



COLORADO
Division of Water Resources
Department of Natural Resources

January 13, 2023

Jared Dains, P.E.
Applegate Group, Inc.
1490 W. 121st Avenue, Suite 100
Denver, CO 80234

**RE: Bucklen Substitute Water Supply Plan (WDID 0302538, Plan ID 3183)
Bucklen Pit, DRMS File No. M-1982-131 (WDID 0303032)
Section 36, T6N, R66W, 6th P.M. and Section 31, T6N, R65W, 6th P.M.
Water Division 1, Water District 3, Weld County**

Approval Period: November 1, 2022 through October 31, 2023

Contact Information for Mr. Dains: jareddains@applegategroup.com; 303-452-6611

Dear Mr. Dains:

We have reviewed your letter dated October 12, 2022 requesting renewal of the above referenced substitute water supply plan ("SWSP") on behalf of Bucklen Equipment Co., Inc. ("Applicant") in accordance with section 37-90-137(11), C.R.S., for an existing sand and gravel operation known as the Bucklen Pit. The original SWSP was approved on September 15, 1993 and was most recently approved in a letter dated November 5, 2020. The required fee of \$257.00 for the renewal of this SWSP has been received (receipt no. 10024911).

SWSP Operations

The Bucklen Pit (well permit no. 67876-F, WDID 0303032) is located just north of the City of Greeley in the NE $\frac{1}{4}$ of the SE $\frac{1}{4}$ of Section 36, Township 6 North, Range 66 West, and in the SW $\frac{1}{4}$ of Section 31, Township 6 North, Range 65 West of the 6th P.M. The pit consists of three separate cells designated as the Original Permit Area, Amendment Area A, and Amendment Area B, as shown on the attached Figure 2. During this plan period, depletions at the Bucklen Pit will consist of evaporation from exposed groundwater, water lost in the mined product, and water used for dust control purposes. The proposed sources of replacement water are leased water from the City of Aurora, leased water from the City of Greeley, and seven (7) shares of the Greeley Irrigation Company owned by the Applicant.

Depletions

Depletions from the Bucklen Pit will result from the evaporation of exposed groundwater and operational losses resulting from mining activity. Currently there are a total of 18.65 acres of groundwater exposed at the Bucklen Pit site, consisting of a 17.65-acre pond located in the Original Permit Area and approximately 1 acre of dewatering trenches and sedimentation ponds located in Amendment Area A. Pursuant to section 37-90-137(11)(b), C.R.S., and case no. 2009CW49, a gravel pit operator or property owner does not need to replace depletions that occur due to evaporation



from groundwater exposed prior to January 1, 1981 as a result of open mining of sand and gravel ("pre-81 areas"), regardless of whether mining continued after December 31, 1980. This office has previously recognized 5.27 acres of the 17.65-acre pond as being pre-81 exposure. Per the State Engineer's *General Guidelines for Substitute Supply Plans for Sand and Gravel Pits* as updated April 1, 2011, pre-81 areas are tied to the physical location at which the groundwater was exposed prior to January 1, 1981. The Applicant has provided a map showing the specific location of the pre-81 area. The credits for the pre-81 area are tied to the location identified in the attached Figure 2 (Pre-81 Credit Location) and may not be re-allocated to other areas of groundwater exposure within the gravel pit boundary. Any pre-81 area that is backfilled will lose the pre-81 exemption should it be excavated in the future. Additionally, the backfilling of the pre-81 area shall not create a credit to be used elsewhere.

Net evaporative depletions were calculated using a gross annual evaporation of 45 inches from the exposed water surface, with a credit of 9.81 inches for effective precipitation, based on an average annual precipitation of 14.02 inches from the Greeley UNC weather station (Station ID 053553) for the time period of 1967 through 2005. This value is less than the average annual precipitation over both the full period of record (1967-2021) and over the most recent ten years (2012-2021) and therefore is accepted for the purposes of this SWSP. Computation of evaporation under this plan was reduced during the ice-covered period. You have assumed the ice-covered period to occur during the months of December and January based on monthly average temperatures reported for the Greeley UNC weather station of 29.4°F for December and 28.6°F for January for the time period of 1967 through 2005. The ice-covered period may be used to reduce the amount of evaporative losses that need to be replaced; however, for the purpose of this SWSP, the Applicant shall replace the net evaporation depletions from the exposed groundwater surface area that may occur during the assumed ice-covered period (December through January) for any time that the pit is not completely covered by ice. Computation of the net evaporation during any time that the pit is not completely covered by ice shall be determined as the pro-rata amount of the monthly gross evaporation rate distribution amount identified in the State Engineer's *General Guidelines for Substitute Supply Plans for Sand and Gravel Pits*, subtracting the pro-rata amount of the effective precipitation for that period. The net depletion of groundwater due to evaporation from the 13.38 acres exposed after December 31, 1980 is projected to total 36.92 acre-feet during this plan period, as shown on the attached Table 1.

Operational losses associated with mining activities will include water removed with the mined product and water used for dust control. Up to 2,500 tons of material is projected to be mined during this plan period. The material will be mined below the groundwater table in a dewatered state and will not be washed; therefore the water retained in the mined product is considered to be 2.0% of the mined material by weight. This results in a groundwater loss of 0.037 acre-feet. The Applicant has estimated that 2,000 gallons of water per day will be used for dust control purposes during the period of March through October. Water used for dust control purposes is assumed to be 100% consumed. The amount of water lost to dust control during this plan period is therefore estimated to be 1.50 acre-feet. The estimated monthly depletions due to operational losses are shown on the attached Table 2 and are projected to total 1.54 acre-feet for this plan period.

The total consumptive use of groundwater at the Bucklen Pit is estimated to be 38.46 acre-feet for this plan period. A monthly breakdown of evaporative and operational depletions is

shown on the attached Table 3.

According to information previously provided to this office, dewatering commenced in Amendment Area A in the summer of 1998 and will continue throughout this plan period. Dewatering occurs through the use of two pumps, with one pump usually running continuously, and two pumps running in high water events. The water is pumped into two settling ponds north of Amendment Area A and immediately adjacent to the Cache la Poudre River, where it is allowed to seep and discharge into the river. Prior to November 2012, the volume of water pumped for dewatering was not included in the accounting submitted to this office or otherwise tracked. Subsequent SWSP approvals have required monthly volumes of dewatering discharge into the settling ponds to be recorded. However, these volumes do not need to be analyzed for depletions to the river as long as pumping remains relatively constant from month to month. Dewatering operations that are constant and continuous will eventually reach a steady-state condition where the accretions to the river generated by dewatering are equal to the depletions to the river generated by dewatering. Given the long duration of historical dewatering operations, it is assumed that dewatering operations at the Bucklen Pit are in a steady-state condition. At least three (3) years from the expected cessation of dewatering, a plan that addresses the replacement of long term lagged depletions, including depletions that occur with the “first fill” of the pit, must be submitted to our office. Should dewatering at the pit cease during this SWSP approval period, this SWSP will automatically be void until an amendment is sought and approved.

The monthly evaporative and operational depletions were lagged from the pit to the Cache la Poudre River using the Alluvial Water Accounting System (AWAS) program developed by the Integrated Decision Support (IDS) Group at Colorado State University with the following parameters:

- Distance from the centroid of the gravel pit pond to the river (X) = 1,390 feet
- Alluvial aquifer width (W) = 10,650 feet
- Specific yield (S) = 0.2
- Transmissivity (T) = 120,000 gallons per day per foot

Lagged depletions due to past and projected operations at the Bucklen Pit site were calculated to total 38.03 acre-feet during this plan period, as shown on the attached Table 3. Depletions were assumed to impact the Cache la Poudre River at a point perpendicular to the gravel pit pond (Original Permit Area).

Replacements

During the non-irrigation season of November 2022 through March 2023, replacement water will be provided by a lease of 22.8 acre-feet of augmentation water from the City of Aurora (Aurora Water) with an additional 3 acre-feet of water leased from the City of Greeley for the month of February 2023 in the event the Aurora augmentation water is unable to reach the Cache la Poudre River. During the irrigation season of April 2023 through October 2023, the replacement source will be consumptive use credits associated with the historical irrigation use of seven (7) shares of the Greeley Irrigation Company. See Table 5 for a monthly breakdown of replacement water for this plan period (Water Year 2023).

Greeley Irrigation Company ("GIC") Shares

The Applicant owns seven (7) out of a total of 519.7 GIC shares, all seven of which have been dedicated to this SWSP for this plan period. A share of GIC water provides the shareholder with GIC direct flow water and Fossil Creek Reservoir water. The Applicant's GIC shares will be delivered to the Cache la Poudre River at the 23rd Avenue and Fourth Street Return Station (WDID 0302318). Replacements to the river will be made directly adjacent to the Bucklen Pit. Due to the close proximity of the return station to the Bucklen Pit, no transit losses will be assessed for the delivery of the GIC shares.

A portion of the Greeley Canal No. 3 (WDID 0300934) was changed in Division 1 Water Court in case no. 1996CW658 based on a ditch-wide analysis by the Poudre Prairie Mutual Reservoir and Irrigation Company ("Poudre Prairie"). The use of the subject ditch shares in this plan shall be in accordance with the terms and conditions decreed in case no. 1996CW658, including monthly and annual volumetric limits on water deliveries and monthly return flow requirements. The decree in case no. 1996CW658 found that 519.7 shares were used to irrigate 3,501 acres with an average historical consumptive use of 5,358 acre-feet per year, which yields an average consumptive use credit of 10.31 acre-feet per share ($5,358 \text{ acre-feet} \div 519.7 \text{ shares}$).

Based on the above, the seven shares to be used in this plan result in a consumptive use credit of approximately 72.17 acre-feet per year ($10.31 \text{ acre-feet per share} \times 7 \text{ shares}$). One of the Applicant's seven shares was associated with Farm W-49, which is now dried up because it is part of the Bucklen Pit. Another five shares were referred to as "floating shares" in case no. 1996CW658. In accordance with paragraph 19 of case no. 1996CW658 the lands historically irrigated by the "floating shares" are reported to have already been dried up and are no longer irrigated. The seventh share was historically used for irrigation on Farm E-47, which has been developed into hard surfaces and is claimed to be dried up in fact.

In paragraph 6.7.4 of the decree in case no. 1996CW658, future farm headgate deliveries of Poudre Prairie's 67.75 shares were limited to 1,712 acre-feet per year (25.26 acre-feet per share), and 12,631 acre-feet (186.43 acre-feet per share) in any consecutive 10-year period. Deliveries of the Applicant's seven shares of GIC water under this plan must comply with these per-share limits. The historical return flows shall be maintained in accordance with the return flow factors identified in case no. 1996CW658. The return flows associated with the delivery of Fossil Creek Reservoir water that is attributable to the Applicant's seven GIC shares shall also be maintained in accordance with the surface and subsurface factors decreed in case nos. 1996CW658.

Pursuant to paragraph 6.7.6 of case no. 1996CW658, the subsurface component of the return flow obligation will be calculated based on the 5-year running average annual farm headgate deliveries of GIC direct flow water and Fossil Creek Reservoir water. You have proposed to calculate subsurface return flow obligations based on the 5-year running average deliveries of the six shares used for replacement purposes in previous SWSPs. The total annual deliveries of the six GIC shares for the last five years are shown in the following table. The total annual delivery of the six shares for Water Year 2022 was estimated using the projected deliveries per share for Year One as described in paragraph 28 of the decree entered in case no. 2003CW348 for those months for which delivery records are not yet available (September and October 2022). The actual subsurface return flow

obligations will be based on the average of actual deliveries of the six shares for Water Year 2018-2022.

Water Year	Total Annual Deliveries	
	Total Annual Delivery (acre-feet)	
	GIC Direct Flow	Fossil Creek Reservoir
2018	98.96	1.64
2019	80.30	0
2020	129.63	6.49
2021	76.74	10.43
2022	114.17	4.13
Average	99.96	4.54

The use of seven shares for replacement purposes in this SWSP will create an additional subsurface return flow obligation that will impact the stream after the expiration date of this plan. **To ensure this additional subsurface return flow obligation is replaced, any subsequent SWSP renewal will need to calculate the subsurface component of the Applicant's return flow obligation using the total annual delivery for all seven shares used for replacement purposes in Water Year 2023 as part of the 5-year running average until such year drops off the calculation, even if a lesser number of shares are proposed to be used for replacement purposes in the renewal(s).**

As specified in case no. 1996CW658, all deliveries of GIC water incur a return flow obligation to the stream system made up of a surface and subsurface component. Surface return flows will be calculated by multiplying the GIC direct flow water by 0.237 (23.7%) and any Fossil Creek Reservoir Water delivered by 0.201 (20.1%). As described above, the subsurface component of the return flow obligation will be calculated by multiplying the 5-year average annual delivery of GIC water by the monthly subsurface return flow factors given in Appendix A-2 of the decree entered in case no. 1996CW658 (see Table 4). As shown in Table 4, the estimated subsurface return flow obligations for GIC direct flow deliveries and Fossil Creek reservoir deliveries total 23.99 acre-feet and 0.95 acre-feet, respectively. The quantity of GIC water remaining after the Applicant has satisfied its return flow obligations is equivalent to the historical consumptive use attributable to the shares.

For the purposes of this SWSP, you have used a projected yield of 20.31 acre-feet of GIC direct flow water per share and 1.19 acre-feet of Fossil Creek Reservoir deliveries per share. These amounts are consistent with projected deliveries per share for Year One as described in paragraph 28 of the decree entered in case no. 2003CW348. Projected deliveries for Year One were calculated in accordance with paragraph 20.3.3 of the decree entered in case no. 2003CW99, and are based on 2002-2006 recorded deliveries. As specified in case no. 1996CW658, all GIC direct flow deliveries incur an immediate surface return flow obligation of 23.7%, and all Fossil Creek deliveries incur an immediate surface return flow obligation of 20.1%. The estimated consumptive use credit is therefore 15.50 acre-feet per share for GIC direct flow water, and 0.95 acre-feet per share for Fossil Creek Reservoir water. In total, the seven GIC shares are expected to have a net credit to the river of 115.13 acre-feet (not including subsurface return flow obligations, which are separately accounted for as a depletion as discussed above). The use of the Year One projected deliveries is acceptable for this plan period and appears reasonable based on current conditions. Should actual GIC deliveries

be less than projected deliveries, the Applicant is obligated to obtain additional or alternate replacement supplies to replace all depletions at the Bucklen Pit.

Based on the actual annual GIC deliveries for Water Year 2014-2022 reported in the SWSP accounting, the 10-year farm headgate delivery will not exceed 186.43 acre-feet per share, or 1,305 acre-feet for all seven shares, so long as Water Year 2023 deliveries do not exceed the annual limitation of 25.26 acre-feet per share, or 176.82 acre-feet for all seven shares, decreed in case no. 1996CW658.

Based on information provided on behalf of the Greeley Irrigation Company, there are a total of 251.97 shares and 1,103.87 acres remaining available for irrigation under the ditch system, resulting in an average of 4.28 acres irrigated per share. Paragraph 6.7.10 of the Poudre Prairie Decree found that expanded use would not occur so long as use of GIC water did not exceed seven (7) acres per share and no new irrigated or irrigable lands may be served by or added to the GIC system outside the historically irrigated lands. As such, no additional terms and conditions are required to assure that this SWSP does not result in an expansion of use of the Applicant's shares should the Applicant reach their annual volumetric limit and cease diverting water. This position applies only to this SWSP and has no bearing on any position the State and Division Engineers may take in any future water court case involving the change of these shares.

Leased Water

A lease of 22.8 acre-feet of water provided by the City of Aurora will be used to make replacements during the period of November 2022 through March 2023. The releases will be made from the Metro Waste Reclamation Facility (aka Robert W. Hite Treatment Facility, WDID 0200700) located in Denver on the South Platte River approximately 66 miles upstream from the Cache la Poudre confluence. A 16.5% (0.25% per mile) river transit loss will be assessed on all deliveries, unless otherwise determined by the Water Commissioner for District 2.

During the months of November through March, it is possible for a call to be placed at the Evans Number 2 Ditch headgate for Milton Reservoir, or a call at the Western Ditch, or the Union Ditch to fill Lower Latham Reservoir, any of which could potentially sweep the river. In the event that the Evans No. 2 Ditch is sweeping the river while there is a downstream call on the South Platte River that depletions from the Bucklen Pit must be replaced to, replacement water from Aurora would be unable to reach the confluence with the Cache la Poudre River and unable to replace depletions from the Bucklen Pit to the calling right. The Applicant has therefore obtained a lease of 3 acre-feet of fully consumable water from the City of Greeley for the month of February 2023. Greeley anticipates delivering the replacement water to the Cache la Poudre River at Greeley's wastewater treatment plant (aka Greeley Sewer, WDID 0302312) located approximately 3 miles downstream of the Bucklen Pit. Any releases by Greeley at a location other than its wastewater treatment plant must be coordinated with the water commissioner.

The District 3 Water commissioner has confirmed there is no call in the winter for the stretch of the Cache la Poudre between the Bucklen Pit and the confluence with the South Platte River. As such, at times when a diversion structure is not sweeping the South Platte River, the Aurora lease is able to provide replacement water on behalf of the Bucklen Pit. It is the Applicant's responsibility to

track the daily call and make arrangements as necessary to ensure replacement water is bypassed or otherwise delivered to the Cache la Poudre and South Platte River confluence.

Additional Replacement Sources

Supplemental leases will be obtained in the event that the above-described sources are insufficient to replace all depletions from the Bucklen Pit. Such supplemental leases may be obtained from any authorized augmentation source contained in a gravel pit substitute water supply plan approved pursuant to section 37-90-137(11), C.R.S., that is capable of making replacements at the most upstream calling right impacted by the Bucklen Pit depletions.

The Applicant has requested permission to lease out any of its excess replacement credit to other gravel pit SWSPs approved pursuant to section 37-90-137(11), C.R.S., to the extent such excess replacement credit exists. The Applicant must provide written notice to the division engineer and water commissioner at least 30 days in advance of the desired commencement of use of the excess replacement credits, which must include the specific plan in which the credits will be used, the provision in the plan that allows an unnamed source to be added for credit, the annual and monthly amount of excess replacement credit available, the location at which the water will be delivered to the stream, and a copy of a lease agreement between the Applicant and the purchaser of the excess replacement credits if the additional plan is not owned by the Applicant. **The Applicant cannot claim credit for the use of the excess replacement credits in any other plan until they have received written approval from the division engineer or water commissioner.** Any use of any such excess replacement credits must continue to be directly related to the mining of sand and gravel.

Long Term Augmentation

In accordance with the letter dated April 30, 2010 from the Colorado Division of Reclamation, Mining, and Safety ("DRMS"), all sand and gravel mining operators must comply with the requirements of the Colorado Reclamation Act and the Mineral Rules and Regulations for the protection of water resources. The April 30, 2010 letter from the DRMS requires that you provide information to the DRMS to demonstrate you can replace long term injurious stream depletions that result from mining-related exposure of groundwater. The DRMS letter identifies four approaches operators may implement to satisfy this requirement.

Approach no. 4 requires documentation to identify what water rights or other permanent water source will be dedicated to the SWSP to assure that all permanent depletions from either an unforeseen abandonment of the site by the Applicant or as a result of long term groundwater exposure after completion of mining and reclamation will be replaced so as to prevent injury to other water rights. You have provided an affidavit dated October 4, 2010 that dedicates five (5) of the Applicant's shares of GIC water as replacement water solely for this SWSP for as long as there are depletions at this gravel pit site or until such time as another replacement source is obtained. A copy of the affidavit is attached to this letter. For the purposes of this SWSP, this affidavit will be accepted for the dedication of the shares; however, if the State Engineer determines that a different affidavit or dedication process is necessary to assure proper dedication of the shares, additional information may be required prior to future SWSP approvals.

Conditions of Approval

I hereby approve this SWSP in accordance with section 37-90-137(11), C.R.S., subject to the following conditions:

1. This SWSP shall be valid for the period of November 1, 2022 through October 31, 2023 unless otherwise revoked or superseded by decree. If a court decreed plan for augmentation is not obtained for the proposed uses by the SWSP expiration date, a renewal request must be submitted to this office with the statutory fee (currently \$257) **no later than September 1, 2023**. If a renewal request is received after the expiration date of this plan, it may be considered a request for a new SWSP, in which case the \$1,593 filing fee will apply.
2. The Applicant must replace all lagged depletions and return flow obligations resulting from operation under this SWSP, including those lagged depletions and return flow obligations that occur to the stream after the expiration date of this SWSP.
3. Well permit no. 67876-F, as amended on February 24, 2010, was obtained for the current use and exposed water surface area of the gravel pit in accordance with sections 37-90-137(2) and (11), C.R.S., in conjunction with this SWSP.
4. The total surface area of the groundwater exposed at the Bucklen Pit after December 31, 1980 shall not exceed 13.38 acres, which results in a maximum annual evaporative loss of 36.92 acre-feet.
5. The annual amount of water used for operational purposes at the Bucklen Pit shall not exceed 1.54 acre-feet, estimated as 1.50 acre-feet for dust suppression and 0.04 acre-feet lost with the production of 2,500 tons of mined product.
6. Total consumption at the Bucklen Pit must not exceed these aforementioned amounts/uses unless an amendment is made to this SWSP.
7. All diversions shall be measured in a manner acceptable to the division engineer. The Applicant shall install and maintain such measuring devices as required by the division engineer for operation of this SWSP.
8. Approval of this SWSP is for the purposes as stated herein. Any additional uses for which the water may be used must first be approved by this office. Any future additional historical consumptive use credit given (e.g. agricultural water transfer) for this site must consider all previous credits given.
9. The Applicant shall replace the net evaporative depletions from the exposed groundwater surface area that may occur during the assumed ice-covered period (December through January) for any time that the exposed groundwater is not completely covered by ice.
10. The replacement water that is the subject of this plan cannot be sold or leased to any other entity, unless excess replacement credits exist and the Applicant has obtained written approval from the division engineer or water commissioner for the use of such excess replacement credits. The replacement water must be appurtenant to this site until all lagged depletions resulting from operation under this SWSP have been replaced or until a plan for augmentation is obtained.
11. The Applicant has proposed to use for augmentation, water available from any other source legally available for augmentation and which can be provided in the amount, at the time, and

at the location required to replace out of priority depletions from the Bucklen Pit. Additional sources of replacement water in this SWSP may only be used if the Applicant complies with the attached Division One Administration Protocol *“Use of Replacement Sources Not Specifically Identified in an SWSP or Augmentation Plan”*.

12. All releases of replacement water must be sufficient to cover all out-of-priority depletions in time, place, and amount and must be made under the direction and/or the approval of the water commissioner. Notice must be provided and approval made by the water commissioner at least 48 hours prior to the release of replacement water, or as required by the water commissioner. The release of replacement water may be aggregated to maximize beneficial use. The water commissioner and/or the division engineer shall determine the rate and timing of an aggregated release.
13. In order to prevent injury to other water rights, the division engineer and water commissioner must be able to administer Applicants' replacement water past headgates on the river at times when those headgates would otherwise be legally entitled to divert all available flow in or “sweep” the South Platte River or its tributaries. Applicant shall not receive credit for replacement of depletions to the South Platte River below such diversion structures unless bypass and measurement structures are in place to allow the division engineer and water commissioner to confirm that Applicant's replacement water is delivered past the headgates. In the event that delivery past dry-up points requires the use of a structure for which a carriage or use agreement with a third party is required, Applicant shall be responsible for securing such agreement. Until such time as the Applicant provides a copy of the carriage or use agreement to the division engineer and water commissioner, no credit will be allowed for replacement of depletions to the South Platte River below such diversion structure.
14. The Division of Water Resources will not be responsible for any enforcement or administration of third party agreements that are not included in a decree of the water court.
15. The water attributable to the seven (7) shares of the Greeley Irrigation Company proposed to be used for replacement purposes in this SWSP must continue to be diverted in priority at the ditch and then measured back to the Cache la Poudre River in the vicinity of the Bucklen Pit. Adequate measuring devices acceptable to the water commissioner must be installed.
16. Conveyance loss for delivery of augmentation water is subject to assessment and modification as determined by the water commissioner or division engineer.
17. 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 uploaded to the CDSS Online Reporting Tool within 30 days of the end of the month for which the accounting applies (<https://dwr.state.co.us/Tools/reporting>). Instructions for using the tool are available on the Division of Water Resources website on the “Services” → “Data & Information” page under the heading of Online Data Submittal. Accounting and reporting procedures are subject to approval and modification by the division engineer. Accounting forms need to identify the WDID number for each structure operating under this SWSP. Additional information regarding accounting requirements can be found in the attached Augmentation Plan Accounting Protocol. NOTE: Monthly accounting, even during the winter non-irrigation season, is required.

In addition, it is the Applicant's responsibility to verify that the entities making replacements are identifying this use on their accounting submitted to our office. For the period of this

plan, those entities are the City of Aurora and the City of Greeley (WDID 0303330 - GLIC Accounting).

18. The name, address and phone number of the contact person who will be responsible for the operation and accounting of this plan must be provided on the accounting forms to the division engineer and water commissioner.
19. The approval of this SWSP does not relieve the Applicant and/or landowner of the requirement to obtain a Water Court decree approving a permanent plan for augmentation or mitigation to ensure the permanent replacement of all depletions, including long-term evaporation losses and lagged depletions after gravel mining operations have ceased. If reclamation of the mine site will produce a permanent water surface exposing groundwater to evaporation, an application for a plan for augmentation must be filed with the Division 1 Water Court at least three (3) years prior to the completion of mining to include, but not be limited to, long-term evaporation losses and lagged depletions. If a lined pond results after reclamation, replacement of lagged depletions shall continue until there is no longer an effect on stream flow.
20. Dewatering at this site will produce delayed depletions to the stream system. As long as the pit is continuously dewatered, the water returned to the stream system should be adequate to offset the depletions attributable to the dewatering operation. The operator shall equip the dewatering operations with a totalizing flow meter and report monthly meter readings which will be used to determine the post-pumping depletions when dewatering ceases. Once dewatering at the site ceases, the delayed depletions must be addressed. Accordingly, dewatering is required to continue during the term of this approval. At least three years prior to completion of dewatering, a plan must be submitted that specifies how the post pumping dewatering depletions (including refilling of the pit) will be replaced, in time, place and amount.
21. If dewatering of the site is discontinued, the pit would fill, creating additional depletions to the stream system due to increased evaporation. To assure that depletions from groundwater evaporation do not occur in the unforeseen event, or events, that would lead to the abandonment of the pit, the Applicant has dedicated five (5) Greeley Irrigation Company shares as replacement water solely to this SWSP for as long as there are depletions at this gravel pit site or until such time as another replacement source is obtained. A copy of the affidavit dated October 4, 2010 is attached to this letter. For the purposes of this SWSP, this affidavit will be accepted for the dedication of the shares; however, if the State Engineer determines that a different affidavit or dedication process is necessary to assure proper dedication of the shares, additional information may be required prior to future SWSP approvals.
22. 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 substitute water supply plan expire without renewal or be revoked prior to adjudication of a permanent plan for augmentation, all excavation of product from below the water table, and all other use of water at the pit, must cease immediately.
23. In accordance with amendments to section 25-8-202(7), C.R.S., and "Senate Bill 89-181 Rules and Regulations" adopted on February 4, 1992, the state engineer shall determine if this substitute supply is of a quality to meet requirements of use to which the senior appropriation

receiving the substitute supply has normally been put. As such, water quality data or analyses may be requested at any time to determine if the requirement of use of the senior appropriator is met.

24. 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 water court case or any other legal action that may be initiated concerning this substitute water supply plan. 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.

Please contact Sarah Brucker in Denver at (303) 866-3581 ext. 8249, or Michael Hein in Greeley at (970) 352-8712, if you have any questions concerning this approval.

Sincerely,



for Jeff Deatherage, P.E.
Chief of Water Supply

Attachments: Figure 2

Tables 1 - 5

City of Aurora Lease Agreement

City of Greeley Lease Agreement

Letter from DRMS dated April 30, 2010

Affidavit for dedication of GIC shares to this SWSP

Use of Replacement Sources Not Specifically Identified in an SWSP or Augmentation
Plan Protocol

Augmentation Plan Accounting Protocol

Cc: Michael Hein, Lead Assistant Division Engineer, Michael.Hein@state.co.us
1809 56th Avenue, Greeley, CO 80634

Brent Schantz, River Operations/Compact Commissioner, Brent.Schantz@state.co.us

Jorge Vidal, Acting Water Commissioner, Water District 2, Jorge.Vidal@state.co.us

Mark Simpson, Water Commissioner, Water District 3, Mark.Simpson@state.co.us

Louis Flink, Tabulation/Diversion Records Coordinator, Louis.Flink@state.co.us

Dawn Ewing, Accounting Coordinator, Dawn.Ewing@state.co.us

Eric Scott, Division of Reclamation Mining and Safety, eric.scott@state.co.us



Table No. 1

Bucklen Equipment Company, Inc.
Bucklen Pit (M-1982-131)



**Evaporative Consumptive Use (aka Evap CU)
From Pond Surface**

Date Revised: 10/12/2022

AG Job #: 08-127

Month	Percent of Annual Evaporation (A)	Gross Monthly Evaporation [in] (B)	Monthly Precip [in] (C)	Monthly CU Credit [in] (D)	Monthly Avg Temp [°F] (E)	Net Evap [in] (F)	Evap CU [ac-ft] (G)
November	4.0%	1.80	0.78	0.55	37.5	1.25	1.40
December	3.0%	1.35	0.41	0.29	29.4	ICE	0.00
January	3.0%	1.35	0.48	0.34	28.6	ICE	0.00
February	3.5%	1.58	0.37	0.26	33.5	1.32	1.47
March	5.5%	2.48	1.07	0.75	41.1	1.73	1.92
April	9.0%	4.05	1.79	1.25	49.4	2.80	3.12
May	12.0%	5.40	2.45	1.72	58.6	3.69	4.11
June	14.5%	6.53	1.90	1.33	68.1	5.20	5.79
July	15.0%	6.75	1.48	1.04	73.8	5.71	6.37
August	13.5%	6.08	1.15	0.81	71.7	5.27	5.88
September	10.0%	4.50	1.11	0.78	63.0	3.72	4.15
October	7.0%	3.15	1.03	0.72	50.9	2.43	2.71
Total	100%	45.00	14.02	9.81	-	33.11	36.92

Gross Annual Evaporation = **45** inches per NOAA Technical Report NWS 33

Historical Consumptive Use Credit = **70%** of monthly precipitation

Freezing Point of Water = **32** °F

WY 2023 Gross Exposed Water Surface = **18.65** acres within permit area

Pre-1981 Area = **5.27** acres within permit area

WY 2023 Net Exposed Area = **13.38** acres within permit area (gross area minus pre-1981 area)

Notes:

(A) Taken from *General Guidelines for Substitute Water Supply Plans for Sand and Gravel Pits Submitted to the State Engineer* for elevations below 6500 ft MSL

(B) Gross monthly evaporation = (Gross Annual Evaporation) * (A)

(C) Monthly precipitation from GREELEY UNC, COLORADO (053553) weather station. Period of record is 1967 to 2005

(D) Monthly consumptive use credit = (Historical Consumptive Use Credit) * (C)

(E) Monthly average temperature from GREELEY UNC, COLORADO (053553) weather station. Period of record is 1967 to 2005

(F) Net evaporation = (B) - (D) if the monthly average temperature is greater than freezing. Otherwise, the pond is assumed to be frozen

(G) Evap CU = (Net Exposed Area) * (E)/12

Table No. 2

Bucklen Equipment Company, Inc.
Bucklen Pit (M-1982-131)



**Operational Consumptive Use (aka Operation CU)
From Mining**

Date Revised: 10/12/2022

AG Job #: 08-127

Month	Percent of Annual Production (A)	Monthly Production [tons] (B)	Water Retained in Product [ac-ft] (C)	Water Used for Dust Control [ac-ft] (D)	Operation CU [ac-ft] (E)
November	40%	1,000	0.01	0.00	0.01
December	40%	1,000	0.01	0.00	0.01
January	10%	250	0.00	0.00	0.00
February	10%	250	0.00	0.00	0.00
March	0%	0	0.00	0.19	0.19
April	0%	0	0.00	0.18	0.18
May	0%	0	0.00	0.19	0.19
June	0%	0	0.00	0.18	0.18
July	0%	0	0.00	0.19	0.19
August	0%	0	0.00	0.19	0.19
September	0%	0	0.00	0.18	0.18
October	0%	0	0.00	0.19	0.19
Total	100%	2,500	0.04	1.50	1.54

Total Annual Production =	2,500	tons
Moisture Content of Product =	2%	by weight
Water Used for Dust Control =	2,000	gallons per day during March through October

Notes:

(A) Estimated monthly production percentages. Provided by Bucklen Equipment Company

(B) Monthly Production = (Total Annual Production) * (A)

(C) Water Retained in Product = [(Moisture Content of Product) * (B) * 2000] / (62.4 * 43560)

(D) Water Used for Dust Control is estimated to be 2000 gallons per day during March through October

(E) Operation CU = (C) + (D)

Table No. 3

Bucklen Equipment Company, Inc.
Bucklen Pit (M-1982-131)



Lagging Distance (X) =	1,390	feet
Aquifer Transmissivity (T) =	120,000	gallons per day per foot
Specific Yield =	0.2	
Aquifer Width (W) =	10,650	

Date Revised: 10/12/2022

AG Job #: 08-127

**Lagged Depletions
From Mining**

WY 2023 Month	Evaporation CU [ac-ft] (A)	Operation CU [ac-ft] (B)	Total CU [ac-ft] (C)	Lagged Depletions [ac-ft] (D)
November	1.40	0.01	1.41	2.79
December	0.00	0.01	0.01	1.85
January	0.00	0.00	0.00	1.24
February	1.47	0.00	1.47	1.36
March	1.92	0.19	2.11	1.99
April	3.12	0.18	3.30	2.51
May	4.11	0.19	4.30	3.30
June	5.79	0.18	5.98	4.14
July	6.37	0.19	6.56	5.07
August	5.88	0.19	6.07	5.26
September	4.15	0.18	4.34	4.63
October	2.71	0.19	2.90	3.89
Total	36.92	1.54	38.46	38.03

Notes:

(A) Evaporation CU from Table 1

(B) Operation CU from Table 2

(C) Total CU = (A) + (B)

(D) Lagged depletions from total CU. Accounts for evaporation and operational uses from prior SWSPs

Table No. 4

Bucklen Equipment Company, Inc.
Bucklen Pit (M-1982-131)

**WY 2023 Estimated GIC Subsurface Return Flow Obligations**

Date Revised: 10/12/2022

AG Job #: 08-127

WY 2023 Month	GIC Direct Flow		Fossil Creek Reservoir	
	GIC Direct Subsurface Return Flow Factor (A)	GIC Direct Subsurface RF Obligation [ac-ft] (B)	Fossil Creek Subsurface Return Flow Factor (C)	Fossil Creek Subsurface RF Obligation [ac-ft] (D)
November	2.1%	2.10	2.0%	0.09
December	2.0%	2.00	1.8%	0.08
January	1.8%	1.80	1.7%	0.08
February	1.7%	1.70	1.6%	0.07
March	1.6%	1.60	1.5%	0.07
April	1.5%	1.50	1.4%	0.06
May	1.8%	1.80	1.3%	0.06
June	2.1%	2.10	1.2%	0.05
July	2.3%	2.30	1.5%	0.07
August	2.4%	2.40	2.4%	0.11
September	2.4%	2.40	2.5%	0.11
October	2.3%	2.30	2.1%	0.10
Total	24.0%	23.99	21.0%	0.95

Water Year	Total Annual Delivery [ac-ft]		Remarks
	GIC Direct Flow	Fossil Creek Reservoir	
2018	98.96	1.64	Based on SWSP accounting
2019	80.30	0.00	Based on SWSP accounting
2020	129.63	6.49	Based on SWSP accounting
2021	76.74	10.43	Based on SWSP accounting
2022	114.17	4.13	Based on actual and projected deliveries
Average	99.96	4.54	

Notes:

- (A) Monthly subsurface return flow factors per Poudre Prairie Decree
 (B) Equals Column (A) multiplied by the average total annual delivery of GIC direct flow water
 (C) Monthly subsurface return flow factors per Poudre Prairie Decree
 (D) Equals Column (C) multiplied by the average total annual delivery of Fossil Creek Reservoir water

Table No. 5

Bucklen Equipment Company, Inc.
Bucklen Pit (M-1982-131)

**WY 2023 Water Balance**

Date Revised: 10/12/2022

AG Job #: 08-127

WY 2023 Month	Augmentation Requirement [ac-ft] (A)	GIC Direct Flow		Fossil Creek Reservoir		Estimated Total GIC Credit for all shares [ac-ft] (F)	Aurora Augmentation Lease [ac-ft] (G)	Aurora Transit Loss [ac-ft] (H)	Net Affect to River [ac-ft] (I)
		Projected GIC Direct Deliveries [ac-ft / share] (B)	Estimated GIC Direct Credit [ac-ft / share] (C)	Projected Fossil Creek Deliveries [ac-ft / share] (D)	Estimated Fossil Creek Credit [ac-ft / share] (E)				
November	4.98	0.00	0.00	0.00	0.00	0.00	6.0	0.99	0.03
December	3.93	0.00	0.00	0.00	0.00	0.00	4.8	0.79	0.08
January	3.12	0.00	0.00	0.00	0.00	0.00	3.8	0.63	0.06
February	3.13	0.00	0.00	0.00	0.00	0.00	3.8	0.63	0.04
March	3.66	0.00	0.00	0.00	0.00	0.00	4.4	0.73	0.02
April	4.07	1.69	1.29	0.03	0.02	9.19	0.0	0.00	5.12
May	5.16	3.38	2.58	0.00	0.00	18.05	0.0	0.00	12.89
June	6.29	3.29	2.51	0.06	0.05	17.91	0.0	0.00	11.61
July	7.44	3.33	2.54	0.31	0.25	19.52	0.0	0.00	12.08
August	7.77	3.08	2.35	0.61	0.49	19.86	0.0	0.00	12.09
September	7.14	3.09	2.36	0.18	0.14	17.51	0.0	0.00	10.37
October	6.28	2.45	1.87	0.00	0.00	13.09	0.0	0.00	6.80
Total	62.97	20.31	15.50	1.19	0.95	115.13	22.8	3.76	71.20

GIC Direct Surface RF Factor = 23.7% per Poudre Prairie Decree

Fossil Creek Surface RF Factor = 20.1% per Poudre Prairie Decree

Number of GIC Shares in SWSP = 7

Aurora Lease Transit Distance = 66 miles

Transit Loss Rate = 0.25% per mile

Notes:

- (A) Augmentation Requirement equal to Evap CU (Table 1) plus Operation CU (Table 2) plus GIC Return Flow Obligations (Table 3)
 (B) GIC projected deliveries for Year One of Projection - Decree Case No. 03CW348
 (C) Estimated GIC direct flow consumptive use credit per share. Calculated by removing surface return flow obligations from deliveries
 (D) Fossil Creek [rp]ected deliveries for Year One of Projection, Decree Case No. 03CW348
 (E) Estimated Fossil Creek consumptive use credit per share. Calculated by removing surface return flow obligations from deliveries
 (F) Total GIC credit for all shares = [(C) + (E)] * (Number of GIC Shares in SWSP)
 (G) Aurora lease during the period November through March.
 (H) Transit Loss on Aurora release
 (J) Net Affect to River = (F) + (G) - (H) - (A)

Water Administration
15151 E. Alameda Parkway, Suite 3600
Aurora, Colorado 80012
303.739.7370

October 11, 2022

Ms. Lori Bucklen
Bucklen Equipment Co., Inc.
804 North 25th Avenue
Greeley, CO 80631

Re: Agreement for Delivery of Reusable Raw Water


Dear Ms. Bucklen:

This letter provides the City of Aurora's consent to continue the above-referenced agreement between the City of Aurora and Bucklen Equipment Company, dated November 22, 2021 ("Agreement") for an additional Lease Year (November 1, 2022 through March 31, 2023) for delivery of water pursuant to the Delivery Schedule attached to this letter. This consent is in response to the request from Mr. Jared Dains, engineer with Applegate Group, Inc. representing Bucklen Equipment Co., requesting said continuance pursuant to the attached Delivery Schedule that modifies the original Delivery Schedule.

Extension of the Agreement for additional Lease Years is permitted under Paragraph 1 of the Agreement. Further, the Delivery Schedule for water under the Agreement may be modified and replaced pursuant to Paragraph 2 of the Agreement. The modified Delivery Schedule attached to this letter replaces the Delivery Schedule attached as Exhibit A to the Agreement. The Effective Date of the Agreement for the purposes of this additional Lease Year is the date of this letter. All other terms of the Agreement remain unchanged, and in full force and effect.

If you have any questions concerning this letter, please do not hesitate to contact John Murphy at the above telephone number.

Sincerely,



Dawn M. Jewell
South Platte Basin Water Resources Supervisor
City of Aurora, Colorado

Cc: Jared Dains
John Murphy

Agreement for Lease of Firm Delivery of Reclaimed Wastewater

Exhibit A
Delivery Schedule

Water Year 2022-23

(Acre-Feet)

	Nov 2022	Dec 2022	Jan 2023	Feb 2023	Mar 2023	Total
Total Release (including transit loss)	6.0	4.8	3.8	3.8	4.4	22.8



Jan. 10, 2023

Bucklen Equipment Co., Inc.
Attn: Lori Bucklen
804 North 25th Ave
Greeley, Colorado 80631

RE: Augmentation Water Rental for Bucklen Equipment Co., Inc.

To whom it may concern,

The city of Greeley ("Greeley") accepts Bucklen Equipment CO., Inc's ("Bucklen") augmentation water rental request for February 2023. Greeley will make available to Bucklen, wholly consumable water that has been changed for augmentation use at one of the following locations: 1) in the Cache la Poudre River immediately below Greeley's existing wastewater treatment plant outfall, at the outlet of the Flatiron Reservoir Nos. 1-5 (aka Poudre Ponds at Greeley), or at delivery stations from the Greeley Canal No. 3; 2) in Lonetree Creek, a tributary to the South Platte River, immediately below the Swift wastewater treatment plant outfall; 3) in the Big Thompson River at delivery stations or release structures from the Greeley Loveland Canal and related structures; or 4) at such other point or points Greeley chooses by giving written notice to the Bucklen **OR** in the Cache la Poudre or Big Thompson Rivers at delivery stations or release structures owned and operated by Greeley or available for Greeley's use where Greeley has augmentation water legally and physically available. Greeley anticipates making releases from its wastewater treatment plant outfall located on the Cache la Poudre River. If Greeley changes the point of delivery, it will provide written notice to Bucklen.

The request totals 3 acre-feet for replacements during February 2023, as shown below. Augmentation water shall be available per the following schedule.

Bucklen Augmentation Schedule
Feb-2023
3

This results in a delivery charge of **\$800** per acre-foot. The total cost for the 3 acre-feet is **\$2,400** and payment is due February 10, 2023. Please follow the payment instructions on the attached invoice.

Please be aware that it is Bucklen's responsibility to receive the necessary approval to use the leased augmentation supplies provided by Greeley.

If you have any questions, please do not hesitate to call me at (970) 381-8886.

Sincerely,

Megan Kramer

Megan Kramer
Water Resource Admin I

STATE OF COLORADO

DIVISION OF RECLAMATION, MINING AND SAFETY

Department of Natural Resources

1313 Sherman St., Room 215

Denver, Colorado 80203

Phone: (303) 866-3567

FAX: (303) 832-8106

M-1982-131



April 30, 2010

Bucklen Equipment Company
804 N 25th Ave
Greeley, CO 806310000

Bill Ritter, Jr.
Governor

James B. Martin
Executive Director

Loretta E. Piñeda
Director

RE: Mining Operations with Exposed Ground water

To Whom It May Concern:

The Division of Reclamation Mining and Safety is responsible for ensuring that Sand and Gravel mining operators comply with the requirements of the Colorado Land Reclamation Act for the Extraction of Construction Materials (Act) and the Mineral Rules and Regulations of the Colorado Mined Land Reclamation Board for the Extraction of Construction Materials (Rules). Among these requirements are provisions for the protection of water resources. The Act requires that reclamation plans must ensure minimization of disturbances to the prevailing hydrologic balance, including disturbances to the quantity of water in the area affected by mining and in the surrounding areas. § 34-32.5-116(4)(h). Rule 3.1.6(1)(a) requires compliance with Colorado water laws and regulations governing injury to existing water rights both during and after mining. Permits must specify how the permittee will comply with applicable Colorado water laws and regulations governing injury to existing water right rights. Rule 6.3.3(j); Rule 6.4.5(2)(c). After an extensive review, the Division determined that several operators may not have appropriate permit conditions to address certain reclamation liabilities arising from impacts to water resources.

In September 2009 the Division of Water Resources (DWR) updated its Guidelines for Sand and Gravel Pits. These guidelines provide guidance on achieving compliance with state law regarding replacement of depletions from sand and gravel mining, thus the guidelines provide a benchmark for the protection of hydrologic balance required under the Act and Rules. As noted in the Guidelines, sand and gravel operations which expose groundwater without complying with state law create a reclamation liability by impacting available groundwater.

State law requires that any person exposing ground water must obtain a well permit from the SEO pursuant to § 37-90-137(11). Because exposed groundwater results in out-of-priority water depletions, operations which expose ground water must also eventually obtain a water-court approved augmentation plan. Currently, several operators do not have either an augmentation plan or bonding to provide an alternative method to mitigate injurious stream depletions that result from mining-related exposure of ground water. The Division has a statutory duty to ensure that lands affected by mining are reclaimed in a manner that complies with state law and to ensure that operators have sufficient bonding to achieve reclamation. In order to assist operators in achieving compliance with these requirements, the Division proposes that, by April 30, 2011, operators should contact the Division and agree upon a plan for achieving compliance.

The Division has identified four approaches for operators:

1. File a financial warranty that will ensure backfilling of the pit to cover the exposed ground water to a depth of two feet above the static ground water level or,
2. Obtain a court approved augmentation plan prior to exposing ground water or,
3. File a financial warranty to cover the cost of installing a clay liner or slurry wall that meets the Division of Water Resources requirements for preventing ground water exposure or,
4. Obtain approval from the Division of Water Resources that acknowledges compliance with the SEO's requirements pursuant to § 37-90-137(11).

The Division will work with operators on an individual basis as they move to implement one of these plans. It is likely that options 1 and 3 will require the submittal of a technical revision or an amendment to the existing permit depending on the nature of the current mining and reclamation plan and the proposed changes. Increased financial warranties, as a result of these modifications, may be posted in a phased manner not to exceed three years. Amendments or revisions currently under review will be required to be approved by April 30, 2011 and may use the phased financial warranty approach described above. New applications going forward or presently under review by the Division will be required to meet the requirements of one of the options 1-4 at the time of application approval. Failure of affected operators to initiate contact with the Division and gain compliance as described above could result in an enforcement action being issued by the Division.

If you have any questions, please contact Tony Waldron at 303-866-3567, extension 8150.

cc: M1982131 Bucklen Equipment Co

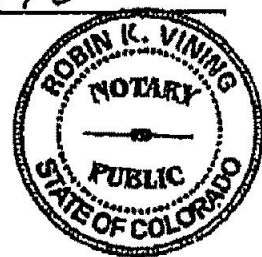
**Dedication of Water Rights to the
Bucklen Pit Substitute Water Supply Plan**

I, Randy Bucklen, as the owner of six shares of the Greeley Irrigation Company evidenced by Certificate Nos. 2884 and 3048, hereby affirm that five of the said shares will be dedicated solely to the Bucklen Pit Substitute Water Supply Plan for as long as there are depletions at this gravel pit or until such time as another replacement source is obtained. The five shares will not be sold, leased, or traded to others during the term of this dedication.

Signature: Randy Bucklen

Date: 10/4/10

STATE OF COLORADO)
)
COUNTY OF _____)



The foregoing instrument was acknowledged before me this 4 day of October, 2010, by Randy Bucklen and _____.

My Commission Expires
My commission expires: December 18, 2010

Witness my hand and official seal.

Robin K. Vining
Notary Public

ADMINISTRATION PROTOCOL
Use Of Replacement Sources Not Specifically Identified
In An SWSP Or Augmentation Plan
Division One – South Platte River

This protocol addresses the minimum standards required for use of a source of replacement water not specifically described in an SWSP or augmentation plan.

- Request to the Division Engineer and Water Commissioner must be in writing and must include:
 - the augmentation plan or SWSP provision in the purchasers plan that allows an unnamed source to be added to the plan for credit
 - the decree provision or SWSP provision in the sellers plan that allows water to be sold for use in the purchasers plan
 - the annual and monthly amount of water available from the water right to be used for replacement
 - the location at which the water will be delivered to the stream
 - a lease agreement between the seller and purchaser of the replacement water
- Applicant shall have written approval from the Division Engineer or Water Commissioner before an unnamed source is added to an augmentation plan or SWSP.
- Applicant must comply with the Augmentation Plan Accounting Protocol and, if appropriate, the Delivery of Water Protocol.

This protocol is subordinate to any decreed language addressing specific situations.



Augmentation Plan Accounting Protocol June 2022

Accounting is an administrative tool to confirm water use is in accordance with a decree or other approval including that any required replacement is made to the stream system at the correct time, location, and amount. This guideline is subordinate to any decree language or Division Engineer specific accounting requirements. It describes basic augmentation plan accounting scenarios. Accounting for more complex scenarios can build on the fundamentals described herein.

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1. Background and definitions

A thorough description of augmentation plans for well pumping is available in the [Beginners Guide to Augmentation Plans for Wells](#). The following terms are used in this document:

- **Diversions** are withdrawals from a well, stream, or pond/reservoir.
- **Depletions** are the volume of reduced streamflow caused by a diversion. Lagged depletions are those that occur at a later time than when water is diverted by well pumping or groundwater pond evaporation due to the timing of water movement through the subsurface between the well/groundwater pond and the stream.
- **Hydrobase** is DWR's database of water information.
- **Colorado's Decision Support Systems ("CDSS")** is a State of Colorado website (<https://cdss.colorado.gov/>) providing access to water data and tools.
- **Replacement water** is a volume of water provided to the stream system to replace depletions and satisfy the unmet needs of senior water rights. Replacement water is typically provided from a reservoir release or another source that has been contracted for the purpose of replacing depletions. Replacement water may also be provided in the form of historic consumptive use ("HCU") credits derived from a change of water right where the use of a water right was changed to augmentation.
- **Transit loss** is the diminishment of the amount of water in a stream as water travels from upstream to the downstream location.
- **Priority Admin Number** indicates the seniority of a water right; equal to the number of days between a water right's priority date and the earliest decreed priority, December 31, 1849. For example, the Priority Admin Number for a water right with a priority date of May 5, 1950 is 36650.00000. The lower the Priority Admin Number, the more senior the water right. The five digits to the right of the period are used when the postponement doctrine applies to a water right due to a delay in decreeing the water right in the court (read more about this in the [Administrative Call Standard](#), Appendix A).
- **Administrative Call** is a term that indicates there are unfulfilled downstream water rights "calling" for curtailment of upstream junior water rights to fulfill their need. In accounting, when the downstream Administrative Call is from a senior water right (with a lower Priority Admin Number), diversions/depletions are out-of-priority and replacement water must be provided.
- **Balance** is the amount of replacement water minus the depletions and obligations, not considering the Administrative Call. The balance may be negative when the diversions resulting in the depletions are in priority.
- **Net Effect** is the amount of replacement water minus the depletions and obligations, considering the Administrative Call. When the net effect is zero or positive, it shows that the Augmentation Plan prevented injury by replacing all out-of-priority diversions/depletions.

2. Methods to submit accounting

a. Accounting and Reporting Uploader (preferred)

The preferred method to submit accounting is through the use of the [CDSS Accounting and Reporting Uploader tool](#). To set up an online account, call or email the Division contacts for the appropriate Water Division as shown in Table 1. Additional information is available on DWR's website under Data and Information/Online Data Submittal.

b. Email

Submit via email to the Water Commissioner and the Division Accounting email shown in Table 1. File names for accounting sheets should include the 7 digit Augmentation Plan WDID assigned by the Division Engineer's office.

3. Timing of accounting submittal

Accounting must be submitted as specified by your decree, DWR administrative approval (SWSP, Replacement Plan, etc.), or as requested by the Division Engineer or designated representative(s). If timing is not specified, submit accounting with the timing shown in Table 1.¹

Table 1. Accounting Submittal Emails and Phone Number by Division

Division	Accounting Question & Submittal Email	Contact Phone Number	Standard Submittal Timing
1 - South Platte	Div1Accounting@state.co.us	970-352-8712	30 days after the end of the reporting month
2 - Arkansas	water.reporting@state.co.us	719-542-3368	10 days after the end of the reporting month*
3 - Rio Grande	kevin.boyle@state.co.us	719-589-6683	10 days after the end of the reporting month
4 - Gunnison	gregory.powers@state.co.us	970-249-6622	10 days after the end of the reporting month
5 - Colorado	dnr_div5acct@state.co.us	970-945-5665	10 days after the end of the reporting month
6 - Yampa/White	brian.romig@state.co.us	970-846-0036	Annually by November 15 or as needed upon request
7 - San Juan/ Dolores	dnr_div7acct@state.co.us	970-247-1845	10 days after the end of the reporting month**
Designated Ground Water Basins	chris.grimes@state.co.us	303-866-3851 ext. 8253	Annually by February 15 for the prior year

*for approvals deemed critical for administration; all others (including simple subdivisions) bi-annual readings before and after the irrigation season

**for approvals deemed critical for administration; annual submittals for others

¹ For proper administration, Water Commissioners may request regular and direct submission of water data in addition to accounting submittals described herein.

4. Overall organization of accounting spreadsheet and required information per tab

a. Overall organization

The following are typical spreadsheet tab names in accounting. See the [example and screenshots section](#) for an overview of what this might look like:

- i. Contact/Plan Information tab
- ii. Input tab(s)
- iii. Depletions & Obligations tab
- iv. Replacement tab
- v. Summary tab
- vi. DWR tab
- vii. DWR Meters tab
- viii. Version/Notes tab

Fewer or additional tabs as necessary for more simple or complex accounting, subject to approval by the Division Engineer

b. Contact/Plan Information Tab

The accounting must provide the contact information including name and email address for:

- i. The party(s) responsible for submitting the accounting
- ii. The plan administrator and/or the plan attorney
- iii. Water court case number (format of YYCWXXXX), SWSP name and 4-digit Plan ID, or Ground Water Commission Order represented in the accounting.
- iv. The 7-digit overall WDID(s) associated with the augmentation plan (not the individual structure WDIDs).²

c. Input Tab(s)

When possible, all cells showing diversion of water (well pumping and stream diversions) should be located on one or multiple input tabs as shown below. Cells with regular input, such as meter readings and reservoir releases, should be shaded a specifically identified color to distinguish them from cells that use formulas to convert or summarize the input.

Depending on the specific operation, the following may be included on Input tabs:

i. Estimated water use or evaporation:

When meters or measurement structures are not required, water consumption is estimated based on counts (number of homes, number of domestic animals, acreage of pond surface area, etc.) multiplied by a factor. Include a column or row for each of the following that are relevant to the augmentation plan:

1. Type of use: single family dwellings, domestic animals, area of lawn and garden (include units - square feet or acres), area of pond evaporation (include units - square feet or acres), etc.
2. Count or area input value for each type: the number of homes or domestic animals or the area (square footage or acres of home lawn and garden irrigation or pond surface evaporation). [this is the “Input” that could change regularly]

² Colorado Decision Support System Tools (<https://dwr.state.co.us/Tools>) can be used to find WDIDs (see Structures), court case numbers (see Water Rights), and other supporting information.

3. Factor to convert input to consumption in acre-feet.
4. Acre-feet of consumption.

ii. Well diversion data using flow meters:

Enter raw readings or measurements (e.g., from totalizing flow meters) and how those raw readings or measurements are converted to volumes of water. There should be one row or column for each well with a meter as described below. Once the spreadsheet formulas have been established, generally only the meter reading is entered with every submittal. The well and meter information may be located in a separate well & meter information tab (see [example and screenshots section](#)).

1. Well WDID
2. Well Permit Number
3. Priority Admin Number
4. Flow Meter Serial Number
5. Reading Date
6. Reading³ [this is the “Input” that will change regularly]
Enter reading exactly as shown on the face of the meter as a non-negative integer.
7. Comment
 - a. When a meter rolls over (such as from 999 to 000), is replaced or reset⁴, add a comment stating the old meter serial number, the maximum number before the rollover or replacement and then enter the number on the face of the meter at the end of the reporting period. Update the meter information section with the new meter’s serial number.
8. Meter information:
 - a. Make
 - b. Model
 - c. The units represented by the digits on the meter (such as gallons or acre-feet)
 - d. Multiplier for meter reading (if applicable)
 - i. Residential well meters typically have a multiplier of 1.0 with units of gallons. Readings should generally report all numbers on the face of the meter (including non-rotating digits) with a multiplier of 1.0.
 - ii. Larger agricultural or commercial wells typically read in acre-feet and typically have a decimal multiplier. For instance, with a multiplier of 0.001, a meter reading of 123456 represents 123.456 acre-feet.
 - e. Correction factor
 - i. This is a multiplier used when a meter test shows a need to correct the installed meter to an accurate reading. This will be 1.0 when there is not a test showing a need for correction.
9. Acre-feet pumped
Use a formula to convert from the meter reading to acre-feet using the multiplier and correction factor. To convert meter readings in gallons to acre-feet, divide by 325,851.

iii. Well diversion data using Electricity Consumption

For wells approved to use power records and a Power Conversion Coefficient (PCC) to estimate water pumped, the accounting information is similar to well diversion data using flow meters (section 4.c.ii) above with the following replacements (instead of 6. “Reading” and 8. “Meter information”):

³ A comment on the Meter Reading cell is used to note “Actual, Estimated, Corrected, or Calculated” for all wells subject to measurement rules when the entry is not based on a reading taken on the actual date specified.

⁴ Resetting a meter may be prohibited by local well measurement rules.

6. Power meter reading [this is the “Input” that will change regularly]
8. Power Meter Information
 - a. PCC

iv. Surface diversion data

Include a column or row for each surface diversion with the following information:

1. Diversion structure name or a.k.a.
2. Structure WDID
3. Measured flow through the measurement structure and units
 - a. If more than one water right is diverted through the structure, there should be adjacent columns for each. Each source should have a designated column or row and labeling should include the measuring structure WDID and the source of the water (e.g. case number).
 - b. If there is a multiplier that adjusts the standard measurement-flow relationship to reflect the actual measurement-flow relationship of the specific structure (“shift”), the adjusted value should be reflected in a separate column.
4. Priority Admin Number
5. Storage and release

If the diversion is to storage, which will be followed by a release of water, follow the instructions in the [Reservoir Accounting Guideline](#).

v. Administrative Call (are diversions in-priority?)

In portions of Colorado, there may be times when depletions are in-priority, and do not require replacement. Depletions are in-priority when water rights on the stream system that are senior to the diversion have enough water and are not “calling” for more water.

1. Simplified (percent of month administrative call)

For certain basic accounting, such as subdivision well depletions, the Division Engineer may allow or apply an estimate of the days of expected administrative call each month. Typically, replacement water is provided based on projected call days, which is later compared to actual administrative call data to ensure that adequate replacement was provided. In this case, the accounting should have an input field either for the number of call days or the percentage of days in the month with a call.

2. Daily record of administrative call

Provide a column that shows whether depletions are either “IN” or “OUT” of priority each day.

- Locations with minimal call variation: In areas with minimal variation in the call, the Division Office may not require a formula comparing Priority Admin Numbers, but will accept manual entries of “IN” or “OUT” of priority each day.
- All other locations: “IN” or “OUT” of priority is determined daily using formulas comparing the Priority Admin Number of depletions to the Priority Admin Number of the calling water right in each depleted stream reach. Include a column for each of the following:
 - The Priority Admin Number of the calling water right. Calling structure information can be obtained programmatically from:
 - CDSS [REST](#) services - insert a link that pulls the required information directly from DWR’s database.
 - [CDSS Administrative Calls tool](#).

DWR accounting staff can provide guidance on incorporating this information within an accounting spreadsheet.

- The Name of the calling water right
- “In” or “Out”-of-priority either for all structures covered by the accounting or for each structure in its own column. Use a formula to compare the Priority Admin Number of the calling structure to the Priority Admin Number of the structure(s) in the accounting.

d. Depletion & Obligation tab

Used to (1) convert well pumping (and groundwater pond evaporation) to lagged depletions impacting the stream and (2) show lagged depletions that are out-of-priority, and (3) include any additional water obligations of the plan for augmentation.

- i. Calculate lagged depletions - Although well pumping and modeling may use a monthly step function to determine the depletions from pumping, the monthly result may, if requested by the Division Office or required by decree, then be divided by the number of days in the month in order to calculate a daily impact for daily water administration.
 1. Well Pumping (or groundwater pond evaporation) - Reference back to the Input tab for the acre-feet of water pumped or evaporated.
 2. Consumption factor (%) - If the decree or approval describes that a percentage of the water pumped is consumed and only the consumed amount is replaced.
 3. Acre-feet consumed - Multiply the acre-feet pumped by the consumption factor.
 4. Delay Factors - show factors that convert pumping in one month to depletions in future months. These may be percentages per month, that total 100 percent over an extended period of time.
 5. Depletions - a formula that combines previous months and present month pumping with the delay factors to determine depletions impacting the stream this month and in future months.
- ii. Out-of-priority depletions are combined into one column for each reach considering the administrative call information included on the Input tab.
- iii. Return flow obligations (if applicable): Replacement water sources changed from a historical irrigation use usually have a return flow obligation that must also be tracked in accounting. Return flow obligations are similar to depletions because they must be replaced in time, place, and amount. Depending on decree language and preference, return flow obligations may be included under the replacement tab in section 4.e. below. For each replacement source with return flow obligations, include the following:
 - the basis and volume of the return flow obligation,
 - the location of the return flow obligation,
 - replacement of the return flow obligation.

e. Replacement tab

List each structure providing replacement water, transit loss information, and volumes released:

- i. Structure providing replacement water: name of reservoir, ditch, well, leased or other replacement water, its WDID, and the water court decree allowing its use for augmentation or replacement. For instructions on accounting for replacement using recharge accretions, refer to specific recharge guidance.
- ii. Replacement water travel distance (miles)
the distance from the point of release to the location of the out-of-priority depletion where replacement is owed
- iii. Transit loss percent per mile (%)

- iv. Total transit loss (%)
- v. Volume released (acre-feet)
- vi. Transit loss volume (acre-feet)
- vii. Volume delivered (acre-feet) - equal to volume released minus transit loss volume
- viii. Return flow obligations (acre-feet): Depending on decree language as described above, these may be included here instead of in the depletion tab. See description under section 4.d. above.

f. Summary Tab

The Summary Tab is used to calculate the Net Effect of the Plan on each impacted stream reach. The summary should reference back to information and formulas in the other spreadsheet tabs. The summary tab compares obligations, replacements and that replacements equal or exceed obligations in time, place, and amount. The Summary tab should only summarize data and calculations located in other tabs of the accounting. It should not contain manual entries, input data, or make calculations that are used in other tabs.

The Summary Tab should contain the following for each impacted stream reach (typically on a daily basis or as required by the division office):

- i. Total depletions and obligations
- ii. Total replacement
- iii. Balance - Total replacement minus total depletions and obligations, which may be negative when the diversions resulting in the depletions are in priority.
- iv. Net Effect - Total replacement minus out-of-priority depletions and obligations. If the net effect is negative, the Plan resulted in injury.

g. DWR tab for Diversion Record Data Import

A tab titled “DWR” can be used to convert data input or numbers calculated in other tabs into rows that represent diversion record water classes, which DWR staff can upload to create official diversion records. When appropriate, DWR staff will develop this tab or work with plan owners to develop this tab, and ensure it follows the format shown in the “[Diversion Record Spreadsheet User Guide](#)” and utilizes water classes according to the [Diversion Records Standard](#). This format is necessary to allow the records to be imported directly into Hydrobase.

h. DWR Meters tab for Meter Reading Data Import

A tab titled “DWR Meters” can be included for use in bulk uploading meter readings. This calculates pumping totals in compliance with well rules or to meet other Division-specific requirements. In order for this tab to be bulk uploaded into Hydrobase, the columns in this tab must be formatted as shown in the “[User Guide - How to Bulk Upload Meter Readings](#)”.

i. Version/Notes tab

A tab to document changes in accounting formulas and the date of those changes.

5. Requirements and recommendations for all tabs

- a. Accounting should show how raw input data is manipulated using formulas to determine the resulting impact on the river. Accounting must therefore include a functional spreadsheet (ie no pdfs) showing all operations, formulas, etc. to clearly show calculations.
- b. The use of a water year of November 1 through October 31 is required unless specifically decreed otherwise. When a different water year is required by decree, DWR may request additional months of data in the accounting to include the November 1 through October 31

time period, resulting in more than 12 months of data being reported.

- c. For all tabs other than the Summary tab, include running accounting for the entire water year without monthly subtotals. Monthly subtotals commonly result in errors in the spreadsheet. The Summary tab can be used as a place to show monthly totals.
- d. Date fields should be complete dates (month, day, and year, recognized as a date value by the spreadsheet software) but may be formatted to display as desired.
- e. Use consistent cell color shading to clearly identify the different types of information, such as manual input cells and formula cells (provide a legend for data types, see example below)
- f. Enter “0” in cells to document no diversion or use, rather than blanks, hyphens, or another character.
- g. When a formula is overwritten with a manual entry, the cell should be highlighted and a comment added for the reasoning.
- h. When there are multiple stream reaches involved, organize accounting from upstream to downstream.
- i. Footnotes should be utilized, as necessary, to describe the basis for formulas, calculations imposed on the raw input data, and column descriptions.

6. Example, Screenshots, and Spreadsheet Templates

Water users may request spreadsheet templates from their local division office for use as examples of how accounting may be assembled, but are responsible for developing their own functional accounting customized for their own Plan requirements. Note that example and actual accounting may have slightly different organization than what is described above.

a. (List of relevant tabs)

	A	B	C	D	E	F	G	H	I
1									
2		Example Aug Plan							
3		Case No. 12CW3456							
4		Plan WDID: 0101234							
5									
6		Water Year							
7		2021							
8									
9									
10									
11									
12		Person responsible for Accounting:							
13		(Name of Contact)							
14		(Address)							
15		(Email)							
16		(Phone)							
17									
18		Aug Plan Contact:							
19		(Name of Contact)							
20		(Address)							
		Contact & Plan Info	Well & Meter Information	Depletions & Obligations	Replacements	Example Pond	Summary	DWR	Version

At the bottom of the workbook you will see tabs for all the pertinent information.

In this example, the complexity warrants separating them into different tabs: i.e. Contact and Plan Information, Well and Meter Information, Depletions and Obligations, Example Pond, Replacements, Summary, DWR, and Version tabs.

b. (Contact & Plan Information)

The accounting should be titled with the Aug Plan Name, Aug Plan Water Court Case No(s) and Plan WDID. Contact your local DWR office for help obtaining any of this information.

A color legend that includes any relevant cell shading and conditional formatting.

Example Aug Plan
Case No. 12CW3456
Plan WDID: 0101234

Water Year
2021

Cell Fill Color Legend
Yellow Indicates Input Cells
Orange Indicates Data Error
Red Indicates Operational Violation
Grey Indicates Cells Not In Use

Person responsible for Accounting:
(Name of Contact)
(Address)
(Email)
(Phone)

Aug Plan Contact:
(Name of Contact)
(Address)
(Email)
(Phone)

Plan Attorney Contact:
(Name of Contact)
(Address)
(Email)
(Phone)

This tab should also include the contact information for the Aug Plan. This may include the Plan Owner, Plan Operator, Person responsible for submitting the accounting and the Plan attorney.

Any other static information that may be helpful can be added to this tab. This may include Decreed rates or volumes, Appropriation/Adjudication dates, Administration numbers, schematics, etc.

Decreed Water Rights & Replacement Sources				
Case No.	Right Name	Adj Date	Appr Date	Admin No
12CW3456	Example Aug Plan		12/31/2012	59535.00000
12CW3456	Example Pond		8/10/2012	59392.00000
W1717	Well 1	12/31/1972	12/31/1940	33237.00000
W1717	Well 2	12/31/1972	7/26/1959	40018.00000

Contact & Plan Info Well & Meter Information Depletions & Obligations Replacements Example Pond Summary DWR Version

c. (Well & Meter Information)

	A	B	C	D	E	F	G	H	I
1	Example Aug Plan								
2	Well & Meter Information								
3	Water Year								
4	2021								
5									
6	Well Information								
7	Name	Well 1	Well 2						
8	WDID	0104567	0105678						
9	Permit No.	12345F	12346FR						
10	Owner	John Brown	Jane Smith						
11	Contact	123 Fake St. Springfield CO 80123	124 Fake St. Springfield CO 80123						
12	Meter Information								
13	Make	McCrometer	McCrometer						
14	Model	MO310	MO306						
15	Serial Number	9-8-RC263N	15-08090-6						
16	Correction Factor	0.931	1						
17	Multiplier	0.001	0.001						
18	Units	acre-feet	acre-feet						
19									
20									
21	* Owner and Contact info is not needed here if the wells are owned by the owner of the plan.								
22									
23									
24									
25									
26									
27									
28									
29									
30									
31									
32									
33									
34									
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99									
100									

Meter and Well information should be kept current. This information is verified through field visits and meter testing.

If convenient, this information can be listed on the tab where meter readings are entered or separated as shown here.

Contact & Plan Info
Well & Meter Information
Depletions & Obligations
Replacements

d. (Depletions & Obligations) - in this example, the Depletions & Obligations tab includes cells for entering meter readings, calculating well pumping over the period, and converting that to lagged depletions.

	A	B	C	D	E	F	G	H	I	J
1		Example Aug Plan								
2		Depletions & Obligations								
3		Water Year								
4		2021								
5										
6		Meter Readings (EOM)								
7										
8		Month	Well 1	Reading	Well 2	Reading				
9			0104567	Type	0105678	Type				
10			(af)		(af)					
11		10	124651	Actual	133356	Actual				
12		11	124653	Actual	133358	Actual				
13		12	124655	Calculated	133360	Calculated				
14		1	124657	Actual	133362	Actual				
15		2	124659	Actual	133364	Actual				
16		3	124661	Actual	133366	Actual				
17		4	124663	Actual	133368	Actual				
18		5		"		"				
19		6		"		"				
20		7		"		"				
		Contact & Plan Info		Well & Meter Information		Depletions & Obligations		Replacements		Example Pond

The Meter Reading section is a manual entry section of the Depletions and Obligations tab. This should be the actual meter reading as shown on the face of the meter. Adjacent tables or columns/rows may be added to calculate multipliers, correction factors, or conversions.

e. (Depletions & Obligations)

	A	B	C	D	E	F	G	H	I	J	K	L
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23		10		"		"						
		Contact & Plan Info		Well & Meter Information		Depletions & Obligations		Replacements		Example Pond	Summary	DWR

The Well Pumping section calculates the value of the amount of pumping determined by the difference in the monthly (or the frequency as required) reading by the subsequent monthly reading and then factoring in values for multipliers, correction factors and/or conversions.

Well Pumping				
Multiplier	0.001	0.001		
Correction Factor	0.931	1		
Month	Well 1	Well 2		
	0104567	0105678		
	(af)	(af)		
11	0.00186	0.00200		
12	0.00186	0.00200		
1	0.00186	0.00200		
2	0.00186	0.00200		
3	0.00186	0.00200		
4	0.00186	0.00200		
5				
6				
7				
8				
9				
10				

f. (Depletions & Obligations) - calculate lagged depletions for the month

	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	
5															
6	EOM)		Well Pumping			URF			Lagged Depletions						
7			Multiplier	0.001	0.001				Previous Year Pumping	10.00	10.00				
8	Well 2	Reading Type	Correction Factor	0.931	1										
9	0105678			Well 1	Well 2				Well 1	Well 2					
10	(af)		Month	0104567	0105678				Month	0104567	0105678				
11	133356	Actual	(af)	(af)	(af)				(af)	(af)	(af)				
12	133358	Actual	11	0.00186	0.00200				11	0.0887	0.0887		11	0.88700	0.75300
13	133360	Calculated	12	0.00186	0.00200				12	0.0660	0.0505		12	0.66000	0.50500
14	133362	Actual	1	0.00186	0.00200				1	0.0396	0.0396		1	0.62300	0.39600
15	133364	Actual	2	0.00186	0.00200				2	0.0334	0.0334		2	0.58500	0.33400
16	133366	Actual	3	0.00186	0.00200				3	0.0294	0.0294		3	0.58500	0.29400
17	133368	Actual	4	0.00186	0.00200				4	0.0623	0.0340		4	0.62300	0.34000
18		"	5						5	0.0698	0.0628		5	0.69800	0.62800
19		"	6						6	0.0811	0.1070		6	0.81100	1.07000
20		"	7						7	0.1132	0.1478		7	1.13200	1.47800
21		"	8						8	0.1302	0.1635		8	1.30200	1.63500
22		"	9						9	0.1075	0.1454		9	1.07500	1.45400
23		"	10						10	0.1019	0.1113		10	1.01900	1.11300
<div>Contact & Plan InfoWell & Meter InformationReplacementsExample PondSummaryDWRVersion</div>															

Lagged Depletions should be calculated utilizing the Well Pumping data and the lagging method established by the relevant decree or SWSP (Stream depletion Factors or Glover Parameters).

g. (Depletions & Obligations) - convert monthly lagged depletions to daily

A	B	C	D	E	F	G	H	I	J	K	L	M
25												
26		Lagged Depletions					Return Flow Obligations					
27	DATE	Well 1	Well 2	Well 1 Out-of-Priority	Well 2 Out-of-Priority	Total Out-of-Priority	Subsurface RFO					
28		0104567	0104567	0105678	0105678	(cfs)	(cfs)	(cfs)	(cfs)			
29		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)			
30	11/1/2020	0.01	0.01	0.01	0.01	0.03	0.03		0.03			
31	11/2/2020	0.01	0.01	0.01	0.01	0.03	0.03		0.03			
32	11/3/2020	0.01	0.01	0.01	0.01	0.03	0.03		0.03			
33	11/4/2020	0.01	0.01	0.01	0.01	0.03	0.03		0.03			
34	11/5/2020	0.01	0.01	0.01	0.01	0.03	0.03		0.03			
35	11/6/2020	0.01	0.01	0.01	0.01	0.03	0.03		0.03			
36	11/7/2020	0.01	0.01	0.01	0.01	0.03	0.03		0.03			
37	11/8/2020	0.01	0.01	0.01	0.01	0.03	0.03		0.03			
38	11/9/2020	0.01	0.01	0.01	0.01	0.03	0.03		0.03			
39	11/10/2020	0.01	0.01	0.01	0.01	0.03	0.03		0.03			
40	11/11/2020	0.01	0.01	0.01	0.01	0.03	0.03		0.03			
41	11/12/2020	0.01	0.01	0.01	0.01	0.03	0.03		0.03			
42												
43												
44												

Lagged Depletions can now be prorated into a daily value to determine the daily depletion to the river from the Aug Plan.

h. (Replacements)

	A	B	C	D	E	F	G	H	I	J	K
1	Example Aug Plan										
2	Replacements										
3	Water Year										
4	2021										
5											
6	DATE	Previous Year's Total	Example Aug Station			Pond Release			Total		
7		131	Total Through Structure 0102345	Transit Loss (cfs) (3)	Credit at Reach (cfs) (4)	Release For Aug 0103456	Transit Loss (cfs) (6)	Credit at Reach (cfs) (7)	Total Aug Credits (cfs) (8)		
8		Diversion of Changed Shares									
9											
10		(cfs) (1)									
11											
162	3/31/2021					0.00	0.00	0.000	0.000		
163	4/1/2021	0.10	0.10	0.00	0.10	0.00	0.00	0.000	0.097		
164	4/2/2021	0.10	0.10	0.00	0.10	0.00	0.00	0.000	0.097		
165	4/3/2021	0.10	0.10	0.00	0.10	0.00	0.00	0.000	0.097		
166	4/4/2021	0.10	0.10	0.00	0.10	0.00	0.00	0.000	0.097		
167	4/5/2021	0.10	0.10	0.00	0.10	0.00	0.00	0.000	0.097		
168	4/6/2021	0.10	0.10	0.00	0.10	0.00	0.00	0.000	0.097		
169	4/7/2021	0.10	0.10	0.00	0.10	0.00	0.00	0.000	0.097		
	Contact & Pl		Well & Meter Information			Depletions & Obligations			Replacements	Exam	

Input information should be shaded differently than the calculated (cells with formulas) cells. Please provide a legend with the color/shading scheme.

i. (Summary) - daily

Example Aug Plan Summary Water Year 2021											
DATE	Call (admin no.) (1)	Is Plan In Priority? (y/n) (2)	Depletions & Obligations				Replacements			Balance (cfs) (10)	Net Effect (cfs) (11)
			Lagged Depletions	OOP Lagged Depletions	RFOs	Total	Aug Station	Pond Release	Total Credits		
			(cfs) (3)	(cfs) (4)	(cfs) (5)	(cfs) (6)	0102345 (cfs) (7)	0103456 (cfs) (8)	(cfs) (9)		
11/15/2020	21698.00000	n	0.03	0.03	0.03	0.06	0.00	0.05	0.05	-0.01	-0.01
11/16/2020	21698.00000	n	0.03	0.03	0.03	0.06	0.00	0.06	0.06	0.00	0.00
11/17/2020	21698.00000	n	0.03	0.03	0.03	0.06	0.00	0.06	0.06	0.00	0.00
11/18/2020	21698.00000	n	0.03	0.03	0.03	0.06	0.00	0.06	0.06	0.00	0.00
11/19/2020	99999.00000	y	0.03	0.00	0.03	0.03	0.00	0.06	0.06	0.00	0.06
11/20/2020	99999.00000	y	0.03	0.00	0.03	0.03	0.00	0.06	0.06	0.00	0.06
11/21/2020	99999.00000	y	0.03	0.00	0.03	0.03	0.00	0.05	0.05	-0.01	0.05
11/22/2020	21698.00000	n	0.03	0.03	0.03	0.06	0.00	0.05	0.05	-0.01	-0.01

The Balance column is the balance of Replacements and actual Depletions/Obligations regardless of whether the plan is in or out of priority. It is calculated by subtracting Depletions and Obligations from Replacements.

j. (Summary) - a monthly summary table may be added at the bottom of the Summary tab below the daily summary

Monthly Summary											
Month	Number of days Plan is In Priority (# of days) (1)	% of Days In Priority (%) (2)	Lagged Depletions (ac-ft) (3)	OOP Lagged Depletions (ac-ft) (4)	RFOs (ac-ft) (5)	Total (ac-ft) (6)	Aug Station (ac-ft) (7)	Res Release (ac-ft) (8)	Total (ac-ft) (9)	Balance (ac-ft) (10)	Net Effect (ac-ft) (11)
Nov-20	0.00	0%	1.77	1.77	1.81	3.58	0.00	4.26	4.26	0.68	0.68
Dec-20	0.00	0%	1.32	1.32	1.41	2.73	0.00	4.32	4.32	1.59	1.59
Jan-21	30.00	97%	1.25	0.04	1.15	1.19	0.00	0.77	0.77	-1.63	0.69
Feb-21	28.00	100%	1.17	0.00	0.89	0.89	0.00	0.00	0.00	-2.06	0.00
Mar-21	31.00	100%	1.17	0.00	0.88	0.88	0.00	0.00	0.00	-2.05	0.00
Apr-21	9.00	30%	1.25	0.04	0.84	0.88	3.83	0.00	3.83	1.75	2.38
May-21	0.00	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jun-21	0.00	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jul-21	0.00	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Aug-21	0.00	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sep-21	0.00	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oct-21	0.00	0%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Net Effect is the Balance or Net Impact value with the priority of the plan included. Plans considered in priority may not be required to replace depletions. This column represents whether the Aug plan shows injury to the river or has sufficiently replaced its uses.