COLORADO
Division of Water Resources
Department of Natural Resources

May 31, 2022

Mr. David M. Heintz, P.E.
Bishop-Brogden Associates, Inc.
333 West Hampden Ave, Ste 1050
Englewood, CO 80110

Re: Martin Marietta's Parsons Mine Substitute Water Supply Plan
(WDID 0302583, Plan ID 5822)
DRMS Permit No. M-2009-082 (WDID 0303045)
Sections 25 and 36, T6N, R67W, 6th P.M., and Sections 30 and 31, T6N, R66W, 6th P.M.
Water Division 1, Water District 3, Weld County

Approval Period: June 1, 2022 through May 31, 2023
Contact information for Mr. Heintz: 303-806-8952; dheintz@bbawater.com

Dear Mr. Heintz:

We have reviewed your letter dated March 29, 2022 requesting approval of a substitute water supply plan ("SWSP") on behalf of Martin Marietta ("Applicant" or "MM") in accordance with section 37-90-137(11), C.R.S., to cover depletions caused by an existing gravel pit operation known as the Parsons Mine (M-2009-082). The required renewal fee of $257 has been received (receipt no. 10020165). The Applicant shall be responsible for compliance with this SWSP, but the State Engineer's Office may also pursue the landowner for eventual compliance.

SWSP Operations

The Parsons Mine is located along the Cache la Poudre River in Sections 25 and 36, Township 6 North, Range 67 West of the 6th P.M., and Sections 30 and 31, Township 6 North, Range 66 West of the 6th P.M., as shown on the attached Figure 1. Mining operations will occur in several phases and are expected to last approximately 5 years. Due to restrictions related to eagle nesting habitat, MM will mine different areas of the site during different times of the year. MM plans to continue to mine Phase 4 and to begin mining Phase 5 in September 2022 and continue for the duration of this plan period. All phases of the mine will be continuously dewatered for the entire plan period. The depletions that are projected to result from the mining operations over the period of this SWSP include evaporation from exposed groundwater, water removed with the mined product, and water used for dust suppression. The proposed replacement sources are a combination of 12 Whitney Ditch shares owned by MM, water stored in MM's Heaton Reservoir, excess reusable effluent leased from the City of Greeley, and/or water stored in MM's 35th Avenue Reservoir.

Depletions

The exposed groundwater surface area at the site consists of 0.37 acres exposed in a 2,000 foot long by 8 foot wide dewatering trench around Phase 1A, 0.69 acres exposed in a 3,800 foot long by 8 foot wide dewatering trench around Phase 2, 1.93 acres exposed in a 10,500 foot long by 8 foot wide dewatering trench in the Phase 4 mining area, 11.15 acres exposed in a silt pond in Phase 1C,

and 1.13 acres exposed in Phase 1B, for a total of 15.27 acres of total exposed area exposed in June 2022 through August 2022. Beginning in September 2022, it is anticipated that there will be an additional 0.55 acres exposed in a 3,000 foot long by 8 foot wide dewatering trench in the Phase 5 mining area for a total of 15.82 acres of total exposed area for the remainder of the plan period.

Net evaporative depletions were calculated using a gross annual evaporation of 3.51 feet (42.12 inches) from the exposed water surface, with a credit of 0.84 feet (10.09 inches) for effective precipitation, based on average annual precipitation of 1.20 feet (14.41 inches) for the Greeley UNC weather station for the period of 1967-2015. **For any future SWSP renewal, the period the average annual precipitation is based on should be extended through the most recent year available (2022 for the 2023-2024 renewal).** Computation of evaporation under this plan may be reduced during the ice-covered period. You have anticipated the ice-covered period to occur during the months of December and January based on below-freezing average monthly temperatures for the Greeley UNC weather station. The ice-covered periods may be used to reduce the amount of evaporative losses that need to be replaced; however, for the purposes of this SWSP, the Applicant shall replace the net evaporation depletions from the exposed groundwater surface area that may occur during the anticipated ice-covered period (December through January) for any time that the exposed groundwater surface is not completely covered by ice. Computation of the net evaporation during any time that the exposed groundwater surface 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 is projected to total 41.53 acre-feet during this plan period, as shown on the attached Table 1 (assuming no ice cover).

Operational losses associated with mining activities will include water removed with the mined product and water used for dust control. MM estimates that they will mine a total of 482,500 tons of material during this plan period. Of this total estimated amount of mined material, 72,300 tons of aggregate is anticipated to be crushed (not washed) and 410,200 tons is anticipated to be washed. All of the material will be mined below the groundwater table, but in a dewatered state. The water retained by the crushed aggregate is considered to be 2% of the mined material by weight, and the water retained by the washed material is considered to be 4% of the mined material by weight. This results in a total groundwater loss of 13.13 acre-feet.

The Applicant has estimated that a total of 18.26 acre-feet of water will be required for dust control purposes at the site during this plan period. MM plans to pump all dust suppression water from the Phase 1C mining area. MM also has an agreement with the North Weld County Water District which allows MM to pump municipal water from a nearby hydrant to use for dust suppression purposes if necessary. However, for the purposes of this SWSP, you have assumed that all water for dust suppression purposes will be groundwater pumped from the Phase 1C mining area. Water used for dust control purposes is assumed to be 100% consumed.

The total consumptive use at this site during the period of this SWSP is 72.92 acre-feet. A monthly breakdown of evaporative and operational consumptive use is given in the attached Table 1.

The Alluvial Water Accounting System (AWAS) program developed by the Integrated Decision Support (IDS) Group at Colorado State University was used to lag depletions from evaporation and operational losses at the mine site to the Cache la Poudre River. The model requires the following parameters: distance (X) from the centroid of the exposed groundwater surface area to the river, aquifer width (W), transmissivity (T), and specific yield (S). The Parsons Mine was split into five

different areas, designated Areas A, B, C, D, and E as shown on the attached Figure 1, in order to more accurately determine the lagged depletions from the site. The aquifer parameters used for each area are listed in the table below:

Aquifer Parameters – Depletion Areas

Area	X (ft)	W (ft)	T (gpd/ft)	S
A	2,176	9,823	85,000	0.15
B	208	9,946	85,000	0.15
C	297	10,816	85,000	0.15
D	2,636	10,810	85,000	0.15
E	550	2,945	85,000	0.15

As shown in the attached Figure 1, Phases 1A and 1B are located within Area A, Phase 1C and Phase 2 are located within Area D, Phase 4 is located within Area C, and Phase 5 is located within Area E.

The total lagged depletions for the Parsons Mine site were determined to be 75.30 acre-feet for this plan period. This amount includes lagged depletions resulting from past consumptive use at the site that are projected to impact the river during this plan period. A monthly breakdown of total lagged depletions is shown in the attached Table 1.

Dewatering

With the exception of the silt pond, all phases of the mine will be continuously dewatered for the entire plan period. As long as the mine site is continuously dewatered, the water returned to the stream system should be adequate to offset the depletions attributable to dewatering operations. MM is not planning to use any dewatering credits for replacement of depletions at the Parsons Mine or at any other site under this SWSP. Totalizing flow meters must be installed at each dewatering discharge location and meter readings must be reported on the submitted accounting. The meter readings will be used in calculating the post-pumping depletions that must be replaced if dewatering ceases at the site during mining operations and/or upon the conclusion of mining operations at the site.

Replacements

The operator proposes to provide replacement water for this pit using consumptive use credits from 12 shares of Whitney Ditch owned by MM either delivered directly to the river for immediate credit or delivered to a recharge pond (Parsons Mine Recharge Area, WDID 0302067) for lagged recharge accretion credits. In addition, MM proposes to use water stored in the Heaton Reservoir under case no. 2001CW193, as well as any excess fully consumable water leased from the City of Greeley available after use for replacement purposes in MM's SWSP for the 35th Avenue Pit, and/or water stored under free river conditions in MM's 35th Avenue Reservoir.

The decreed source for the water rights under the Whitney Ditch (WDID 0300930) is the Cache la Poudre River, and the decreed point of diversion for the Whitney Ditch is on the north side of the Cache la Poudre River in the NW¼ of the SE¼ of Section 19, T6N, R67W, 6th P.M., Weld County. For this SWSP, MM has chosen to rely on the historical consumptive use analysis of the Whitney Ditch conducted for water court case no. 2008CW65. Case no. 2008CW65 relied on a ditch-wide analysis of the 320 total shares in the Whitney Ditch. Based on a study period of 1950 through 1995, the Court found that the average annual gross river diversion was 10,600.2 acre-feet per year, or 33.13 acre-feet per share. Total average annual farm headgate deliveries were found to be 9,010.2

acre-feet per year, or 28.16 acre-feet per share, based on a transit loss of 15% under the Whitney Ditch system. The ditch-wide analysis determined that the overall average consumptive use was 4,400.9 acre-feet per year or 13.75 acre-feet per share, assuming a farm efficiency of 60%. In case no. 2002CW331, 8 shares historically used on 74 acres were previously found to have a river headgate diversion of 33.42 acre-feet per share and a consumptive use of 16.32 acre-feet per share (130.5 acre-feet total). After removing the consumptive use decreed for the 8 shares in case no. 2002CW331, the historical consumptive use for the remaining 312 shares was determined to be 4,270.4 acre-feet, or 13.69 acre-feet per share. For MM's 12 Whitney Ditch shares dedicated to this SWSP, the total average annual consumptive use would therefore equal to 164.25 acre-feet per year and 337.88 acre-feet of total deliveries. The monthly and annual volumetric limit of the farm headgate deliveries are shown on the attached Table 3, column 4. The decree entered in case no. 2008CW65 limited diversions to the historic diversion period of April 1 through October 31, therefore this SWSP does not authorize any diversions in March. The annual volumetric limit reflects deliveries historically made in March. The ditch-wide analysis utilized a return flow split of 50% surface and 50% subsurface return flows. The return flows during the irrigation season will be calculated based upon a percentage of the actual monthly deliveries and winter return flows will be calculated based upon the total deliveries from the previous irrigation season as decreed in case no. 2008CW65. Eight (8) of the 12 shares are located within Zone 2-A of the 2008CW65 decree, and the remaining 4 shares are located within Zone 2-B of the 2008CW65 decree. Zone 2-A is described in the decree as the irrigated area located below the Jones ditch but above Canal No. 3 and within approximately 2,000 feet of the Cache la Poudre River. Zone 2-B is described in the decree as the irrigated area located below the Jones Ditch but above Canal No. 3 and greater than approximately 2,000 feet from the Cache la Poudre River. The decreed monthly return flow percentages for Zones 2-A and 2-B are shown on the attached Table 2, column 5.

The Whitney Ditch water rights will continue to be diverted in priority at the Whitney Ditch headgate during the historical irrigation season of April 1 through October 31. During the period of this SWSP, MM plans to deliver approximately 182.75 acre-feet of Whitney Ditch water to recharge ponds and approximately 77.80 acre-feet of the farm headgate deliveries directly back to the river. To date, two interconnected recharge ponds have been constructed in the NW¼ of the SW¼ of Section 30, T6N, R66W, 6th P.M. The ponds have a single inflow structure and individual staff gages. The maximum surface area of the pond(s) is 2.14 acres. The pond(s) will receive water from the Whitney Ditch using MM's existing headgates and infrastructure located as shown in Figure 3.

The IDS AWAS stream depletion model was used to determine the lagged accretions from the recharge area. The AWAS lagging parameters applied to the recharge pond(s) are shown in the table below.

Aquifer Parameters – Recharge Pond(s)

X (ft)	W (ft)	T (gpd/ft)	S
3,116	10,205	85,000	0.15

Continuous flow recorders and staff gages are required to accurately track daily inflow to the recharge pond(s). Augmentation credits are based on the amount of water determined to have been infiltrated into the ground based on the change in gage height, less any evaporative losses and plant consumption. The infiltrated water is then lagged to the stream using the AWAS program and aquifer parameters given above. The measuring and recording device used to deliver water to the recharge pond(s) has been approved by the water commissioner, and a staff gage has been installed in the

pond(s) as required by the SEO's Recharge Protocol. A stage-capacity table was provided with the 2018-2019 SWSP request. Gross evaporative losses from the recharge pond(s) will be subtracted from the volume of water delivered to the pond(s) every day there is visible water in the pond(s). For the purpose of this SWSP, you have estimated annual gross evaporation using the maximum surface area of 2.14 acres. Delivery of the projected 182.75 acre-feet to recharge during this plan period will result in 6.08 acre-feet of evaporative losses, leaving 176.67 acre-feet of accretions to be lagged to the river. Past and projected recharge deliveries will result in a lagged accretion of 174.99 acre-feet accruing to the river during this plan period. After accounting for 95.09 acre-feet of return flow obligations, the net recharge accretion projected to accrue to the river during this plan period is 79.91 acre-feet.

Approximately 77.80 acre-feet of the Whitney Ditch water will be delivered directly to the Cache la Poudre River, as shown on the attached Table 3, column 7. MM's Whitney Ditch deliveries directly to the river will be made through MM's augmentation structure (Whitney Ditch Martin Marietta Return, WDID 0302923), as shown on the attached Figure 3. The deliveries will be measured at MM's augmentation structure and delivered back to Cache la Poudre River at the point shown in Figure 3. The return flow obligations associated with Whitney Ditch water direct deliveries were determined to total 41.96 acre-feet calculated based on the return flow percentages for Zones 2-A and 2-B decreed in case no. 2008CW65, shown on Table 2, column 5, leaving 35.84 acre-feet of water available for replacement.

During the period of this SWSP, MM will dry up a total of 130.8 acres attributed to MM's 12 Whitney Ditch shares, as shown on the attached Figure 2. The Applicant has stated that groundwater monitoring in the period of July 2019-May 2021 indicates that the depth to groundwater for all 10 monitoring wells at the site was greater than 7.11 feet. The Applicant also provides groundwater monitoring data to the DRMS as part of their annual reporting. If based on additional information the state engineer determines that the depth to groundwater is shallower than 2.5 feet, and the maximum rooting depth of vegetation on the dry-up parcels is not demonstrated to be shallower than the depth to groundwater, the state engineer may reduce the consumptive use credits attributable to the dry-up acreage as provided for in paragraphs 9(h)(ii) and (iii) of the decree entered in case no. 2008CW65.

Water stored in the Heaton Reservoir under the junior water right decreed in case no. 2001CW193 may also be used by exchange as a replacement source for depletions associated with Parsons Mine and other MM sites within the South Platte Basin under separate SWSPs. Heaton Reservoir (WDID 0504089) is located in Section 9, T2N, R68W, 6th P.M. Water stored under the right decreed in case no. 2001CW193 is delivered to the reservoir through the Rural Ditch (WDID 0600551). The date of appropriation for the Heaton Reservoir storage right is October 26, 2001 for 680 acre-feet, conditional, subject to the right to fill and refill as described in case no. 2001CW193. Replacement water will be pumped from Heaton Reservoir directly into the St. Vrain River just downstream of the confluence with Boulder Creek. Replacement made out of Heaton Reservoir provides replacement supply that is conveyed to the South Platte River at the confluence of the Cache la Poudre River, downstream of the point of depletion on the Cache la Poudre River. The downstream replacement is allowed at times when the call is downstream of Heaton Reservoir and there is no dry-up point between the point of depletion on the Cache la Poudre and the confluence with the South Platte River. The Applicant will need to obtain permission from the District 5 Water Commissioner prior to any credit for releases from Heaton Reservoir to ensure the Heaton Reservoir water can make it past any dry-up locations between the confluence of Boulder Creek and the St.

Vrain River to the confluence of the Cache la Poudre River and the South Platte River. The delivery schedule incorporates a transit loss of 18.25% based on the currently assessed rate of 0.5% per mile for a distance of 36.5 miles. If a different transit loss is determined by the division engineer or water commissioner, the Applicant must modify their accounting and replacements as necessary to be consistent with the determined transit loss.

Under this SWSP, MM requests the ability to use any excess fully consumable water leased from the City of Greeley ("Greeley") not required for replacement purposes in MM's SWSP for the 35th Avenue Pit (WDID 0302546, Plan ID 2945) for replacement purposes under this SWSP. MM's predecessor, Lafarge West, Inc., traded its 550 Boyd and Freeman Ditch shares for 125 acre-feet of augmentation water from Greeley. MM acquired this lease from Lafarge as part of their acquisition of the Greeley 35th Ave Pit. The lease allows MM to use this water to cover depletions at Greeley 35th Ave Pit and surrounding land. A copy of the lease has been provided to this office. To the extent that excess fully consumable water is available, the leased replacement water may also be used to replace depletions at the Parsons Mine. Fully consumable replacement water provided by Greeley will be returned to the river at one of the following locations:

a) Greeley Water Pollution Control Facility Outfall (WDID 0302312) located on the Cache la Poudre River;

b) JBS Swift Industrial WWTP Outfall (WDID 0102342) on Lone Tree Creek;

c) confluence of the 35th Avenue Drainage Ditch and Cache la Poudre River;

d) any augmentation station/release structure(s) to be constructed in the vicinity of such confluence and associated with Greeley's operation of reservoirs known as Flatiron Reservoir Nos. 1-5 (a.k.a. Poudre Ponds/Greeley West Pit/Greeley 25th Ave Pit);

e) an augmentation station/release structure located under the Boyd and Freeman Ditch and approved by the water commissioner and division engineer for such purpose;

f) release structures from Greeley Canal No. 3 as described in Greeley's decree in case no. 99CW232, or;

g) any other release and measurement point that Greeley and MMM agree upon.

The Applicant also requests the ability to use water stored in the Greeley 35th Ave Reservoir (WDID 0303844) under free river conditions as a replacement source under this SWSP. The Greeley 35th Ave Reservoir is located approximately 7.5 miles downstream of the Parsons Mine, in the western half of the Greeley 35th Ave Pit. MM stored water in the Greeley 35th Ave Reservoir under free river conditions in 2018, 2019, 2020, 2021, and 2022 with the approval of the water commissioner. Water will be pumped directly from the reservoir to the Cache la Poudre River at the westernmost border of the Greeley 35th Ave Pit. Water pumped from the Greeley 35th Ave Reservoir will not be used for replacement purposes under this SWSP without prior approval from the District 3 water commissioner.

The Applicant is required to coordinate with the appropriate water commissioner the delivery location of replacement water to ensure out-of-priority depletions are adequately replaced to prevent injury to other water rights. **Excess fully consumable water leased from Greeley cannot be used for replacement of depletions from the Parsons Mine without prior approval from the**

water commissioner. Conveyance loss for delivery of augmentation water is subject to assessment and modification as determined by the water commissioner or division engineer.

Use of Excess Credits

The Applicant has requested the ability to use excess replacement credit associated with their subject 12 Whitney Ditch shares in their 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.**

Long Term Augmentation

The original reclamation plan for the site was developed in 2009 by MM's predecessor, Lafarge West, Inc. The 2009 reclamation plan shows a mixture of the pits being reclaimed to open water ponds or wetlands, with approximately 60 acres of the site covered with water once reclamation is complete. Based on information previously received by this office, MM plans to revise the final reclamation plan and it is expected that a large majority, if not all, of the mined areas will either be backfilled or lined in order to minimize any long-term exposed groundwater at the site.

In accordance with the letter dated April 30, 2010 (copy attached) 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 to satisfy this requirement.

On June 11, 2018, the DRMS approved Technical Revision No. 1 which removed the permit stipulation to have the financial warranty only cover the cost of reclaiming one year's worth of disturbance and exposure of groundwater, and complied with the long-term augmentation requirement by submitting a financial warranty to cover the cost of installing a slurry wall around all 10 lakes at the site.

In accordance with the approach in Technical Revision No. 1, an increased bond has been obtained for $4,168,714.00 through the DRMS.

Conditions of Approval

I hereby approve the proposed 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 June 1, 2022 through May 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 of $257 no later than April 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. Well permit no. 80245-F was obtained for the current use and exposed pond surface area of the gravel pit in accordance with sections 37-90-137(2) and (11), C.R.S.
3. The total surface area of the groundwater exposed at the Parsons Mine site must not exceed 15.27 acres for the period of June 2022 through August 2022, and 15.82 acres for the period of September 2022 through May 2023, which results in an annual net evaporative loss of 41.53 acre-feet.
4. The annual amount of water used for operational purposes at the Parsons Mine site shall not exceed 31.39 acre-feet, estimated as 18.26 acre-feet for dust suppression and 13.13 acre-feet lost with the production of 482,500 tons of mined aggregate (72,300 tons crushed but not washed and 410,200 tons washed).
5. Total consumption at the Parsons Mine site must not exceed these aforementioned amounts unless an amendment is made to this SWSP.
6. Approval of this SWSP is for the purposes as stated herein. This office must first approve any additional uses for the water. Any future historical consumptive use credit given (e.g., agricultural water transfer) for this site must consider all previous credits given.
7. 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. 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.
8. Diversions of the Whitney Ditch shares changed in this SWSP are limited to the period of April 1 through October 31.
9. The water attributable to the 12 shares of the Whitney Ditch that will be used for direct replacements must continue to be diverted in-priority at the ditch then measured back to the Cache la Poudre River in the vicinity of the Parsons Mine. Adequate measuring devices acceptable to the water Commissioner must be installed.
10. 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.
11. Computation of evaporation under this plan may be reduced during the ice-covered period. You have anticipated the ice-covered period to occur during the months of December and January. However, for the purpose of this SWSP, the Applicant shall replace the net evaporation depletions from the exposed groundwater surface area of the gravel pit that may occur during the anticipated ice-covered period (December and January) for any time that the exposed water surfaces are not completely covered by ice.

12. The replacement water that is the subject of this SWSP cannot be sold or leased to any other entity unless prior approval is obtained from the state or division engineer. 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.

13. 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 Administration Protocol for Division One. **NOTE:** Monthly accounting, even during the winter non-irrigation season, is required.

    In the event that excess fully consumable water from the City of Greeley is used as a replacement water source under this SWSP, the Applicant shall verify that the entity making replacements (City of Greeley) has included the Applicant on their accounting and submitted their accounting to the division office and the water commissioner.

14. **Prior to the use of the Heaton Reservoir, Greeley effluent, or Greeley 35th Ave Reservoir water, the Applicant is required to notify the water commissioner and obtain the water commissioner's approval at least 48 hours prior to use, or less if allowed by the water commissioner**. The Applicant is required to obtain the water commissioner's approval on a daily basis or other interval as required by the water commissioner. These replacement supplies may only be used at times when there is a continuous live stream between a downstream replacement location and the point of depletion and there is no call for water within that reach.

15. The Applicant shall follow the accounting and recharge protocols as referenced in the attached documents for the operation of this SWSP.

16. Conveyance loss for delivery of augmentation water is subject to assessment and modification as determined by the division engineer.

17. In order to prevent injury to other water rights, the division engineer and water commissioner must be able to administer Applicant's 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 Cache La Poudre River or its tributaries. Applicant shall not receive credit for replacement of depletions to the Cache La Poudre 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 Cache La Poudre River below such diversion structure.

18. 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.

19. Approval of this SWSP is contingent on the dry-up of the 130.8-acre portion of the Applicant's property as shown on the attached Figure 2. The Applicant shall perform an inspection of the dried up parcel, submit a Dry-Up Report - Verified Statement of that inspection, and provide a zipped GIS shapefile of the dried-up land as follows:

- The Applicant's inspection of dry-up must be submitted on the Dry-Up Report - Verified Statement form at the beginning of the irrigation season indicating planned dry-up and then again in the fall after the irrigation season confirming the planned dry-up was accomplished. A pdf map may be attached to that report. The Dry-Up Report - Verified Statement form is available for download from the Division of Water Resources' website at: https://drive.google.com/drive/folders/1TF0alNt6f5fla0Xz_n1_iAGCg4xusRN2 (Water Administration Documents / South Platte River Basin Forms). The Dry-Up Report - Verified Statement must be 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.
- GIS shapefiles in a file format *.zip outlining the dry-up shall also be submitted at the same time as the Dry-Up Report. The GIS files must include any accompanying attribute data and the datum must be NAD83 and the UTM projection must be Zone 13N.
- Submittals shall be made by June 30, 2022 for planned dry-up and by October 31, 2022 for dry-up confirmation. Submittals shall be made through the CDSS Online Reporting Tool (https://dwr.state.co.us/Tools/reporting). Instructions for using the tool are available under Services / Data and Information in the Online Data Submittal Section. Two new Reporting Submittal Tool elements will be created for this SWSP: (1) Dry-up shapefile and (2) Dry-up Report - Verified Statement. For additional assistance with Online Reporting Submittals, contact Dawn Ewing in the Division 1 office at dnr_div1accounting@state.co.us.

20. 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 must be reduced by any ongoing sub-irrigation from groundwater, as provided for in the ditch-wide analysis decreed in case no. 2008CW65 that the Applicant has chosen to rely upon for this SWSP. Information provided to this office indicates that groundwater levels below what is now the Parsons Mine are more than 7.11 feet below the ground surface. If, based on additional information, the state engineer determines that the depth to groundwater is shallower than the 2.5 feet, the state engineer shall require the Applicant to demonstrate that the maximum rooting depths of the vegetation on the dry-up parcels is shallower than the average monthly depth to groundwater, or the amount of the calculated HCU that may be claimed in this SWSP will be reduced accordingly.

21. Dewatering at this site will produce delayed depletions to the stream system. As long as the site is continuously dewatered, the water returned to the stream system should be adequate to offset the depletions, thus dewatering is required to continue during the term of this plan. Once dewatering at the sites cease, the delayed depletions must be addressed, including depletions resulting from the gradual refilling of the pit. At least three years prior to

completion of dewatering, a plan must be submitted that specifies how the post pumping dewatering depletions will be replaced, in time, place and amount.

22. 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 additional depletions to the river do not occur, a bond for $4,168,714.00 through the DRMS for the construction of a slurry wall to prevent exposure of groundwater has been obtained. Therefore, if the dewatering is discontinued the bond can finance the completion of the construction of a slurry wall, thus preventing depletions to the stream system.
23. 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.
24. The state engineer may revoke this SWSP or add additional restrictions to its operation if at any time the State Engineer determines that injury to other vested water rights has occurred or will occur as a result of the operation of this SWSP. Should this SWSP expire without renewal or be revoked prior to adjudication of a permanent plan for augmentation, all use of water under this SWSP must cease immediately.
25. 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.
26. 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 the 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.
27. 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 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.

If you have any questions concerning this approval, please contact Javier Vargas-Johnson in Denver at (303) 866-3581 or Michael Hein in Greeley at (970) 352-8712.

Sincerely,

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

Attachments: Figures 1-3
Tables 1-3
Augmentation Plan Accounting and Recharge Protocols
Letter from DRMS dated April 30, 2010

Cc: Michael Hein, Lead Assistant Division Engineer, Michael.Hein@state.co.us

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

Shera Sumerford, Water Commissioner, District 5, Shera.Sumerford@state.co.us

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

Dawn Ewing, Accounting Coordinator, dnr_div1accounting@state.co.us

Peter Hays, Division of Reclamation Mining and Safety, Peter.Hays@state.co.us

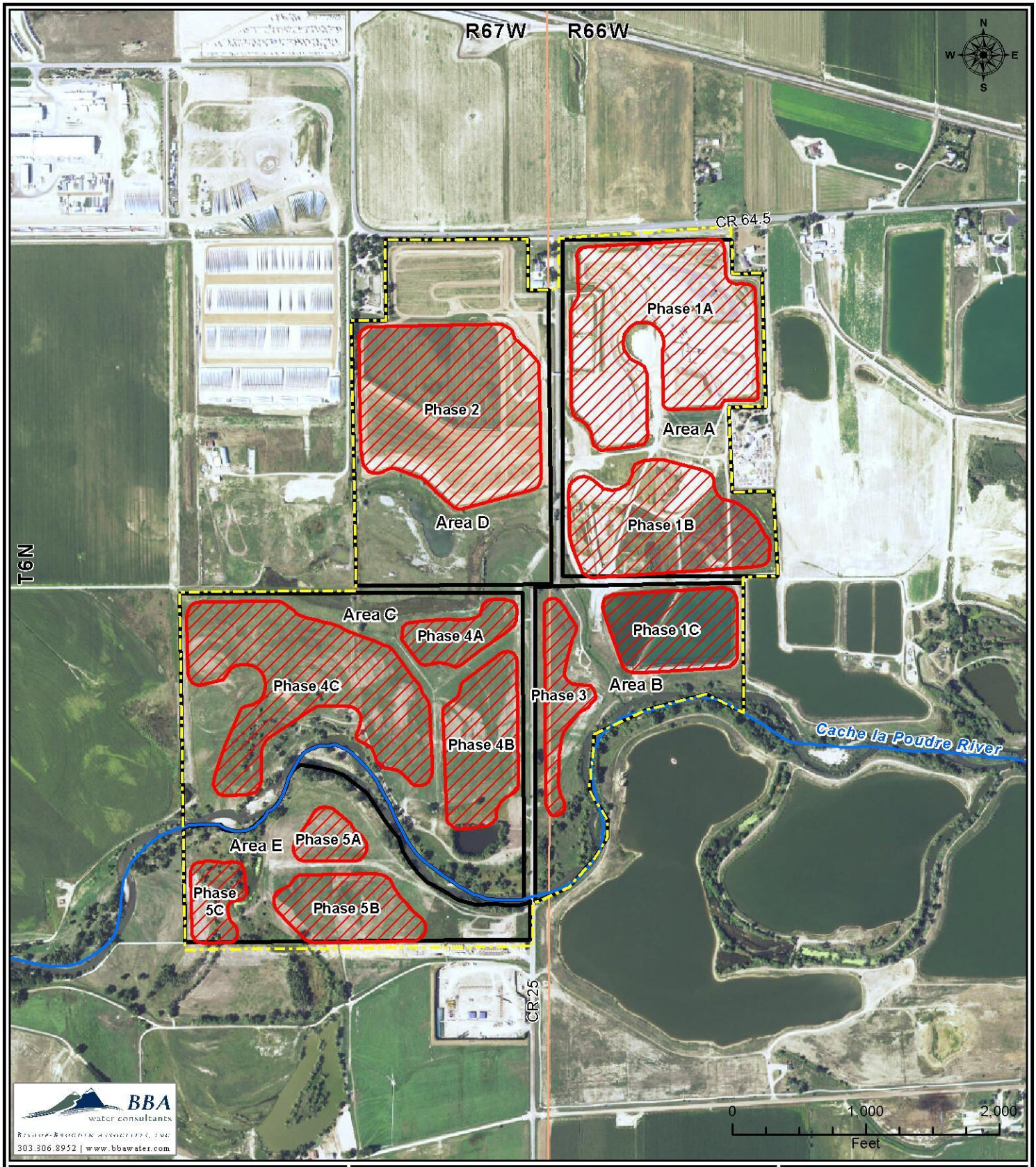


Figure 1
Martin Marietta
Parsons Mine
Mining Phases

Date: 3/28/2022 | Job No. 1204.09

Legend

- Planned Mining Phases
- Parsons Mine Lagging Areas
- DRMS Permit Boundary

Aerial Photo Date: 8/27/2017, USDA, NAIP
Data Source: CDSS, CDWR, USGS, BLM

Colorado

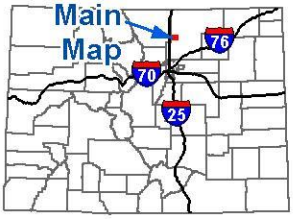


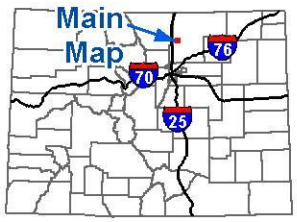
Figure 2
Martin Marietta
Parsons Mine
Whitney Ditch
Dry-Up Area

Date: 3/22/2018 | Job No. 1204.09

Legend

- Parsons Mine Dry-Up Area (130.8 ac.)
- Parsons Mine Lagging Areas
- DRMS Permit Boundary

Aerial Photo Date: 8/27/2017, USDA, NAIP
Data Source: CDSS, CDWR, USGS, BLM



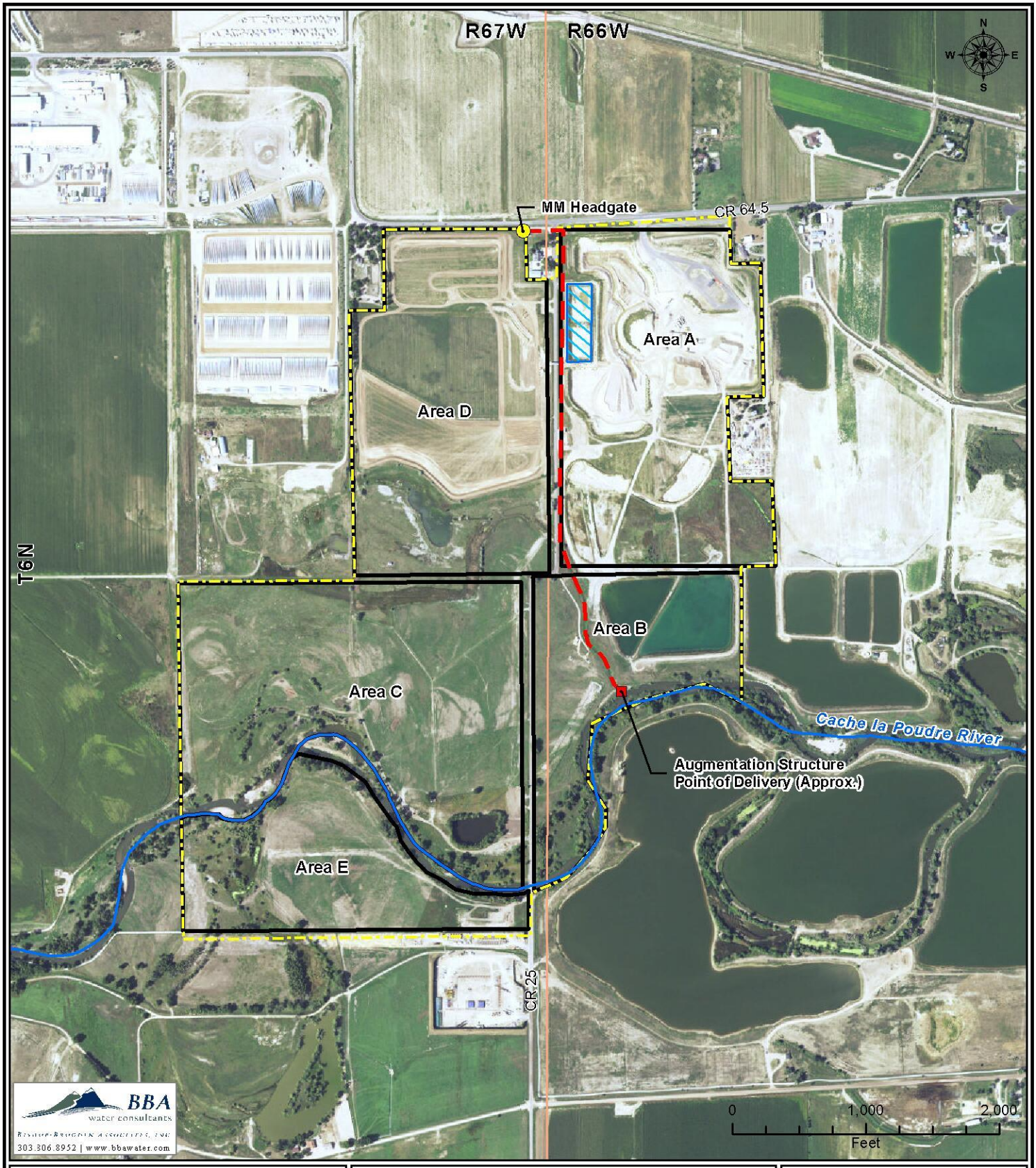


Figure 3
Martin Marietta Parsons Mine
General Location Map

Date: 3/28/2022 | Job No. 1204.09

Legend

- Headgate
- Augmentation Point of Delivery
- Augmentation Structure (Approx.)
- Parsons Mine Lagging Areas
- DRMS Permit Boundary
- Recharge Ponds

Aerial Photo Date: 8/27/2017, USDA, NAIP
Data Source: CDSS, CDWR, USGS, BLM

Colorado

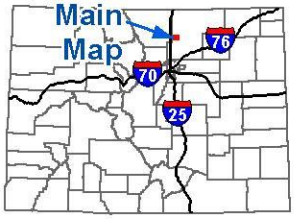


Table 1
Martin Marietta
2022-2023 Parsons Mine SWSP Accounting
Total Operational Depletions

	Evaporation Depletions						Production Depletions						
							Aggregate Production (tons)						
Month	Total Exposed Area (ac) [1]	Gross Evaporation (feet) [2]	Average Total Precipitation (feet) [3]	Effective Precipitation (feet) [4]	Net Evaporation (feet) [5]	Total Net Evaporation Volume (ac-ft) [6]	Crushed (Not Washed) [7]	Washed [7]	Aggregate Production Consumption (ac-ft) [8]	Dust Suppression (ac-ft) [9]	Total Production Consumption (ac-ft) [10]	Total Site Depletions (ac-ft) [11]	Total Lagged Depletions (ac-ft) [12]
Jun-22	15.27	0.51	0.15	0.11	0.40	6.15	7,200	41,100	1.32	2.30	3.62	9.77	9.40
Jul-22	15.27	0.53	0.13	0.09	0.44	6.68	7,000	39,600	1.27	2.30	3.57	10.25	10.10
Aug-22	15.27	0.47	0.11	0.08	0.39	6.02	7,700	43,400	1.39	2.30	3.69	9.72	9.82
Sep-22	15.82	0.35	0.10	0.07	0.28	4.47	6,300	35,900	1.15	2.30	3.45	7.92	8.18
Oct-22	15.82	0.25	0.09	0.06	0.18	2.91	7,000	39,900	1.28	2.30	3.58	6.49	6.99
Nov-22	15.82	0.14	0.06	0.04	0.10	1.54	6,400	36,300	1.16	1.53	2.70	4.24	5.02
Dec-22	15.82	0.11	0.04	0.03	0.08	1.20	4,200	23,800	0.76	0.61	1.38	2.57	3.38
Jan-23	15.82	0.11	0.04	0.03	0.08	1.23	3,300	18,800	0.60	0.54	1.14	2.37	2.89
Feb-23	15.82	0.12	0.03	0.02	0.10	1.57	4,500	25,500	0.82	0.54	1.35	2.92	3.16
Mar-23	15.82	0.19	0.08	0.06	0.13	2.13	6,700	37,800	1.21	1.07	2.28	4.41	4.35
Apr-23	15.82	0.32	0.15	0.10	0.21	3.34	5,900	33,400	1.07	1.23	2.30	5.63	5.53
May-23	15.82	0.42	0.21	0.15	0.27	4.30	6,100	34,700	1.11	1.23	2.34	6.64	6.49
Total	-	3.51	1.20	0.84	2.67	41.53	72,300	410,200	13.13	18.26	31.39	72.92	75.30

Notes:

[1] The total area of exposed ground water at the site consist of the dewatering trenches and silt pond.

[2] Total gross evaporation (3.51 feet) is based upon NOAA Technical Report NWS 33 and distributed according to SEO Senate Bill 89-120 criteria.

November: 4.0%	February: 3.5%	May: 12.0%	August: 13.50%
December: 3.0%	March: 5.5%	June: 14.5%	September: 10.0%
January: 3.0%	April: 9.0%	July: 15.0%	October: 7.0%

[3] Based upon the average precipitation at the Greeley UNC, CO (ID#3553) NOAA weather station for the time period 1967-2015.

[4] Assumed 70% effective precipitation. Equal to [4] x 70%.

[5] Equal to [2] - [4]. There is no evaporation December and January due to below-freezing average monthly temperatures.

[6] Equal to [1] x [5].

[7] Aggregate production from mining is based upon information from MM.

[8] Aggregate production from mining is based upon information from MM. Water retained in product equals 4% of total weight of washed aggregate produced and 2% of total weight of crushed aggregate produced as defined by Senate Bill 89-120.

[9] Dust suppression values provided by MM.

[10] Equal to [8] + [9].

[11] Equal to depletions associated with each lagging area. All dust suppression water [9] will be pumped from Area B. Other depletions for all areas include evaporation [6] and mining production [8] depending on which area mining occurs in for a given month.

[12] Equal to values from [11] lagged based upon specific lagging parameters designated to each lagging area. Lagging calculations were based on the following lagging area parameters:

Area A - Distance from stream = 2,176 ft, Transmissivity = 85,000 gpd/ft, Specific Yield = 0.15, Aquifer Width = 9,823 ft
Area B - Distance from stream = 208 ft, Transmissivity = 85,000 gpd/ft, Specific Yield = 0.15, Aquifer Width = 9,946 ft
Area C - Distance from stream = 297 ft, Transmissivity = 85,000 gpd/ft, Specific Yield = 0.15, Aquifer Width = 10,816 ft
Area D - Distance from stream = 2,636 ft, Transmissivity = 85,000 gpd/ft, Specific Yield = 0.15, Aquifer Width = 10,810 ft
Area E - Distance from stream = 550 ft, Transmissivity = 85,000 gpd/ft, Specific Yield = 0.15, Aquifer Width = 2,950 ft

Table 2
Martin Marietta
2022-2023 Parsons Mine SWSP Accounting
Recharge Pond Operations
(all values in ac-ft)

Month	Whitney Ditch FHG Deliveries to Recharge Pond	Estimated Recharge Ponds Evaporation	Net Recharge	Total Lagged Recharge Credit Accretion	Return Flow Factor(%)		Return Flow Obligations	Net Recharge Accretion
					Zone 2-A	Zone 2-B		
	[1]	[2]	[3]	[4]	[5]		[6]	[7]
Jun-22	35.50	1.09	34.41	13.02	43.76%	39.87%	15.08	-2.06
Jul-22	39.63	1.13	38.50	17.80	41.18%	34.64%	15.45	2.35
Aug-22	39.71	1.01	38.69	21.34	45.53%	37.25%	16.98	4.35
Sep-22	38.67	0.75	37.92	23.80	55.44%	48.08%	20.49	3.31
Oct-22	3.05	0.53	2.52	23.48	47.79% | 1.65%	47.79% | 2.01%	4.61	18.87
Nov-22	0.00	0.00	0.00	17.51	0.86%	1.85%	2.12	15.39
Dec-22	0.00	0.00	0.00	13.20	0.59%	1.59%	1.64	11.56
Jan-23	0.00	0.00	0.00	10.78	0.45%	1.37%	1.35	9.43
Feb-23	0.00	0.00	0.00	9.12	0.37%	1.19%	1.14	7.98
Mar-23	0.00	0.00	0.00	8.25	0.28%	1.03%	0.95	7.30
Apr-23	4.62	0.68	3.94	7.84	65.84%	89.36%	3.40	4.44
May-23	21.58	0.90	20.68	8.87	54.62%	55.84%	11.88	-3.01
Total	182.75	6.08	176.67	174.99	-	-	95.09	79.91

Notes:
[1] Total average farm headgate deliveries of Whitney Ditch water delivered to the recharge pond.
[2] Evaporation calculated based on total maximum recharge pond surface area of 2.14 acres when diversions are being made and monthly evaporation rates shown in Column 2 of Table 1.
[3] Equals [1] - [2].
[4] Lagging calculations were based on the following parameters:
Distance from stream = 3,116 ft, Transmissivity = 85,000 gpd/ft, Specific Yield = 0.15, Aquifer Width = 10,205 ft
[5] Return flow factors are based on Case No. 08CW65 decree for Zone 2-A and 2-B.
[6] April-September = [1] x [5], October = [1] x [5] + (2022 Deliveries x [5]), November-March = (2022 Deliveries x [5]). Pro-rata deliveries associated with each return flow zone are calculated based upon (8/12) x [1] to Zone 2-A and (4/12) x [1] to Zone 2-B.
[7] Equals [4] - [6].

Table 3
Martin Marietta
2022-2023 Parsons Mine SWSP Accounting
Water Balance
(all values in ac-ft)

Month	Total Lagged Operational Depletions [1]	Percent of Month Call on the River (%) [2]	Total Replacement Requirements [3]	Whitney Ditch FHG Credit Available for Use [4]	Whitney Ditch Water Delivered to Recharge [5]	Net Recharge Accretion [6]	Whitney Ditch Water Delivered to River [7]	Return Flow Requirements for Deliveries to River [8]	Net Accretion from Deliveries to River [9]	Deliveries from Storage in Heaton Reservoir [10]	Transit Loss for Deliveries from Heaton Reservoir [11]	Net Replacement from Deliveries from Heaton Reservoir [12]	Excess Greeley Lease Water from 35th Ave. Site [13]	Deliveries from Storage in 35th Avenue Reservoir [14]	Net Effect to the River [15]
Jun-22	-9.40	100%	-9.40	55.42	35.50	-2.06	19.91	-8.46	11.46	0.00	0.00	0.00	0.00	0.00	0.00
Jul-22	-10.10	100%	-10.10	93.92	39.63	2.35	12.70	-4.95	7.75	0.00	0.00	0.00	0.00	0.00	0.00
Aug-22	-9.82	100%	-9.82	84.87	39.71	4.35	9.55	-4.09	5.47	0.00	0.00	0.00	0.00	0.00	0.00
Sep-22	-8.18	100%	-8.18	49.02	38.67	3.31	10.36	-5.49	4.87	0.00	0.00	0.00	0.00	0.00	0.00
Oct-22	-6.99	100%	-6.99	3.05	3.05	18.87	0.00	-1.31	-1.31	0.00	0.00	0.00	0.00	0.00	10.57
Nov-22	-5.02	100%	-5.02		0.00	15.39	0.00	-0.88	-0.88	0.00	0.00	0.00	0.00	0.00	9.49
Dec-22	-3.38	100%	-3.38		0.00	11.56	0.00	-0.68	-0.68	0.00	0.00	0.00	0.00	0.00	7.50
Jan-23	-2.89	100%	-2.89		0.00	9.43	0.00	-0.56	-0.56	0.00	0.00	0.00	0.00	0.00	5.98
Feb-23	-3.16	100%	-3.16		0.00	7.98	0.00	-0.47	-0.47	0.00	0.00	0.00	0.00	0.00	4.35
Mar-23	-4.35	100%	-4.35	0.13	0.00	7.30	0.00	-0.39	-0.39	0.00	0.00	0.00	0.00	0.00	2.56
Apr-23	-5.53	100%	-5.53	8.76	4.62	4.44	4.15	-3.06	1.09	0.00	0.00	0.00	0.00	0.00	0.00
May-23	-6.49	100%	-6.49	42.70	21.58	-3.01	21.12	-11.62	9.50	0.00	0.00	0.00	0.00	0.00	0.00
Total	-75.30	-	-75.30	337.88	182.75	79.91	77.80	-41.96	35.84	0.00	0.00	0.00	0.00	0.00	40.45

Notes:
[1] Total lagged depletions from mining operations, as calculated in Table 1.
[2] Equal to percent of the month in which a call is placed on the river.
[3] Equal to [1] x [2].
[4] Farm headgate deliveries available for use of specified 12 Whitney Ditch shares based upon ditch wide analysis decreed in Case No. 08CW65.
[5] Whitney Ditch farm headgate deliveries delivered to the recharge pond.
[6] Net recharge accretion calculated in Column [7] of Table 2.
[7] Whitney Ditch farm headgate deliveries delivered directly to the river through MM's augmentation structure.
[8] Return flow requirements are calculated using return flow factors decreed in 08CW65, and shown in Column [5] of Table 2.
[9] Equal to [7] + [8].
[10] Total replacement supply deliveries from storage in Heaton Reservoir.
[11] Transit loss between the point of delivery on Boulder Creek to the confluence of the South Platte River and Cache La Poudre River is assumed to be 18.25 % based upon a total distance of 36.5 miles and a typical transit loss rate of 0.5% per mile.
[12]Equal to [10] + [11].
[13] Replacement supply using excess City of Greeley effluent lease credits currently used under MM’s Greeley 35th Avenue SWSP (WDID 0302945).
[14] Total replacement supply deliveries from storage in MM's 35th Avenue Reservoir.
[15] Equal to [3] + [6] + [9] + [12] + [13] = [14].

COLORADO
Division of Water Resources
Department of Natural Resources

ADMINISTRATION PROTOCOL
Augmentation Plan Accounting
Division One - South Platte River
Revised October, 2021

This protocol establishes the accounting and reporting process required to enable the division engineer's office to determine if depletions from all out-of-priority diversions are being replaced so as to prevent injury to vested water rights. The accounting must follow "cradle to grave" accounting practices that track exactly how the data are manipulated from raw data input (e.g., meter readings) to the resultant impact on the river. While this protocol is subordinate to any decreed language addressing specific accounting requirements, it generally addresses the minimum requirements of such accounting.

The accounting must use the standard convention where a depletion is shown as a negative value and an accretion or other replacement source is shown as a positive value. The difference of depletions and replacements will then result in either a negative or positive impact on the stream.

1. Accounting must be submitted electronically to the division engineer and water commissioner through the online data submittal portal at the following link on our website: https://dwr.state.co.us/Tools/reporting. If not already registered, you will need to create a new account through that link.

   Typically, submittals are due within 30 days of the end of the month for which the accounting is being submitted, unless decreed otherwise. Additional data or more frequent submittals may be required by the water commissioner if required for administration. Accounting submittals not submitted through the online data submittal portal or questions regarding accounting submittals may be emailed to dnr_Div1Accounting@state.co.us.

   The following naming convention must be used for all files submitted via email:
   "PlanWDID_YYMMDD"

   where: PlanWDID is the WDID assigned by the division engineer's office

   YYMMDD corresponds to the date the accounting is submitted.

   As an example, the assigned WDID for the former GASP plan was 0103333. If accounting using Excel® was submitted for that plan on May 15, 2004, the file name would be:
   "0103333_040515.xls"

2. The accounting must include a Contact & Plan Information tab, that includes the 7-digit WDID for the plan for augmentation/SWSP, the 4-digit SWSP ID (if applicable), and contact information (i.e., name, phone number, email address) for the augmentation plan accounting including:
   a. the owner(s) of each augmented structure
   b. the person responsible for submitting the accounting
   c. the plan administrator and/or the plan attorney.

3. All of the raw input data (i.e., meter readings, water pumped from wells, etc.) must be provided and organized in a single location, such as an "Input" worksheet, etc. The accounting must include the following input data listed below, as well as relevant WDIDs and permit numbers.

    a. Diversion data from flumes or weirs and unit of measurement.

    b. The required input data for each well is:
        i. the monthly flow meter reading as shown on the flow meter; date of the meter reading; flow meter multiplier (i.e., 0.001, 10, 1); units of volume (i.e., gallons or acre-feet); the meter serial number; correction factor, if any.
        ii. The total volume pumped, showing the calculations using the information in Item "i" above.
        iii. factors from the decree or SWSP that provide for the well consumptive use and depletions (i.e., presumptive depletion factor (PDF), water balance methodology, lagging parameters, etc.).
        iv. Any well permitted or decreed as an alternate point of diversion (APOD) to a surface water right must report pumping on a daily basis if any of the diversions during the month is claimed as being "in priority". (See Administration Protocol - APOD Wells for more details.)

    c. If applicable, data for each recharge structure must be included and comply with the appropriate decree(s) or SWSP Approval requirements and any applicable current statewide Administration Protocol. At a minimum the following should be reported in the accounting:
        i. 7-digit WDID and name of recharge structure
        ii. daily volume in AF diverted into the site;
        iii. monthly volume in AF released from the site;
        iv. monthly gross evaporative loss in AF;
        v. volume of water in AF remaining at the end of the month.

    d. The accounting must identify each source of replacement water actually delivered to the stream and how replacement water at that location offset the depletions. To demonstrate the water was actually delivered to the required location will require the following information:
        i. the name (water court case, lease, etc.) and WDID of the originating source of the replacement water, date released and volume of water released;
        ii. transit losses from point of release to point of depletion or use, if any, using stream loss factors approved by the water commissioner;
        iii. the volume of water actually delivered on a daily basis past any surface water diversion that was sweeping the river as corroborated by the water commissioner. (See Administration Protocol - Delivery of Water for more details on delivering water).

    For each source of replacement water that has been "changed" for use as a source of augmentation, such as changed reservoir shares, changed rights from a ditch, or credits from dry-up, etc., the following input information must be reported:
        i. the decreed volume of return flow obligation;
        ii. if not specified in the decree or SWSP, the location and timing of the owed return flow on the stream(s).

4. If required by the decree or SWSP, the accounting must include a monthly projection of the plan's operation at least through March 31 of the next calendar year, or as specified in the decree or SWSP.

5. The accounting submittal must include output associated with modeling showing monthly delayed depletions (from well pumping or return flow obligations) and/or accretions (from recharge).

6. All accounting must provide a net impact summary that shows a daily balance of the out-of-priority depletions, accretions from each recharge site, volume of replacement water actually delivered and the resultant net impact. If necessary, a net impact must be shown for each applicable river and reach.

   While modeling may use a monthly step function to determine the depletions from pumping and accretions from recharge, the monthly result must then be divided by the number of days in the month in order to simulate a daily impact, as water rights are administered on a daily and not monthly basis.

   The accounting should indicate that the replacement water is equal to the depletion(s) such that the daily net impact (using the simulated daily numbers from the modeling) is not negative, unless the water commissioner approves less frequent aggregation of replacements without injury to downstream water rights.

   In the instance that aggregation is allowed, replacement is needed only for days with out-of-priority depletions. For example, if a well is out-of-priority for 15 days during a month, replacement must be made only for the 15 days the well is out-of-priority. Likewise, any simulated daily accretions will only count toward replacing the depletion on the days the well is out-of-priority. The accretions that accrue to the river when the well is in priority cannot be applied to different days with out-of-priority depletions.

7. The basis for determining that the depletions are out-of-priority should be data from the Division of Water Resources' Administrative Calls & Analysis Tool (https://dwr.state.co.us/Tools/AdministrativeCalls/Active) and should be included in the accounting along with the relative steps in the determination of a structure being in or out of priority. The analysis may be done, unless otherwise limited by decree, for each well or groups of wells, provided the most junior water right associated with the group of wells is used as the reference water right for the group's out-of-priority status.

8. The accounting shall include all the required information for the month of the submittal in addition to the information submitted from previous months such that the information and monthly submittals are a cumulative report each month throughout the 12 month reporting period.

9. If a well is covered in multiple SWSPs or augmentation plans, the monthly meter readings must be the same in the accounting for each plan covering the subject well. The accounting for every plan covering the well shall state the proportionate and total pumping amount covered by each plan to assure all out-of-priority depletions are replaced.

10. The following additional accounting requirements apply when sources of replacement water are used in more than one plan.
    a. The entity providing replacement water to the stream is responsible for accounting for the total amount of replacement water and how much of the total went to each plan.
    b. The amount of replacement water claimed for a particular augmentation plan must match the amount in the accounting from the entity providing the replacement water to the stream.
    c. The amount of replacement water claimed for use by one or more water users shall not exceed the amount of replacement water physically and legally available. (See Administration Protocol – Use Of Unnamed Sources For Replacement for additional requirements concerning required notice and approval of sources of replacement not specifically described in a SWSP or augmentation plan).

COLORADO
Division of Water Resources
Department of Natural Resources

ADMINISTRATIVE PROTOCOL
Recharge
Division One - South Platte River Basin
Revised May, 2022

The purpose of recharge is to intentionally introduce water into a tributary aquifer through percolation from the surface. The introduction of water to the aquifer causes a like amount of groundwater to discharge at a surface stream in a specific location and time as "accretions" or "recharge credits" available for beneficial use. Recharge as used in this document does not include artificial recharge of the Denver Basin or nontributary aquifers. A Recharge Structure can be:

- A section of ditch, the infiltration from which can be reasonably modeled as a single source of water.
- A single pond or a group of ponds that receive water from the same delivery location and the infiltration from which can be reasonably modeled as a single source of water.

1. Recharge credits/accretion including timing, location, and amount are determined only in accordance with decrees of the court or written administrative approvals, including Substitute Water Supply Plans (SWSPs). SWSP or water court applications should include the following information about each Recharge Structure:
    a. map(s) showing the locations of:
        i. diversion point(s)
        ii. Recharge Structure
        iii. measurement structures (inflow, outflow, staff gage);
    b. listing of the court case number for the decree(s) authorizing the diversion of water into the Recharge Structure and use of the water in a plan for augmentation, if any
    c. the maximum water surface area of the structure or stage-area capacity curve developed for each Recharge Structure;
    d. for ditch structures, if the ditch is divided into more than one Recharge Structure, an explanation of how the volume delivered to an upstream reach will be allocated to downstream Recharge Structures in the ditch.
2. The division engineer will assign the Recharge Structure a WDID number. The WDID number is the identification number that will be used for the administration of the structure and must be included in all correspondence and accounting.

3. Prior to commencement of construction, the owner/operator of the Recharge Structure must obtain water commissioner's approval of proposed equipment, installation and construction. Prior to any diversion into the Recharge Structure, the owner/operator must obtain the water commissioner's written approval of the final construction and equipment installation, as further described below.

a. The flow into each Recharge Structure must be equipped with a measurement device and a continuous flow data recorder, unless the water commissioner in conjunction with the division engineer determines adequate records may be kept without such equipment. Refer to the Administrative Protocol and Functional Standards - Surface Water Headgates and Measuring Devices, for minimal suggested equipment installation and operation.
b. If the Recharge Structure is designed to discharge water via a surface outlet, such discharge must also be equipped with a measurement device and a continuous flow recorder.
c. Each Recharge Structure must have a staff gage, or other devices as required, installed to provide a reading of the surface water elevation in the Recharge Structure.[1] The gage installation should be such that the gage registers the lowest water level in the Recharge Structure. The staff gage must be readable from a readily accessible location. The gage shall have permanent demarcations of 0.01 feet, with the whole feet (1.00 feet) clearly and easily identifiable.

4. All Recharge Structures must be maintained in such a way as to minimize consumptive use of the water by vegetation. Existing vegetation shall be mowed or removed prior to and during the running of water into the Recharge Structure. Crops may not be planted in a Recharge Structure during the same irrigation year that it is used as a Recharge Structure without prior approval from the water commissioner or division engineer.

5. The timing and quantity of recharge credits/accretions is estimated by applying the lagging parameters (or Unit Response Functions "URFs") in the decree or SWSP to the volume of water infiltrated into the ground (*Infiltrated Volume* as calculated below). One common method for determining the volume of water infiltrated for any time period can be determined by using a daily mass balance calculation, in acre-feet, and solving for the residual volume (R) of unmeasured flows[2] as follows. Other methods for determining the volume of water infiltrated into the ground may be considered on a case-by-case basis:

[1] Unless an alternate method of measuring or estimating the change in storage has been approved by the Division Engineer.
[2] For more information on the mass-balance equation as it applies to ponds or reservoirs, please refer to Guideline 2019-3, Reservoir Accounting Guideline

$$R = \Delta Storage - Meas.\ Inflow + Meas.\ Outflow + Evaporation + ET$$

where,

a. R represents the net sum of all unmeasured flow. When R is positive, it represents the volume of unmeasured inflows (i.e., no recharge occurred) and when negative, it represents the volume of unmeasured outflow (i.e., recharge volume) that infiltrated into the ground and can be used, with the lagging parameters, to determine the amount of recharge credit.
b. $\Delta Storage$ is the change in storage volume compared to a previous measurement, typically based on staff gage readings and the stage-capacity table.
c. $Meas.\ Inflow$ is the volume of water delivered into the recharge structure,
d. $Meas.\ Outflow$ is the volume of water discharged from the recharge structure,
e. $Evaporation$ is the volume of water lost to evaporation (see item 6, below),
f. ET is the volume of water lost from the consumption by vegetation located within the recharge structure. Appropriate vegetative consumptive use values, based on publications of actual plant water use, should be used depending on the type of plants that are found to exist, subject to DWR approval.

6. Gross Evaporative losses from the Recharge Structure must be subtracted from the volume of water delivered to the Recharge Structure. Evaporative losses must be accounted for every day the Recharge Structure has a visible water surface. If the Recharge Structure does not have a stage-surface area curve approved by the water commissioner, the maximum surface area of the Recharge Structure must be used to determine the evaporative losses, unless a different method is approved. Gross evaporation should be estimated using the processes described for off-channel reservoirs in Guideline 2019-3 - Reservoir Accounting Guideline. Monthly evaporation estimates may be prorated for days when there is no visible water surface. A lack of visible water surface is determined from a field inspection. Days with no water surface may be entered from the date of field inspection until the next date of water delivery.

7. Any structure that intercepts groundwater must be permitted as a well and included in a plan for augmentation or SWSP approved by the State Engineer. The Division Engineer strongly recommends avoiding Recharge Structures that intercept groundwater, in order to simplify the accounting process.

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
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COLORADO DIVISION OF RECLAMATION MINING & SAFETY

April 30, 2010

Lafarge West, Inc.
10170 Church Ranch Way, Ste. 200
Westminister, CO 800210000

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:

M2006064	Shields at Fossil Creek Mine	M1983031	Stromquist Pit
M1994002	Andrews S & G #5 (Burlington Pit)	M1974072	Chantala Pit
M2006018	North Bank Resources	M1985218	Rich Pit
M2006073	Sundance Sand and Gravel Resource	M1985206	Boone-Martin Pit
M2009082	Parsons Mine	M1995022	Andrews #2
M1977081	Greeley West Pit	M1990144	Boone-Fillmore Pit
M2003091	Duckworth Pit	M1997087	Hartman Pit
M2000113	Mamm Creek Sand & Gravel	M2001094	Shaw Pit
M2001090	River Valley Resource	M2002009	Beeman Pit #1
M2000016	Riverbend Operation	M1981307	Fountain Pit
M1979134	Powers Pit	M1977439	Home Office Mine
M1977036	Greeley 35th Ave Pit	M1979191	Three Bells Pit
M2000034	Reichert Pit	M1982182	Port of Entry Pit
M2001051	North Taft Hill Expansion Site	M2002081	Overland Ponds
M1974015	Lyons Pit	M1981088	McCoy Pit
M1974004	Specification Aggregates Quarry	M1982034	Miller Pit
M1987176	Hamm Pit	M1996082	Blair Mesa Pit
M1988042	Cottonwood Pit	M1980136	Chambers Pit
M1990112	State Pit	M1977098	Sievers Pit
M1979002	North Delta Pit	M1983013	Latham - Burkett Pit
M1979159	Brose Pit	M1979097	East Rigden Pit
M1998014	Gypsum Ranch Pit	M1991035	Bluestone Pit
M1999088	Kyger Pit	M1986159	Courtner Pit
M1998075	Andrews #3 (Mock Pit)		

M1974070	Nelson Pit
M2000002	Tanabe Pit
M1994045	Bluestone Pit
M1986079	M & G Pit