COLORADO
Division of Water Resources
Department of Natural Resources

June 1, 2022

Mr. Paul Bruss
Bishop-Brogden Associates, Inc.
333 West Hampden Ave., Ste 1050
Englewood, CO 80110

RE: Castle Concrete Aggregates (Grisenti Farms) Pit
DRMS File No. M-2001-005
Sec. 13, Twp. 19S, Rng. 69W, 6th P.M.
Water Division 2, Water District 12
SWSP ID 4625, WDID 1207856

Approval Period: April 1, 2022 through March 31, 2024
Contact Information for Mr. Bruss: 303-806-8952; pbruss@bbawater.com

Dear Mr. Bruss:

We have reviewed your February 1, 2022 renewal request for a substitute water supply plan ("SWSP" or "plan"), in accordance with § 37-90-137(11) C.R.S., for a gravel pit to be operated by Castle Concrete Aggregates ("Castle" or "Applicant"), previously operated by Transit Mix Concrete Company. The gravel pit is permitted by the Division of Reclamation, Mining, and Safety ("DRMS") under File No. M-2001-005, and is permitted with the Division of Water Resources under Well Permit No. 79268-F. The required $257 fee for the SWSP renewal request has been received and given receipt no. 10018655.

SWSP OPERATION

Castle has a lease agreement with the Grisenti family to mine sand and gravel from approximately 100 acres of land along the Arkansas River east of Florence. The mining operation is divided into two phases. Phase 1 involved the mining of approximately 35 acres located east of Highway 115 and west of Brush Hollow Creek. Phase 1 has been completed, and the reclaimed pit serves as a water recharge pond for SWSP operations. Mining operations have been completed in Phase 2, and the Applicant is in the process of completing final reclamation of the site, including the first fill of the Phase 2 pit. The two ponds will be used for wildlife habitat and aquifer recharge associated with a long-term augmentation plan for the site. The attached Figure 1 shows the project phases.

DEPLETIONS

Depletions from the Grisenti Pit site include the Phase 2 pit first-fill operations, evaporation from exposed groundwater, reclamation irrigation uses and dust control on the site. During the 2021 SWSP approval period, the Phase 2 first-fill operation was estimated to have reached the

natural groundwater table. If the stage in the Phase 2 pit does not increase above the July 2021 peak during the SWSP period, the first-fill will be considered complete. Should there be additional first-fill inflows, the projected operations have conservatively assumed 50 acre-feet per year of additional fill. Presently, the Phase 2 pit is only being passively filled by groundwater infiltration.

As of January 2022, the total exposed groundwater area at the Grisenti Pit was estimated to be 48.3 acres, consisting of a 24-acre recharge pond in Phase 1 pit and 24.3 acres in the Phase 2 pit. The Phase 2 pit may fill up to a maximum of 26.8 acres, resulting in a total surface area of 50.8 acres during the approval period of this SWSP. The net evaporative loss at the site is projected to be 149.2 acre-feet in the 2022-2023 period and 152.9 acre-feet in the 2023-2024 period.

Depletions from reclamation activities include irrigation of seeded areas around the two pits, an area of approximately 45 acres, and dust control. The diversions for irrigation will be pumped from the reclaimed gravel ponds, and will consist of approximately 30 acre-feet per year. Dust control is estimated to be up to 3.5 acre-feet per year. Both are considered to be 100% consumptive.

A monthly breakdown of these amounts for both plan years is shown in Table 1, attached. Total depletions from mining activities are estimated to be 232.7 acre-feet for the 2022 plan year and 236.4 acre-feet for the 2023 plan year.

In the future, a turnout structure may be constructed to fill the pit directly from the Lester-Attebery Ditch. These deliveries will be separately metered and associated depletions will be assessed the same day that the deliveries occur.

LAGGED DEPLETIONS

The renewal request has included lagged depletions associated with evaporation, irrigation, dust control, and a projected 50 acre-feet incidental Phase 2 pit first-fill inflow (this is not expected to occur). Depletions are lagged individually based upon the centroid of the exposed groundwater area.

The depletions were lagged through use of IDS-AWAS, which utilized the Glover Method with the following parameters:

Glover Method Input Parameters

Location	T	S	X	W
Phase 1	40,000	0.087	934	1,489
Phase 2	40,000	0.087	541	1,252

T = Transmissivity of aquifer (gallons per day per foot)
S = Specific yield of aquifer
X = Distance between the centroid of the pond or mining area and the Arkansas River (feet)
W = Distance between the Arkansas River and the alluvial boundary (feet)

The cumulative lagged depletions are 232.7 acre-feet for the 2022 plan year and 236.3 acre-feet for the 2023 plan year, and may be found in Table 1, attached.

REPLACEMENTS

The main source of replacement water is based on the 81.4 acres that is now removed from agricultural production by the mining operation out of the total pro rata share of 89.47 acres of alfalfa and silage corn historically irrigated with Lester-Attebery Ditch water. A ditch-wide analysis has been completed and the calculated historical consumptive use for the Grisenti parcel was 220.8 acre-feet per year (2.47 acre-feet per acre). The historical irrigation summary is attached as Table 2. Although 89.4 acres are currently dried up, eight acres have been removed from the calculations to account for potential future irrigation. The proposed dry-up of 81.4 acres of historically irrigated land provides a historical consumptive use credit of 201.12 acre-feet (221.60 acre-feet credit during April through October and a return flow obligation of 20.48 acre-feet during winter months).

Sixty shares of Twin Lakes Reservoir water will be used to supply the replacement water for the winter months. Based on an average yield of 0.93 acre-feet per share, the Applicant can request Twin Lakes release approximately 55.80 acre-feet per year. This water is subject to a 10.3 percent transit loss (0.07% per mile for 147.8 miles) for delivery to the Grisenti site, yielding a replacement supply of approximately 50 acre-feet per year. However, **only the transmountain portion of these shares can be used for replacement purposes under this SWSP.** The exact amount of the transmountain portion for the year's allocation can be obtained from Twin Lakes Reservoir and Canal Company. Contact information for Twin Lakes is: Bruce Hughes (bhughes@ccanal.net) or Stacey Sober (ssober@ccanal.net) contact telephone number (719) 267-4411.

The Applicant has a one year remaining on a multi-year lease agreement with PBWW for up to 120 acre-feet of water that was originally used for the Pueblo East Pit. This water is no longer required for operations at the Pueblo East Pit, and PBWW has agreed to make the leased water available for use at the Grisenti Pit. This water may be released from Pueblo Reservoir by administrative exchange, or from an upstream reservoir if no exchange potential exists. This lease expires in September 2022.

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 DRMS requires that you provide information to 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 to satisfy this requirement. Approach nos. 1 and 3 require bonding to ensure the pit can be backfilled or lined. 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 ground water exposure after completion of mining and reclamation will be replaced so as to prevent injury to other water rights.

In accordance with approach nos. 1 and 3, a bond for $115,000 has been obtained through DRMS. It is our understanding that this may be used for backfilling of the sediment pond and water basin, but is not adequate for backfilling of the Phase 2 mining pit. Therefore, in accordance with approach no. 4, the mineral lease between the Applicant and the landowner provides for the Applicant's use of the Lester-Attebery water rights in connection with the mining operation. The Applicant intends to fully utilize the Lester-Attebery Ditch rights as the sole replacement supply for a long-term augmentation plan for the Grisenti Pit. For the purposes of this SWSP, the lease agreement will be accepted for the dedication of the subject water rights; however, if the State Engineer determines that a different dedication process is necessary to assure proper dedication of water rights, additional information may be required prior to future SWSP approvals.

CONDITIONS OF APPROVAL

This SWSP is hereby approved pursuant to § 37-90-137(11), C.R.S., subject to the following conditions:

1. This SWSP shall be valid for the period of April 1, 2022 through March 31, 2024, unless otherwise revoked or superseded by decree. If this SWSP will not be made absolute by a water court action by the expiration date, a renewal request must be submitted to this office with the statutory fee of $257 no later than **February 1, 2024**.

2. The total surface area of the groundwater exposed after December 31, 1980 shall not exceed 50.8 acres for the period of this SWSP.

3. The annual volume of groundwater used for dust control shall not exceed 3.5 acre-feet.

4. The lagged depletions associated with this mining operation must not exceed 232.7 acre-feet during the period April 1, 2022 – March 31, 2023 and 236.4 acre-feet during the period April 1, 2023 – March 31, 2024. Documentation of pond size may be required by the Division Engineer in the form of an aerial photo evaluation or survey by a Professional Land Surveyor during the term of this plan.

5. Total consumption at the Grisenti Farms Pit must not exceed the aforementioned amounts, unless a new SWSP allowing such is approved by this office.

6. Approval of this SWSP is for the purposes as stated herein. Any additional uses of this water must first be approved by this office in a new SWSP. Any future additional historical consumptive use credit given (e.g., agricultural water transfer) for this site must consider all previous credits given.

7. Releases of water by Pueblo Board of Water Works pursuant to this SWSP shall be

coordinated with the Water Commissioner and the Augmentation Coordinator and shall equal or exceed the depletions to be replaced on a monthly basis.

8. All diversions, including dust suppression, must be measured in a manner acceptable to the Division Engineer and in accordance with the "Amendments to Rules Governing the Measurement of Tributary Ground Water Diversions Located in the Arkansas River Basin".

9. When applicable, Applicant will submit augmentation replacement requests via the "Arkansas Basin Water Operations Dashboard" (http://div2waterops.com/AnonymousHome). To set up an account on the "Arkansas Basin Water Operations Dashboard", email Phil Reynolds (phil.reynolds@state.co.us) with: user name, user email address, user phone number, and indicate SWSP name (Or SWSP group WDID) or decree number. Once the applicant's request is made through the "Arkansas Basin Water Operations Dashboard", the Division Engineer's Office will review and either approve or deny the request. This decision will be emailed to applicants through the "Dashboard" to document this transaction.

10. The Applicant must provide adequate accounting (including, but not limited to diversions, depletions, and river calls) on a monthly basis. The accounting must be submitted to the Division Engineer via the online submittal tool. Submission access was established under the previous SWSP approval, please contact Brian Sutton at brian.sutton@state.co.us with any questions related to accounting submission under this SWSP approval. Accounting must be submitted 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.

11. The Applicant shall perform an inspection and provide verification that the land associated with the changed water right in this SWSP has been removed from irrigation during the term of this SWSP. Verification of dry-up must be in the form of an affidavit signed by an individual with personal knowledge of the dry-up for the entire irrigation season for each parcel of land associated with the change of water right in this SWSP. For 2022, this SWSP renewal request shall serve as written notification to the Water Commissioner and Division Engineer identifying the lands to be dried-up for the **2022** irrigation season. **By November 30, 2022,** the Applicant shall provide an affidavit to the Water Commissioner and Division Engineer that confirms dry-up during the **2022** irrigation season. For 2023, the Applicant shall provide a written notification to the Water Commissioner and Division Engineer **by March 15, 2023** identifying the lands to be dried-up for the **2023** irrigation season. **By November 30, 2023,** the Applicant shall provide an affidavit to the Water Commissioner and Division Engineer that confirms dry-up during the **2023** irrigation season.

    The historical consumptive use attributed to the changed surface water right(s) under this SWSP shall not include groundwater contributions. As a result, the historical consumptive use ("HCU") credit calculated for the subject water right to be changed by this SWSP shall be reduced by any ongoing sub-irrigation from groundwater. In order to

ensure the required dry-up conditions exist during the approval period of this SWSP, and to ensure no sub-irrigation from groundwater is occurring, the Applicant shall provide records of monthly monitoring of depth to groundwater for all land associated with the change of water right in this SWSP. Information regarding depth to groundwater may be provided using existing irrigation wells, existing or new monitoring wells, or piezometers located on the dried-up fields. Applicant may utilize wells or piezometers located within ¼ mile of each field provided that the Applicant can demonstrate the depth to ground water information available off-site is representative of the depth to groundwater on the dried-up land. The Applicant shall modify its accounting to reduce the amount of the calculated HCU that may be claimed in this SWSP according to the table below. Measurements taken at the start of each month will determine the necessary reduction in credit to be applied during the following month. The Applicant may use another methodology upon review and prior approval by the State Engineer and Division Engineer. (Construction of monitoring holes/wells, or piezometers requires that permits or notices be obtained as described in Table 1 of the Water Well Construction Rules.)

Depth to Groundwater (Feet)	Percent Reduction in Calculated HCU[1]	
	Native Grass	Alfalfa
1	85%	100%
2	50%	90%
3	30%	75%
4	20%	50%
5	15%	35%
6	10%	20%
7	5%	15%
8	0%	10%

[1] Adapted from *EVAPOTRANSPIRATION AND AGRONOMIC RESPONSES IN FORMERLY IRRIGATED MOUNTAIN MEADOWS, South Park, Colorado*, March 1, 1990; Revised September 1, 1991

12. The approval of this SWSP does not relieve the Applicant and/or the 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. Since reclamation of the mine site will produce a permanent water surface exposing ground water to evaporation, an application for a plan for augmentation must be filed with the Division 2 Water Court, to include, but not be limited to, long-term evaporation losses and lagged depletions. The Applicant has indicated that a plan for augmentation will be developed when additional information has been gathered regarding the method and rate of infiltration.

13. The Applicant must replace all out-of-priority depletions resulting from operation under this SWSP, including those lagged depletions that occur to the stream after the expiration date of this SWSP.

14. If a lined pond results after reclamation, replacement of lagged depletions from mining and dewatering shall continue until there is no longer an effect on stream flow. **Any**

subsequent request for a renewal/additional SWSP for this site must include information regarding the Applicant's plans for filing an application with the water court for a plan for augmentation.

15. **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 DRMS requires that you provide information to 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 to satisfy this requirement.**

    In accordance with approach nos. 1 and 3, a bond for $115,000 has been obtained through DRMS. It is our understanding that this may be used for backfilling of the sediment pond and water basin, but is not adequate for backfilling of the Phase 2 mining pit. Therefore, in accordance with approach no. 4, the mineral lease between the Applicant and the landowner provides for the Applicant's use of the Lester-Attebery water rights in connection with the mining operation. The Applicant intends to fully utilize the Lester-Attebery Ditch rights as a replacement supply for a long-term augmentation plan for the Grisenti Pit, in addition to water releases from Twin Lakes Reservoir. For the purposes of this SWSP, the lease agreement will be accepted for the dedication of the subject water rights; however, if the State Engineer determines that a different dedication process is necessary to assure proper dedication of water rights, additional information may be required prior to future SWSP approvals.

16. The replacement water that is the subject of this SWSP cannot be sold, leased or otherwise legally encumbered during the term of this SWSP. As a condition of subsequent renewals of this SWSP, the replacement water must be appurtenant to this site until a plan for augmentation is obtained. All replacement water must be concurrent with depletions in quantity, timing, and location.

17. The native portion of the Twin Lakes shares shall not be used to replace depletions in this SWSP absent a change of water right decree that changes the native component or a change of water right application or substitute water supply plan to add augmentation use to the existing decreed uses.

18. 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 or will occur as a result of this SWSP. Should this SWSP expire without renewal or be revoked prior to adjudication of a permanent plan for augmentation, all use of groundwater must cease immediately.

19. In accordance with amendments to C.R.S. § 25-8-202(7) and "Senate Bill 89-181 Rules and Regulations" adopted on February 4, 1992, the State Engineer shall determine whether or not the substitute supply is of a quality to meet requirements of use to senior appropriators. As such, water quality data or analysis may be requested at any time to

determine if the water quality is appropriate for downstream water users.

20. 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 the SWSP. This decision shall not bind the State Engineer to act in a similar manner in any other applications involving other plans or in any proposed renewal of this plan, 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.

Should you have any questions, please contact Melissa van der Poel of this office, or Dan Henrichs in the Division 2 office in Pueblo at (719) 269-2800.

Sincerely,

Jeff Deatherage, P.E.
Chief of Water Supply

Attachments: Tables 1-4
Figure 1

ec: Bill Tyner, Division 2 Engineer
Rachel Zancanella, Assistant Division 2 Engineer
Brian Sutton, Augmentation Coordinator
Dan Henrichs, District 12 Water Commissioner
Water Information Team Members
Division of Reclamation, Mining and Safety

JD/kff/Castle Concrete Aggregates Grisenti Pit 2022-24 SWSP.docx

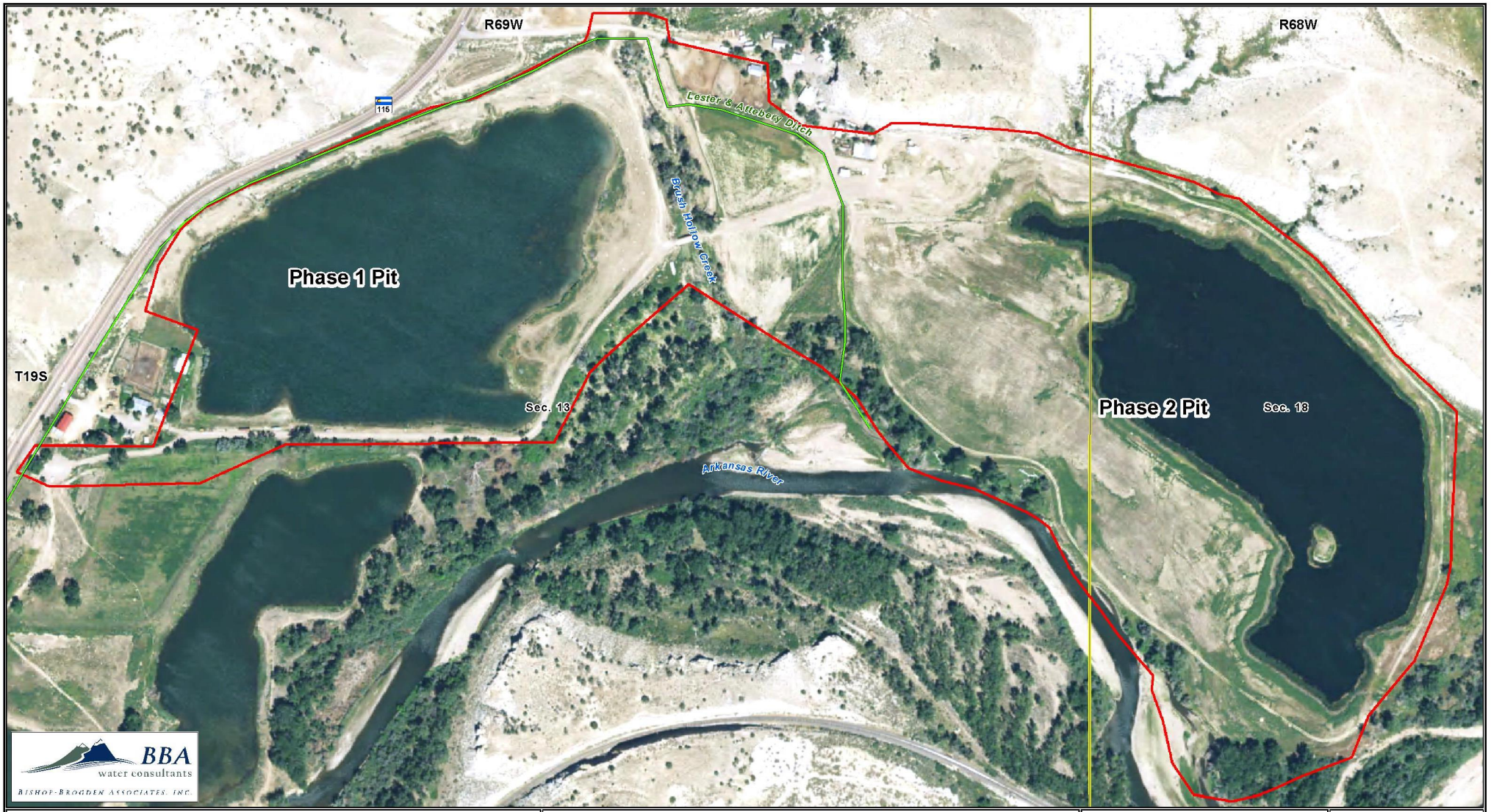

Figure 1
Castle Concrete Aggregates - Grisenti Pit
General Location Map

Date: 1/13/2022 | Job No. 9107.08

Legend

- Canal/Ditch
- Permit Boundary (Approx.)
- PLSS Section
- PLSS Township Boundary

Aerial Photo Date: 8/24/2021 NAIP USDA. Data Source: CDSS, CDOT, BLM, USGS

N W E S

0 150 300 600
Feet

Colorado
Main Map

Table 1
Castle Concrete Aggregates - Grisenti Pit
2-Year Projected Depletions from Mining Operations

Month	Production		Dust Control	Reclamation Irrigation Use		Exposed Water Surface									First-Fill of Phase 2 (Unlagged)	Total Unlagged Depletion from Mining Operation	Total Lagged Depletion from Mining Operation
										Exposed Ground Water Area		Net Evaporation Volume					
	Mined Material (x 1000 tons)	Water Consumed (ac-ft)	(ac-ft)	Phase 1 (ac-ft)	Phase 2 (ac-ft)	Gross Evaporation (ft)	Total Precipitation (ft)	Effective Precipitation (ft)	Net Evaporation (ft)	Phase 1 (acres)	Phase 2 (acres)	Phase 1 (ac-ft)	Phase 2 (ac-ft)	Total (ac-ft)	(ac-ft)	(ac-ft)	(ac-ft)
	[1]	[2]	[3]	[4a]	[4b]	[5]	[6]	[7]	[8]	[9a]	[9b]	[10a]	[10b]	[10c]	[11]	[12]	[13]
Apr-22	0.00	0.00	0.29	0.00	0.00	0.34	0.11	0.08	0.26	24.0	24.4	6.2	6.4	12.6	2.5	15.4	13.0
May-22	0.00	0.00	0.30	1.11	3.89	0.45	0.13	0.09	0.36	24.0	24.6	8.7	8.9	17.5	10.0	32.8	27.6
Jun-22	0.00	0.00	0.29	1.11	3.89	0.55	0.10	0.07	0.49	24.0	25.0	11.7	12.1	23.8	12.5	41.6	38.6
Jul-22	0.00	0.00	0.30	1.11	3.89	0.57	0.15	0.11	0.46	24.0	25.2	11.1	11.7	22.8	10.0	38.1	38.9
Aug-22	0.00	0.00	0.30	1.11	3.89	0.51	0.16	0.11	0.40	24.0	25.3	9.5	10.0	19.5	7.5	32.3	34.1
Sep-22	0.00	0.00	0.29	1.11	3.89	0.38	0.09	0.06	0.32	24.0	25.5	7.7	8.1	15.8	5.0	26.1	28.1
Oct-22	0.00	0.00	0.30	1.11	3.89	0.26	0.07	0.05	0.21	24.0	25.5	5.1	5.4	10.5	2.5	18.3	20.8
Nov-22	0.00	0.00	0.29	0.00	0.00	0.15	0.06	0.04	0.11	24.0	25.5	2.6	2.8	5.4	0.0	5.7	9.7
Dec-22	0.00	0.00	0.30	0.00	0.00	0.11	0.04	0.03	0.08	24.0	25.5	2.0	2.1	4.2	0.0	4.5	5.1
Jan-23	0.00	0.00	0.30	0.00	0.00	0.11	0.03	0.02	0.09	24.0	25.5	2.1	2.2	4.3	0.0	4.6	4.6
Feb-23	0.00	0.00	0.27	0.00	0.00	0.13	0.04	0.03	0.10	24.0	25.5	2.5	2.7	5.2	0.0	5.5	5.2
Mar-23	0.00	0.00	0.30	0.00	0.00	0.21	0.08	0.06	0.15	24.0	25.5	3.7	3.9	7.6	0.0	7.9	7.0
22-23 Total	0.00	0.00	3.50	6.67	23.33	3.78	1.06	0.74	3.03	-	-	72.8	76.3	149.2	50.0	232.7	232.7
Apr-23	0.00	0.00	0.29	0.00	0.00	0.34	0.11	0.08	0.26	24.0	25.6	6.2	6.7	12.9	2.5	15.7	13.2
May-23	0.00	0.00	0.30	1.11	3.89	0.45	0.13	0.09	0.36	24.0	25.8	8.7	9.3	18.0	10.0	33.3	28.0
Jun-23	0.00	0.00	0.29	1.11	3.89	0.55	0.10	0.07	0.49	24.0	26.1	11.7	12.7	24.3	12.5	42.1	39.1
Jul-23	0.00	0.00	0.30	1.11	3.89	0.57	0.15	0.11	0.46	24.0	26.4	11.1	12.2	23.3	10.0	38.6	39.5
Aug-23	0.00	0.00	0.30	1.11	3.89	0.51	0.16	0.11	0.40	24.0	26.6	9.5	10.5	20.0	7.5	32.8	34.6
Sep-23	0.00	0.00	0.29	1.11	3.89	0.38	0.09	0.06	0.32	24.0	26.7	7.7	8.5	16.2	5.0	26.5	28.5
Oct-23	0.00	0.00	0.30	1.11	3.89	0.26	0.07	0.05	0.21	24.0	26.8	5.1	5.7	10.7	2.5	18.5	21.1
Nov-23	0.00	0.00	0.29	0.00	0.00	0.15	0.06	0.04	0.11	24.0	26.8	2.6	2.9	5.5	0.0	5.8	9.8
Dec-23	0.00	0.00	0.30	0.00	0.00	0.11	0.04	0.03	0.08	24.0	26.8	2.0	2.3	4.3	0.0	4.6	5.2
Jan-24	0.00	0.00	0.30	0.00	0.00	0.11	0.03	0.02	0.09	24.0	26.8	2.1	2.3	4.4	0.0	4.7	4.7
Feb-24	0.00	0.00	0.27	0.00	0.00	0.13	0.04	0.03	0.10	24.0	26.8	2.5	2.8	5.3	0.0	5.6	5.3
Mar-24	0.00	0.00	0.30	0.00	0.00	0.21	0.08	0.06	0.15	24.0	26.8	3.7	4.1	7.8	0.0	8.1	7.2
23-24 Total	0.00	0.00	3.50	6.67	23.33	3.78	1.06	0.74	3.03	-	-	72.8	80.0	152.9	50.0	236.4	236.3

Notes:

[1] Active mining has completed at the Grisenti Pit. Therefore, no production is expected during SWSP period.

[2] Based upon 4 percent water loss by weight.

[3] Dust control projections based upon historical maximum annual dust control uses, distributed uniformly through the year. Actual monthly dust control amounts may vary.

[4a], [4b] Projected reclamation irrigation use at Phases 1 and 2.

[5] Based upon NOAA Evaporation Atlas (45.4 inches per year), distributed monthly based upon State's SB-120 guidelines.

[6] Based upon average monthly precipitation data from the NOAA Climate Data (Canon City, 1950 - 2003).

[7] Effective Precipitation equals 70 percent of total precipitation, based upon the State's SB-120 guidelines, [6] * 0.70.

[8] Net Evaporation equals Gross Evaporation less Effective Precipitation, [5] - [7].

[9a], [9b] Projected exposed area at Phases 1 and 2. Total maximum exposed water surface area that may occur at Grisenti Pit during the plan period is 50.8 acres. Projected amounts based on estimated timing and infiltration rates for the first-fill operations.

[10a], [10b], [10c] Equals [8] * [9a] for Phase 1 and [8] * [9b] for Phase 2. Total net evaporation equal to [10a] + [10b].

[11] Total first-fill inflows to Phase 2 pit during the month. Projected amounts based on estimated timing and infiltration rates for the first-fill operations.

[12] Total Unlagged Depletion from Mining Operation equals [2] + [3] + [4a] + [4b]+ [10c] + [11]. Amount conservatively assumes first-fill occurs by ground water infiltration only.

[13] Total Lagged Depletions from Mining Operation are lagged using URF factors for each mining area, developed in IDS-AWAS employing the glover method. The IDS-AWAS inputs are provided in the 2022 SWSP renewal request.

Table 2
Castle Concrete Aggregates - Grisenti Pit
Historical Irrigation Summary

												Full 89.4 Acres		81.4 Acres Pro Rata	
Month	Historical Diversions (ac-ft) [1]	Ditch Loss (ac-ft) [1a]	Farm Delivery (ac-ft) [1b]	Surface Runoff (ac-ft) [2]	Consumptive Irrigation Requirement (ft) [3]	Consumptive Irrigation Requirement (ac-ft) [4]	Consumptive Use (CU) per StateCU (ac-ft) [5]	To Groundwater (ac-ft) [6]	Glover Lagging Factors (%) [7]	Lagged Groundwater Return Flow (ac-ft) [8]	Total Return Flow (ac-ft) [9]	Historical Stream Depletion (ac-ft) [10]	Historical Stream Accretion (ac-ft) [11]	Historical Stream Depletion (ac-ft) [12]	Historical Stream Accretion (ac-ft) [13]
Apr	43.45	4.35	39.11	7.82	0.14	12.52	9.65	21.64	0.07	16.00	23.83	15.28		13.91	
May	126.33	12.63	113.70	22.74	0.34	30.40	29.42	61.54	0.19	46.96	69.70	44.00		40.06	
Jun	127.98	12.80	115.18	23.04	0.58	51.85	50.73	41.41	0.19	45.88	68.92	46.26		42.12	
Jul	128.35	12.83	115.51	23.10	0.67	59.90	56.34	36.07	0.16	40.05	63.15	52.36		47.67	
Aug	97.86	9.79	88.07	17.61	0.55	49.17	43.66	26.80	0.14	34.18	51.80	36.27		33.03	
Sep	65.15	6.52	58.64	11.73	0.33	29.50	25.98	20.93	0.08	19.91	31.64	27.00		24.58	
Oct	55.34	5.53	49.81	9.96	0.07	6.26	5.11	34.74	0.07	17.64	27.60	22.21		20.22	
Nov									0.03	8.35	8.35		8.35		7.61
Dec									0.02	4.86	4.86		4.86		4.43
Jan									0.02	3.73	3.73		3.73		3.40
Feb									0.01	2.82	2.82		2.82		2.57
Mar									0.01	2.72	2.72		2.72		2.47
Total	644.47	64.45	580.02	116.00	2.68	239.59	220.88	243.13	100.00%	243.13	359.14	243.38	22.49	221.60	20.48

Notes:

[1] Based upon analysis of Lester-Attebery Ditch daily diversions between 1950 - 2006, pro-rated based upon percent ownership of each of the three water rights totaling 9.1 cfs.

[1a] Ditch Loss equals 10% of diversions, [1] * 0.1.

[1b] Farm Delivery equals diversions minus ditch loss, [1] - [1a].

[2] Surface Runoff equal to 20 percent of farm delivery; [1b] * 0.2.

[3] Based upon Modified Blaney-Criddle analysis with an elevation adjustment for the Grisenti crop mix of primarily alfalfa, and climate records from the Canon City weather station from 1950 - 2006, as computed in StateCU.

[4] Historical irrigation on Grisenti farm averaged 89.4 acres between 1950 and 2006, based upon aerial photo delineation and consistent with information provided by Mr. Grisenti.

[5] CU results from StateCU analysis.

[6] Equals [1b] - [2] - [5].

[7] Lagging factors based upon a steady-state Glover analysis using the following parameters: D (weighted) = 700 feet, T = 40,000 gpd/ft, and s= 0.087.

[8] Lagged Groundwater Return Flow equals annual amount To Groundwater distributed monthly using the Glover Factors, [6 Total] x [7 Monthly].

[9] Total Return Flow equals Surface Runoff + Lagged GW Return Flow, [2] + [8].

[10] Historical Stream Depletion equals Historical Diversion less Total Return Flow, [1b] - [9]; if positive, else zero.

[11] Historical Stream Accretion equals Total Return Flow less Historical Diversion , [9] - [1b]; if positive, else zero.

[12] Based upon Phase I and Phase II mining removing all 89.4 acres of irrigated acreage less up to 8 acres of land potentially irrigated by Grisentis on BLM land. [10] * 81.4/89.4.

[13] Based upon Phase I and Phase II mining removing all 89.4 acres of irrigated acreage less up to 8 acres of land potentially irrigated by Grisentis on BLM land. [11] * 81.4/89.4.

Table 3
Castle Concrete Aggregates - Grisenti Pit
2-Year Projected Replacement Operations
(all values in acre-feet)

Month	Total Lagged Mining Depletion [1]	HCU Credit & Return Flow Obligation [2]	Projected Lagged HCU Credits Delivered to the River [3]	Remaining Replacement Requirements [4]	Excess Credits [5]	Reservoir Delivery Requirements [6]
Apr-22	13.0	13.9	7.8	5.2	0.0	5.2
May-22	27.6	40.1	27.9	0.0	0.3	0.0
Jun-22	38.6	42.1	39.8	0.0	1.2	0.0
Jul-22	38.9	47.7	45.1	0.0	6.2	0.0
Aug-22	34.1	33.0	39.1	0.0	5.0	0.0
Sep-22	28.1	24.6	29.1	0.0	1.0	0.0
Oct-22	20.8	20.2	22.6	0.0	1.8	0.0
Nov-22	9.7	-7.6	9.1	8.2	0.0	8.2
Dec-22	5.1	-4.4	1.1	8.4	0.0	8.4
Jan-23	4.6	-3.4	0.0	8.0	0.0	8.0
Feb-23	5.2	-2.6	0.0	7.7	0.0	7.7
Mar-23	7.0	-2.5	0.0	9.5	0.0	9.5
22-23 Total	232.7	201.1	221.6	47.0	15.5	47.0
Apr-23	13.2	13.9	7.8	5.4	0.0	5.4
May-23	28.0	40.1	27.9	0.1	0.0	0.1
Jun-23	39.1	42.1	39.8	0.0	0.7	0.0
Jul-23	39.5	47.7	45.1	0.0	5.7	0.0
Aug-23	34.6	33.0	39.1	0.0	4.5	0.0
Sep-23	28.5	24.6	29.1	0.0	0.6	0.0
Oct-23	21.1	20.2	22.6	0.0	1.5	0.0
Nov-23	9.8	-7.6	9.1	8.4	0.0	8.4
Dec-23	5.2	-4.4	1.1	8.5	0.0	8.5
Jan-24	4.7	-3.4	0.0	8.1	0.0	8.1
Feb-24	5.3	-2.6	0.0	7.9	0.0	7.9
Mar-24	7.2	-2.5	0.0	9.7	0.0	9.7
23-24 Total	236.3	201.1	221.6	48.1	12.9	48.1

Notes:
[1] Total lagged mining depletions from Table 1, column [13].
[2] HCU credits from Table 2, columns [12] and [13]. Negative values represent return flow obligation.
[3] HCU credits are diverted through the Lester-Attebury Ditch to the Phase 1 pond where the water is recharged back to the river. Lagged HCU credits delivered to the River were projected based on lagging factors described in the 2022 SWSP.
[4] Remaining replacement requirements calculated as follows: If [2] < 0, equal to maximum of ([1] - [2] - [3]) and zero. If [2] > 0, equal to maximum of ([1] - [3]) and zero.
[5] Excess credits calcualted as follows: If [4] > 0, then 0, else [3] - [1].
[6] Reservoir release may be occur from Twin Lakes or from Pueblo Reservoir via administrative exchange. Twin Lakes releases will be assessed 10.3% transit loss based upon a loss of 0.07% per mile over 147.8 miles.

Table 4
Castle Concrete Aggregates - Grisenti Pit
Example SWSP Accounting Form
May 2022

	Production		Dust Control		Reclamation Irrigation				Evaporation of Exposed Ground Water Area																
									Net	Exposed Ground Water Area (acres)			Net Evaporation Vol (ac-ft)			First-Fill of Phase 2	Total	Total	Historical	Unlagged Ditch	Lagged	Exch. of	Replacement Requirements		Replacement
	Mined Material (tons)	Water Consumed (ac-ft)	Meter Reading (gallons)	Water Use (ac-ft)	Phase 1 Meter (gallons)	Phase 1 Amount (ac-ft)	Phase 2 Meter (gallons)	Phase 2 Amount (ac-ft)	Evap. Rate (ft)	Phase 1	Phase 2	Total	Phase 1	Phase 2	Total	Ground Water Infiltration (ac-ft)	Unlagged Mining Depletion (ac-ft)	Lagged Mining Depletion (ac-ft)	Irrigation Credit (+)/ Debit (-) (ac-ft)	Deliveries to Phase 1 Pond (ac-ft)	Historical Irrigation Credit To River (ac-ft)	Water from Pueblo Reservoir (ac-ft)	Remaining Replacement Requirement (ac-ft)	Twin Lakes Release (ac-ft)	Balance Credit (+)/ Debit (-) (ac-ft)
Month	[1]		[2]		[3a]		[3b]		[4]	[5]			[6]			[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]
Apr-22	0	0.00	3,696,938	0.29	0.00	0.00	0.00	0.00	0.26	24.0	24.4	48.40	6.25	6.35	12.60	2.50	15.39	13.01	13.91	13.91	7.83	6.00	0	0	0.82
May-22	0	0.00	3,793,801	0.30	362057	1.11	1267198	3.89	0.36	24.0	24.6	48.60	8.66	8.88	17.54	10.00	32.84	27.62	40.06	40.06	27.88	0.00	0	0	0.26
Jun-22									0.49	24.0	23.3	47.30	11.66	11.32	22.98				42.12						
Jul-22									0.46	24.0	24.1	48.10	11.11	11.15	22.26				47.67						
Aug-22									0.40	24.0	24.7	48.70	9.50	9.78	19.27				33.03						
Sep-22									0.32	24.0	25.1	49.10	7.65	8.01	15.66				24.58						
Oct-22									0.21	24.0	25.3	49.30	5.07	5.34	10.41				20.22						
Nov-22									0.11	24.0	25.6	49.60	2.61	2.79	5.40				-7.61						
Dec-22									0.08	24.0	25.8	49.80	2.02	2.17	4.19				-4.43						
Jan-23									0.09	24.0	26.0	50.00	2.10	2.28	4.38				-3.40						
Feb-23									0.10	24.0	26.2	50.20	2.51	2.74	5.26				-2.57						
Mar-23									0.15	24.0	26.4	50.40	3.69	4.06	7.75				-2.47						
Apr-20 - Mar-21	0	0.00	-	0.58				3.89	-	-	-	-	14.91	15.23	30.14	12.50	48.22	40.63	53.98	53.98	35.72	6.00	0.00	0.00	1.09

Notes:
[1] No production is expected during the SWSP period. Equal to 0.
[2] Water use based upon end-of-month meter readings reported by Castle Concrete Aggregates. March 2022 end-of-month meter reading is 3,603,200 gallons.
[3a], [3b] Reclamation irrigation use at Phases 1 and 2. Water will be pumped from either Phases 1 or 2 and will be lagged useing URF factors for each phase, as described in 2022 SWSP. Irrigation uses are assumed 100% consumptive.
[4] Net Evaporation calculated as described in the 2022 SWSP renewal request.
[5] Individual and total exposed ground water area reported by BBA or Castle Concrete Aggregates. Projected surface area in Phase 2 based on expected volume of fill during month.
[6] Individual and total evaporative depletion volume equal to net evaporation rate [4] multiplied by the exposed ground water area [5].
[7] Unlagged ground water infiltration into Phase 2 pit resulting from cessation of dewatering and first-fill operations at the pit. Value conservatively assumes no direct delivery of water to Phase 2 via Lester-Attebery Ditch.
[8] Total unlagged mining depletions equal [1] + [2] + [3a] + [3b] + [6] + [7].
[9] Total lagged mining depletions are lagged using URF factors for each mining area, developed in IDS-AWAS employing the glover method. IDS-AWAS inputs are specified in the 2022 SWSP renewal request.
[10] Based on Historical Irrigation Credits/Debits from BBA analysis in 2010 SWSP request, continued in 2022 SWSP.
[11] Actual replacement deliveries to the Phase 1 recharge pond measured through a 2-foot rectangular weir by a continuous recorder.
[12] Historical irrigation credits delivered from Lester-Attebury Ditch to the Phase 1 pond are lagged using URFs for Phase 1, developed in IDS-AWAS employing the glover method. IDS-AWAS inputs are specified in the 2022 SWSP renewal request.
[13] Replacement water delivered to Arkansas River out of Pueblo Reservoir via administrative exchange. Source of water is lease water from PBWW.
[14] If [10] is negative, equals maximum of [9] - [10] - [12] - [13] and zero, else if [10] is positive, equal to maximum of [9] - [12] - [13] and zero.
[15] Twin Lakes Release is assessed a 10.3% transit loss based upon a loss of 0.07% per mile and a distance of 147.8 miles. Manual input.
[16] Equal to [12] + [13] + [15] * (1-0.103) - [9] - minimum of [10] and zero.