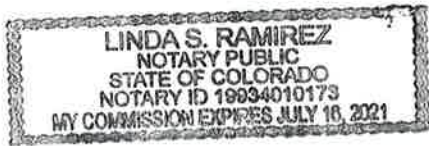


Exhibit F

RIO GRANDE WATER CONSERVATION DISTRICT

April 12, 2018

**RESOLUTION
FOR THE DISTRICT TO ACT AS FINANCIAL GUARANTOR OF THE
REPLACEMENT OBLIGATIONS OF SUBDISTRICT NO. 2**

The Board of Directors of the Rio Grande Water Conservation District (“District”) does hereby resolve that:

WHEREAS, Special Improvement District No. 2 of the Rio Grande Water Conservation District (“Subdistrict No. 2”) was created to ensure remedy of injurious stream depletions to senior water rights resulting from the withdrawal of groundwater from wells in Subdistrict No. 2 and to conserve and stabilize the water supply and amount of groundwater in storage for irrigation and other beneficial uses for the water users within the boundaries of Subdistrict No. 2; and

WHEREAS, Subdistrict No. 2 is operating under an approved Plan of Water Management which requires the development of an Annual Replacement Plan (“ARP”) showing, among other things, the predicted injurious stream depletions caused by Subdistrict Well pumping and the manner in which Subdistrict No. 2 will remedy those stream depletions; and

WHEREAS, Subdistrict No. 2 continues to work diligently to obtain permanent and/or renewable supplies to remedy future stream depletions caused by present or future groundwater withdrawals by Subdistrict No. 2 wells, and

WHEREAS, at the present time it is impossible for Subdistrict No. 2 to acquire a sufficient quantity of water as a permanent supply, and sufficient reservoir storage space available for that quantity of water, to cover total post-plan injurious stream depletions after this Plan Year.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the District on the 12th day of April, 2019 that:

1. In order to address the issue identified above, the District, which is created by statute and has a mill levee which provides an annual and consistent stream of monies, will act as a financial guarantor itself if Subdistrict No. 2 were to fail or otherwise be unable to replace injurious stream depletions caused by the lagged effects of past and present groundwater withdrawals by Subdistrict No. 2 wells.

2. The District will provide funds to acquire water or compensate parties directly to insure injured parties are kept whole. This mechanism will act as a temporary measure to assure future replacement of injurious stream depletions until Subdistrict No. 2 is able to obtain permanent and/or renewable supplies to remedy future stream depletions caused by present or future groundwater withdrawals.

Exhibit G

**RESOLUTION
OF THE BOARD OF DIRECTORS OF THE
RIO GRANDE WATER CONSERVATION DISTRICT**

**TO ALLOW SPECIAL IMPROVEMENT DISTRICT NO. 2 TO USE A PORTION OF
THE PRODUCTION OF THE CLOSED BASIN PROJECT FOR THE REPLACEMENT
OF INJURIOUS DEPLETIONS UNDER ITS 2019 ANNUAL REPLACEMENT PLAN**

The Board of Directors of the Rio Grande Water Conservation District at a special meeting held on April 12, 2019, in Alamosa, Colorado does hereby resolve that:

WHEREAS, Special Improvement District No. 2 of the Rio Grande Water Conservation District (“Subdistrict No. 2”) was created to conserve and stabilize the water supply and groundwater storage for irrigation, domestic, municipal and other beneficial uses for the water users within the boundaries of Subdistrict No. 2 and to remedy injurious depletions caused by groundwater withdrawals from Subdistrict Wells; and

WHEREAS, Subdistrict No. 2 is operating under an approved Plan of Water Management which requires the development of an Annual Replacement Plan (“ARP”) showing, among other things, the predicted injurious depletions caused by Subdistrict Well groundwater withdrawals and the manner in which the Subdistrict will remedy those depletions; and

WHEREAS, the production from the Closed Basin Project can and should be used as a source of water to remedy injurious depletions caused by groundwater withdrawals from wells included in the Subdistrict’s 2019 ARP.

R E S O L U T I O N

NOW, THEREFORE, be it resolved by the Board of Directors of the Rio Grande Water Conservation District that:

1. The District anticipates that the vast majority of this Project Water will be used to replace non-irrigation season depletions from November 1 through March 31. There may be circumstances during the irrigation season when Subdistrict No. 2 cannot deliver water to the Rio Grande below the Chicago Ditch due to intervening dry stream reaches or excessive losses in deliveries. In those circumstances, the District believes Project Water is an appropriate replacement source, but intends that its use during the irrigation season be minimized.
2. The inclusion of 800 acre-feet of water from the production of the Closed Basin Project as a source of supply in the Subdistrict No. 2 2019 Annual Replacement Plan and the use of said water under the 2019 ARP to remedy injurious stream depletions is approved.

Exhibit H

General Forbearance Protocols

For the Rio Grande Alluvium System

During the 2019 Irrigation Season

Subdistrict No. 2 (the Rio Grande Alluvium Subdistrict) will begin to replace depletions to their affected streams in May of 2019. Along with this replacement of stream depletions, the State and Division Engineer may allow the owners of the calling ditch to 'forbear', or choose to not take the water that otherwise would have been allocated to that ditch in exchange for receiving payment in some other form. This forbearance is authorized under Colorado Revised Statute 37-92-501 (4)(b)(1)(B) which states that the State Engineer shall "Recognize contractual arrangements among water users, water user associations, water conservancy districts, ground water management subdistricts, and the Rio Grande water conservation district, pursuant to which... injury to senior surface water rights resulting from the use of underground water is remedied by means other than providing water to replace stream depletions."

In order to assist the Subdistrict, water users, and Water Commissioners in determining whether a forbearance contract will be allowed, the following are general guidelines regarding those forbearance contracts for the 2019 irrigation season:

- A water right must be the calling water right in order to forbear. In other words, the ditch must be legally and physically entitled and able to receive and divert the replacement water that would have been placed into the river or stream reach if that ditch owner would have decided to take the water instead of forbearing.
- The owner of a ditch that cannot physically divert all of the water under its priorities due to an inadequate ditch size or other physical restrictions cannot forbear for the amount that the ditch is not able to divert. However, this ditch may be able to forbear in the amount that it is physically and legally able to divert.
- The owner of a ditch that physically is not able to divert the replacement water entitled to it at certain times of the year (for instance during low flow periods) due to an inadequate diversion dam or headgate, or other reasons, cannot forbear during that time of year unless and until the ditch or associated structures are repaired and physically able to take water at that time.
- If it is certain that the owner of a ditch would have declined to take water in his ditch on a given day if he were in priority to take that water, for instance if that owner never takes his full priority, due to a break in the ditchbank, if the owner has not called for that water right in the ditch, etc., the ditch owner cannot forbear for that water right on that day.

- Forbearance will be allowed on water rights that are not large enough to cover the entire daily replacement amount. A ditch may be forbearing only a portion of the total daily replacement amount due to the size of the water right. In such cases there may be several water rights in various ditches that are forbearing at the same time.
- Ditches cannot forbear a portion of the replacement water and on the same day take a portion of the replacement water.
- Ditches with a forbearance contract must have accurate, reliable, and operational measurement devices on the ditch.
- A forbearance that results in a section of the river drying up, cannot be used to create a futile call. The river must be administered to replicate what conditions would have taken place had a continuous deliverance of water taken place.