COLORADO
Division of Reclamation, Mining and Safety
Department of Natural Resources
1313 Sherman Street, Room 215
Denver, Colorado 80203

March 28, 2019

Derrick Dease
Holcim (US) Inc.
3500 Highway 120
Florence, CO 81226

RE: Boettcher Limestone Quarry, Permit No. M-1977-348, Technical Revision No. 10 (TR-10), Adequacy Review No. 1

Mr. Dease:

On March 5, 2019, the Division of Reclamation, Mining and Safety (Division or DRMS) received your Technical Revision (TR-10) for the Boettcher Limestone Quarry, Permit No. M-1977-348. The requested revision addresses the following:

> *Site groundwater characterization data support the conclusion that groundwater sampled from down-gradient wells represents predominantly pre-1952 water, and at the time of and prior to tritium dating of the groundwater conducted in August 2014, represents ambient concentrations of pre-January 31, 1994 groundwater. Based on these findings, it is recommended that 1) the recent data be used to assess ambient conditions at the site as of January 31, 1994; and 2) in cases where ambient conditions exceed WQCC's Regulation No. 41 Table Value Standards, a less restrictive standard based on the ambient conditions be applied.*

The groundwater monitoring plans and data associated with mine sites such as the Boettcher Limestone Quarry, are subject to SB-181 reporting to the Colorado Department of Public Health and Environment (CDPHE), Water Quality Control Division (WQCD). All operators must comply with the requirements of CDPHE Water Quality Control Commission (WQCC) Regulation No. 41 – The Basic Standards for Ground Water.

Regulation No. 41 states that WQCC has the exclusive jurisdiction to set groundwater standards and classifications. DRMS is named as an implementing agency, responsible for implementing WQCC's standards and classifications for discharges (other than point source discharges to surface water) through its own regulatory programs after consultation with the WQCC and the WQCD. In areas where groundwater has not yet been classified and no site specific standards have been adopted by WQCC (as is the case with Boettcher Limestone Quarry), the Interim Narrative Standard, as summarized from Regulation No. 41 below, applies.

WQCC's Interim Narrative Standard [41.5(C)(6)]

a. The "Interim Narrative Standard" in 41.5(C)(6)(b)(i) below is applicable to all groundwater, to which standards have not already been assigned in the state, with the exception of those areas where the total dissolved solids (TDS) are equal to or exceed 10,000 mg/l. This standard is applicable independent of and in addition to the statewide standards for radioactive materials and organic pollutants established in this section 41.5.C.

b. i. Until such time as use classifications and numerical standards are adopted for the groundwater on a site-specific basis throughout the state, and subject to the provisions of subsection (ii) below, groundwater quality shall be maintained for each parameter at whichever of the following levels is less restrictive:

(A) existing ambient quality as of January 31, 1994, or

(B) that quality which meets the most stringent criteria set forth in Tables 1 through 4 of "The Basic Standards for Ground Water."
…

iii. In applying this Interim Narrative Standard, the Commission intends that agencies with authority to implement this standard will exercise their best professional judgment as to what constitutes adequate information to determine or estimate existing ambient quality, taking into account the location, sampling date, and quality of all available data. Data generated subsequent to January 31, 1994, shall be presumed to be representative of existing quality as of January 31, 1994, if the available information indicates that there have been no new or increased sources of groundwater contamination initiated in the area in question subsequent to that date. If available information is not adequate to otherwise determine or estimate existing ambient quality as of January 31, 1994, such groundwater quality for each parameter shall be assumed to be no worse that the most stringent levels provided for in Tables 1 through 4 of "The Basic Standards for Ground Water," unless the Commission has adopted alternative numerical standards for a given specific area.

Therefore, in almost all cases, the most stringent criteria for an analyte set forth in Tables 1 through 4 of "The Basic Standards for Ground Water" (Table Value Standards) will be the applicable standard for that analyte. If an operator wishes to propose a groundwater standard less restrictive than the Table Value Standard, it will be the operator's burden to sufficiently demonstrate to DRMS that their circumstances meet at least one of the following two conditions, thereby allowing DRMS to apply a less restrictive standard, and still fully implement the requirements of Regulation No. 41:

1) An operator is able to provide DRMS with adequate pre-January 31, 1994 data to demonstrate, to the satisfaction of DRMS, that the existing ambient groundwater quality as of January 31, 1994 exceeded Table Value Standards; or

2) An operator provides DRMS with data generated after January 31, 1994 which exceeds Table Value Standards, and can also demonstrate that no new or increased sources of groundwater contamination in the area in question have been initiated since January 31, 1994, thereby indicating the data is representative of existing groundwater quality as of January 31, 1994.

The only other way a DRMS permitted site may allowably exceed Table Value Standards would be for the operator to obtain a site-specific exemption or variance from WQCC through a rule-making process.

WQCC requests that DRMS, as an implementing agency, exercise its best professional judgment as to what constitutes adequate information to determine or estimate existing ambient quality as of January 31, 1994, taking into account the location, sampling date, and quality of all available data. DRMS may also seek concurrence with WQCC prior to approving any groundwater standards for a site which are less restrictive than the Table Value Standards.

In the case of Boettcher Limestone Quarry, the available groundwater monitoring data shows exceedances in the Table Value Standard for multiple analytes. However, the operator is not able to address condition one (listed above) by providing the Division with pre-January 31, 1994 data to demonstrate that the existing ambient groundwater quality as of January 31, 1994 exceeded Table Value Standards.

Therefore, the operator must address condition two (listed above) by providing the Division with data generated after January 31, 1994 which exceeds Table Value Standards, and also demonstrating that no new or increased sources of groundwater contamination in the area in question have been initiated since January 31, 1994, thereby indicating the data is representative of existing groundwater quality as of that date.

The operator has submitted TR-10 in efforts to address condition two, requesting the Division to accept the available post-January 31, 1994 groundwater monitoring data as being representative of existing groundwater quality as of that date, and therefore, to apply standards for the site which are less restrictive than the Table Value Standards.

After reviewing the materials submitted with TR-10, the Division has identified the following adequacy items that require additional information and/or clarification by the operator (categorized by general topic):

Geology/Hydrogeology:

1) The groundwater evaluation provided in TR-10 is based solely on the assumption that groundwater flow at the site occurs primarily along the contact of the Niobrara Formation and Codell Sandstone. The evaluation does not discuss other potential pathways for groundwater flow, specifically fracture flow, and/or other conduits. However, documentation in the permit file indicates alternative pathways for groundwater flow may exist at the site, including:

a. A groundwater investigation conducted at the site in 1990 by Stewart Environmental Consultants, Inc. (SEC; received on March 23, 1998) to determine whether the site could be used as a county landfill. The results of the investigation led SEC to conclude the site would be difficult to permit as a landfill due to its complex geology and groundwater hydrology associated with fracture and/or conduit flow. SEC found that groundwater monitoring at the site would be difficult because the joint structure of the formation is unknown, appropriate groundwater monitoring would depend on intersecting saturated joints, and any continuity of the joints could be an avenue for contaminate migration.

b. A hydrogeologic and geochemical assessment of the site conducted by SECOR International Inc. in 1998 (SECOR; received on December 11, 1998), which noted that groundwater flow at the site is likely limited to the most highly fractured zones or interfaces between geologic strata, and that estimated conductivity was highest where fractures were noted during drilling.

c. While the Office of the State Engineer (SEO) initially certified three ponds at the site (mined pits with ponded water) in 2015 as having achieved the design standard for groundwater seepage for lined reservoirs in accordance with the 1999 SEO Guidelines, after reviewing monthly water accounting submitted for the site, the SEO later determined an augmentation plan is required for the groundwater exposed in the pits. Therefore, regardless of the low permeability of site bedrock, groundwater seepage into the pits exceeds the SEO's allowable leekage rates. This determination by the SEO suggests groundwater movement at the site may be subject to a fracture flow regime.

d. On page 2 of TR-10, the operator describes the curve/band in the hogback located in the CKD disposal area A2 as being a change in strike of the Niobrara Formation deposits, representing a zone of flexure. Found within these flexure areas, are some minor changes in dip and minor faulting (with small displacements). Fracture areas are commonly associated with this geologic feature. Evidence of fracturing is found in the borehole logs provided for all but well MW-4. These logs describe fracturing present in most of the wells, and some slickensides observed in well MW-7 (indicating fault movement).

Additionally, a draft report titled Technical Background Document on Ground Water Controls at CKD Landfills, published by the EPA in 1998, indicates the site is situated in an immature karst hydrogeologic setting in which the groundwater system may have conduit-flow characteristics.

Please be sure the groundwater evaluation provided in TR-10 addresses all potential pathways for groundwater flow at the site, including fracture flow.

Groundwater Monitoring Program:

2) On page 3, the operator states that no groundwater monitoring wells screened similarly to the downgradient site wells have been installed outside of the areas of CKD disposal. Please explain why this has not been done at this site, as the data obtained from such wells could potentially be very useful in evaluating CKD impacts.

3) Wells MW-1, MW-2, and MW-3 are installed across the Niobrara/Codell contact, the screened lithology of well MW-4 is unknown, and wells MW-6 and MW-7 are screened above the contact in the Niobrara Formation. Please discuss how these differences in screened lithology may explain differences observed in groundwater quality at these wells, if at all.

4) The tritium analysis discussed over pages 5 – 7 indicates that groundwater sampled in well MW-1 recharged relatively recently, while groundwater sampled in Group 2 and Group 3 wells is predominantly older than 1952, ranging from approximately 78-83% pre-1952 water found in well MW-4, to 97% pre-1952 water found in well MW-3. The Division has the following comments regarding the tritium analysis:

   a. Please explain why well MW-5 was not sampled for the tritium analysis. Because well MW-5 is grouped with well MW-1 in the groundwater evaluation (Group 1), and well MW-1 was sampled for tritium analysis, it would have been helpful to also have tritium data for this well for comparison.

   b. The results of the tritium analysis appear to further substantiate the findings of earlier studies conducted at the site (included in the permit file) indicating the formations have a low permeability and the groundwater recharge to the formations is very slow. While these results speak to the residence time of site groundwater, they do not directly address groundwater quality, as site wells were shown to have various mixtures of "new" water (post-1952) introduced prior to, during, and/or after CKD disposal occurred on site (1980 – 2002). Therefore, please expand your evaluation of the tritium analysis to include discussion of how the results might relate to groundwater quality observed at site wells.

   c. Your evaluation of the tritium analysis suggests wells MW-2 and MW-3 (located closest downgradient from the A2 disposal area) may have been significantly recharged by post-1952 water from the former A2 pit (prior to being backfilled with CKD in 2002). If this is the case, please provide an explanation as to why the tritium study shows the highest percentage of "old" water (97%) present in well MW-3.

   d. Please provide the sampling procedures utilized for collecting the groundwater samples for tritium analysis, including sample collection, storage, and shipping procedures. What containers were used? How was the water collected from the well? Were the wells purged prior to sampling? Additionally, please provide copies of the field sheets associated with the tritium sampling event.

   e. Please explain how demonstrating that a portion of the water (albeit a large portion) present in monitoring wells is "old" (pre-1952) demonstrates the groundwater has not been contaminated by CKD disposal activities that occurred on site from 1980 - 2002. If approximately 20% of the groundwater present in the wells came from post-1952 recharge, would that 20% "new" water not be sufficient to degrade the overall water quality in the wells, even if the "new" water is significantly contaminated?

f. The groundwater sampled from all site wells (except MW-7) shows elevated concentrations of uranium, and gross alpha and beta. Please provide a discussion on how elevated concentrations of these radionuclides would affect the age dating results, specifically terrigenic helium.

g. In a quantitative interpretation of hydrogen/helium dating, one must consider the effects of mixing and dispersion of the groundwater. Due to these effects, the age date is biased towards the water component with higher tritium concentrations. Therefore, mixing must either be ruled out, or accounted for in the data evaluation. Please describe how mixing and dispersion were accounted for in the age dating conducted at the site.

5) The groundwater monitoring data provided with TR-10 did not include all available data for the wells, including data collected prior to September 27, 2010 for wells MW-2, MW-3, and MW-4. Please include all available data for Division review.

6) The Division has the following comments regarding the most recent groundwater monitoring report submitted for the site (for 2nd semi-annual 2018 event):

a. Some of the analytes (i.e. thallium, antimony) have detection limits set at or above the groundwater standard, making it difficult to evaluate how close to the standard the analyte concentration might be, or in some cases, whether the analyte concentration exceeds the standard. This results in a loss of valuable information that may indicate whether the CKD is impacting groundwater. The Division recommends working with the lab to lower the detection limits for these analytes, so that groundwater conditions can be more effectively evaluated.

b. In the laboratory report (page 36), there is a note that states “some parameters were received past hold time”. Please identify which samples and parameters the note is referring to and provide a brief explanation.

c. Please provide the field sheets from the November 15, 2018 sampling event which show the method used for purging and sampling the wells, and the field parameters associated with sample collection. While reporting field parameter data was a stipulation of Technical Revision No. 3 approval (Stipulation No. 5), the operator has not been including this data in monitoring reports. Pursuant to the approved groundwater sampling plan, this data shall be included on any future monitoring reports.

7) The details of well MW-4 installation are not available, so it is unknown whether the well was developed properly. However, the rise in groundwater constituents soon after installation could potentially be related to intercepting a contamination front as it migrated past the well location and slowly reached equilibrium. The Division does not believe the operator has provided enough evidence to demonstrate this well and other wells installed on site took such a long time (years) to reach equilibrium, as suggested. Please provide additional information and/or discussion as to why it may have taken years for the wells to reach equilibrium.

Reclamation:

8) Rule 3.1.7(8) requires an operator to demonstrate, to the satisfaction of DRMS, that reclamation has been achieved so that existing and reasonably potential future uses of groundwater are protected. Such a demonstration must be made by the operator and accepted by the Division prior to releasing reclamation liability for the site. On page 9, the operator indicates demonstration of this has been done by reseeding a portion of the site (located south and outside of the CKD disposal areas). Typically, revegetation efforts are intended to help stabilize the land surface, including to control erosion. Please explain how the reseeding efforts described demonstrate that existing and reasonably potential future uses of groundwater are protected.

Figures/Diagrams:

9) On page 3, the operator states the Dakota-Cheyenne (sandstone) aquifer is the principal aquifer of the region, and is overlain by the Carlile and Niobrara Formations. Please include the Dakota-Cheyenne aquifer and all overlying units in the area of the quarry on the stratigraphic section provided on Figure 2, or on a separate figure.

10) On Figures 1, 4, and 11, the operator has included two blue arrows, indicating the approximate groundwater flow direction (to the east) from the A2 disposal areas. This information alone does not sufficiently demonstrate groundwater flow in the areas of CKD disposal. Please provide a potentiometric surface map for the site, and indicate how groundwater flow on site interacts with the regional groundwater flow. This information is necessary in evaluating potential off-site impacts.

11) The amended permit boundary as shown on Figures 1, 4, and 11 appears to be incorrect. On these figures, the CKD disposal boundaries overlap the western permit boundary. The Division believes this is an error, as the permit area should encompass the CKD disposal areas (see enclosed Google Earth images of site showing approximate location of approved permit boundary). Please correct the location of the permit boundary and/or CKD disposal areas as portrayed on all relevant figures.

12) Figure 3 shows a Generalized Cross-Section apparently of the A2 disposal area.

    a. Please show this section line on one of the site maps provided.

    b. Please add the following features to the cross-section:

        i. A map label that describes the specific area of the cross-section (i.e., Generalized Cross-Section of CKD Disposal Area A2).

        ii. Location(s) of CKD materials.

        iii. Location of the open pit to the east of the CKD disposal areas, including the approximate water level of its ponded water.

c. Please describe the data/information used to determine the approximate groundwater elevation shown on the cross-section.

d. Well MW-1 is shown on this cross-section as being located upgradient of the A2 disposal pit, which contradicts its location as shown on Figures 1, 4, and 11 (within the A2 disposal areas), and its location as described in the text (within 100 feet downgradient of the A2 disposal areas). Please explain these discrepancies and make any necessary corrections on the cross-section, figures, and/or text regarding its location.

13) Please provide a separate cross-section for the Dry Fill CKD disposal area, including a map label that describes the specific area of the cross-section, and showing the approximate location of CKD, monitoring wells MW-4 and MW-7, the groundwater elevation, and the pit to the east of the CKD disposal area, including the approximate water level of its ponded water. Please be sure this section line is shown on one of the site maps provided.

14) Please provide a figure showing groundwater elevations at all monitoring wells versus time (as was included with the 2nd semi-annual monitoring report for 2018), and include an analysis of this data with respect to the site hydrogeology and groundwater monitoring results.

15) Please locate on a site map any tributary water courses, wells, springs, stock water ponds, reservoirs, and ditches on the affected land and on adjacent lands, pursuant to Rule 6.4.7(2)(a). Please identify any of the wells known to be screened in the Niobrara or Carlile Formations.

16) On Figure 5 – Piper Diagram of Groundwater and SPLP Results, the Division is not able to find the plots for well MW-4, perhaps because they are hidden behind other plots. Please explain where the MW-4 data plots on this diagram.

17) Figure 1 – Dissolved Barium shows initial concentrations of barium to be < 2 mg/L (The Table Value Standard) in wells MW-1 – MW-4 for the first 8 sampling events from 1999 – 2000. Then, there was a 10-year data gap from late 2000 – late 2010, where no monitoring well data was collected for the site. During the period of the data gap, the operation was disposing of CKD materials in the A2 area (from 1999 – 2002). When site monitoring picked back up again in late 2010, barium concentrations at wells MW-2 - MW-4 (downgradient wells) were significantly elevated above their initial concentrations, especially wells MW-3 and MW-4, which had concentrations exceeding 2 mg/L (8 mg/L at MW-4).

a. Please explain this significant increase in barium concentrations observed at wells MW-2 - MW-4 after disposal of CKD in the A2 area.

b. While barium concentrations at wells MW-3 and MW-4 have been relatively constant since monitoring picked back up for the site in late 2010, barium concentrations at well MW-2 show a slight increasing trend since 2014, with concentrations mostly exceeding 2 mg/L since that time. Please explain this positive trend in barium concentrations observed at well MW-2 since 2014.

18) Figure 2 – Dissolved Boron shows initial concentrations of boron to be < 0.75 mg/L (the Table Value Standard) in wells MW-1 – MW-4. However, boron concentrations in wells MW-2, MW-3, and MW-4 have shown exceedances of the 0.75 mg/L standard since monitoring picked back up in 2010. Monitoring wells MW-6 and MW-7 (installed later, with first sampling data from 2013), also show exceedances of the 0.75 mg/L standard, more consistently for well MW-7. Please explain this increase in boron concentrations observed at downgradient wells.

19) Figure 5 – Total Dissolved Solids shows initial TDS at well MW-4 to range between about 6,000 – 9,000 mg/L. However, after site monitoring picked back up in 2010, TDS at well MW-4 has consistently exceeded 10,000 mg/L. Please explain this increase in TDS observed at well MW-4.

20) Figure 7 – Chloride shows initial concentrations of chloride at well MW-4 to be less than 3,000 mg/L, increasing to over 5,000 mg/L by the end of 2000. After site monitoring picked back up in 2010, chloride concentrations at this well have remained above 6,000 mg/L, sometimes exceeding 7,000 mg/L. Please explain this increase in chloride concentrations observed at well MW-4. Additionally, please explain why wells MW-1 and MW-5 have chloride concentrations below the standard, while the other (downgradient) wells have chloride concentrations that exceed the standard.

21) Please explain why, in graphing the laboratory data, it is suitable to use values that are half the Practical Quantification Limit (PQL), when the lab has flagged the value with a "U" and not a "B". Why not use the PQL value that is reported by the lab?

Summary and Recommendations:

22) In the summary and recommendations section on page 9, the operator recommends the recent data be used to assess ambient conditions at the site as of January 31, 1994, and that in cases where ambient conditions exceed Regulation No. 41 Table Value Standards, a less restrictive standard based on the ambient conditions be applied. Please provide a list of the specific analytes for which the operator is requesting that a less restrictive standard be applied, including the proposed numerical standard for each analyte.

23) In the summary and recommendations section on page 9, the operator lists four observations to support the conclusion that concentrations of barium and TDS observed in the samples collected from site monitoring wells can be attributed to local geology, and do not represent influence from CKD disposal in area A2. The Division has the following comments on these observations:

    a. These observations primarily focus on the elevated barium and TDS concentrations, and do not address elevated concentrations of other constituents observed in site groundwater. Please provide an analysis of all exceedances observed in site groundwater, including: arsenic, barium, boron, chloride, fluoride, gross alpha, iron, manganese, nitrate as N, nitrate + nitrite as N, selenium, sulfate, thallium, and uranium, TDS over 10,000 mg/L. Please be sure this analysis includes a discussion of the elevated constituents found in CKD materials versus native materials (as shown in Figures 8-10), and addresses the fact

that some of these constituents are also elevated in groundwater sampled downgradient from CKD disposal areas.

b. Observation no. 1 states that naturally occurring barium and TDS background concentrations are regionally elevated in the Niobrara aquifer groundwater.

    i. Please provide the data source for which this determination was made. Has the operator collected water quality samples or reviewed water quality data from local wells? If so, please identify the location of these wells on a map, and provide a comparison of this data with site well data.

c. Observation no. 2 states that if CKD in area A2 was an ongoing source for barium and TDS loading to the groundwater, higher concentrations of barium would be expected in the Group 2 wells that are closer to CKD disposal area A2. However, the highest barium and TDS concentrations are in groundwater samples from the Group 3 wells, which are located greater than 500 feet from CKD disposal area A2.

    i. The Division does not fully agree with the operator's grouping scheme for site wells. For example, the operator has grouped wells MW-4, MW-6, and MW-7 together in Group 3, as being located further downgradient of the CKD disposal area A2. However, well MW-4 may potentially be better classified with Group 2 wells, as it is located much closer to the Dry Fill CKD disposal area than wells MW-6 and MW-7. Furthermore, well MW-4 does have barium exceedances and TDS > 10,000 mg/L. Please explain why well MW-4 is included in Group 3 and not Group 2 for this evaluation.

d. Observation no. 3 states that dissolved metals concentrations elevated above benchmark levels are only consistently observed for barium, and that elevated or upward trending concentrations of other constituents would be expected if CKD was influencing groundwater concentrations in the site wells.

    i. As noted above, several analytes, and not just barium, have exceeded Table Value Standards at the site. Therefore, the operator will need to expand the evaluation presented in TR-10 to include an analysis of all exceedances observed in site groundwater.

    ii. It is difficult to establish trends for many of the parameters, given that 1) the groundwater has not been consistently analyzed for all applicable Table Value Standards (until the most recent sampling event conducted on November 15, 2018); 2) several parameters that were being monitored, including ones with exceedances, were dropped from the sampling list after the November 13, 2012 sampling event (no explanation found in the permit file), then 3) additional parameters (also including ones with exceedances) were dropped from the sampling list after the May 21, 2014 sampling event (with approval of Technical Revision No. 6), and 4) there was a ten-year long data gap from late 2000 – late 2010, during which no monitoring data was collected from the site. Data from

this period would have been very helpful to review given the A2 pit was being backfilled with CKD during the start of this period (through 2002).

iii. The Division recommends the operator, at a minimum, conduct additional sampling and analysis of other existing groundwater sources in the quarry area, including but not limited to, the four open pits on site with ponded groundwater, Curtis Lake Reservoir located just east and downgradient from the site, and the water supply ditch and associated seeps bordering the site to the south. Alternatively, or in addition to this sampling, the operator should consider installing additional monitoring wells on site outside of CKD disposal areas, which are similarly screened to downgradient wells. A comparison of data collected from these wells and other existing groundwater sources to data collected from downgradient wells would be very useful in evaluating potential CKD impacts to groundwater. Please commit to providing a proposed sampling plan to the Division (in TR-10) prior to sampling any water sources other than existing site wells.

e. Observation no. 4 states that based on leaching tests of CKD solids and groundwater from other CKD-impacted sites, elevated pH values and concentrations of potassium (and other constituents) would be expected for CKD impacted groundwater.

i. TR-10 did not include sufficient information from studies conducted at other CKD-impacted sites to demonstrate these sites are comparable to the Boettcher Limestone Quarry. If the operator wants the Division to consider these studies in its decision on TR-10, more details about the sites and how they compare to the Boettcher Limestone Quarry will need to be provided.

ii. The available monitoring data does not include field parameter data (temperature, specific conductance, pH, water levels) as required by TR-3. The pH values provided in monitoring reports were taken by the lab. Please provide all available field parameter data collected during the various sampling events. Additionally, please include an analysis of the field pH data (as was provided for the lab pH data).

24) Please explain how the information described in TR-10 demonstrates there have been no new or increased sources of contamination initiated in the area in question since January 31, 1994, as required by WQCC's Regulation No. 41.5(C)(6)(b)(iii).

This concludes the Division's preliminary adequacy review of TR-10. The Division reserves the right to further supplement this document with additional adequacy items and/or details as necessary.

The decision date for TR-10 is currently set for **April 4, 2019**. If additional time is needed to submit a response, an extension request must be received by our Office by the decision date. If on the decision date, outstanding adequacy items remain, and no extension request has been received, TR-10 will be

denied. Given the complexity of TR-10, the Division strongly recommends the operator submit an extension request as soon as possible.

If you have any questions, you may contact me by telephone at 303-866-3567, ext. 8129, or by email at amy.eschberger@state.co.us.

Sincerely,

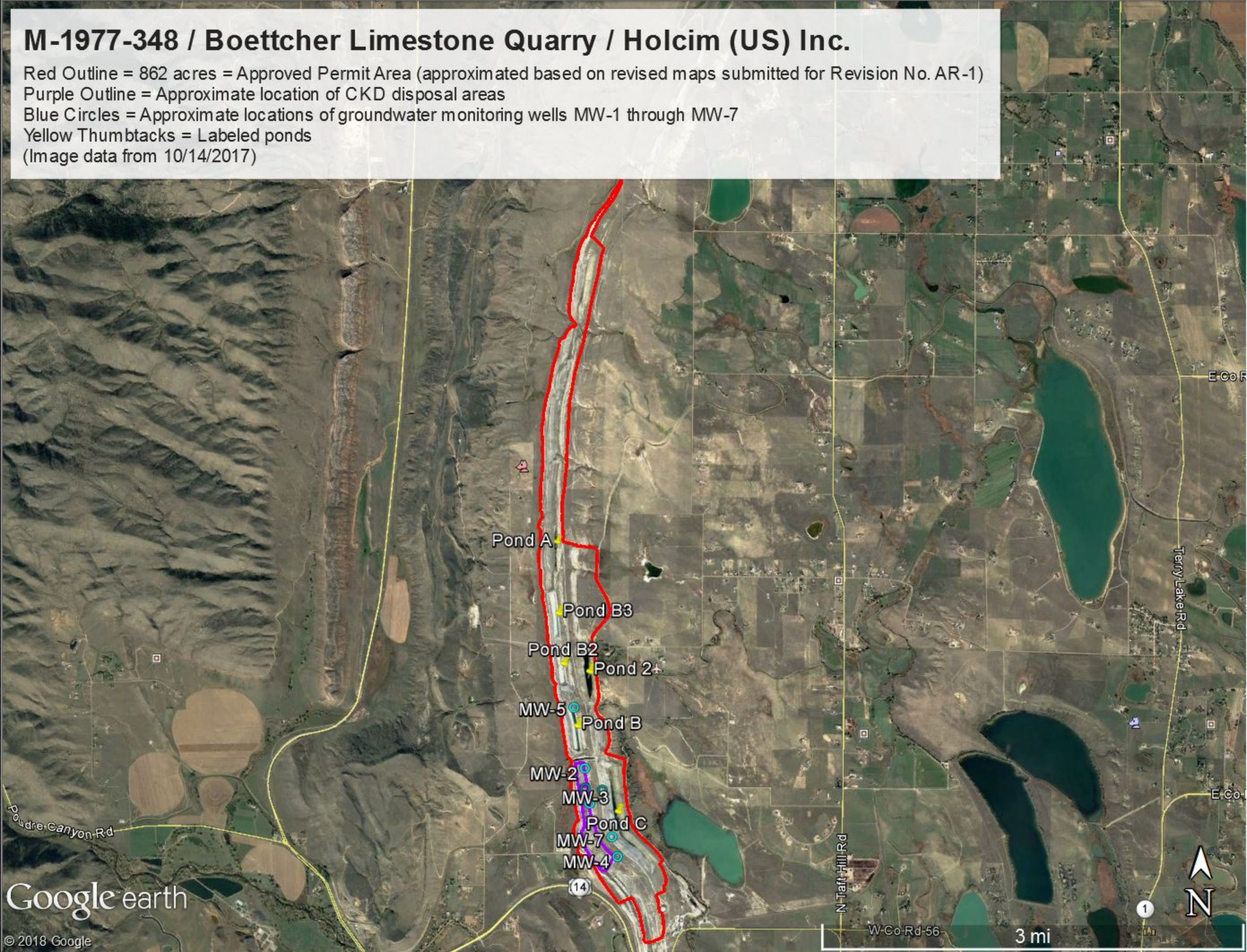
Amy Eschberger
Environmental Protection Specialist

Encls: Google Earth image of site showing approximate location of approved permit boundary
Google Earth image of southern portion of site showing approximate location of approved permit boundary

Ec: Sara Harkins, Golder Associates, Inc. at: sara_harkins@golder.com
Derrick Dease, Holcim (US) Inc. at: derrick.dease@lafargeholcim.com
Patrick Lennberg, DRMS at: patrick.lennberg@state.co.us
Michael Cunningham, DRMS at: michaela.cunningham@state.co.us
Russ Means, DRMS at: russ.means@state.co.us
Robert Hillegas, CDPHE, WQCD at: robert.hillegas@state.co.us
Aimee Konowal, CDPHE, WQCD at: aimee.konowal@state.co.us

M-1977-348 / Boettcher Limestone Quarry / Holcim (US) Inc.

Red Outline = 862 acres = Approved Permit Area (approximated based on revised maps submitted for Revision No. AR-1)
Purple Outline = Approximate location of CKD disposal areas
Blue Circles = Approximate locations of groundwater monitoring wells MW-1 through MW-7
Yellow Thumbtacks = Labeled ponds
(Image data from 10/14/2017)



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Closer view of southern portion of site.
Red Outline = 862 acres = Approved Permit Area (approximated based on revised maps submitted for Revision No. AR-1)
Purple Outline = Approximate location of CKD disposal areas
Blue Circles = Approximate locations of groundwater monitoring wells MW-1 through MW-7
(Image data from 10/14/2017)