

April 3, 2023

Peter Hays
Division of Reclamation, Mining and Safety
1313 Sherman Street, Room 215
Denver, CO 80203

RE: Response to 2nd Adequacy Review Comments for Martin Marietta Materials, Inc., Windsor East Mine, File No. M-2022-042, 112c Permit Application

Dear Mr. Hays:

This letter is in response to your 2nd Adequacy Review Letter, dated March 22, 2023, regarding Exhibit G - Water Information for Martin Marietta Windsor East Mine's 112c Permit Application (File No. M-2022-042).

Please find below our responses to the comments made by Eric Scott in his letter dated March 17, 2023. For ease of review, we are only responding to the comments made by Eric where he had more to say than "Adequate as Submitted".

Comments

4. Section 1.6 of the provided materials describes a "simplified model" and states that it was calibrated/verified based on observed drawdown in one well. This model is then used to predict groundwater drawdowns due to mining after one year and 5 years of dewatering at distances up to 2640 feet. DRMS will require a substantially more rigorous modelling demonstration to predict and illustrate the maximum groundwater drawdown impacts from dewatering during mining, potential impacts to nearby wells, as well as any post-mining mounding and shadowing impacts due to the construction of impermeable or low permeability mine cells. The model should provide GW drawdown/mounding contour maps based on, and verified against all available site setting and geologic information, current and historic water level data, and the predicted size and location of mining cells (for both sites).

Additional modeling was not provided, however, the rationale for not providing a modeling evaluation based on: existing monitoring and drawdown data, distance and direction to nearest non-monitoring wells, and nearest well ownership and use is sound. In addition, although the likelihood of impacts to off-site wells is minimal, the monitoring and mitigation plans provided should be able to sufficiently address any unforeseen impacts if any are observed.

Response

Acknowledged

5. Section 2.1 of the provided exhibit states that up to 5 quarters of "baseline" GW level data will be collected for the WEM site with the exception of Cell A where dewatering will commence immediately. This is based on the rationale that GW levels in that area have already been impacted by the adjacent Parsons dewatering activity. DRMS acknowledges that the historic GW regime has likely already been impacted to some extent by the adjacent Parsons site. However, based on the observations of significant GW drawdowns at distance from the Parsons site, allowing dewatering of Cell A while attempting to collect "baseline" water level data for the remainder of the WEM site will likely render that data useless as a "baseline" for later mining drawdown comparison. Dewatering or exposure of GW should not be allowed on the WEM site until the full 5 quarters of baseline data can be collected.
 - a. Mining below groundwater/dewatering of Cell A during collection of the 5 quarters of baseline data may also adversely impact the validity of the baseline analytical data results.

Not addressed, however, rationale provided for the proposed activity based on existing data and continued monitoring is sound.

Response

Acknowledged

6. Water Quality Parameters and rationale presented in section 2.2.1 and Table 5 are acceptable as presented with the following edits.
- Add CN to section 2.2.1 or sample for it.
 - WQS for U should be 0.0168 to 0.03, not 0.02 as stated in Table 5
 - Will any QA/QC samples be collected/run to verify field and lab procedures?
 - I note that although there are several wells on the adjacent Parsons site, no analytical data has been presented as “background” for WEM, however, that may be a subject for another discussion.

Adequate as submitted - with the exception of item “c.” No response was provided to address the question if any QA/QC samples would be collected/run to verify field and lab procedures as a component of the provided analytical monitoring plan. If no QA/QC samples are collected the applicant will need to acknowledge that the only way to address potential “outlier” data, if observed, will be through re-sampling and re-analysis.

Response

Martin Marietta will collect a duplicate sample as part of each sample-collection round to improve QA/QC for the program. Exhibit G has been revised to reflect this.

10. Section 2.3 also states that “if a well goes dry, MM will implement mitigation measures within 7 days.” In the event that a well owner reports that their well has become unusable, MM will be required to implement mitigation measures immediately (as soon as practically possible). MM will concurrently commence an investigation into the status of the complaint. The results of this investigation as well as any proposed remediation or rationale for discontinuing mitigation will be submitted to DRMS for approval within 30 days.

Partly addressed. The language in comment #9 above has been incorporated. The initial investigation, as well as the temporary, and long-term impact mitigation measures proposed are reasonable and appropriate. However, the operator should acknowledge that the DRMS, and potentially the MLRB, are responsible for determining if mitigation is required, as well as when and how any mitigation measures are implemented and discontinued after the initial complaint is received.

Response

Exhibit G language in section 2.3 has been revised to explicitly recognize that the DRMS and/or MLRB are responsible for determining if mitigation is required and when and how mitigation measures will be implemented following receipt of a complaint.

11. Appendix G-3: Because the analyte list and reporting levels have been identified, please identify and include the sample container type and size, preservative (if required), holding times, and analytical method to be used. This information could also be included in Table 5.

Adequate as submitted - Analytical methods have not been provided, but it has been noted on Table 5 that the method selected must provide reporting levels below the applicable standards.

Response

Acknowledged.

Thank you for your consideration. If you have any questions or need additional information, please let me know.

Sincerely,

TETRA TECH

A handwritten signature in black ink that reads "Chris Gutmann". The signature is cursive and fluid.

Christopher Gutmann, P.G. (Arizona)
Hydrogeologist

cc: Julie Mikulas, Martin Marietta
Pam Hora, Tetra Tech

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EXHIBIT G: WATER INFORMATION

1.0 INTRODUCTION AND BACKGROUND

This Exhibit addresses the hydrologic conditions at the Windsor East Mine located in Section 36, Township 6 North, Range 67 West of the 6th Principal Meridian, Town of Windsor, Colorado (See Figure G-1). The Exhibit documents the depth and direction of groundwater flow, the nature of the subsurface geologic materials through which it flows (Figure G-2), any interactions with streams, lakes, canals or other surface water bodies in the area and the potential impacts to surrounding water users due to mining impacts.

The information in this Section is intended to satisfy the requirements outlined in Sections 3.1.6, 6.3.3, 6.3.4, and 6.4.7 of the Colorado Mined Land Reclamation Board's Construction Material Rules and Regulations.

Section 3.1.6

(1) Hydrology and Water Quality: Disturbances to the prevailing hydrologic balance of the affected land and of the surrounding area and to the quantity or quality of water in surface and groundwater systems both during and after the mining operation and during reclamation shall be minimized by measures, including, but not limited to:

(a) compliance with applicable Colorado water laws and regulations governing injury to existing water rights;

(b) compliance with applicable federal and Colorado water quality laws and regulations, including statewide water quality standards and site-specific classifications and standards adopted by the Water Quality Control Commission;

(c) compliance with applicable federal and Colorado dredge and fill requirements; and

(d) removing temporary or large siltation structures from drainage ways after disturbed areas are revegetated and stabilized, if required by the Reclamation Plan.

Section 6.4.7

(1) If the operation is not expected to directly affect surface or groundwater systems, a statement of that expectation shall be submitted.

This site is directly adjacent to the Cache la Poudre River. The Cache la Poudre River will be utilized for the discharge of dewatering water from each of the proposed mine cells. The presence of the river has the collateral benefit of mitigating groundwater drawdowns and associated impacts to wells east of the Site.

(2) If the operation is expected to directly affect surface or groundwater systems, the Operator/Applicant shall:

(a) Locate on the map (in Exhibit C) tributary water courses, wells, springs, stock water ponds, reservoirs, and ditches on the affected land and on adjacent lands where such structures may be affected by the proposed mining operations.

Please see Exhibit C Pre-Mining Maps for the location of all tributary water courses, wells, springs, stock water ponds, reservoirs, and ditches on the affected land and on adjacent lands where such structures may be affected by the proposed mining operations.

(b) Identify all known aquifers

The Windsor East site is underlain by two aquifers:

- The valley-fill deposits of the Lower Cache la Poudre River.
 - described in: Hershey, L.A. and P.A. Schneider, 1972. "Geologic Map of the Lower Cache la Poudre River Basin, North-Central Colorado", USGS Miscellaneous Geologic Investigations Map I-687. (See Figure G-2)
- The Fox Hills Sandstone
 - described in: Robson, S.G. 1989, "Alluvial and Bedrock Aquifers of the Denver basin – Eastern Colorado's Dual Ground-Water Resource", USGS Water-Supply Paper 2302

(c) Submit a brief statement or plan showing how water from de-watering operations or from runoff from disturbed areas, piled material and operating surfaces will be managed to protect against pollution of either surface or groundwater (and, where applicable, control pollution in a manner that is consistent with water quality discharge permits), both during and after the operation.

The geologic conceptual model of the subsurface and groundwater was developed from the geologic map for the area and the boring logs associated with the installation of the monitoring well network at the Windsor East site and the Parsons Mine site located to the east (Figure G-3). Based on water levels measured in these wells, a groundwater level elevation map was developed (Figure G-5). Following removal and stockpiling of topsoil, each of the four cells will be dewatered and mined. Sand and gravel will be extracted using the "dry" mining method in which the water table is lowered to allow mining to be performed under drained conditions. To lower the water table, local dewatering is conducted using a perimeter drain constructed around each planned mining cell.

The dewatering system would discharge to the Cache la Poudre River. Dewatering of the mine would lower the groundwater levels to a limited extent in the surrounding alluvial aquifer and will not impact the underlying Fox Hills Sandstone aquifer. Effects on groundwater levels are projected to be limited in extent due to natural and manmade hydrologic and hydrogeologic characteristics and boundaries, principally including the transmissive nature of the alluvial aquifer, the Cache la Poudre River, and the mining operation. Figure G-6 illustrates the resulting changes to groundwater flow directions during mining and after reclamation.

The available gravel resource is anticipated to be mined for approximately 6 years; however, the rate of mining and overall life of the mine is dependent upon demand and market conditions. All material mined at Windsor East will be conveyed to Martin Marietta's adjacent Parsons Mine site for processing at the existing plant on that site.

Upon completion of mining, the reclamation plan for the mine includes the placement of compacted clay embankment liners in Mining cells A and C, while cells B and D will be backfilled with non-economic grade alluvium including topsoil, sands, and fine gravel. These cells will thereby be converted to sealed water storage reservoirs, which will be owned and used by GWIP, LLC, the landowner of the Windsor East Mine site.

Exhibit D: Pre-Mining and Mining Plan shows the location of the Affected Area and proposed mining cells. Changes to the hydrologic balance within the Affected Area will be limited to the localized dewatering associated with the excavation of the mine cells, and the minor alteration of the existing groundwater flow patterns due to the subsequent installation of compacted clay embankment liners during reclamation. Figures G-5 and G-6 show the mine cells and conceptual groundwater flows before and after the installation of the compacted clay liners.

1.1 HISTORIC USE

The Windsor East property has historically been used for agriculture. The adjacent neighbors include Martin Marietta's Parsons Mine site to the east, agricultural land with a few residences to the north and west, and the Cache la Poudre River to the south.

Based on well registration, land use besides agriculture within two miles of the site has included Eastman Kodak to the west and northwest, Front Range Energy to the northwest of the site, Joseph Energy to the northwest of the site, and Hensel Phelps Construction to the northwest of the site.

1.2 HYDROGEOLOGIC SETTING

1.2.1 Geology

The geology mapped at land surface beneath the site consists of quaternary age valley-fill deposits comprised of sand, silt, and gravel primarily (Figure G-2). The areas of higher elevation around the site are typically comprised of quaternary terrace deposits. Boring logs from installation of monitoring wells immediately east of the property were reviewed for details on the site geology. The Parsons sand and gravel mine has 12 monitoring wells on the property, including MW-12 which is the nearest to the Windsor East property, located between the Parsons property and the Windsor East property (Figure G-3). The boring logs generally indicate that the geology consists of a 10-30 ft thick layer of unconsolidated alluvial sediments overlying siltstone bedrock. The upper 4-14 feet of the alluvial sediments are typically finer-grained silts and clays and may be only partially saturated in many locations. The lower 4-20 feet of the alluvium consists of sands and gravels which are expected to be highly transmissive of shallow groundwater.

The shallow bedrock of the Fox Hills Sandstone consists of weathered, consolidated sedimentary rock varying from claystone to siltstone as observed in the boreholes advanced on the Parsons mine property to the east. In comparison to the alluvium, the weathered bedrock is expected to be several orders of magnitude less transmissive due to the consolidated, finer-grained properties. Bedrock was encountered in the boreholes advanced at the Windsor East mine property between 15 and 22 ft below ground surface (bgs), and 13ft bgs in the nearest Parsons Mine borehole (Parson MW-12).

1.2.2 Groundwater

Groundwater at the site represents a combination of water that flows through the high-permeability valley-fill alluvial deposits parallel to the Cache la Poudre River and water that infiltrates in the surrounding higher-elevation recharge areas to the north and south of the river, typically associated with the agricultural fields that dominate the land use of the area. Infiltrating water in these areas of higher elevation drains at the lower-lying erosional valleys formed by streams and rivers of the area, resulting in flow patterns that resemble a muted form of the land surface topography. The erosional valleys are typically underlain by the higher-permeability sands and gravels deposited by historic flood events and form channeled zones through which groundwater can flow more rapidly. South of the Windsor East property, the Cache la Poudre River is the surface-water feature for local groundwater discharge. Within several hundred feet of the river, groundwater flows in a direction that is near parallel to the river due to the constant interaction with the river stage within the porous sands and gravels. As a result, while groundwater beneath the site is typically slightly higher than that of the river and flows toward the river, the flow direction of groundwater flow is generally parallel to the Cache la Poudre River from west to east, at close proximity (Figure G-5). Some minor component of upward groundwater flow from the deeper bedrock may occur, but this is likely to be negligible compared to the influence of the river and the underflow within the valley-fill alluvium.

The direction of regional shallow groundwater flow is therefore toward the southeast but changing to a near easterly direction near the river. Based on water-level measurements in the monitoring wells installed at the Windsor East mine property, the water table is approximately 8-11 feet below land surface.

1.3 EXISTING AND PLANNED WELLS

1.3.1 Existing Monitoring Wells

A network of monitoring wells was installed in 2010 to characterize the groundwater conditions at the Parsons mine east of the Windsor East property (Figure G-3). The boreholes for the wells were drilled to the bedrock contact and the wells were constructed using 8-10 foot screened intervals between the water table and the bedrock contact. These wells generally show the direction of groundwater flow in an easterly direction, in equilibrium with the river water elevations, although subject to the influence of the Parsons mine cell dewatering.

1.3.2 Well Inventory

In May 2022, a well inventory of the Affected Area and adjacent areas was conducted to identify wells near the project. The inventory included a search of the State of Colorado Office of the State Engineer database of wells located within ½ mile of the Affected Area (Table 1). The well inventory identified 25 constructed wells within ½ mile of the Affected Area. Figure G-4 enclosed shows the Affected Area and the constructed well locations on file with the Colorado Division of Water Resources.

Wells located within 600 feet of the Lease Boundary

The well inventory identified two wells completed in the alluvial aquifer within 600 feet of the lease-area boundary. The first is a monitoring well (Parsons MW-12) owned by Martin Marietta (permit # 280593) associated with the Parsons mine immediately to the east of the Windsor East property. Bedrock was encountered at 13 ft bgs and water was observed at approximately 6-8 ft bgs. The second is a monitoring well owned by Hall-Irwin Corporation (permit # 277000). It was constructed in 2007 and was screened from 4 to 15 ft bgs. Bedrock was encountered at 13 ft bgs and water was observed at approximately 2 ft bgs in 2007. Monitoring holes and wells are not a concern for dewatering impacts because neither are allowed to serve as pumped sources of water.

Water supply wells located within ½ mile of the Lease Boundary

In addition to the wells identified within 600 feet of the lease boundary, the well inventory identified two residential wells, eight monitoring/observation wells, three monitoring holes, and one general purpose well completed in the alluvial aquifer within ½ mile of the lease-area boundary. Appendix G-5 provides a letter from GWIP LLC regarding the status of wells 89706-A, 113762--A, and 1472-R-R.

Permit number 89706-A

Domestic/Residential well (89706-A) is registered to Brett T and Mary K Lauer. It was constructed in 1977 to a depth of 32 feet. It is located slightly more than 600 feet distance from the lease boundary on the northwest corner, and approximately 1,060 feet northwest from the nearest planned mining cell. The well is 5-inch diameter PVC, screened from 17 to 32 ft bgs, and was equipped with a pump capable of 30 gpm. The driller's log indicates that water was encountered at 12 feet bgs in 1977. A 6-hr pumping test conducted in 1977 resulted in sustained pumping of 20 gpm and a pumping water level of 27 ft bgs (15 feet of drawdown, a specific capacity of 1.33 gpm/ft). Bedrock was observed at 27 ft bgs. The parcel that this well sits on is owned by GWIP LLC, the property owner for this reclamation permit application.

Permit number 113762--A

Domestic well (113762--A) is registered to M WaterCo LLC, although originally to Harold Long and Sons. It was constructed in 1980 to a depth of 25 feet. Water was noted at 12 ft bgs and bedrock was encountered at 20 ft bgs. A sustained pumping test of 30 gpm for 2 hours was conducted in 1980 with no recorded drawdown. It is located 1500 to 2000 feet distance from the lease boundary on the north side. A registered domestic well with a similar permit number (113762-) is associated with Harold Long and Sons Inc. The date of construction was not recorded, but the well inventory indicates that it was drilled to a depth of 30 feet, encountering bedrock at 20 ft bgs. This well shares nearly identical location and construction information (and permit number) with the well registered to M WaterCo LLC and seems to be the same well. The parcel that this well sits on is owned by GWIP LLC, the property owner for this reclamation permit application.

Permit number 1472-R-R

General Purpose well (1472-R-R) is registered to West Weld Ag Investors. This well was originally drilled for Allen Lamb with permit number 1472 before 1957 and listed as an irrigation well. It was replaced by well 1472-R at an unknown date to a depth of 15 ft bgs, with a 40 ft by 60 ft sump from which water was pumped at approximately 500 gpm. A permit application was received in 1981 to replace well 1472-R with a new irrigation well by West Weld Ag Investors with a proposed maximum pumping rate of 500 gpm and a planned depth of 50 ft. The registered UTM coordinates for the well indicate that it is located several hundred feet south of the Cache la Poudre river, but the description in the permit indicates that it is located 3,300 ft south of the northern edge of

section 35 and 1,300 ft west of the eastern edge of section 35, and therefore may actually be located just north of the river near UTM 512260 E, 4476810 N. This location is approximately 1,200-1,300 ft west of the southwestern corner of the lease boundary, and approximately 1,500 ft from the nearest planned mining cell. A loop of the Cache la Poudre River extends between the lease area and the likely location for the well. Based on both a field and records investigation, the well listed at 1472-R-R is believed to have been located near the irrigation center pivot, and abandoned at some time in the past. The parcel that this well sits on is owned by GWIP LLC, the property owner for this reclamation permit application.

Monitoring Wells on the Adjacent Parsons Mine Property

Monitoring wells installed as part of the Parsons Mine operations were considered as part of this permit application. Twelve of the fourteen wells were installed in 2010 and the other two were installed more recently. Table 2 includes construction details and depth-to-water information. Measuring point elevations were surveyed on December 15, 2022, to the nearest 0.01 ft elevation. Appendix G-2 provides water levels measured over time for the Parsons Mine monitoring wells.

1.3.3 Site Monitoring Wells

Martin Marietta installed five monitoring wells (Figure G-3) in August 2022 to support the monitoring plan associated with the project, documenting the groundwater conditions before initiation of mining, during mining, and after mining is complete. Through the well monitoring program, the wells will serve as points at which water levels will be measured and water quality samples collected. The boreholes for each of the wells were advanced until bedrock was encountered. Lithologic logs documenting the valley-fill sediments observed and the bedrock during drilling were recorded. The monitoring wells were constructed of two-inch Schedule 40 PVC casing and screen. Silica sand was placed from approximately two feet above the top of the screen to the bottom of the borehole (bedrock). Above the silica sand, a bentonite seal was placed in the borehole annulus to restrict infiltration of surface water. Each of the monitoring wells was finished at the surface with a locking, aboveground, steel protective casing set in concrete. Table 3 provides additional details on the monitoring well installations. Appendix G-1 presents borehole logs and well completion details for the monitoring wells.

1.4 HISTORIC AND FUTURE GROUNDWATER LEVELS

Monitoring wells established at the Windsor East site in August 2022 were used to collect groundwater elevation data. This set of water level data was supplemented by water level data collected from monitoring wells on the adjacent Parsons Mine site located east of the Windsor East property. Water level data measured for the wells are included in Tables 2 and 3. Depth to water at the Windsor East site varies from 7.9 to 10.4 ft below the top of the well casing, corresponding to a range of water level elevation from 4732.14 at MW-06 to 4717.44 at MW-11. Figure G-5 presents the general direction of groundwater flow (southeast).

Since 2010, regular groundwater measurements have been collected from the 14 monitoring wells around Martin Marietta's Parsons Mine site. These wells shall hereafter be referred to as the Parsons Well Network, and are numbered MW-1 through MW-14. Appendix G-2 shows the variation in water level measurements from monitoring wells MW-1 to MW-12. Water levels measured in the Parsons well network vary from 4730 feet at MW-5 to 4690 feet above mean sea level (amsl) at MW-1 where the effects of dewatering are visible in late 2021 through 2022. Water levels are seasonally at their highest elevations in August or September following the irrigation season, and typically at their lowest elevations in February to March when irrigation has been suspended for the longest period of time. The water level at MW-12 before initiation of local dewatering in 2019 ranged from 5.8 to 7.8 ft bgs (4720.5 to 4722 ft amsl), then dropped to an average of 11.3 ft bgs (4716.7 ft amsl), a drawdown of approximately 4.6 ft. This monitoring well is located approximately 100 feet from the dewatering trench of the nearest active mining cell at the Parsons Mine, and the 4.6-foot change in water levels experienced at the Parsons Mine is expected to be representative of the drawdown that will be associated with dewatering of the mining cells at the Windsor East site.

Based on observed water levels at the Windsor East and Parsons sites, dewatering will lower water levels to within 2 feet of the top of bedrock in the immediate vicinity of each mining cell. The lowered groundwater effects

will be transmitted horizontally by the gravel aquifer, reducing water levels in the surrounding area as a “cone of depression” forms around the mining cell. During mining, water in the area will flow radially toward the dewatered cells, where it will be removed using the dewatering trench drainage system and discharged into the river.

Following mining, each cell will be lined to form a hydraulically isolated reservoir. The effect of the clay liner on the groundwater within the aquifer will be the formation of a hydraulic mound upgradient of the cell where water levels will be several feet higher than under pre-mining conditions. Downgradient of the cell, the groundwater levels will be several feet lower due to a “shadow effect” behind the reservoir. These changes in groundwater levels due to the clay-lined cells are expected to have minimal effect on the groundwater in the surrounding area due to the proximity of the river adjacent to and downgradient of the lined cells. Downgradient of the lined cells, groundwater levels will reach an equilibrium with the river due to its proximity, thereby minimizing the “shadow effect”.

1.5 AVAILABLE SATURATED THICKNESS

The drilling and installation of monitoring wells at the Windsor East site in August 2022 indicated that bedrock was encountered between 15 and 22.5 feet below land surface. Water levels measured on August 12, 2022, ranged from 7.9 to 10.4 feet bgs. Based on this data, the saturated thickness of aquifer present beneath the site ranges from approximately 5 to 13.5 ft (Table 3). The lowest saturated thickness was recorded in MW-11 on the eastern side of the site, which is likely showing the direct impact of dewatering activities associated with the adjacent Parsons mine.

Dewatering activities required as part of mining in the absence of a hydraulic barrier wall result in drawdown of the water table and associated decrease in saturated thickness of the alluvium. This has the potential to impact other wells nearby if the decline in water levels is sufficient to prohibit the well owner from extracting the associated water rights from the well.

Table 4 presents historic information about the variability in saturated thickness near the site and the impact from mining based on available data. Four of the monitoring wells that were installed at the Parsons Mine Site to observe water levels at the Parsons Mine site, provide evidence of the saturated thickness of alluvium nearest to the Windsor East property. Water levels measured during pre-mining and mining conditions illustrate the expected decline in saturated thickness approximately 100 feet from the gravel mines. In particular, the Parsons Mine monitoring well MW-12 is located approximately 100 feet west of a cell that began dewatering and mining in 2019. The water level record for the well shows the range of saturated thickness for the alluvium before and during dewatering activities at this distance. MW-12 is located on the eastern edge of the Windsor East property and is therefore expected to be representative of the conditions at the site as well as of the expected impacts from dewatering during mining near the property boundary.

Before 2019, the water table was an average of 6.3 feet above the top of the bedrock at MW-12 and fluctuated over a range of approximately 1 foot above or below this average. During dewatering, the depth to water increased, and the saturated thickness decreased until it was an average of 1.7 feet above the top of the bedrock, with a variation range of approximately 1 to 1.5 feet.

Water wells completed in sand and gravel aquifers typically provide approximately 25 to 30 gallons per minute per foot of drawdown of saturated thickness in the well. Domestic wells are typically permitted for maximum pumping rates of 15 gallons per minute (gpm). As a result, less than 2 feet of saturated thickness above the pump intake is therefore likely to be required to provide the allowed pumping rates of 15 gpm. The reduction of saturated thickness of 4.6 ft at MW-12 to 1.7 ft above bedrock suggests that the potential for impact to a domestic well at this distance is likely, however, wells located further from the lease boundary will have more saturated thickness and hence will likely be able to pump the permitted rates.

1.6 HYDRAULIC IMPACTS

The hydraulic impacts associated with dewatering around the planned mine cells are expected to spread outward as a function of the aquifer properties of the alluvium, the time elapsed since dewatering began, and the distance of observation from the point of dewatering. The previous observations of the depressed water table (drawdown)

due to mining at the adjacent Parsons mine (noted in the previous section) are useful for predicting the impact of the Windsor East mine. In particular, the observations at Parsons well MW-12 (located directly between a dewatered cell and the Windsor East site) represent an ideal location from which the effects of dewatering in the vicinity can be observed. As noted in Table 4, the result of dewatering at MW-12, located approximately 100 ft from the nearest cell, resulted in drawdown of 4.6 ft. This response occurred over two years, since dewatering was variable depending on mining rates.

A water resources investigation (WRI) study performed by the United States Geological Survey (USGS) (Langer and Paschke, WRI 02-4267, 2002), explored the simulated spread of hydraulic impacts in a hypothetical situation involving the excavation of surface alluvium to bedrock (similar to most of the sand and gravel mine operations along the Front Range river corridors). Appendix G-4 shares this USGS WRI report. The study used analytical and numerical modeling of a pit near a river in a highly permeable unconfined aquifer. This study illustrated that in a hypothetical sand and gravel pit in an aquifer adjacent to a river, a numerical simulation of steady-state drawdown does not result in drawdown exceeding approximately 1 foot at a roughly 0.5-mile distance from the hypothetical pit.

There are no registered wells owned by parties other than Great Western or Martin Marietta within 0.5 miles of the Windsor East Mine property. As a result, there are no parties that are expected to be impacted as a result of either dewatering operations or subsequent development of lined ponds at the Windsor East Mine site. Therefore, detailed localized numerical modeling of hydraulic impacts has not been conducted. Additionally, there are likely mitigating factors to drawdown spread caused by dewatering. Active dewatering may stop and start at a location depending on the mining progress, the proximity of the Cache la Poudre River will provide a constant source of water mitigating drawdown impacts, and the aquifer may prove more or less transmissive depending on the location. With this understanding, the modeled spread of the hydraulic effects of dewatering suggests that the impact of the lowering of the water table during mining is unlikely to substantially affect any nearby water wells.

1.7 WATER USE

Section 6.4.7 of the Colorado Mined Land Reclamation Board's Construction Material Rules and Regulations:

- (3) The Operator/Applicant shall provide an estimate of the project water requirements including flow rates and annual volumes for the development, mining and reclamation phases of the project.*
- (4) The Operator/Applicant shall indicate the projected amount from each of the sources of water to supply the project water requirements for the mining operation and reclamation.*

Water use will be at its highest during the mining phase of the project. Mining at the site will intercept groundwater tributary to the Cache la Poudre River. Consumptive uses of groundwater at the site include evaporation from groundwater exposed to the atmosphere, water retained in material hauled off-site for processing, and water used for dust control.

Evaporative losses at the site are attributable to exposed groundwater in the dewatering trenches for each mine cell. Evaporative losses were calculated as the difference between gross evaporation and effective precipitation. The NOAA Technical Report NWS 33, Evaporation Atlas for the Contiguous 48 United States (U.S. Department of Commerce) was used to determine the site's average annual gross evaporation of 43 inches. Precipitation was obtained from the Western Regional Climate Center for the Fort Collins weather station (053005). The gross annual precipitation for this site was determined to be 15.08 inches. Effective precipitation was calculated as 70 percent of gross precipitation; thus, the average annual effective precipitation was determined to be 10.56 inches. The resulting evaporative loss rate is therefore 27.92 inches. The maximum total annual evaporative consumptive use at the site is estimated at 12-17 acre-feet, which is primarily a function of the water used for dust control (10-15 ac-ft/yr).

2.0 MONITORING AND MITIGATION PLAN

This Groundwater Monitoring and Mitigation Plan is prepared as part of Martin Marietta's application to the Colorado Division of Reclamation, Mining and Safety (DRMS) for a permit for the Windsor East Mine in Weld County, Colorado. This plan presents the methods and locations for monitoring of groundwater during gravel mining and site reclamation activities. Although adverse impacts to other local users of groundwater are not expected due to activities at the mine, this plan addresses how any adverse effects to groundwater would be mitigated, should they occur.

Martin Marietta will submit a Temporary Substitute Water Supply Plan to the State Engineer's Office for approval. The temporary substitute supply plan is designed to protect senior vested water rights and mitigate potential depletions of flows in adjacent waterways.

2.1 MINING PLAN

Except for Cell A, the mining plan has been designed to allow for up to five quarters worth of groundwater monitoring to occur before excavation below the water table occurs. This monitoring includes monthly water level measurements in the five monitoring wells at the Windsor East Mine site, and five quarterly water-quality sample collection events. To allow for sufficient time for groundwater characterization to occur, mining is only planned to occur in the unsaturated zone until one year's worth of monitoring and groundwater sample collection has been conducted. An exception will be made for mine Cell A. This cell is the easternmost cell in the mining plan and is located within several hundred feet of the Parsons mine. As a result, water levels are already lowered in the area from Parsons dewatering. Since changes to the groundwater flow regime have already been substantially implemented, trenching and mining below the water table at Cell A with associated dewatering will begin before the five quarters of monitoring are complete. Based on the current mining schedule, mining will expose the water table after three quarters of monitoring has taken place. Following the five quarters of monitoring, dewatering trenches will be excavated around the perimeter of each remaining mine cell on a schedule determined by the mining plan.

Dewatering will occur initially adjacent to the area on the east where dewatering associated with Parsons mine has already reduced water levels (Cell A). The bottom of the trench will be maintained at or deeper than the deepest point in the excavated mine cell, thereby intercepting all groundwater before it reaches the mine cell. After collection of five quarters of groundwater monitoring, mining will gradually progress westward, with perimeter dewatering drains preceding excavation below the water table. Groundwater flow into each dewatering trench will be accumulated in connected sumps and discharged directly into the Cache la Poudre River.

Following completion of mining activities, mine cells A and C will be finished with a compacted embankment liner from material located on-site, keyed into the bedrock at the base of the mine cell, thus forming a low-permeability bathtub in the mine cell. Once finished, dewatering of the perimeter trench will cease, and the trench will be backfilled, allowing groundwater to return to a state of natural flow around the now-lined mine cell. It is expected that some minor hydraulic mounding may occur upgradient of the lined mine cell, with some "shadow effect" (decline in groundwater level) downgradient of the mine cell. Since no existing water wells have been identified downgradient between the mine and the river, the shadow effect is not anticipated to impact other users. Figure G-6 depicts the anticipated groundwater flow directions resulting from the installation of the compacted liners during reclamation.

Mine cells B and D will be backfilled with non-economic aggregate. While this material is expected to be finer-grained than the existing subsurface sands and gravels being mined, they are not expected to represent a significant barrier to flow. Some minor hydraulic mounding may occur to the northwest of each of the cells, but the effect is presumed to be localized and limited to less than 2 feet relative to the surrounding water table.

2.2 MONITORING

The monitoring plan will consist of regular data collection from the set of five monitoring wells installed around the perimeter of the Windsor East property (Figure G-3). Data collection activities will include monthly measurement of water levels in wells and quarterly sampling of water quality from wells and surface discharge locations for a minimum of five quarters. Following five quarters of background water quality sample collection and analysis, Martin Marietta will submit a summary of the water quality results to DRMS for review, and a formal request to reduce the analyte list and/or frequency for water quality sample collection, if appropriate.

2.2.1 Water Quality Parameters

Martin Marietta will collect water samples from each of the wells and discharge outflow sites and submit the samples to an analytical laboratory to determine water quality for a set of parameters. As part of this process, notes will be recorded on field forms or in a logbook documenting the activities related to sample collection including date, time, measured water level, pre-sampling well purging details, and sample collection documentation. The DRMS recommends a set of parameters for analysis for aggregate mine permitting. These include a list of dissolved metals, radiological parameters, and miscellaneous parameters which include pH and total dissolved solids (TDS). The nature of activities associated with sand and gravel mining involves excavation of large volumes of aggregate materials using industrial machinery. These activities inherently do not result in the generation or release of coliform bacteria, asbestos, chlorophenol, foaming agents, odor, or phenol compounds. They also do not result in a change in corrosivity of water, or color change. As a result, these parameters which are otherwise a part of the DRMS requirements for water quality analysis are excluded from the list of water quality parameters. Likewise, sand and gravel mining does not lead to the generation or release of gross alpha or beta and photon emitters as part of the operation. Martin Marietta acknowledges the preference on the part of DRMS to have gross alpha radiological analysis performed and will include it in the list, but will exclude beta and photon emitters from analysis. Table 5 presents the complete list of water quality parameters proposed for analysis.

Quality Assurance / Quality Control (QA/QC) samples will be collected as part of the monitoring program. Typical sampling programs may employ a range of samples for the purposes to confirm laboratory procedures, field conditions, sampling methodologies and consistency of data including trip blanks, field blanks, field duplicates. Trip blanks consist of a laboratory pre-filled volatile organic analysis (VOA) 40 mL bottle which is transported in the same coolers with the samples between the water source and the laboratory to determine whether volatile organic compounds (VOCs) are a product of the sample containment and transportation process. Field blanks are sample bottles filled using deionized or distilled water previously obtained from a laboratory and filled on site to evaluate whether the process of sample collection is a source of dissolved constituents, and are typically analyzed primarily for VOCs. Field duplicates represent a paired sample collected at the same time as the primary sample, using the same sized bottles and run for a similar set of analysis to determine whether variation due to sample collection and laboratory analysis procedures result in a significant range in analytical results. Martin Marietta will collect one field duplicate per sampling event for QA/QC purposes, but since VOCs are not a part of the sampling program, trip blanks and field blanks will not be collected.

2.2.2 Windsor East Monitoring Wells

The monitoring plan will consist of regular data collection from the five monitoring wells installed around the perimeter of Windsor East (Figure G-3). Monitoring data will be used to identify potential changes in alluvial groundwater flow or elevation associated with mining and reclamation activities. Baseline data collected from the monitoring program will provide a range of relative water levels associated with pre-mining groundwater conditions. Experience at other sand and gravel mine sites in similar geologic settings shows that groundwater levels tend to fluctuate between two to four feet each year; levels are highest in the summer and lowest in the winter and early spring. Martin Marietta will conduct monthly water level monitoring for the five monitoring wells around Windsor East during dewatering and until groundwater levels have recovered once dewatering ends.

Groundwater samples will be collected to document baseline water quality prior to mining, then determine whether any changes have occurred as a result of mining activities. One quarterly water quality sample for laboratory analysis will be collected during each of the five quarters of monitoring to document the baseline water quality around the mine. Based on the historical water level fluctuations observed in the wells associated with the Parsons Mine, the seasonal high and low water levels for groundwater have been evaluated. Water levels are seasonally at their highest elevations in August or September following the irrigation season, and typically at their lowest elevations in February to March when irrigation has been suspended for the longest period of time. During high groundwater levels, the sample is expected to be representative of the groundwater which flows from the agricultural fields toward the river, and during the periods of low groundwater the sample is expected to be representative of alluvial channel water flowing from the west. After five quarters, water quality sample collection will continue to be conducted twice per year while mining, with sample collection timed to be consistent with high and low groundwater levels. The results of water quality sample analysis will be provided to DRMS following the baseline water quality evaluation, and during annual reporting thereafter.

Appendix G-3 includes procedures for collecting water samples. These procedures include a process of pumping to purge standing well water, then using the pump to remove water for sample collection, then placing the water in sample bottles obtained from the analytical laboratory. At the end of purging, the pH of the water will be recorded using a handheld pH meter. Samples for dissolved constituents, primarily inorganics and metals, will first be filtered through a 0.45-micron filter to remove suspended solids. Samples will then be stored on ice in a cooler for transport and submitted for analysis of the constituents listed in Table 5 under chain-of-custody protocols.

If sufficient data is collected during the life of the mining operation, and a demonstration can be made that project impacts to the groundwater system have been minimized, Martin Marietta may request the approval of a Technical Revision to revise the water level monitoring frequency or water quality sample collection frequency at a later date.

2.2.3 Domestic and Irrigation Water Wells

No active water wells (water-supply wells) were present within 600 ft of the lease area.

2.2.4 Dewatering Discharge

Based on data collected from monitoring wells on the adjacent Parsons Mine property, the depth to groundwater fluctuates by two feet depending on the season but averages about 7 feet below ground surface. Due to the absence of large quantities of potential pollutants on site (no on-site processing or concrete or asphalt production), the mining and reclamation operations are not likely to affect groundwater quality on or off the site.

Martin Marietta's Parsons facility complies with applicable requirements in the site CDPS General Permit COG501594 for Discharges Associated with Sand and Gravel Mining and Processing. CDPHE WQCD considers stormwater runoff combined with mine dewatering water to be process water. Current discharges at the Martin Marietta Windsor East Site and Parsons Pit are permitted as process water. As such, process water discharges are subject to the process water provisions in the general permit. Martin Marietta plans to obtain a City of Windsor Grading, Erosion and Sediment Control Plan (GESCP) Permit and comply with applicable requirements as stated in the City of Windsor's Municipal Code/Ordinance Chapter 13, Article, Stormwater Quality.

2.3 MITIGATION

The available monitoring well data will be used to identify changes in alluvial groundwater flow associated with mining and reclamation activities. Baseline data collected from the monitoring program will provide a range of relative water levels associated with pre-mining groundwater conditions. These data will be utilized to evaluate the nature and extent of the change to the prevailing hydrologic balance and if necessary, provide for the development of corrective actions. Well owners in the section below refer specifically to owners of wells from which extracted water is put to beneficial use, such as water wells, irrigation wells, etc. Owners of monitoring

wells are not considered well owners in this context since a change in water levels for these wells does not represent material damage.

In the event of a well owner complaint, Martin Marietta commits to reporting any complaints received from well owners to the DRMS within 48 hours, investigating the complaint as soon as practical, and submitting the results to the DRMS for evaluation within 30 days.

For the investigation, the first level of response will be to review water level data from the monitoring well network and, if available, a measurement of the water level in the plaintiff's well. Information will be evaluated to determine the plaintiff's complaint may be tied to dewatering or the lined reservoirs. If the data indicates that there is no reason to believe the plaintiff's well was impacted by dewatering or the lined reservoirs, that will conclude the action taken by Martin Marietta. If the data does not clearly show there is no impact, as a second level of response, Martin Marietta will present a contract to the well owner requesting access to the well to perform mechanical and electrical inspection and testing of the well and associated system, e.g. pressure tank. The agreement will explain that if the problem with the well is not due to a lower water level and is instead due to a mechanical or electrical issue, the well owner will be responsible for the repairs. If the well is determined to be in good working order and the problem is due to a lower water level, then the mining-associated impacts will be addressed to the satisfaction of the DRMS. If the DRMS determines that the impact on a well for which temporary mitigation has been initiated is not a result of Martin Marietta's activities or is not solely a result of Martin Marietta's activities, Martin Marietta will reduce or cease mitigation accordingly.

In the event of a complaint that a well has become unusable, and based on the inspection results described above, Martin Marietta will implement mitigation measures within 7 days. Mitigation measures would include providing a temporary alternative water supply that meets the documented historic well production or need until further investigation can be conducted to determine if the well condition is due to the mining operation.

The DRMS, and potentially the Mine Land Reclamation Board (MLRB), are responsible for determining if mitigation is required, as well as when and how any mitigation measures are implemented and discontinued after the initial complaint is received. Should DRMS or MLRB conclude that mitigation action is required, Martin Marietta will begin to implement one or more mitigation measures.

Temporary mitigation measures may include, but are not limited to:

- Compensation for well owners to use their existing treated water system to replace the well production loss;
- Provision of a water tank and delivery water as necessary to meet documented historic well production or need; and
- Other means acceptable to both the well owner and Martin Marietta.

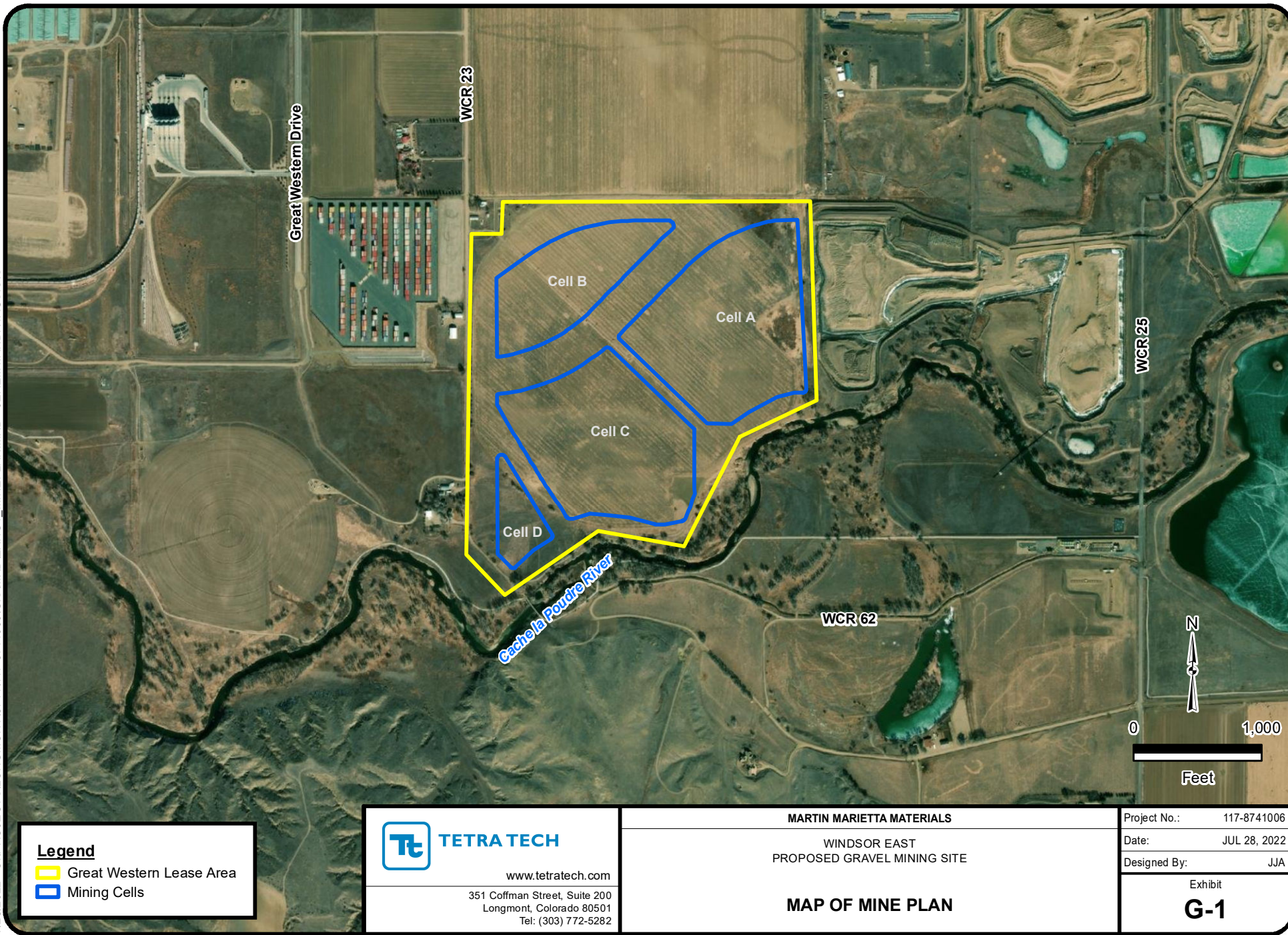
Long-term mitigation measures may include, but are not limited to:

- Cleaning a well to improve efficiency.
- Providing an alternative source of water or purchasing additional water to support historic well use with respect to water quantity and quality. If needed, water quality parameters will be checked in affected wells to ensure alternative sources support the historic use.
- Modifying a well to operate under lower groundwater conditions. This could include deepening existing wells or lowering the pumps. All work would be completed at Martin Marietta's expense except for replacing equipment that was non-functional prior to mining.
- If existing wells cannot be retrofitted or repaired, replace the impacted well with a new replacement well.
- Design and installation of a cistern.

If a groundwater mitigation action is required, Martin Marietta will notify the DRMS of the condition, action taken and report the results and present a plan for monitoring the mitigation.

FIGURES

7/28/2022 - O:\PROJECTS\LONGMONT\8741\117-8741006\GIS\MXD\EXHG1_MINEPLAN.MXD - JEREMY ANDRYAUSKAS



Legend

-  Great Western Lease Area
-  Mining Cells



TETRA TECH

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MARTIN MARIETTA MATERIALS

WINDSOR EAST
PROPOSED GRAVEL MINING SITE

MAP OF MINE PLAN

Project No.: 117-8741006

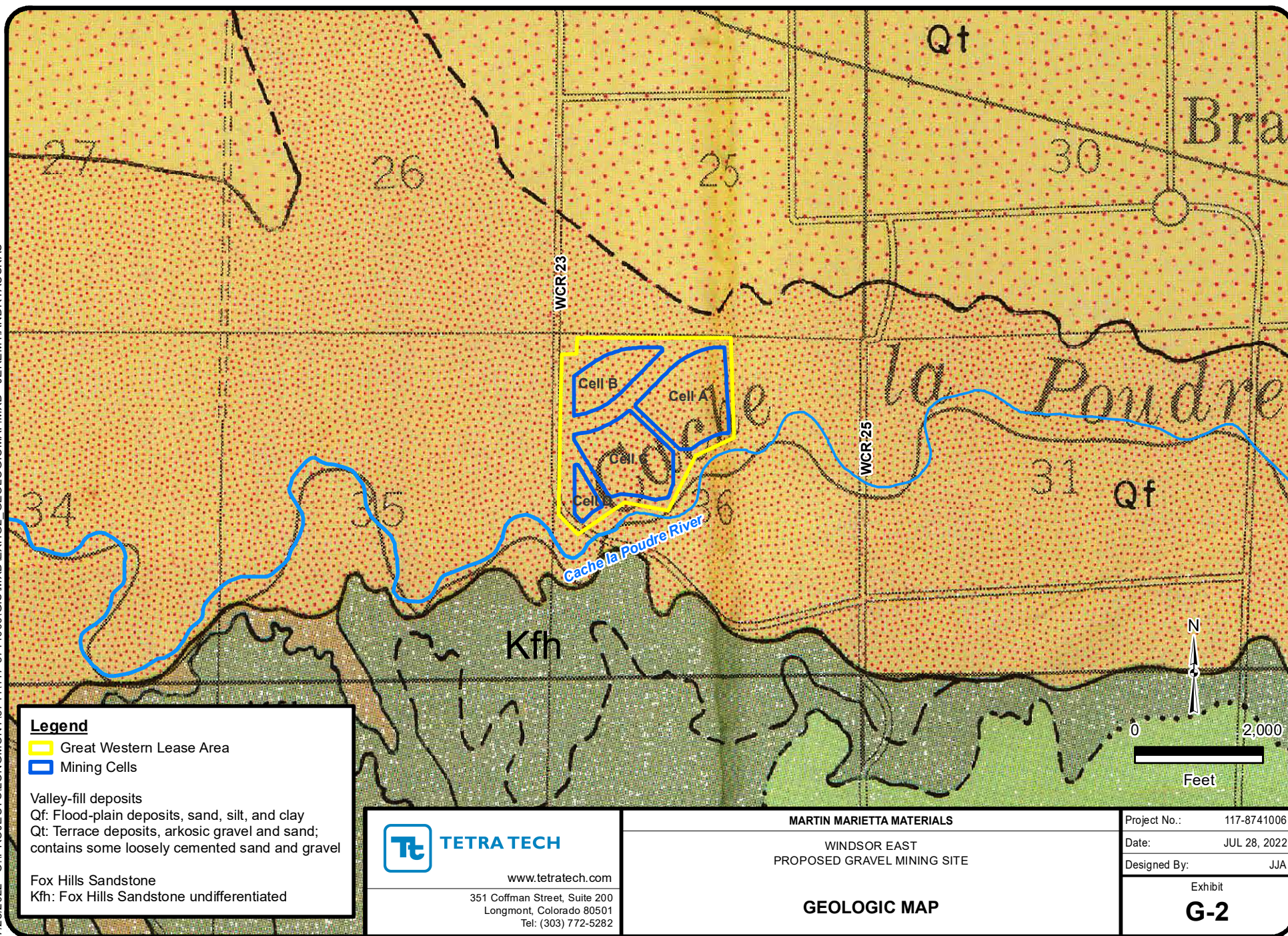
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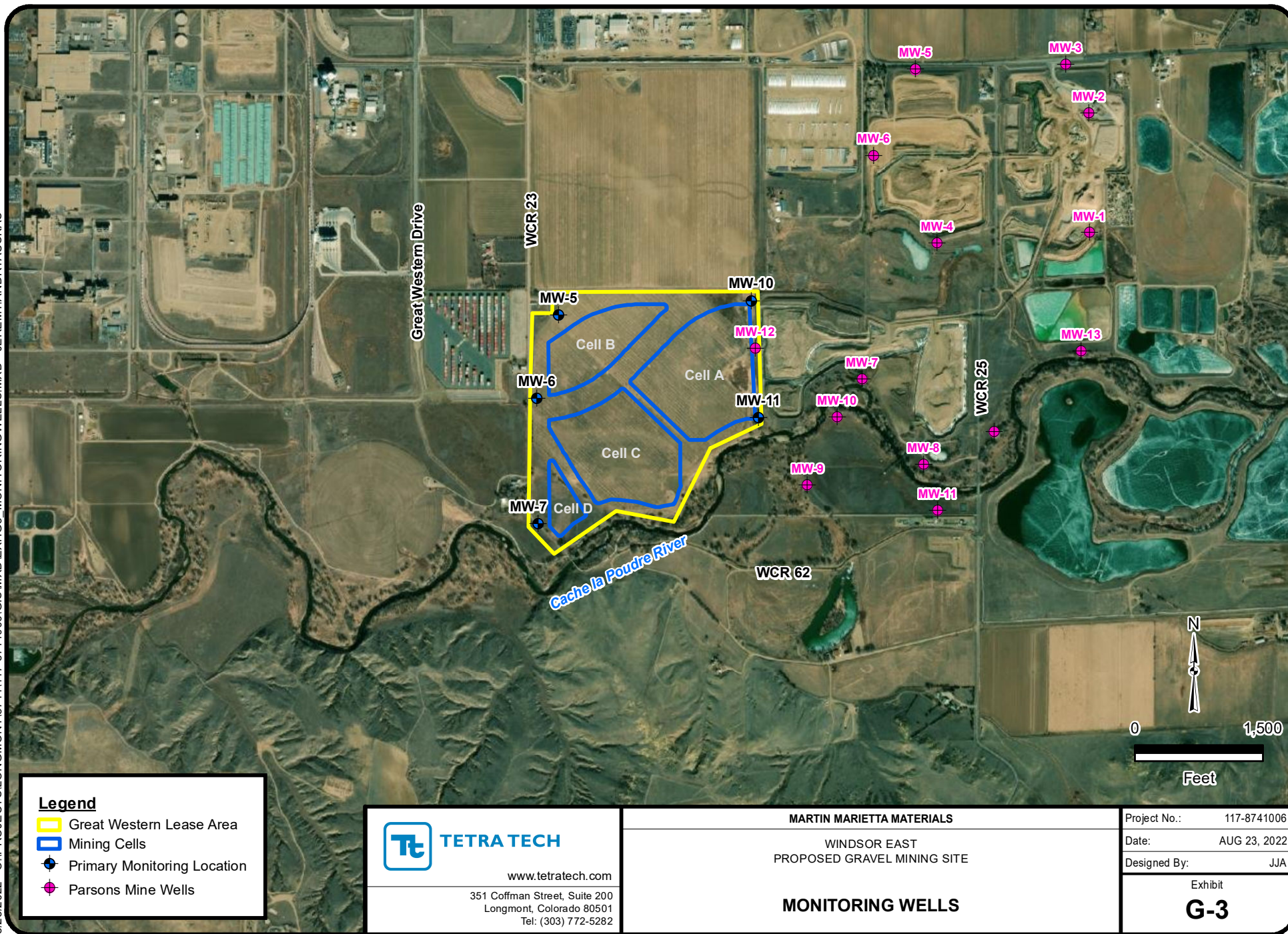
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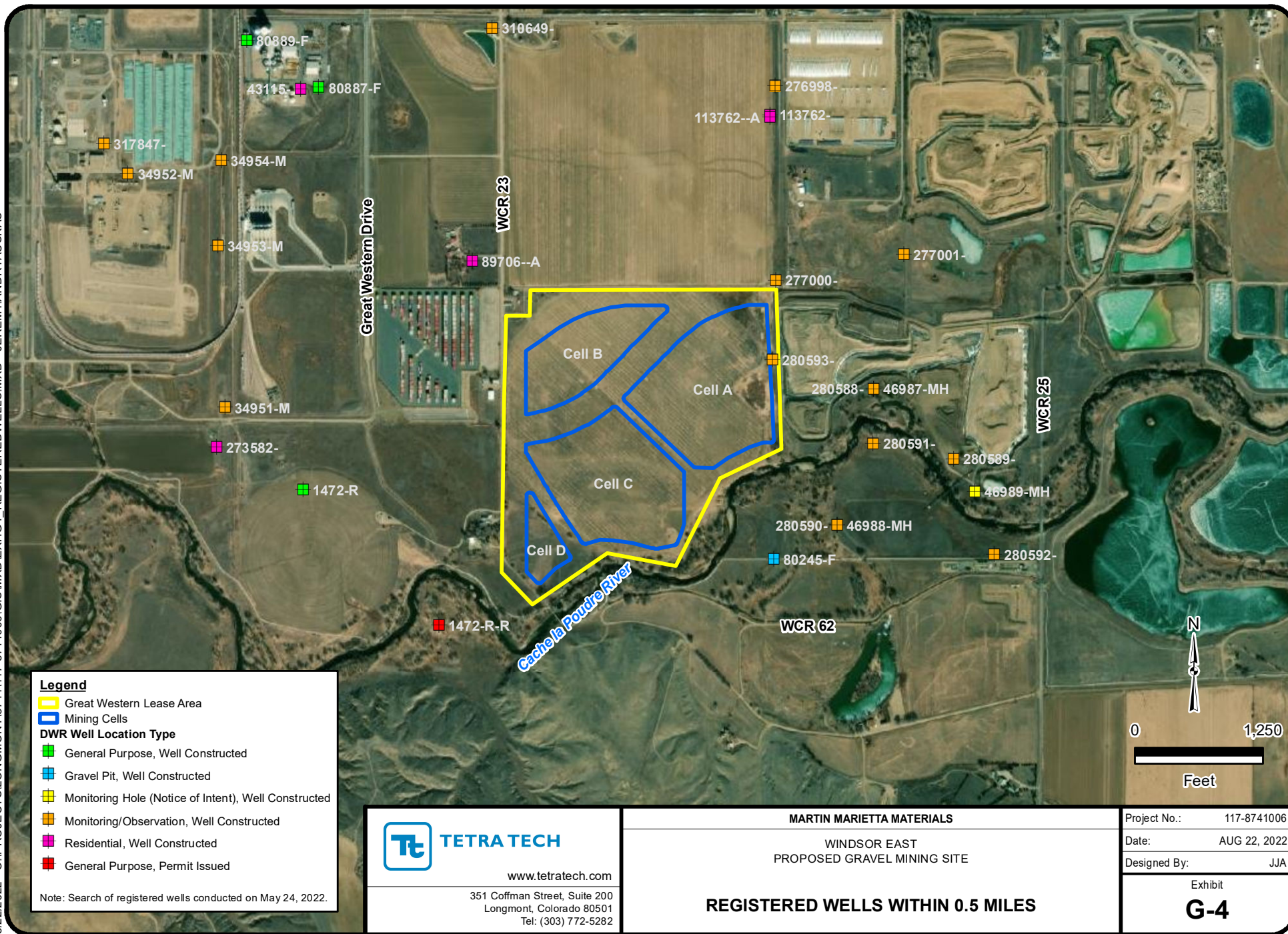
Exhibit

G-1

7/28/2022 - O:\PROJECTS\LONGMONT\8741\117-8741006\GIS\MXD\EXHG2 GEOLOGICMAP.MXD - JEREMY ANDRYAUSKAS

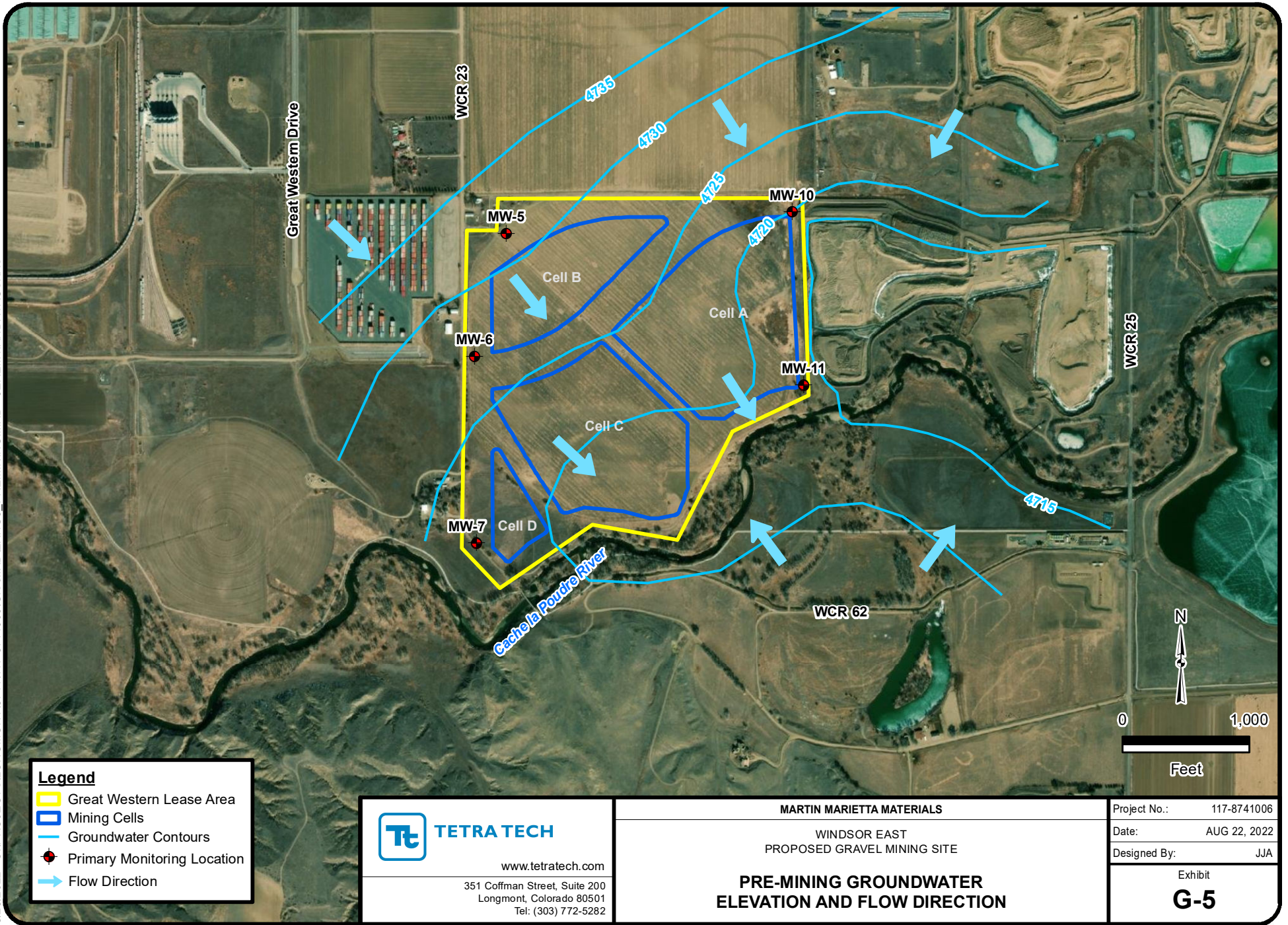






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Legend

- Great Western Lease Area
- Mining Cells
- Groundwater Contours
- Primary Monitoring Location
- Flow Direction

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MARTIN MARIETTA MATERIALS

WINDSOR EAST
PROPOSED GRAVEL MINING SITE

**PRE-MINING GROUNDWATER
ELEVATION AND FLOW DIRECTION**

Project No.:	117-8741006
Date:	AUG 22, 2022
Designed By:	JJA
Exhibit G-5	

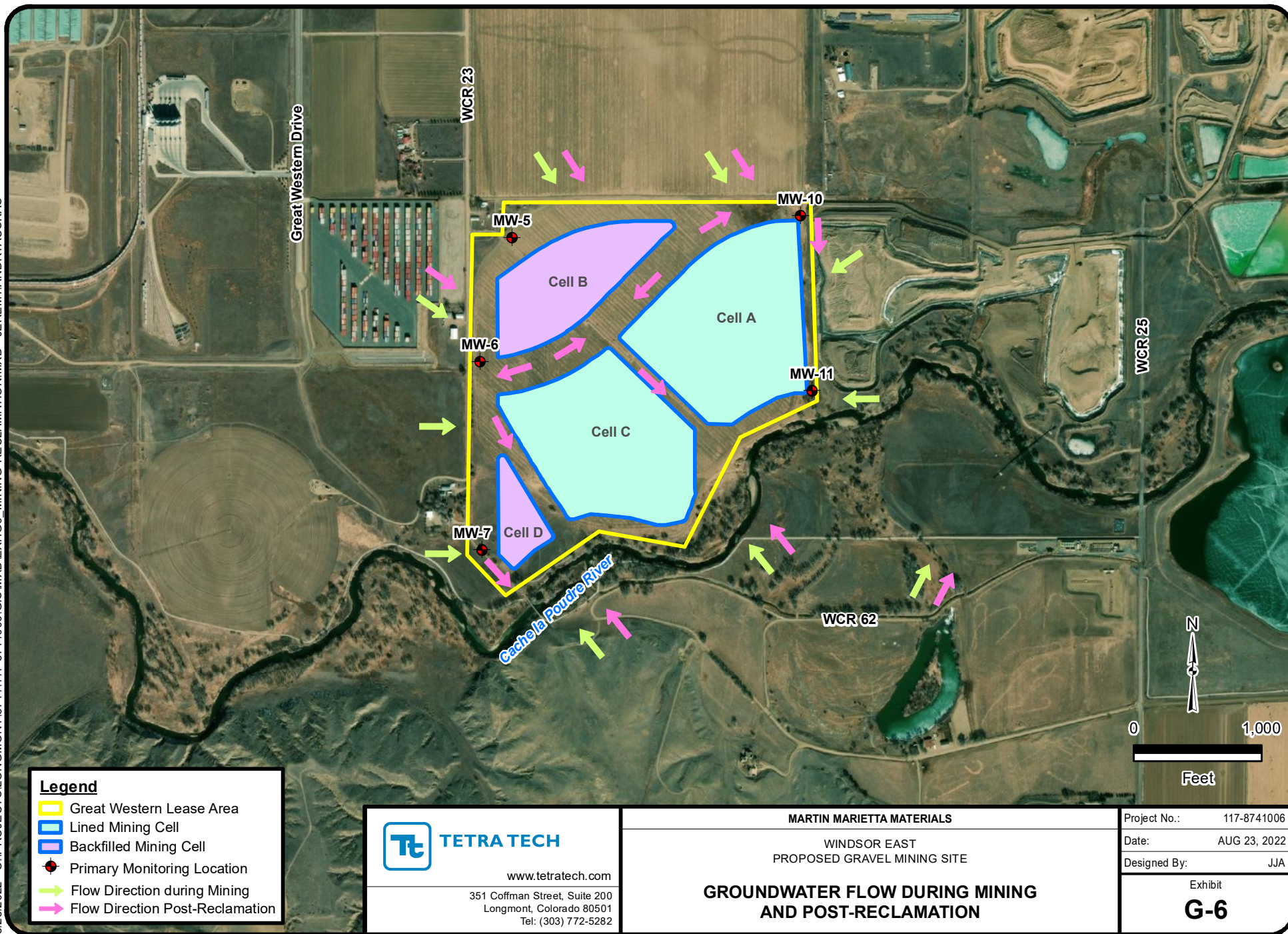


Table 1. Well Inventory Search Results

Permit Number	Contact Name	Town ship	Range	Section	Q160	Q40	UTM X	UTM Y	Distance	< 600 ft ?	< 0.5 mi ?	Permit Category	Permit Issued	Construction Date	Use(s)	Elevation	Depth	Screen Top	Screen Bottom	More Info
280593-	MARTIN MARIETTA MATERIALS INC	6.0 N	67.0 W	36	NE	NW	513402.6	4477581	< 100 ft	Yes	Yes	Monitoring/Observation	05/07/09	04/20/07	Monitoring/Sampling	4725	14	6	14	https://dwr.state.co.us/Tools/WellPermits/3639673L
277000-	HALL-IRWIN CORPORATION	6.0 N	67.0 W	25	SE	SW	513411.5	4477818	< 100 ft	Yes	Yes	Monitoring/Observation	03/28/08	03/01/07	Monitoring/Sampling	4727	14	4	15	https://dwr.state.co.us/Tools/WellPermits/3627148E
89706--A	LAUER BRETT T & MARY K	6.0 N	67.0 W	26	SE	SE	512509.3	4477876	640 ft	No	Yes	Residential	04/21/77	04/29/77	Domestic		32	17	32	https://dwr.state.co.us/Tools/WellPermits/9065892
280591-	MARTIN MARIETTA MATERIALS INC	6.0 N	67.0 W	36	NE	SW	513702.1	4477332	900 ft	No	Yes	Monitoring/Observation	05/07/09	04/20/07	Monitoring/Sampling	4723	15	4	14	https://dwr.state.co.us/Tools/WellPermits/3639673J
280588-	MARTIN MARIETTA MATERIALS INC	6.0 N	67.0 W	36	NE	NW	513702.5	4477496	940 ft	No	Yes	Monitoring/Observation	05/07/09	04/19/07	Monitoring/Sampling	4724	16	6	14	https://dwr.state.co.us/Tools/WellPermits/3639673G
280590-	MARTIN MARIETTA MATERIALS INC	6.0 N	67.0 W	36	NE	SW	513594.4	4477089	960 ft	No	Yes	Monitoring/Observation	05/07/09	04/20/07	Monitoring/Sampling	4727	16	6	16	https://dwr.state.co.us/Tools/WellPermits/3639673I
1472-R-R	WEST WELD AG I	6.0 N	67.0 W	35	SE	NE	512410.1	4476792	1300 ft	No	Yes	General Purpose	04/29/82		Irrigation					https://dwr.state.co.us/Tools/WellPermits/0221570
277001-	HALL-IRWIN CORPORATION	6.0 N	67.0 W	25	SE	SW	513792.4	4477895	1320 ft	No	Yes	Monitoring/Observation	03/28/08	03/02/07	Monitoring/Sampling	4724	9	4	10	https://dwr.state.co.us/Tools/WellPermits/3627148F
113762--A	M WATERCO LLC	6.0 N	67.0 W	25	SW	NE	513394.6	4478305	1700 ft	No	Yes	Residential	04/21/80	04/28/80	Domestic, Stock		25	12	25	https://dwr.state.co.us/Tools/WellPermits/0914278
280589-	MARTIN MARIETTA MATERIALS INC	6.0 N	67.0 W	36	NE	SE	513941.6	4477286	1750 ft	No	Yes	Monitoring/Observation	05/07/09	04/19/07	Monitoring/Sampling	4722	18	6	16	https://dwr.state.co.us/Tools/WellPermits/3639673H
46989-MH	PARSONS, SALLY	6.0 N	67.0 W	36	NE	SE	514004.4	4477189	1970 ft	No	Yes	Monitoring Hole (Notice of Intent)	04/17/07	04/19/07	Monitoring/Sampling	4722	18	6	16	https://dwr.state.co.us/Tools/WellPermits/0046989
276998-	HALL-IRWIN CORPORATION	6.0 N	67.0 W	25	SE	NW	513410.8	4478397	1980 ft	No	Yes	Monitoring/Observation	03/28/08	03/01/07	Monitoring/Sampling	4740	24	4	25	https://dwr.state.co.us/Tools/WellPermits/3627148C
280592-	MARTIN MARIETTA MATERIALS INC	6.0 N	67.0 W	36	NE	SE	514062.2	4477002	2300 ft	No	Yes	Monitoring/Observation	05/07/09	04/20/07	Monitoring/Sampling	4724	17	6	16	https://dwr.state.co.us/Tools/WellPermits/3639673K
310649-	GREAT WESTERN DEVELOPMENT CO	6.0 N	67.0 W	26	SE	NE	512567.4	4478569	2580 ft	No	Yes	Monitoring/Observation	08/22/18	07/20/17	Monitoring/Sampling	4758	26			https://dwr.state.co.us/Tools/WellPermits/3688007
34951-M	EASTMAN, KODAK	6.0 N	67.0 W	35	NW	NE	511773.7	4477440	2790 ft	No	No	Monitoring/Observation	04/11/89	05/10/89	Monitoring/Sampling		10	5	10	https://dwr.state.co.us/Tools/WellPermits/0297546O
273582-	BROE LAND ACQUISITIONS II LLC	6.0 N	67.0 W	35	NW	SE	511749.1	4477321	2800 ft	No	No	Residential	05/14/07	12/13/07	Commercial		32	12	32	https://dwr.state.co.us/Tools/WellPermits/3616219
80887-F	FRONT RANGE ENERGY LLC	6.0 N	67.0 W	26	SE	NW	512052.5	4478393	2880 ft	No	No	General Purpose	05/09/17	01/23/06	Industrial, Irrigation, Other					https://dwr.state.co.us/Tools/WellPermits/3679484A
34953-M	EASTMAN, KODAK	6.0 N	67.0 W	26	SW	SE	511752.9	4477922	2900 ft	No	No	Monitoring/Observation	04/11/89	05/08/89	Monitoring/Sampling		18	8	18	https://dwr.state.co.us/Tools/WellPermits/0297546Q
43115-	HENSEL PHELPS CONST	6.0 N	67.0 W	26	SE	NW	511997.7	4478388	2950 ft	No	No	Residential		09/19/70	Domestic		29			https://dwr.state.co.us/Tools/WellPermits/9064312
34954-M	EASTMAN, KODAK	6.0 N	67.0 W	26	SW	SE	511761.9	4478175	3200 ft	No	No	Monitoring/Observation	04/11/89	05/10/89	Monitoring/Sampling		18	8	18	https://dwr.state.co.us/Tools/WellPermits/0297546R
80889-F	FRONT RANGE ENERGY LLC	6.0 N	67.0 W	26	SE	NW	511838.4	4478531	3690 ft	No	No	General Purpose	05/09/17	02/01/06	Industrial, Irrigation, Other					https://dwr.state.co.us/Tools/WellPermits/3679484C
34952-M	EASTMAN, KODAK	6.0 N	67.0 W	26	SW	SE	511484.6	4478135	3980 ft	No	No	Monitoring/Observation	04/11/89	05/10/89	Monitoring/Sampling		16	6	16	https://dwr.state.co.us/Tools/WellPermits/0297546P
317847-	JOSEPH ENERGY LLC	6.0 N	67.0 W	26	SW	NE	511413	4478225	4280 ft	No	No	Monitoring/Observation	07/01/20	03/19/20	Monitoring/Sampling	4753	13			https://dwr.state.co.us/Tools/WellPermits/10004233
34941-M	EASTMAN, KODAK	6.0 N	67.0 W	34	SE	NE	510971.7	4476873	5300 ft	No	No	Monitoring/Observation	04/11/89	05/08/89	Monitoring/Sampling		16	6	16	https://dwr.state.co.us/Tools/WellPermits/0297546E

Table 2. Parsons Mine Well Construction Summary

Well	Location		Land Surface	Screened Interval		Depth to Water		Depth to Bedrock
	Latitude	Longitude	Elevation (ft asl)	Top of screen (ft BTOC)	Bottom of screen (ft BTOC)	Date	Measured (ft BTOC)	(ft BTOC)
MW-1	40 27'09.1 N	104 49'40.2 W	4704	7.2	15.2	4/14/2022	13.25	15
MW-2	40 27'23.0 N	104 49'40.2 W	4707	19.2	29.2	4/14/2022	15.20	28
MW-3	40 27'28.6 N	104 49'43.7 W	4742	20.7	30.7	4/14/2022	16.73	29
MW-4	40 27'08.0 N	104 50'03.3 W	4731	4.7	11.7	4/14/2019	4.43	12
MW-5	40 27'28.1 N	104 50'06.5 W	4745	18.7	28.7	4/14/2022	19.20	29
MW-6	40 27'18.1 N	104 50'12.9 W	4747	13.7	23.7	4/14/2022	17.94	24
MW-7	40 26'52.2 N	104 50'14.7 W	4721	5.7	13.7	4/14/2022	13.23	14
MW-8	40 26'42.3 N	104 50'05.4 W	4721	6.3	16.3	11/14/2013	9.28	17
MW-9	40 26'40.0 N	104 50'23.0 W	4731	5.7	15.7	4/14/2022	11.80	14
MW-10	40 26'47.8 N	104 50'18.5 W	4731	3.7	13.7	4/14/2022	10.80	14
MW-11	40 26'37.0 N	104 50'03.3 W	4727	5.7	13.7	4/14/2022	10.55	16
MW-12	40 26'55.8 N	104 50'30.9 W	4728	5.7	13.7	4/14/2022	11.90	13
MW-13	40 26'55.4 N	104 49'41.5 W	4717			4/14/2022	11.03	
MW-14	40 26'46.1 N	104 49' 54.7 W	4720			4/14/2022	10.60	
Note: Land surface elevations, provided by Martin Marietta, are believed to be estimated from local topographic map								

Table 4: Saturated Thickness and Dewatering Impacts at Parsons

Well	MW-4	MW-6	MW-7	MW-12
Pre-mining Conditions				
Minimum	5.3	7.0	4.2	5.2
Maximum	10.1	13.5	6.1	7.2
Average	7.3	8.5	5.3	6.3
Mining Conditions				
Minimum	7.0	5.9	0	1.0
Maximum	7.3	8.7	6.9	3.3
Average	7.2	6.6	1.7	1.7
Est Drawdown / Change in Saturated Thickness	0.1 ft	1.9 ft	3-5 ft	4.6 ft

Table 5. Water Quality Sampling Parameters

Parameter	Applicable Water Quality Standard Concentration	Comments
Aluminium - Dissolved	5 mg/L	Filter in field (0.45 micron)
Antimony - Dissolved	0.006 mg/L	Filter in field (0.45 micron)
Arsenic - Dissolved	0.01 mg/L	Filter in field (0.45 micron)
Barium - Dissolved	2.0 mg/L	Filter in field (0.45 micron)
Beryllium - Dissolved	0.004 mg/L	Filter in field (0.45 micron)
Boron - Dissolved	0.75 mg/L	Filter in field (0.45 micron)
Cadmium - Dissolved	0.005 mg/L	Filter in field (0.45 micron)
Chromium - Dissolved (CrVI)	0.1 mg/L	Filter in field (0.45 micron)
Cobalt - Dissolved	0.05 mg/L	Filter in field (0.45 micron)
Copper - Dissolved	0.2 mg/L	Filter in field (0.45 micron)
Fluoride - Total F	2.0 mg/L	
Iron - Dissolved	0.3 mg/L	Filter in field (0.45 micron)
Lead - Dissolved	0.05 mg/L	Filter in field (0.45 micron)
Lithium - Dissolved	2.5 mg/L	Filter in field (0.45 micron)
Manganese - Dissolved	0.05 mg/L	Filter in field (0.45 micron)
Mercury - Dissolved	0.002 mg/L	Filter in field (0.45 micron)
Molybdenum - Dissolved	0.21 mg/L	Filter in field (0.45 micron)
Nickel - Dissolved	0.1 mg/L	Filter in field (0.45 micron)
Nitrate (NO3)	10.0 mg/L as N	Filter in field (0.45 micron)
Nitrite (NO2)	1.0 mg/L as N	Filter in field (0.45 micron)
Nitrate+Nitrite (NO2+NO3), dissolved	10.0 mg/L as N	Filter in field (0.45 micron)
pH	6.5 - 8.5	Measure in field
Selenium - Dissolved	0.02 mg/L	Filter in field (0.45 micron)
Silver - Dissolved	0.05 mg/L	Filter in field (0.45 micron)
Sulfate - Total	250 mg/L	
Thallium - Dissolved	0.002 mg/L	Filter in field (0.45 micron)
TDS	400 mg/L	Filter in field (0.45 micron)
Uranium - Dissolved	0.02 mg/L	Filter in field (0.45 micron)
Vanadium - Dissolved	0.1 mg/L	Filter in field (0.45 micron)
Zinc - Dissolved	2 mg/L	Filter in field (0.45 micron)
Gross Alpha Particle Activity	15 pCi/L	
Chloride, dissolved	250 mg/L	Filter in field (0.45 micron)

Notes: Detection Limit / Reporting Limit must be equivalent to the water quality standard or lower.

APPENDIX G-1
BORING LOGS AND WELL COMPLETION DIAGRAMS
WINDSOR EAST AND PARSONS MINE MONITORING WELLS

Great Western

MW-5

Mo. 4498

8-8-22 1303

CME Truck Mounted

Hollow Stem Auger

on (Feet): _____

Thickness (Feet): 9.0

Depth (Feet): 2532

Rod Preston

$$-104.85053$$

8-8-22

Authentic Drilling

8.25^h

7.5

22.5

Well Construction

13 ft
Accur

(1) Grain Size: B=Boulder, P=Cobble, G=Gravel, S=sand, V=very, F=Fine, M=Medium, C=Coarse
(2) Rounding: R=rounded, r=subrounded, a=subangular, A=angular
(3) Grading: P=poorly graded, M=moderately graded, W=well graded, X=see description

Site Name: Great Western

Site Location: _____

Boring Number: MW-05

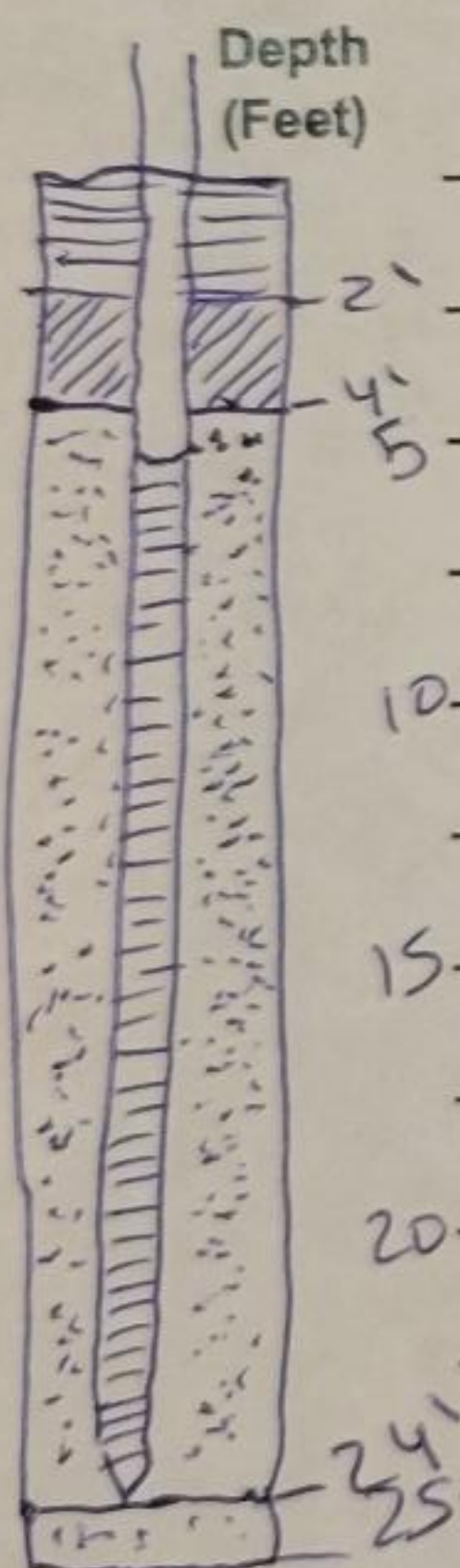
Latitude: _____

Date Started: 8-8-22Rig Type: CME Truck Mounted RigDrilling Method: Hollow Stem Auger

Surface Elevation (Feet): _____

Overburden Thickness (Feet): 9.0Boring Total Depth (Feet): 25Logged By: Rod Preston

Longitude: _____

Date Completed: 8-8-22Drilling Contractor: Authentic DrillingBorehole Diameter: 8.25"Depth to Water (Feet): 7.5'Depth to Bedrock (Feet): 23.5Backfill Type: Well construction

Sample Interval	Grain Size ⁽¹⁾	Rounding ⁽²⁾	Grading ⁽³⁾	Time, Material Description, and Comments	Top of Groundwater
				Well Construction	
0 - 1.5'				2' Cement Bentonite Grout	
1.5 - 3'				2-4' Bentonite chip seal	
3 - 2.5'				4-25' Sand screen	
0 - 4'				0-8' schedule 40 riser pipe	
4 - 24'				5-25' -010 Slotted screen sched 40	
				Materials used	
				Sand - Washed Silica Sand 10/20 50 lb bag	
				Bentonite → pure gold medium chips 50 lb bag	
				crumbles → 8-20 cetco	
				Portland Cement type I/II 94 lb bag	
				* Trouble setting well, sand filled in as we tried to put filter in, plugging the hole, ended up lifting 1 ft to get well set.	

(1) Grain Size: B=Boulder, P=Cobble, G=Gravel, S=sand, V=very, F=Fine, M=Medium, C=Coarse

(2) Rounding: R=rounded, r=subrounded, a=subangular, A=angular

(3) Grading: P=poorly graded, M=moderately graded, W=well graded, X=see description

* ran out of pure gold, used crumbles for bentonite seal

* Portland cement grout mixed with cetco 8-20 mesh granular ~~cement~~ bentonite crumbles to thicken grout

* Started setting well at 1400

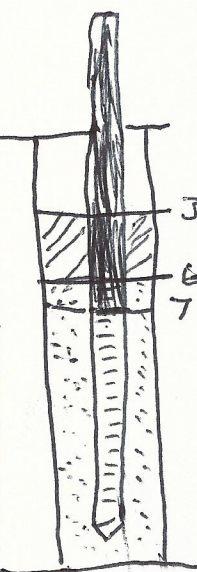
Site Name: Great Western
 Site Location: Pit 8 area adjacent to CO Road 23
 Boring Number: MW-06 Logged By: David Bieber
 Latitude: 40.44728 Longitude: -104.85126
 Date Started: 8/1/2022 12:30 Date Completed: 8/1/2022 14:30
 Rig Type: CMR 55-300 Truck Drilling Contractor: Authentic Drilling
 Drilling Method: Hollow Stem Auger Borehole Diameter: 8 1/2 inch
 Surface Elevation (Feet): 4734.835 Depth to Water (Feet): 8
 Overburden Thickness (Feet): 8 Depth to Bedrock (Feet): 16 16
 Boring Total Depth (Feet): 19 Backfill Type: Monitor Well

Depth (Feet)	Sample Interval	Grain Size ⁽¹⁾	Rounding ⁽²⁾	Grading ⁽³⁾	Time, Material Description, and Comments	Top of Groundwater
0					Overburden silt/clay mixture, dark grayish brown, stiff, moist, trace sand	
5						
8						
10		VF-VC	R	W	Silty sand with gravel and cobble moderate brown, slightly firm, wet cobbles to 3 inches	
15						
16					Bedrock Claystone, medium to dark gray, stiff, moist	
TD 19						
					Filter Pack 6 to 19 feet 10/20 50# x 5	
					Bentonite Chips 3 to 6 feet 50# x 2	
					Type 1/4" Cement 5% Bentonite 0 to 3 100# x 1	
					Schedule 40 PVC 0.010 screen 7 to 17 feet	
					Schedule 40 PVC Casing +3 to 7 feet	

(1) Grain Size: B=Boulder, P=Cobble, G=Gravel, S=sand, V=very, F=Fine, M=Medium, C=Coarse

(2) Rounding: R=rounded, r=subrounded, a=subangular, A=angular

(3) Grading: P=poorly graded, M=moderately graded, W=well graded, X=see description



Site Name: Great Western
 Site Location: South Western corner
 Boring Number: GW-MW-07
 Latitude: 40.44353
 Date Started: 08/01/2022 10:00
 Rig Type: CMESS-300 Truck
 Drilling Method: Hollow Stem Auger
 Surface Elevation (Feet): 4733.709
 Overburden Thickness (Feet): 7
 Boring Total Depth (Feet): 17 1/2 feet

Logged By: Daniel Biebel
 Longitude: -104.85127
 Date Completed: 08/01/2022 12:05
 Drilling Contractor: Authentic Drilling
 Borehole Diameter: 8-1/4 inch
 Depth to Water (Feet): 12-1/2
 Depth to Bedrock (Feet): 16
 Backfill Type: Monitoring Well

Depth (Feet)	Sample Interval	Grain Size ⁽¹⁾	Rounding ⁽²⁾	Grading ⁽³⁾	Time, Material Description, and Comments	Top of Groundwater
					Overburden, Silt, Light to moderate Brown, slightly stiff, dry to slightly moist, trace fine sand	← +3 ← 0 ← 2 ← 5 ← 6
5						
7					Sand with some gravel, moderate reddish brown, loose, moist gravel to 1 inch.	
10						
15					Coarsening down to sandy gravel, gravel to 1 inch Cobble tag at bottom +3" Bedrock - calc, shaly, medium gray, stiff	← 16 ← 16 1/2 ← 17 1/2 (D)
20					Casing +3 to 6 feet Screen 6 to 16 feet Well point on bottom 16 to 16 1/2	
25					Filter Pack 5 to 17 1/2 feet Bedrock 2 to 5 feet Grout 0 to 2 feet 2x50# Bentonite Chips (medium) Seal - 2x50# Bentonite Chips 6x50# Filter Pack - 10/20 sand Casing - Sch 40 2" PVC Screen - Sch 40 2" PVC .010 Slot	

(1) Grain Size: B=Boulder, P=Cobble, G=Gravel, S=sand, V=very, F=Fine, M=Medium, C=Coarse

(2) Rounding: R=rounded, r=subrounded, a=subangular, A=angular

(3) Grading: P=poorly graded, M=moderately graded, W=well graded, X=see description

Gravel - 100 # 1 1/2 Portland Cement
with 5% Bentonite Crumbles

Site Name: Great Western
 Site Location: Pits 8, Northeast Carne
 Boring Number: MW-10
 Latitude: 40.45023
 Date Started: 2/2/2020 0740
 Rig Type: cm 55-300 Tract
 Drilling Method: Hollow Stem Auger
 Surface Elevation (Feet): 9
 Overburden Thickness (Feet): 9
 Boring Total Depth (Feet): 20 1/2

Logged By: David B. Beller
 Longitude: -104.84239
 Date Completed: 2/2/2022 10:30 hrs
 Drilling Contractor: Authentic Drilling
 Borehole Diameter: 8 1/2 inch
 Depth to Water (Feet): 9 feet
 Depth to Bedrock (Feet): 16
 Backfill Type: Monitoring Well

Depth (Feet)	Sample Interval	Grain Size ⁽¹⁾	Rounding ⁽²⁾	Grading ⁽³⁾	Time, Material Description, and Comments	Top of Groundwater
0					Overburden, Clayey Silt, Dark Brown, slightly sticky, moist, sandy clay	
5					zone from 4 to 5 feet	
9					water rose to 6.15 feet	
10					silty, Clayey Cobble zone based on rig chatter and drilling	
14					Silt to sandy Silt, moderate Gray Brown	
16					stiff, wet Bedrock	
20						
20 1/2						
					4" Stickup on surface	
					Grout Type 1/11 Portland Cement 4 to 0 100# x 1 1/2	
					Seal Bentonite Medium Chips 7 to 4 50# x 2	
					Casing Sch 40 PVC 8 to + 3	
					Screen Sch 40 PVC, 010 Slot 18 to 8	
					Filter Pack 10/20 Sand 20 to 7 50# x 9 1/4	

(1) Grain Size: B=Boulder, P=Cobble, G=Gravel, S=sand, V=very, F=Fine, M=Medium, C=Coarse

(2) Rounding: R=rounded, r=subrounded, a=subangular, A=angular

(3) Grading: P=poorly graded, M=moderately graded, W=well graded, X=see description

Site Name: Great Western
 Site Location: Southeast side of Pit Area 8
 Boring Number: MW-11
 Latitude: 40.44668
 Date Started: 8/1/2022 15:50
 Rig Type: CMV55-300 Trach
 Drilling Method: Hollow Stem Auger
 Surface Elevation (Feet): 4727.636
 Overburden Thickness (Feet): 7
 Boring Total Depth (Feet): 20 1/2

Logged By: David Beber
 Longitude: -104.84212
 Date Completed: 8/1/2022 17:40
 Drilling Contractor: Authentic Drilling
 Borehole Diameter: 8 1/2 inch
 Depth to Water (Feet): 7.4
 Depth to Bedrock (Feet): 15
 Backfill Type: Monitoring Well

Depth (Feet)	Sample Interval	Grain Size ⁽¹⁾	Rounding ⁽²⁾	Grading ⁽³⁾	Time, Material Description, and Comments	Top of Groundwater
0					Overburden, Clayey silt, moderate brown slightly stiff, slightly moist to moist	
5						
7						
10			R	P	Clayey cobbles, moderate grayish brown, stiff, moist, cobbles to 3 inches	
15					Weathered bedrock, clay, reddish, stiff moist	
16					Bedrock, dark gray claystone, stiff, moist	
19						
20						
15-41-50 ft 3'						
					Filter Pack 10/20 sand 20 1/2 to 5 feet	50# x 6 1/4
					Bentonite Median Chips 5 to 2 feet	50# x 2
					Type 1/11 Portland Cement 2 to 0 feet	100# x 1
					Sch 40 PVC Screen 0.010 slot 16 to 6 ft	
					Sch 40 PVC Casing 6 feet to +3 feet	
					4" x 4" Stick Up Well Box	

(1) Grain Size: B=Boulder, P=Cobble, G=Gravel, S=sand, V=very, F=Fine, M=Medium, C=Coarse

(2) Rounding: R=rounded, r=subrounded, a=subangular, A=angular

(3) Grading: P=poorly graded, M=moderately graded, W=well graded, X=see description

Site Name: Riverbend West
 Site Location: Chikoma E10
 Boring Number: CH-MW05
 Latitude: 40.05764 15:42
 Date Started: 8/2/2022
 Rig Type: CMB SS-300
 Drilling Method: Hollow Stem Auger
 Surface Elevation (Feet): _____
 Overburden Thickness (Feet): 11
 Boring Total Depth (Feet): _____

Logged By: David Bieber
 Longitude: -104.84528
 Date Completed: _____
 Drilling Contractor: Authentic Drilling
 Borehole Diameter: 8 1/2"
 Depth to Water (Feet): 16 static 17.3'
 Depth to Bedrock (Feet): 20
 Backfill Type: Monitoring Well

Depth (Feet)	Sample Interval	Grain Size ⁽¹⁾	Rounding ⁽²⁾	Grading ⁽³⁾	Time, Material Description, and Comments	Top of Groundwater
0					Overburden, silt to sandy silt, moderate brown, slightly stiff, slightly moist	
5					to moist, some clay.	
10						
11					Sandy gravel, moderate reddish brown, loose, moist, gravel to 1 inch Fining down to coarse sand	
15						
17					Sandy silt, moderate brown, loose to slightly stiff, wet	
20					Finning downward to silt, light brown.	20
25 ¹³ ₁₆ 26					Bedrock, Claystone, dark gray red brown, <u>stiff</u> , <u>wet</u>	
					Set well on 8/3/2022	
					Set Screen 24 to 19 feet	
					Set casing 10 to +3 feet	
					Filter Pack 25 ¹³ / ₁₆ to 24 feet	
					Bentonite 9 to 6 feet	

(1) Grain Size: B=Boulder, P=Cobble, G=Gravel, S=sand, V=very, F=Fine, M=Medium, C=Coarse

(2) Rounding: R=rounded, r=subrounded, a=subangular, A=angular

(3) Grading: P=poorly graded, M=moderately graded, W=well graded, X=see description

CLIENT Lafarge North America
 PROJECT LOCATION Windsor, CO
 PROJECT NO LF-0538

BOREHOLE LOG

Andy & Richard

BH NO. 1
 PAGE 1 OF 3

NORTH	DRILLER <u>DRILLING ENGINEERS INC.</u>	DATE START <u>4/18/2007</u>
EAST	RIG <u>CME-75</u>	DATE FINISH <u>4/18/2007</u>
GRD ELEV.	BITS <u>8.25" H.S.A.</u> FLUIDS <u>---</u>	TOTAL DEPTH <u>16'</u>
TOC ELEV.	LOGGED BY <u>Charoen S.</u>	WATER DEPTH <u>9'</u>

SAMPLE TYPES:

CT Cuttings
 SS Split Spoon
 DC Dry Core
 Other _____
 WS Wash
 NX NX Core
 CS Continuous Sampler

SAMPLER SPECIFICATIONS:

Length 2.5' Material steel
 O.D. 2" Liner _____
 I.D. 1.7" Other _____

DEPTH (FT)	BIT CASING	SAMP NO.	SAMP TYPE	RECOV. FT/FT	BLOWS per 6"	SYM	SURFACE CONDITION: <u>Grass</u>	SOIL VAPOR PID ☐ FID ☐
							SOIL/ROCK DESCRIPTION	BG HS Core
0							Augered to 3'	
1							0 to 3.0' - Cutting - SILT AND CLAY. Brown, some sand, trace roots. Moist.	
2								
3	8.25" H.S.A.							
4			SS	19"	5		SSI 3' to 5'	
5	4.25" I.D.			24"	8		3.0' to 4.8' SILT AND CLAY. Brown stiff, little sand, little stone up to 2-inch in diameter Moist.	
6					14		4.8' to 5.0' NO RECOVERY	
7							Augered to 9'	
8							5.0' to 9.0' - Cutting SILT AND CLAY. Brown, little sand, little stone up to 2-inch in diameter Moist. Rough Drilling due to stone	
9								
10			SS	10"	7		SS2 9' to 11'	
				24"	13		9.0' to 9.8' SAND AND GRAVEL	
							Brown med dense, little silt	

LOCATION SKETCH	DENSITY:	PROPORTIONS:	REMARKS/WEATHER
Southeast of Ethers Property See Attached Plan	GRANULAR: COHESIVE: 0-10 Loose 0-4 Soft 10-30 Med Dense 4-8 Med Stiff 30-50 Dense 8-15 Stiff >50 Very Dense 15-30 Very Stiff	0-10% Trace 10-20% Little 20-35% Some 35-50% And	60F sunny

LOG STATUS

PRELIMINARY _____ FINAL ✓



EnviroGroup Limited
 Centennial, Colorado

CLIENT Lataarge North America
 PROJECT LOCATION Windsor, CO
 PROJECT NO. LF-0538

BOREHOLE LOG

BH NO. 1
 PAGE 2 OF 3

NORTH	DRILLER <u>DRILLING ENGINEERS INC.</u>	DATE START <u>4/18/2007</u>
EAST	RIG <u>CME 75</u>	DATE FINISH <u>4/18/2007</u>
GRD ELEV	BITS <u>8.25" H.S.A.</u> FLUIDS <u>-</u>	TOTAL DEPTH <u>16'</u>
TOC ELEV.	LOGGED BY <u>Charoen S.</u>	WATER DEPTH <u>9'</u>

SAMPLE TYPES:		SAMPLER SPECIFICATIONS:	
CT Cuttings	WS Wash	Length <u>2.5'</u>	Material <u>Steel</u>
SS Split Spoon	NX NX Core	O.D. <u>2"</u>	Liner <u>-</u>
DC Dry Core	CS Continuous Sampler	I.D. <u>1.7"</u>	Other <u>-</u>
Other _____			

DEPTH (FT)	BIT CASING	SAMP NO.	SAMP TYPE	RECOV. FT/FT	BLOWS per 6"	SYM	SURFACE CONDITION: <u>Grass</u>	SOIL VAPOR PID ☐ FID ☐
							SOIL/ROCK DESCRIPTION	BG HS Core
10							little stone up to 2" in diameter	Wet
11							9.8' to 11.0' NO RECOVERY	
12							Augered to 14'	
13	8.25" H.S.A.						11.0 to 14.0' - Cutting - SAND AND GRAVEL some silt some stone	
14	4.25" I.D.						Rough drilling due to stone.	
15				24'	5		SS 14' to 16'	
16				16	16		14.0' to 15.2' - SILT, Brown	
17				24"	25		very stiff, some sand, wet	
18				24"	32		15.2' to 16.0' - SILTSTONE, Grey	
19							very stiff, trace sand,	
20							lightly weathered, very moist	
							Augered to 15.5'	
							END OF BOREHOLE AT 16.0'	
							Install monitoring well MW-1	

LOCATION SKETCH	DENSITY:	PROPORTIONS:	REMARKS/WEATHER	
See plan	GRANULAR:	COHESIVE:	60F Sunny	
	0-10 Loose	0-4 Soft		0-10% Trace
	10-30 Med Dense	4-8 Med Stiff		10-20% Little
	30-50 Dense	8-15 Stiff		20-35% Some
	>50 Very Dense	15-30 Very Stiff		35-50% And

LOG STATUS:

PRELIMINARY: _____ FINAL: ✓



EnviroGroup Limited
 Centennial, Colorado

CLIENT Lafarge North America
 PROJECT LOCATION Windsor, CO
 PROJECT NO. LF-0538

BOREHOLE LOG

Andy & Richard

BH NO. 1
 PAGE 3 OF 3

NORTH	DRILLER <u>DRILLING ENGINEERS INC.</u>	DATE START <u>4/18/2007</u>
EAST	RIG <u>CME-75</u>	DATE FINISH <u>4/18/2007</u>
GRD ELEV.	BITS <u>8.25" H.S.A.</u> FLUIDS <u>---</u>	TOTAL DEPTH <u>16'</u>
TOC ELEV	LOGGED BY <u>Charoen S.</u>	WATER DEPTH <u>9'</u>

SAMPLE TYPES:

CT Cuttings
☒ Splt Spoon
 DC Dry Core
 Other _____

WS Wash
 NX NX Core
 CS Continuous Sampler

SAMPLER SPECIFICATIONS:

Length 2.5'
 O.D. 2"
 I.D. 1.7"

Material steel
 Liner ---
 Other ---

DEPTH (FT)	BIT CASING	SAMP NO.	SAMP TYPE	RECOV. FT/FT	BLOWS per 6"	SYM	SURFACE CONDITION: <u>Grass</u>	SOIL VAPOR PID ☐ FID ☐
							SOIL/ROCK DESCRIPTION	BG HS Core
0							2" PVC 0.01" slotted screen	
1							8' screen	
2							PURE GOLD BENTONITE COARSE	
3	8.25"						CHIP (3/8" to 3/4")	
4	H.S.A.						Silica Sand 10/20	
5							Lock	
6	4.25"						Casing	
7	I.D.						Cap	
8							Riser -3 to 7.2' Concrete 0 to 2'	
9							Screen 7.2' - 15.2' Bentonite 2' to 6'	
10							Cap 15.2' - 15.5' sand 6' to 16'	

LOCATION SKETCH	DENSITY:	PROPORTIONS:	REMARKS/WEATHER	
See Plan	GRANULAR:	COHESIVE:	60° F Sunny	
	0-10 Loose	0-4 Soft		0-10% Trace
	10-30 Med Dense	4-8 Med Stiff		10-20% Little
	30-50 Dense	8-15 Stiff		20-35% Some
	>50 Very Dense	15-30 Very Stiff		35-50% And

LOG STATUS:

PRELIMINARY _____ FINAL: ✓



EnviroGroup Limited
 Centennial, Colorado

CLIENT Lafarge North America
 PROJECT LOCATION Windsor, CO
 PROJECT NO LF-0538

BOREHOLE LOG

Andy & Richard

BH NO. 2
 PAGE 1 OF 4

NORTH	DRILLER <u>DRILLING ENGINEERS INC.</u>	DATE START <u>4/18/2007</u>
EAST	RIG <u>CME-75</u>	DATE FINISH <u>4/18/2007</u>
GRD ELEV.	BITS <u>8.25" H.S.A.</u> FLUIDS <u>---</u>	TOTAL DEPTH <u>30.3'</u>
TOC ELEV	LOGGED BY <u>Charoen S.</u>	WATER DEPTH <u>14'</u>

SAMPLE TYPES

CT Cuttings
 SS Split Spoon
 DC Dry Core
 Other: _____
 WS Wash
 NX NX Core
 CS Continuous Sampler

SAMPLER SPECIFICATIONS:

Length 2.5'
 O.D. 2"
 I.D. 1.7"

Material steel
 Liner ---
 Other ---

DEPTH (FT)	BIT CASING	SAMP NO.	SAMP TYPE	RECOV. FT/FT	BLOWS per 6"	SYM	SURFACE CONDITION: <u>Grass</u>	SOIL VAPOR PID ☐ FID ☐
							SOIL/ROCK DESCRIPTION	BC HS Core
0							Augered to 4'	
1							0 to 4.0' - Cutting - SILT AND CLAY. Brown little sand little gravel, trace roots. Moist	
2	8.25"							
3	H.S.A.							
4								
5	4.25" I.D.		SS	22" 24"	3 4 6 7		SS 1 4' to 6' 4.0' to 5.8' SILT AND CLAY. Brown stiff, little sand little gravel. Damp	
6							5.8' to 6.0 NO RECOVERY	
7							Augered to 9'	
8							6.0' to 9.0' - Cutting SILT AND CLAY. Brown little sand little gravel. Damp.	
9								
10			SS	22" 24"	3 3		SS 2 9' to 11' 9.0' to 10.8' SILT AND CLAY. Brown med stiff, trace sand	

LOCATION SKETCH	DENSITY:	PROPORTIONS:	REMARKS/WEATHER
See Plan	GRANULAR: 0-10 Loose 10-30 Med Dense 30-50 Dense >50 Very Dense	COHESIVE: 0-4 Soft 4-8 Med Stiff 8-15 Stiff 15-30 Very Stiff	0-10% Trace 10-20% Little 20-35% Some 35-50% And
			60 F Sunny

LOG STATUS:

PRELIMINARY: _____ FINAL: ✓



EnviroGroup Limited
 Centennial, Colorado

CLIENT LaTarge North America
 PROJECT LOCATION Windsor, CO
 PROJECT NO. LF-0538

BOREHOLE LOG

BH NO. 2
 PAGE 2 OF 4

NORTH	DRILLER <u>DRILLING ENGINEERS INC.</u>	DATE START <u>4/18/2007</u>
EAST	RIG <u>CME 75</u>	DATE FINISH <u>4/18/2007</u>
GRD ELEV.	BITS <u>8.25" H.S.A.</u> FLUIDS <u>-</u>	TOTAL DEPTH <u>30.3'</u>
TOC ELEV.	LOGGED BY <u>Charoen S.</u>	WATER DEPTH <u>14'</u>

SAMPLE TYPES:		SAMPLER SPECIFICATIONS:	
CT Cuttings	WS Wash	Length <u>2.5'</u>	Material <u>Steel</u>
SS Split Spoon	NX NX Core	O.D. <u>2"</u>	Liner <u>-</u>
DC Dry Core	CS Continuous Sampler	I.D. <u>1.7"</u>	Other <u>-</u>
Other <u>-</u>			

DEPTH (FT)	BIT CASING	SAMP NO.	SAMP TYPE	RECOV. FT/FT	BLOWS per 6"	SYM	SURFACE CONDITION: <u>Grass</u>	SOIL VAPOR PID ☐ FID ☐
							SOIL/ROCK DESCRIPTION	BC HS Core
-10					4		10.8' to 11' NO RECOVERY	
-11					6			
-12							Augered to 14'	
-13	8.25" H.S.A.						11' to 14' - Cutting - SILT AND CLAY. Brown, trace sand	
-14	4.25" I.D.							
-15				16"	6		SS 3 14' to 16'	
-16				24"	12		14' to 15.3' SAND AND GRAVEL	
-17					14		Brown, med dense, some stone up to 2-inch diameter	
-18					21		trace silt, trace clay, WET	
-19							15.3' to 16.0' NO RECOVERY	
-20							Augered to 19'	
							16.0' to 19.0' SAND AND GRAVEL	
							Brown, some stone up to 2 inch diameter, trace silt, trace clay, WET	
				18"	15		SS 4 19' to 21'	
				24"	6		19.0' to 20.5' SAND AND GRAVEL	
							Brown, med. dense, some stone	

LOCATION SKETCH <u>See Plan</u>	DENSITY:		PROPORTIONS:		REMARKS/WEATHER <u>60 F</u> <u>Sunny</u>
	GRANULAR:	COHESIVE:			
	0-10 Loose	0-4 Soft	0-10%	Trace	
	10-30 Med Dense	4-8 Med Stiff	10-20%	Little	
	30-60 Dense	8-15 Stiff	20-35%	Some	
	>50 Very Dense	15-30 Very Stiff	35-50%	And	

LOG STATUS

PRELIMINARY _____ FINAL ✓



EnviroGroup Limited
 Centennial, Colorado

CLIENT Latarge North America
 PROJECT LOCATION Windsor, CO
 PROJECT NO. LF-0538

BOREHOLE LOG

BH NO. 2
 PAGE 3 OF 4

NORTH	DRILLER <u>DRILLING ENGINEERS INC.</u>	DATE START <u>4/18/2007</u>
EAST	RIG <u>CME 75</u>	DATE FINISH <u>4/18/2007</u>
GRD ELEV.	BITS <u>8.25" H.S.A.</u> FLUIDS <u>—</u>	TOTAL DEPTH <u>30.3'</u>
TOC ELEV.	LOGGED BY <u>Charoen S.</u>	WATER DEPTH <u>14'</u>

SAMPLE TYPES:

CT Cuttings
 SS Split Spoon
 DC Dry Core
 Other: _____

WS Wash
 NX NX Core
 CS Continuous Sampler

SAMPLER SPECIFICATIONS:

Length 2.5'
 O.D. 2"
 I.D. 1.7"

Material Steel
 Liner —
 Other —

DEPTH (FT.)	BIT CASING	SAMP NO.	SAMP TYPE	RECOV. FT/FT	BLOWS per 6"	SYM	SURFACE CONDITION: <u>Grass</u>	SOIL VAPOR PID ☐ FID ☐
							SOIL/ROCK DESCRIPTION	BC HS Core
20					12		up to 2-inch diameter, trace	
21					50/3"		silt, trace clay. WET.	
22							20.5' to 21.0' NO RECOVERY	
23	8.25"						Augered to 24'	
24	H.S.A.						21.0' to 24.0' - Cutting SAND AND GRAVEL, Brown to redbrown, some stones up to 2-inch diameter. WET	
25	4.25"			22"	22		SS 5 24' to 26'	
26	I.D.			24"	35		24.0' to 25.8' SAND AND GRAVEL, Brown to redbrown, very dense, some stones up to 2-inch diameter. WET	
27					40		25.8' to 26.0' NO RECOVERY	
28					31		Augered to 29'	
29							26.0' to 28.0' - Cutting - SAND AND GRAVEL, Brown to redbrown, some stones up to 2-inch diameter	
30				15"	15		28.0' to 29.0' - Cutting - SILTSTONE	
				15"	40		Brown, little sand, trace clay. WET	
							SS 6 29' to 30.3'	

LOCATION SKETCH	DENSITY:	PROPORTIONS:	REMARKS/WEATHER
See Plan	GRANULAR: 0-10 Loose 10-30 Med Dense 30-50 Dense >50 Very Dense	COHESIVE: 0-4 Soft 4-8 Med Stiff 8-15 Stiff 15-30 Very Stiff	0-10% Trace 10-20% Little 20-35% Some 35-60% And
			60 F Sunny

LOG STATUS:

PRELIMINARY _____ FINAL: ☒



EnviroGroup Limited
 Centennial, Colorado

CLIENT Lafarge North America
 PROJECT LOCATION Windsor, CO
 PROJECT NO. LF-0538

BOREHOLE LOG

BH NO. 2
 PAGE 4 OF 4

NORTH	DRILLER <u>DRILLING ENGINEERS INC.</u>	DATE START <u>4/18/2007</u>
EAST	RIG <u>CME 75</u>	DATE FINISH <u>4/18/2007</u>
GRD ELEV.	BITS <u>8.25" H.S.A.</u> FLUIDS <u>—</u>	TOTAL DEPTH <u>30.3'</u>
TOC ELEV	LOGGED BY <u>Charoen S.</u>	WATER DEPTH <u>14'</u>

SAMPLE TYPES:		SAMPLER SPECIFICATIONS:	
CT Cuttings	WS Wash	Length <u>2.5'</u>	Material <u>steel</u>
SS Split Spoon	NX NX Core	O.D. <u>2"</u>	Liner <u>—</u>
DC Dry Core	CS Continuous Sampler	I.D. <u>1.7"</u>	Other <u>—</u>
Other:			

DEPTH (FT)	BIT CASING	SAMP NO.	SAMP TYPE	RECOV. FT/FT	BLOWS per 6"	SYM	SURFACE CONDITION: <u>Grass</u>	SOIL VAPOR PID ☐ FID ☐
							SOIL/ROCK DESCRIPTION	BC HS Core
30					50/3"		29.0' to 30.3' SILTSTONE, Brown and grey, very stiff, little claystone, trace sand. Slightly weathered, very moist.	
31							Filter sand to 29.0'	
	8.25"						Augered to 29.5'	
	H.S.A.						Install monitoring well MW-2	
	4.25"						2" PVC 10-foot screen	
	I.D.						Cap and Lock	
							Casing	
							Riser - 3' to 19.2' Concrete to 2'	
							Screen 19.2' to 29.2' Bentonite chip 2' to 17'	
							Cap 29.2' - 29.5' Filter Sand 17' to 29.5'	
							Bentonite 6 bags	
							Sand 4 bags	
							Concrete 1 bag	

LOCATION SKETCH <u>See Plan</u>	DENSITY:		PROPORTIONS:		REMARKS/WEATHER <u>70F sunny</u>
	GRANULAR:	COHESIVE:			
	0-10 Loose	0-4 Soft	0-10% Trace		
	10-30 Med Dense	4-8 Med Stiff	10-20% Little		
	30-60 Dense	8-15 Stiff	20-35% Some		
	>60 Very Dense	15-30 Very Stiff	35-50% And		

LOG STATUS:

PRELIMINARY: _____ FINAL: ✓



EnviroGroup Limited
 Centennial, Colorado

CLIENT Lafarge North America
 PROJECT LOCATION Windsor, CO
 PROJECT NO. LF-0538

BOREHOLE LOG

Andy & Richard

BH NO. 3
 PAGE 1 OF 4

NORTH	DRILLER <u>DRILLING ENGINEERS INC.</u>	DATE START <u>4/18/2007</u>
EAST	RIG <u>CME-75</u>	DATE FINISH <u>4/18/2007</u>
GRD ELEV	BITS <u>8.25" H.S.A.</u> FLUIDS <u>---</u>	TOTAL DEPTH <u>31'</u>
TOC ELEV	LOGGED BY <u>Charoen S.</u>	WATER DEPTH <u>14'</u>

SAMPLE TYPES:

CT Cuttings
 SS Split Spoon
 DC Dry Core
 Other _____
 WS Wash
 NX NX Core
 CS Continuous Sampler

SAMPLER SPECIFICATIONS:

Length 2.5'
 O.D. 2"
 I.D. 1.7"
 Material steel
 Liner ---
 Other ---

DEPTH (FT)	BIT CASING	SAMP NO	SAMP TYPE	RECOV. FT/FT	BLOWS per 6"	SYM	SURFACE CONDITION: <u>Grass</u>	SOIL VAPOR PID ☐ FID ☐
							SOIL/ROCK DESCRIPTION	BG HS Core
0							Augered to 4'	
1							0 to 4.0' - Cutting - SILT AND CLAY	
2							Brown, little sand, little gravel	
3	8.25"						trace roots, Moist.	
4	H.S.A.							
5							SS 1 4' to 6'	
6							4.0 to 5.5' FINE SAND. Brown, loose,	
7							some silt, some clay. Wet	
8							(Purged water)	
9							5.5' to 6.0' NO RECOVERY	
10							Augered to 9'	
							6.0' to 7.0' - Cutting - FINE SAND. Brown	
							some silt, some clay, wet.	
							7.0' to 9.0' - Cutting - SILT AND CLAY	
							Brown, trace sand. moist.	
							SS 2 9' to 11'	
							9.0' to 10.3' - FINE TO MEDIUM SAND	
							Brown, dense, some stones up	
							to 2-inch diameter. Damp	

LOCATION SKETCH <u>See Plan</u>	DENSITY:		PROPORTIONS:		REMARKS/WEATHER <u>70F Sunny</u>
	GRANULAR:	COHESIVE:			
	0-10 Loose	0-4 Soft	0-10% Trace		
	10-30 Med Dense	4-8 Med Stiff	10-20% Little		
	30-50 Dense	8-15 Stiff	20-35% Some		
	>50 Very Dense	15-30 Very Stiff	35-50% And		

LOG STATUS:

PRELIMINARY _____ FINAL: ☒



EnviroGroup Limited
 Centennial, Colorado

CLIENT LaTarge North America
 PROJECT LOCATION Windsor, CO
 PROJECT NO LF-0538

BOREHOLE LOG

BH NO. 3
 PAGE 2 OF 4

NORTH	DRILLER <u>DRILLING ENGINEERS INC.</u>	DATE START <u>4/18/2007</u>
EAST	RIG <u>CME 75</u>	DATE FINISH <u>4/18/2007</u>
GRD ELEV.	BITS <u>8.25" H.S.A.</u> FLUIDS <u>-</u>	TOTAL DEPTH <u>31'</u>
TOC ELEV.	LOGGED BY <u>Charoen S.</u>	WATER DEPTH <u>14'</u>

SAMPLE TYPES:

☐ CT Cuttings
☒ SS Split Spoon
☐ DC Dry Core
 Other _____
 WS Wash
 NX NX Core
 CS Continuous Sampler

SAMPLER SPECIFICATIONS:

Length 2.5'
 O.D. 2"
 I.D. 1.7"
 Material Steel
 Liner -
 Other -

DEPTH (FT)	BIT CASING	SAMP NO.	SAMP TYPE	RECOV. FT/FT	BLOWS per 6"	SYM	SURFACE CONDITION: <u>Grass</u>	SOIL VAPOR PID ☐ FID ☐
							SOIL/ROCK DESCRIPTION	BC HS Core
10					20		10.3' to 11.0' NO RECOVERY	
11					25			
12							Augered to 14'	
13	8.25" H.S.A.						11.0' to 14.0' - Cutting - SAND AND GRAVEL Brown, Damp.	
14	4.25" I.D.						SS 3 14' to 16'	
15				16"	6		14.0' to 15.3' SAND AND GRAVEL.	
16				24"	8		Red brown, med dense, trace silt. Wet.	
17					7		15.3' to 16.0' NO RECOVERY	
18							Augered to 19'	
19							16.0' to 19.0' - Cutting - SAND AND GRAVEL, trace silt. Wet	
20				18"	8		SS 4 19' to 21'	
				24"	30		19.0' to 20.5' SAND AND GRAVEL.	
							Brown, dense, some stones up to 2-inch diameter, trace silt. Wet	

LOCATION SKETCH <u>See Plan</u>	DENSITY:		PROPORTIONS:		REMARKS/WEATHER <u>70 F Sunny</u>
	GRANULAR:	COHESIVE:			
	0-10 Loose	0-4 Soft	0-10%	Trace	
	10-30 Med Dense	4-8 Med Stiff	10-20%	Little	
	30-50 Dense	8-15 Stiff	20-35%	Some	
	>50 Very Dense	15-30 Very Stiff	35-50%	And	

LOG STATUS:

PRELIMINARY: _____ FINAL: ✓



EnviroGroup Limited
 Centennial, Colorado

CLIENT Lafarge North America
 PROJECT LOCATION Windsor, CO
 PROJECT NO. LF-0538

BOREHOLE LOG

BH NO. 3
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NORTH	DRILLER <u>DRILLING ENGINEERS INC.</u>	DATE START <u>4/18/2007</u>
EAST	RIG <u>CME 75</u>	DATE FINISH <u>4/18/2007</u>
GRD ELEV	BITS <u>8.25" H.S.A.</u> FLUIDS <u>—</u>	TOTAL DEPTH <u>31'</u>
TOC ELEV	LOGGED BY <u>Charoen S.</u>	WATER DEPTH <u>14'</u>

SAMPLE TYPES:		SAMPLER SPECIFICATIONS:	
CT Cuttings	WS Wash	Length <u>2.5'</u>	Material <u>steel</u>
SS Split Spoon	NX NX Core	O.D. <u>2"</u>	Liner <u>—</u>
DC Dry Core	CS Continuous Sampler	I.D. <u>1.7"</u>	Other <u>—</u>
Other: <u>—</u>			

DEPTH (FT.)	BIT CASING	SAMP NO.	SAMP TYPE	RECOV. FT/FT	BLOWS per 6"	SYM	SURFACE CONDITION: <u>Grass</u>	SOIL VAPOR PID ☐ FID ☐	BC	HS	Core
							SOIL/ROCK DESCRIPTION				
20					50/5"		20.5' to 21.0' NO RECOVERY.				
21							Augered to 24'				
22							21.0' to 24.0' - Cutting - SAND AND GRAVEL. Brown, some				
23	8.25"						stones up to 2-inch diameter				
24	H.S.A.						trace silt.				
25	4.25"				25		SS 5 24' to 26'				
26	I.D.				32		24.0' to 25.7' SAND AND GRAVEL.				
27					35		Brown, very dense, some				
28					35		stones up to 2-inch diameter				
29							trace silt.				
30							25.7' to 26.0' NO RECOVERY				
							Augered to 29'				
							26.0' to 29.0' - Cutting - SAND AND GRAVEL, some stones up to				
							2-inch diameter, trace silt				
							SS 6 29' to 31'				
							29.0' to 30' SILTSTONE. Grey,				
							very stiff, some clay, trace				
							sand. Lightly weathered. Wet				

LOCATION SKETCH	DENSITY:	PROPORTIONS:	REMARKS/WEATHER
See Plan	GRANULAR:	COHESIVE:	
	0-10 Loose	0-4 Soft	0-10% Trace
	10-30 Med Dense	4-8 Med Stiff	10-20% Little
	30-60 Dense	8-15 Stiff	20-35% Some
	>60 Very Dense	15-30 Very Stiff	35-60% And
			70 F Sunny

LOG STATUS

PRELIMINARY _____ FINAL: ✓



EnviroGroup Limited
 Centennial, Colorado



CLIENT Lafarge North America
 PROJECT LOCATION Windsor, CO
 PROJECT NO. LF-0538

BOREHOLE LOG

Andy & Richard

BH NO. 4
 PAGE 1 OF 2

NORTH	DRILLER <u>DRILLING ENGINEERS INC.</u>	DATE START <u>4/18/2007</u>
EAST	RIG <u>CME-75</u>	DATE FINISH <u>4/18/2007</u>
GRD ELEV.	BITS <u>8.25" H.S.A.</u> FLUIDS <u>—</u>	TOTAL DEPTH <u>13.7'</u>
TOC ELEV.	LOGGED BY <u>Charoen S.</u>	WATER DEPTH <u>4'</u>

SAMPLE TYPES:
 CT Cuttings
 SS Splt Spoon
 DC Dry Core
 Other: _____
 WS Wash
 NX NX Core
 CS Continuous Sampler

SAMPLER SPECIFICATIONS:
 Length 2.5' Material steel
 O.D. 2" Liner —
 I.D. 1.7" Other —

DEPTH (FT.)	BIT CASING	SAMP NO.	SAMP TYPE	RECOV. FT/FT	BLOWS per 6"	SYM	SURFACE CONDITION: <u>Grass</u>	SOIL VAPOR PID ☐ FID ☐	BG	HS	Core
0							Augered to 4'				
1							0 to 4.0' - cutting - SILT AND CLAY				
2							Brown, trace sand, trace roots				
3							Moist				
4	8.25" H.S.A.						SS 1 4' to 6'				
5	4.25" I.D.			10"	6		4.0' to 4.8' GRAVEL. Brown, med				
6				24"	12		dense, trace sand, trace silt,				
7					12		trace clay. Wet				
8					12		4.8' to 6.0' NO RECOVERY				
9							Augered to 9'				
10							6.0' to 9.0' GRAVEL. Brown, some				
							sand, some stone up to 2-inch				
							diameter trace silt, trace clay.				
							Wet.				
							SS 2 9' to 11'				
				24"	5		9.0' to 11.0' SAND AND GRAVEL. Brown				
				24"	15		to red brown, dense, trace silt				

LOCATION SKETCH	DENSITY:				PROPORTIONS:		REMARKS/WEATHER
See Plan	GRANULAR:		COHESIVE:				70 F Sunny
	0-10	Loose	0-4	Soft	0-10%	Trace	
	10-30	Med Dense	4-8	Med Stiff	10-20%	Little	
	30-50	Dense	8-15	Stiff	20-35%	Some	
	>50	Very Dense	15-30	Very Stiff	35-50%	And	

LOG STATUS:

PRELIMINARY: _____ FINAL: ✓



EnviroGroup Limited
 Centennial, Colorado

CLIENT Lafarge North America
 PROJECT LOCATION Windsor, CO
 PROJECT NO. LF-0538

BOREHOLE LOG

BH NO. 4
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NORTH	DRILLER <u>DRILLING ENGINEERS INC.</u>	DATE START <u>4/18/2007</u>
EAST	RIG <u>CME 75</u>	DATE FINISH <u>4/18/2007</u>
GRD ELEV.	BITS <u>8.25" H.S.A.</u> FLUIDS <u>-</u>	TOTAL DEPTH <u>13.7'</u>
TOC ELEV	LOGGED BY <u>Charoen S.</u>	WATER DEPTH <u>4'</u>

SAMPLE TYPES:

CT Cuttings
 (SS) Split Spoon
 DC Dry Core
 Other: _____
 WS Wash
 NX NX Core
 CS Continuous Sampler

SAMPLER SPECIFICATIONS:

Length 2.5' Material Steel
 O.D. 2" Liner -
 I.D. 1.7" Other -

DEPTH (FT)	BIT CASING	SAMP NO	SAMP TYPE	RECOV. FT/FT	BLOWS per 6"	SYM	SURFACE CONDITION: <u>Grass</u>	SOIL VAPOR PID ☐ FID ☐		
							SOIL/ROCK DESCRIPTION	BG	HS	Core
10					18					
11					18					
12							Augered to 12'			
13	8.25" H.S.A.			16"	10		11.0' to 12.0' - Cutting - SILT. Brown			
				22	22		some sand, some gravel. Wet			
14	4.25" I.D.			42	42		SS3 12' to 14'			
				50 1/2"	50 1/2"		12.0' to 13.3' SILTSTONE. Grey			
15							very stiff, trace clay. Lightly weathered. Wet			
16							13.3' to 13.7' NO RECOVERY			
17							END OF Borehole			
18							Monitoring well Installation (4/19/2007)			
19							2" PVC 7-foot screen			
20							casing and lock MW-4 cap			
							Riser - 3 to 4.7' concrete 0 to 2'			
							Screen 4.7' to 11.7' bentonite chip 2' to 4'			
							Cap 11.7' to 12.0' Filtersand 4.0 to 13.7'			

LOCATION SKETCH	DENSITY:	PROPORTIONS:	REMARKS/WEATHER
See Plan	GRANULAR:	COHESIVE:	
	0-10 Loose	0-4 Soft	0-10% Trace
	10-30 Med Dense	4-8 Med Stiff	10-20% Little
	30-50 Dense	8-15 Stiff	20-35% Some
	>50 Very Dense	15-30 Very Stiff	35-50% And
			70 F Sunny

LOG STATUS.

PRELIMINARY. _____ FINAL. ✓



EnviroGroup Limited
 Centennial, Colorado

CLIENT LaTarge North America
 PROJECT LOCATION Windsor, CO
 PROJECT NO. LF-0538

BOREHOLE LOG

BH NO. 5
 PAGE 1 OF 4

NORTH	DRILLER <u>DRILLING ENGINEERS INC.</u>	DATE START <u>4/19/2007</u>
EAST	RIG <u>CME 75</u>	DATE FINISH <u>4/19/2007</u>
GRD ELEV	BITS <u>8.25" H.S.A.</u> FLUIDS <u>—</u>	TOTAL DEPTH <u>31'</u>
TOC ELEV.	LOGGED BY <u>Charoen S.</u>	WATER DEPTH <u>14'</u>

SAMPLE TYPES:		SAMPLER SPECIFICATIONS:	
CT Cuttings	WS Wash	Length <u>2.5'</u>	Material <u>Steel</u>
SS Split Spoon	NX NX Core	O.D. <u>2"</u>	Liner <u>—</u>
DC Dry Core	CS Continuous Sampler	I.D. <u>1.7"</u>	Other <u>—</u>
Other <u>—</u>			

DEPTH (FT.)	BIT CASING	SAMP NO.	SAMP TYPE	RECOV. FT/FT	BLOWS per 6"	SYM	SURFACE CONDITION: <u>Grass</u>	SOIL VAPOR PID ☐ FID ☐
							SOIL/ROCK DESCRIPTION	BC HS Core
0								
1							Augered to 4'	
2							0 to 4.0' - Cutting - SILT AND CLAY.	
3	8.25"						Brown, little sand, little gravel	
4	H.S.A.						trace roots. Moist.	
5	4.25"						SS 1 4' to 6'	
6	I.D.			20"	4		4.0' to 5.7' SILT. Brown, med stiff	
7				24"	4		some sand, little clay. Moist	
8					4		5.7' to 6.0' NO RECOVERY	
9							Augered to 9'	
10							6.0' to 9.0' SILT. Brown, some	
							sand, little clay. Moist	
							SS 2 9' to 11'	
				20"	3		9.0' to 10.7' CLAY. Brown, little	
				24"	4		silt, little sand, moist	

LOCATION SKETCH <u>See Plan</u>	DENSITY:		PROPORTIONS:		REMARKS/WEATHER <u>50F windy</u> <u>Sunny</u>		
	GRANULAR:		COHESIVE:				
	0-10	Loose	0-4	Soft		0-10%	Trace
	10-30	Med Dense	4-8	Med Stiff		10-20%	Little
	30-50	Dense	8-15	Stiff		20-35%	Some
	>50	Very Dense	15-30	Very Stiff	35-50%	And	

LOG STATUS

PRELIMINARY _____ FINAL ✓



EnviroGroup Limited
 Centennial, Colorado

CLIENT Lafarge North America
 PROJECT LOCATION Windsor, CO
 PROJECT NO. LF-0538

BOREHOLE LOG

BH NO. 5
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NORTH	DRILLER <u>DRILLING ENGINEERS INC.</u>	DATE START <u>4/19/2007</u>
EAST	RIG <u>CME 75</u>	DATE FINISH <u>4/19/2007</u>
GRD ELEV.	BITS <u>8.25" H.S.A.</u> FLUIDS <u>-</u>	TOTAL DEPTH <u>31'</u>
TOC ELEV.	LOGGED BY <u>Charoen S.</u>	WATER DEPTH <u>14'</u>

SAMPLE TYPES:

CT Cuttings
 (SS) Split Spoon
 DC Dry Core
 Other _____

WS Wash
 NX NX Core
 CS Continuous Sampler

SAMPLER SPECIFICATIONS:

Length 2.5'
 O.D. 2"
 I.D. 1.7"

Material Steel
 Liner _____
 Other _____

DEPTH (FT.)	BIT CASING	SAMP NO.	SAMP TYPE	RECOV. FT/FT	BLOWS per 6"	SYM	SURFACE CONDITION: <u>Grass</u>	SOIL VAPOR PID ☐ FID ☐	BC	HS	Core
10					4		10.7' to 11.0' NO RECOVERY				
11					4		Augered to 14'				
12							11.0' to 14.0' - Cutting - CLAY. Brown little silt, little sand, moist				
13	8.25" H.S.A.										
14	4.25" I.D.						SS 3 14' to 16'				
15				12"	8		14.0' to 15.0' SAND AND GRAVEL. Brown med dense, trace silt, trace clay.				
16				24"	7		Wet.				
17					10		15.0' to 16.0' NO RECOVERY				
18							Augered to 19'				
19							16.0' to 19.0' - Cutting - SAND AND GRAVEL, trace silt, trace clay.				
20							Wet.				
							SS 4 19' to 21'				
				22"	12		19.0' to 20.8' SAND AND GRAVEL.				
				24"	24		Brown, very dense, trace silt trace clay. Wet				

LOCATION SKETCH	DENSITY:	PROPORTIONS:	REMARKS/WEATHER
See Plan	GRANULAR: 0-10 Loose 10-30 Med Dense 30-50 Dense >50 Very Dense	COHESIVE: 0-4 Soft 4-8 Med Stiff 8-15 Stiff 15-30 Very Stiff	0-10% Trace 10-20% Little 20-35% Some 35-50% And
			50 F Windy Sunny

LOG STATUS

PRELIMINARY _____ FINAL ☒



EnviroGroup Limited
 Centennial, Colorado

CLIENT Lafarge North America
 PROJECT LOCATION Windsor, CO
 PROJECT NO. LF-0538

BOREHOLE LOG

BH NO. 5
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NORTH	DRILLER <u>DRILLING ENGINEERS INC.</u>	DATE START <u>4/19/2007</u>
EAST	RIG <u>CME 75</u>	DATE FINISH <u>4/19/2007</u>
GRD ELEV	BITS <u>8.25" H.S.A.</u> FLUIDS <u>---</u>	TOTAL DEPTH <u>31'</u>
TOC ELEV	LOGGED BY <u>Charoen S.</u>	WATER DEPTH <u>14'</u>

SAMPLE TYPES:

CT Cuttings
 SS Split Spoon
 DC Dry Core
 Other: _____

WS Wash
 NX NX Core
 CS Continuous Sampler

SAMPLER SPECIFICATIONS:

Length 2.5'
 O.D. 2"
 I.D. 1.7"

Material steel
 Liner ---
 Other ---

DEPTH (FT)	BIT CASING	SAMP NO.	SAMP TYPE	RECOV. FT/FT	BLOWS per 6"	SYM	SURFACE CONDITION: <u>Grass</u>	SOIL VAPOR PID ☐ FID ☐	BC	HS	Core
20					32		20.8' to 21.0' NO RECOVERY				
21					34						
22							Augered to 24'				
23	8.25" H.S.A.						21.0' to 24.0' - Cutting - SAND AND GRAVEL. Brown trace silt, trace clay. Wet				
24	4.25" I.D.						SS 5 24' to 26'				
25				22"	10		24.0' to 25.8' SAND AND GRAVEL. Brown med. dense, little silt, little clay. Wet.				
26				24"	12		25.8' to 26.0' NO RECOVERY				
27							Augered to 29'				
28							26.0' to 29.0' - Cutting - SAND AND GRAVEL. Brown, little silt, little clay. wet.				
29							SS 6 29' to 31'				
30				14"	42		29.0' to 30.2' SILTSTONE. Brown to red brown, very stiff, trace sand, trace clay. Moderately weathered				
				24"	40						

LOCATION SKETCH

See Plan

DENSITY:

GRANULAR:

0-10 Loose
 10-30 Med Dense
 30-50 Dense
 >50 Very Dense

COHESIVE:

0-4 Soft
 4-8 Med Stiff
 8-15 Stiff
 15-30 Very Stiff

PROPORTIONS:

0-10% Trace
 10-20% Little
 20-35% Some
 35-50% And

REMARKS/WEATHER

50 F Windy
 Sunny

LOG STATUS:

PRELIMINARY: _____ FINAL: ✓



EnviroGroup Limited
 Centennial, Colorado

CLIENT Lafarge North America
 PROJECT LOCATION Windsor, CO
 PROJECT NO. LF-0538

BOREHOLE LOG

BH NO. 5
 PAGE 4 OF 4

NORTH	DRILLER <u>DRILLING ENGINEERS INC.</u>	DATE START <u>4/19/2007</u>
EAST	RIG <u>C.M.E 75</u>	DATE FINISH <u>4/19/2007</u>
GRD ELEV	BITS <u>8.25" H.S.A.</u> FLUIDS <u>—</u>	TOTAL DEPTH <u>31'</u>
TOC ELEV	LOGGED BY <u>Charoen S.</u>	WATER DEPTH <u>14'</u>

SAMPLE TYPES:

CT Cuttings
 SS Split Spoon
 DC Dry Core
 Other _____

WS Wash
 NX NX Core
 CS Continuous Sampler

SAMPLER SPECIFICATIONS:

Length 2.5'
 O.D. 2"
 I.D. 1.7"

Material steel
 Liner —
 Other —

DEPTH (FT.)	BIT CASING	SAMP NO.	SAMP TYPE	RECOV. FT/FT	BLOWS per 6"	SYM	SURFACE CONDITION: <u>Grass</u>	SOIL VAPOR P10 ☐ P100 ☐
							SOIL/ROCK DESCRIPTION	BC HS Core
30					45		Wet.	
31					50		30.2' to 31.0' NO RECOVERY	
							Augered to 29.5'	
							Add sand to 29.0'	
							End of Borehole	
							Monitoring well Installation	
							2" PVC 10-foot screen	
							MW-5	
							Casing and lock	
							cap	
							Riser -3 to 18.7' Concrete 0 to 3'	
							Screen 18.7' to 28.7' Bentonite chip 3' to 17'	
							Cap 28.7' to 29.0' filter sand 17' to 31.0'	
							Filter sand 4 bags	
							Bentonite 6.5 bags	
							Concrete 2 bags	

LOCATION SKETCH	DENSITY:	PROPORTIONS:	REMARKS/WEATHER
See Plan	GRANULAR:	COHESIVE:	
	0-10 Loose	0-4 Soft	0-10% Trace
	10-30 Med Dense	4-8 Med Stiff	10-20% Little
	30-50 Dense	8-16 Stiff	20-35% Some
	>50 Very Dense	15-30 Very Stiff	35-50% And
			50F Windy Sunny

LOG STATUS:

PRELIMINARY: _____ FINAL: ✓



EnviroGroup Limited
 Centennial, Colorado

CLIENT LaFarge North America
 PROJECT LOCATION Windsor, CO
 PROJECT NO. LF-0538

BOREHOLE LOG

Andy & Richard

BH NO. 6
 PAGE 1 OF 3

NORTH	DRILLER <u>DRILLING ENGINEERS INC.</u>	DATE START <u>4/19/2007</u>
EAST	RIG <u>CME-75</u>	DATE FINISH <u>4/19/2007</u>
GRD ELEV.	BITS <u>8.25" H.S.A.</u> FLUIDS <u>---</u>	TOTAL DEPTH <u>25.3'</u>
TOC ELEV.	LOGGED BY <u>Charoen S.</u>	WATER DEPTH <u>9'</u>

SAMPLE TYPES:

CT Cuttings
☒ Split Spoon
 DC Dry Core
 Other: _____
 WS Wash
 NX NX Core
 CS Continuous Sampler

SAMPLER SPECIFICATIONS:

Length 2.5' Material steel
 O.D. 2" Liner ---
 I.D. 1.7" Other ---

DEPTH (FT.)	BIT CASING	SAMP NO.	SAMP TYPE	RECOV. FT/FT	BLOWS per 6"	SYM	SURFACE CONDITION: <u>Grass</u>	SOIL VAPOR PID ☐ FID ☐	BG	HS	Core
0											
1							Augered to 4'				
2							0 to 4.0' - Cutting - SILT AND CLAY				
3	8.25"						Dark brown, little sand, trace roots, Moist				
4	H.S.A.										
5				19'	2		SS1 4' to 6'				
6	4.25"			24'	2		4.0' to 5.6' CLAY. Brown, soft, little silt, little sand. Moist				
7	I.D.				2		5.6' to 6.0' NO RECOVERY				
8					2						
9							Augered to 9'				
10							6.0' to 9.0' CLAY. Brown some sand, little silt. Moist				
							SS2 9' to 11'				
				14'	3		9.0' to 10.2' SAND AND GRAVEL.				
				24'	2		Brown, loose, little stone up to 2-inch diameter trace silt trace clay. Wet				

LOCATION SKETCH	DENSITY:	PROPORTIONS:	REMARKS/WEATHER
See Plan	GRANULAR: 0-10 Loose 10-30 Med Dense 30-50 Dense >50 Very Dense COHESIVE: 0-4 Soft 4-8 Med Stiff 8-15 Stiff 15-30 Very Stiff	0-10% Trace 10-20% Little 20-35% Some 35-50% And	50 windy Sunny

LOG STATUS:

PRELIMINARY: _____ FINAL: ☒



EnviroGroup Limited
 Centennial, Colorado

CLIENT Lafarge North America
 PROJECT LOCATION Windsor, CO
 PROJECT NO. LF-0538

BOREHOLE LOG

BH NO. 6
 PAGE 2 OF 3

NORTH	DRILLER <u>DRILLING ENGINEERS INC.</u>	DATE START <u>4/19/2007</u>
EAST	RIG <u>CME 75</u>	DATE FINISH <u>4/19/2007</u>
GRD ELEV.	BITS <u>8.25" H.S.A.</u> FLUIDS <u>-</u>	TOTAL DEPTH <u>25.3'</u>
TOC ELEV	LOGGED BY <u>Charoen S.</u>	WATER DEPTH <u>9'</u>

SAMPLE TYPES:

CT Cuttings
 (SS) Split Spoon
 DC Dry Core
 Other: _____
 WS Wash
 NX NX Core
 CS Continuous Sampler

SAMPLER SPECIFICATIONS:

Length 2.5'
 O.D. 2"
 I.D. 1.7"
 Material Steel
 Liner -
 Other -

DEPTH (FT)	BIT CASING	SAMP NO.	SAMP TYPE	RECOV. FT/FT	BLOWS per 6"	SYM	SURFACE CONDITION: <u>Grass</u>	SOIL VAPOR PID ☐ FID ☐
							SOIL/ROCK DESCRIPTION	BG HS Core
10					3		10.2' to 11.0' NO RECOVERY	
11					13		Augered to 14'	
12							11.0' to 14.0' - Cutting - SAND AND GRAVEL. Brown, some stones up to 2-inch diameter, trace silt, trace clay. Wet	
13	8.25" H.S.A.						SS 3 14' to 16'	
14	4.25" I.D.			14"	5		14.0' to 15.2' SAND AND GRAVEL. Brown, med dense, some stones up to 2-inch diameter, trace silt, trace clay. Wet	
15				24"	8			
16					10			
17					20		15.2' to 16.0' NO RECOVERY	
18							Augered to 19'	
19							16.0' to 19.0' - Cutting - SAND AND GRAVEL, some stones up to 2-inch diameter, trace silt, trace clay. Wet	
20				14"	6		SS 4 19' to 21'	
				24"	8		19.0' to 20.2' SAND AND GRAVEL, Brown med dense, some stones up to 2-inch diameter	

LOCATION SKETCH	DENSITY:	PROPORTIONS:	REMARKS/WEATHER	
See Plan	GRANULAR:	COHESIVE:	50 Windy Sunny	
	0-10 Loose	0-4 Soft		0-10% Trace
	10-30 Med Dense	4-8 Med Stiff		10-20% Little
	30-50 Dense	8-15 Stiff		20-35% Some
	>50 Very Dense	15-30 Very Stiff		35-50% And

LOG STATUS

PRELIMINARY _____ FINAL ✓



EnviroGroup Limited
 Centennial, Colorado

CLIENT LaTarge North America
 PROJECT LOCATION Windsor, CO
 PROJECT NO. LF-0538

BOREHOLE LOG

BH NO. 6
 PAGE 3 OF 3

NORTH	DRILLER <u>DRILLING ENGINEERS INC.</u>	DATE START <u>4/19/2007</u>
EAST	RIG <u>CME 75</u>	DATE FINISH <u>4/19/2007</u>
GRD ELEV.	BITS <u>8.25" H.S.A.</u> FLUIDS <u>—</u>	TOTAL DEPTH <u>25.3'</u>
TOC ELEV	LOGGED BY <u>Charoen S.</u>	WATER DEPTH <u>9'</u>

SAMPLE TYPES

CT Cuttings
 SS Split Spoon
 DC Dry Core
 Other: _____

WS Wash
 NX NX Core
 CS Continuous Sampler

SAMPLER SPECIFICATIONS:

Length 2.5'
 O.D. 2"
 I.D. 1.7"

Material steel
 Liner —
 Other —

DEPTH (FT)	BIT CASING	SAMP NO.	SAMP TYPE	RECOV. FT/FT	BLOWS per 6"	SYM	SURFACE CONDITION: <u>Grass</u>	SOIL VAPOR PID ☐ FID ☐
							SOIL/ROCK DESCRIPTION	BC HS Core
20					20		trace silt, trace clay. Wet	
21					30		20.2' to 21.0' NO RECOVERY	
							Augered to 24'	
22							21.0' to 24.0' - Cutting - SAND AND GRAVEL. Brown, trace silt, trace clay. Wet	
23	8.25" H.S.A.							
24	4.25" I.D.				10		SS 5 24' to 26'	
25	25.3'				25		24.0' to 25.3' SILTSTONE. Grey, very stiff, little sand, trace clay. Wet	
					50 1/3"		END OF BOREHOLE	
26							END OF BOREHOLE	
							Monitoring well Installation	
							2" PVC 10 foot screen	
							MW-6	
							Casing + Lock	
							Cap	
							Riser - 3 to 13.7' Concrete 0 to 3'	
							screen 13.7' to 23.7' Bentonite chip 3 to 12'	
							Cap 23.7' to 24' Filter sand 12' to 25.3'	

sand 3 bags
 Bentonite 5 bags
 Concrete 2 bags

LOCATION SKETCH	DENSITY:	PROPORTIONS:	REMARKS/WEATHER
See Plan	GRANULAR:	COHESIVE:	
	0-10 Loose	0-4 Soft	0-10% Trace
	10-30 Med Dense	4-8 Med Stiff	10-20% Little
	30-50 Dense	8-15 Stiff	20-35% Some
	>50 Very Dense	15-30 Very Stiff	35-50% And
			50 F sunny windy

LOG STATUS

PRELIMINARY: _____ FINAL: ✓



EnviroGroup Limited
 Centennial, Colorado

CLIENT Lafarge North America
 PROJECT LOCATION Windsor, Co
 PROJECT NO. LF-0538

BOREHOLE LOG

Andy & Richard

BH NO. 7
 PAGE 1 OF 2

NORTH	DRILLER <u>DRILLING ENGINEERS INC.</u>	DATE START <u>4/19/2007</u>
EAST	RIG <u>CME-75</u>	DATE FINISH <u>4/19/2007</u>
GRD ELEV.	BITS <u>8.25" H.S.A.</u> FLUIDS <u>—</u>	TOTAL DEPTH <u>16'</u>
TOC ELEV	LOGGED BY <u>Charoen S.</u>	WATER DEPTH <u>9'</u>

SAMPLE TYPES:
 CT Cuttings
 SS Split Spoon
 DC Dry Core
 Other _____
 WS Wash
 NX NX Core
 CS Continuous Sampler

SAMPLER SPECIFICATIONS:

Length 2.5' Material steel
 O.D. 2" Liner —
 I.D. 1.7" Other —

DEPTH (FT)	BIT CASING	SAMP NO.	SAMP TYPE	RECOV. FT/FT	BLOWS per 6"	SYM	SURFACE CONDITION: <u>Grass</u>	SOIL VAPOR PID ☐ FID ☐
							SOIL/ROCK DESCRIPTION	BC HS Core
0							Augered to 4'	
1							0-4.0' - Cutting - SILT AND CLAY	
2							Dark brown, trace sand,	
3							trace roots. Moist	
4	8.25"						SS1 4' to 6'	
5	4.25"			18'	2		4.0' to 5.5' CLAY. Brown, soft,	
6	I.D.			—	2		some sand, trace silt, Moist	
7				24'	2		5.5' to 6.0' NO RECOVERY	
8					2			
9							Augered to 9'	
10							6.0' to 9.0' CLAY. Brown, some	
							sand, trace silt, Moist	
							SS2 9' to 11'	
				16"	10		9.0' to 10.3' MEDIUM SAND. Brown	
				24"	20		dense, trace silt trace clay	
							Wet.	

LOCATION SKETCH	DENSITY:	PROPORTIONS:	REMARKS/WEATHER
See Plan	GRANULAR: 0-10 Loose 10-30 Med Dense 30-50 Dense >50 Very Dense COHESIVE: 0-4 Soft 4-8 Med Stiff 8-15 Stiff 15-30 Very Stiff	0-10% Trace 10-20% Little 20-35% Some 35-50% And	50F Sunny windy

LOG STATUS:

PRELIMINARY _____ FINAL: ✓



EnviroGroup Limited
 Centennial, Colorado

CLIENT Latarge North America
 PROJECT LOCATION Windsor, CO
 PROJECT NO LF-0538

BOREHOLE LOG

BH NO. 7
 PAGE 2 OF 2

NORTH	DRILLER <u>DRILLING ENGINEERS INC.</u>	DATE START <u>4/19/2007</u>
EAST	RIG <u>CME 75</u>	DATE FINISH <u>4/19/2007</u>
GRD ELEV.	BITS <u>8.25" H.S.A.</u> FLUIDS <u>-</u>	TOTAL DEPTH <u>16'</u>
TOC ELEV.	LOGGED BY <u>Charoen S.</u>	WATER DEPTH <u>9'</u>

SAMPLE TYPES:
 CT Cuttings
 SS Split Spoon
 DC Dry Core
 Other: _____
 WS Wash
 NX NX Core
 CS Continuous Sampler

SAMPLER SPECIFICATIONS:
 Length 2.5'
 O.D. 2"
 I.D. 1.7"

Material Steel
 Liner -
 Other -

DEPTH (FT)	BIT CASING	SAMP NO.	SAMP TYPE	RECOV. FT/FT	BLOWS per 6"	SYM	SURFACE CONDITION: <u>Grass</u>	SOIL VAPOR PID ☐ FID ☐	SOIL/ROCK DESCRIPTION	BG	HS	Core
10					20				10.3' to 11.0' NO RECOVERY			
11					22							
12									Augered to 14'			
13	8.25" H.S.A.								11.0' to 14.0' - Cutting - CLAY. Grey, some sand, trace silt. Wet			
14	4.25" I.D.								SS 3 14' to 16'			
15				20"	12				14.0' to 15.7' CLAYSTONE. Grey. very stiff, trace sand, trace silt. slightly weathered, very moist			
16				24"	25				END OF BOREHOLE			
17					27				MONITORING WELL INSTALLATION			
18					30				2" PVC 8-foot screen			
19									MW-7			
20									Casing & Lock cap			
									RISER -3 to 5.7' Concrete 0 to 2'			
									screen 5.7' to 13.7' Bentonite 2' to 5'			
									cap 13.7' to 14.0' Filter sand 5' to 16'			

LOCATION SKETCH	DENSITY:	PROPORTIONS:	REMARKS/WEATHER
See Plan	GRANULAR:	COHESIVE:	
	0-10 Loose	0-4 Soft	0-10% Trace
	10-30 Med Dense	4-8 Med Stiff	10-20% Little
	30-50 Dense	8-15 Stiff	20-35% Some
	>50 Very Dense	15-30 Very Stiff	35-50% And
			50F Sunny windy

LOG STATUS:

PRELIMINARY: _____ FINAL: ☒



EnviroGroup Limited
 Centennial, Colorado

CLIENT Lafarge North America
 PROJECT LOCATION Windsor, CO
 PROJECT NO. LF-0538

BOREHOLE LOG

Andy & Richard

BH NO. 8
 PAGE 1 OF 3

NORTH	DRILLER <u>DRILLING ENGINEERS INC.</u>	DATE START <u>4/19/2007</u>
EAST	RIG <u>CME-75</u>	DATE FINISH <u>4/19/2007</u>
GRD ELEV	BITS <u>8.25" H.S.A.</u> FLUIDS <u>—</u>	TOTAL DEPTH <u>18.3'</u>
TOC ELEV.	LOGGED BY <u>Charoen S.</u>	WATER DEPTH <u>9'</u>

SAMPLE TYPES:
 CT Cuttings
☒ SS Split Spoon
 DC Dry Core
 Other: _____
 WS Wash
 NX NX Core
 CS Continuous Sampler

SAMPLER SPECIFICATIONS:

Length 2.5'
 O.D. 2"
 I.D. 1.7"

Material steel
 Liner —
 Other —

DEPTH (FT.)	BITS	SAMP NO.	SAMP TYPE	RECOV. FT/FT	BLOWS per 6"	SYM	SURFACE CONDITION: <u>Grass</u>	SOIL VAPOR PID ☐ FID ☐
							SOIL/ROCK DESCRIPTION	BG HS Core
0							Augered to 4'	
1							0 to 4.0' - Cutting - SILT AND CLAY. Dark brown. trace sand, trace roots. Moist	
2	8.25"							
3	H.S.A.							
4							SS 1 4' to 6'	
5	4.25"		SS	16'	2		4.0' to 5.0' CLAY. Dark brown	
6	I.D.			—	3		stiff, little sand, trace silt	
7				24"	7		Moist	
8					9		5.0' to 5.3' SAND AND GRAVEL.	
9							Brown, med dense, trace silt. Moist	
10							5.3' to 6.0' NO RECOVERY	
							Augered to 9'	
							6.0' to 9.0' SAND AND GRAVEL	
							Brown, some stones up to 2-inch diameter, some clay. Very moist.	
			SS	12"	7		SS 2 9' to 11'	
				24"	12		9.0' to 10.0' SAND AND GRAVEL.	
							Brown, med dense, some stones	

LOCATION SKETCH	DENSITY:	PROPORTIONS:	REMARKS/WEATHER
See Plan	GRANULAR: 0-10 Loose 10-30 Med Dense 30-50 Dense >50 Very Dense COHESIVE: 0-4 Soft 4-8 Med Stiff 8-15 Stiff 15-30 Very Stiff	0-10% Trace 10-20% Little 20-35% Some 35-50% And	SOF Sunny windy

LOG STATUS:

PRELIMINARY _____ FINAL: ✓



EnviroGroup Limited
 Centennial, Colorado

CLIENT Lafarge North America
 PROJECT LOCATION Windsor, CO
 PROJECT NO. LF-0538

BOREHOLE LOG

BH NO. 8
 PAGE 2 OF 3

NORTH	DRILLER <u>DRILLING ENGINEERS INC.</u>	DATE START <u>4/19/2007</u>
EAST	RIG <u>CME 75</u>	DATE FINISH <u>4/19/2007</u>
GRD ELEV	BITS <u>8.25" H.S.A.</u> FLUIDS <u>-</u>	TOTAL DEPTH <u>18.3'</u>
TOC ELEV.	LOGGED BY <u>Charoen S.</u>	WATER DEPTH <u>9'</u>

SAMPLE TYPES:		SAMPLER SPECIFICATIONS:	
CT Cuttings	WS Wash	Length <u>2.5'</u>	Material <u>Steel</u>
SS Split Spoon	NX NX Core	O.D. <u>2"</u>	Liner <u>-</u>
DC Dry Core	CS Continuous Sampler	I.D. <u>1.7"</u>	Other <u>-</u>
Other: _____			

DEPTH (FT.)	BIT CASING	SAMP NO.	SAMP TYPE	RECOV. FT/FT	BLOWS per 6"	SYM	SURFACE CONDITION: <u>Grass</u>	SOIL VAPOR PID ☐ FID ☐
							SOIL/ROCK DESCRIPTION	BG HS Core
10					6		up to 2-inch diameter, trace clay. Wet.	
11					4		10.0' to 11.0' NO RECOVERY	
12							Augered to 14'	
13	8.25" H.S.A.						11.0' to 14.0' - Cutting - SAND AND GRAVEL. Brown, some stones up to 2-inch diameter. Wet	
14	4.25" I.D.						SS 3 14 to 16'	
15			SS	18'	5		14.0' to 15.5' SAND AND GRAVEL. Brown med. dense, some stones up to 2-inch diameter. Wet	
16				24"	10		15.5' to 16.0' NO RECOVERY	
17					15		Augered to 17'	
18	18.3'			16"	10		16.0' to 17.0' - Cutting - SAND AND GRAVEL. Brown, some stone up to 2-inch diameter	
19				16"	30		SS 4 17' to 19'	
20				50/4"			17.0' to 18.3' CLAYSTONE. Grey, very stiff, some siltstone, little sand. Slightly weathered, Very moist.	
							END OF BOREHOLE	
							END OF BOREHOLE	

LOCATION SKETCH <u>See Plan</u>	DENSITY:		PROPORTIONS:		REMARKS/WEATHER <u>50 F Sunny Windy</u>
	GRANULAR:	COHESIVE:			
	0-10 Loose	0-4 Soft	0-10%	Trace	
	10-30 Med Dense	4-8 Med Stiff	10-20%	Little	
	30-50 Dense	8-15 Stiff	20-35%	Some	
	>50 Very Dense	15-30 Very Stiff	35-50%	And	

LOG STATUS:

PRELIMINARY _____ FINAL: ✓



EnviroGroup Limited
 Centennial, Colorado

CLIENT LaTarge North America
PROJECT LOCATION Windsor, CO
PROJECT NO. LF-0538

BOREHOLE LOG

BH NO. 8
PAGE 3 OF 3

NORTH	DRILLER DRILLING ENGINEERS INC.	DATE START 4/19/2007
EAST	RIG CME 75	DATE FINISH 4/19/2007
GRD ELEV.	BITS 8.25" H.S. A. FLUIDS —	TOTAL DEPTH 18.3'
TOC ELEV.	LOGGED BY Charoen S.	WATER DEPTH 9'

SAMPLE TYPES:		SAMPLER SPECIFICATIONS:	
CS Cuttings	WS Wash	Length <u>2.5'</u>	Material <u>steel</u>
☒ Split Spoon	NX NX Core	O.D. <u>2"</u>	Liner <u>-</u>
DC Dry Core	CS Continuous Sampler	I.D. <u>1.7"</u>	Other <u>-</u>
Other: _____			

[illegible]

LOCATION SKETCH	DENSITY:				PROPORTIONS:		REMARKS/WEATHER
	GRANULAR:		COHESIVE:				
See Plan	0-10	Loose	0-4	Soft	0-10%	Trace	50 F Sunny Windy
	10-30	Med Dense	4-8	Med Stiff	10-20%	Little	
	30-50	Dense	8-15	Stiff	20-35%	Some	
	>50	Very Dense	15-30	Very Stiff	35-50%	And	

LOG STATUS

PRELIMINARY. _____ FINAL: ✓



EnviroGroup Limited
Centennial, Colorado

CLIENT Lafarge North America
 PROJECT LOCATION Windsor, CO
 PROJECT NO. LF-0538

BOREHOLE LOG

Andy & Richard

BH NO. 9
 PAGE 1 OF 3

NORTH	DRILLER <u>DRILLING ENGINEERS INC.</u>	DATE START <u>4/20/2007</u>
EAST	RIG <u>CME-75</u>	DATE FINISH <u>4/20/2007</u>
GRD ELEV	BITS <u>8.25" H.S.A.</u> FLUIDS <u>---</u>	TOTAL DEPTH <u>16'</u>
TOC ELEV.	LOGGED BY <u>Charoen S.</u>	WATER DEPTH <u>9'</u>

SAMPLE TYPES:
☒ C Cuttings
☒ SS Split Spoon
☐ DC Dry Core
☐ Other:
 WS Wash
 NX NX Core
 CS Continuous Sampler

SAMPLER SPECIFICATIONS:

Length 2.5'
 O.D. 2"
 I.D. 1.7"

Material steel
 Liner ---
 Other ---

DEPTH (FT.)	BIT CASING	SAMP NO.	SAMP TYPE	RECOV. FT/FT	BLOWS per 6"	SYM	SURFACE CONDITION: <u>Grass</u>	SOIL VAPOR PID ☐ FID ☐
							SOIL/ROCK DESCRIPTION	BG HS Core
0							Augered to 4'	
1							0 to 4.0' - Cutting - SILT AND CLAY	
2							Dark brown, trace sand.	
3	8.25"						Moist	
4	H.S.A.						SS 1 4' to 6'	
5					3		4.0' to 5.3' SAND AND GRAVEL.	
6					5		Brown, med dense, trace silt	
7	4.25"		SS	16"	7		trace clay. Moist	
8	I.D.			24"	7		5.3' to 6.0' NO RECOVERY	
9							Augered to 9'	
10							6.0' to 9.0' - Cutting SAND AND GRAVEL. Brown, trace silt, trace clay. Moist	
							SS 2 9' to 11'	
			SS	12"	10		9.0' to 10.0' SAND AND GRAVEL.	
				24"	15		Brown, dense, some stone up to 2-inch diameter, trace silt. Wet	

LOCATION SKETCH	DENSITY:	PROPORTIONS:	REMARKS/WEATHER
See Plan	GRANULAR: 0-10 Loose 10-30 Med Dense 30-50 Dense >50 Very Dense COHESIVE: 0-4 Soft 4-8 Med Stiff 8-15 Stiff 15-30 Very Stiff	0-10% Trace 10-20% Little 20-35% Some 35-50% And	50 F Sunny

LOG STATUS

PRELIMINARY _____ FINAL ☒



EnviroGroup Limited
 Centennial, Colorado

CLIENT Lafarge North America
 PROJECT LOCATION Windsor, CO
 PROJECT NO. LF-0538

BOREHOLE LOG

BH NO. 9
 PAGE 2 OF 3

NORTH	DRILLER <u>DRILLING ENGINEERS INC.</u>	DATE START <u>4/20/2007</u>
EAST	RIG <u>CME 75</u>	DATE FINISH <u>4/20/2007</u>
GRD ELEV.	BITS <u>8.25" H.S.A.</u> FLUIDS <u>-</u>	TOTAL DEPTH <u>16'</u>
TOC ELEV	LOGGED BY <u>Charoen S.</u>	WATER DEPTH <u>9'</u>

SAMPLE TYPES:
 CT Cuttings
 SS Split Spoon
 DC Dry Core
 Other: _____
 WS Wash
 NX NX Core
 CS Continuous Sampler

SAMPLER SPECIFICATIONS:
 Length 2.5'
 O.D. 2"
 I.D. 1.7"

Material Steel
 Liner -
 Other -

DEPTH (FT)	BIT CASING	SAMP NO	SAMP TYPE	RECOV. FT/FT	BLOWS per 6"	SYM	SURFACE CONDITION: <u>Grass</u>	SOIL VAPOR PID ☐ FID ☐	BC	HS	Core
10					17		100' to 11.0' NO RECOVERY				
11					10		Augered to 14'				
12							11.0' to 14.0' - Cutting - SAND AND GRAVEL. Brown, some stones up to 2-inch diameter				
13	8.25" H.S.A.						SS 3 14' to 16'				
14	4.25" ID.				12		14.0' to 15.5' SILTSTONE. Grey.				
15			SS	18"	12		very stiff, trace sand, trace clay, slightly weathered.				
16				24"	17		very moist				
17					20		Augered to 16'				
18							END OF BOREHOLE				
19							Monitoring well Installation				
20							2" PVC 10-foot screen				
							MW-9				

LOCATION SKETCH	DENSITY:	PROPORTIONS:	REMARKS/WEATHER
See Plan	GRANULAR:	COHESIVE:	
	0-10 Loose	0-4 Soft	0-10% Trace
	10-30 Med Dense	4-8 Med Stiff	10-20% Little
	30-50 Dense	8-15 Stiff	20-35% Some
	>50 Very Dense	15-30 Very Stiff	35-50% And
			50 F Sunny

LOG STATUS

PRELIMINARY _____ FINAL ✓



EnviroGroup Limited
 Centennial, Colorado

EnviroGroup Limited
Centennial, Colorado

CLIENT LaFarge North America
 PROJECT LOCATION Windsor, CO
 PROJECT NO. LF-0538

BOREHOLE LOG

Andy & Richard

BH NO. 10
 PAGE 1 OF 2

NORTH	DRILLER <u>DRILLING ENGINEERS INC.</u>	DATE START <u>4/20/2007</u>
EAST	RIG <u>CME-75</u>	DATE FINISH <u>4/20/2007</u>
GRD ELEV.	BITS <u>8.25" H.S.A.</u> FLUIDS <u>---</u>	TOTAL DEPTH <u>15.3'</u>
TOC ELEV.	LOGGED BY <u>Charoen S.</u>	WATER DEPTH <u>4'</u>

SAMPLE TYPES
 CT Cuttings
 SS Split Spoon
 DC Dry Core
 Other: _____
 WS Wash
 NX NX Core
 CS Continuous Sampler

SAMPLER SPECIFICATIONS:

Length 2.5' Material steel
 O.D. 2" Liner ---
 I.D. 1.7" Other ---

DEPTH (FT.)	BIT CASING	SAMP NO.	SAMP TYPE	RECOV. FT/FT	BLOWS per 6"	SYM	SURFACE CONDITION: <u>Grass</u>	SOIL VAPOR PID ☐ FID ☐	BC	HS	Core
0							Augered to 4'				
1							0 to 4.6' - Cutting - CLAY. Dark brown, some silt little sand trace roots. Moist				
2											
3	8.25" H.S.A.						SS1 4' to 6'				
4							4.0' to 5.3' SAND AND GRAVEL.				
5	4.25" I.D.			16" 24"	8 4 3 3		Brown, loose, some stones up to 2-inch diameter, trace silt. Wet				
6							5.3' to 6.0' NO RECOVERY				
7							Augered to 9'				
8							6.0' to 9.0' - Cutting - SAND AND GRAVEL. Brown, some stones up to 2-inch diameter, trace silt. Wet				
9							SS2 9' to 11'				
10				18" 24"	4 7		9.0' to 10.5' SAND AND GRAVEL. Brown, loose; some stones up to 2-inch diameter. Wet				

LOCATION SKETCH	DENSITY:	PROPORTIONS:	REMARKS/WEATHER
See Plan	GRANULAR: 0-10 Loose 10-30 Med Dense 30-50 Dense >50 Very Dense COHESIVE: 0-4 Soft 4-8 Med Stiff 8-15 Stiff 15-30 Very Stiff	0-10% Trace 10-20% Little 20-35% Some 35-50% And	60 F Sunny

LOG STATUS:

PRELIMINARY: _____ FINAL: ☒



EnviroGroup Limited
 Centennial, Colorado

CLIENT Lafarge North America
 PROJECT LOCATION Windsor, CO
 PROJECT NO. LF-0538

BOREHOLE LOG

BH NO. 10
 PAGE 2 OF 2

NORTH	DRILLER <u>DRILLING ENGINEERS INC.</u>	DATE START <u>4/20/2007</u>
EAST	RIG <u>CME 75</u>	DATE FINISH <u>4/20/2007</u>
GRD ELEV	BITS <u>8.25" H.S.A.</u> FLUIDS <u>-</u>	TOTAL DEPTH <u>15.3'</u>
TOC ELEV.	LOGGED BY <u>Charoen S.</u>	WATER DEPTH <u>4'</u>

SAMPLE TYPES:

CT Cuttings
 SS Split Spoon
 DC Dry Core
 Other: _____
 WS Wash
 NX NX Core
 CS Continuous Sampler

SAMPLER SPECIFICATIONS:

Length 2.5' Material Steel
 O.D. 2" Liner -
 I.D. 1.7" Other -

DEPTH (FT.)	BIT CASING	SAMP NO.	SAMP TYPE	RECOV. FT/FT	BLOWS per 6"	SYM	SURFACE CONDITION: <u>Grass</u>	SOIL VAPOR PID ☐ FID ☐
							SOIL/ROCK DESCRIPTION	BG HS Core
10					3		10.5' to 11.0' NO RECOVERY	
11					15		Augered to 14'	
12							11.0' to 14.0' - Cutting - SAND AND GRAVEL. Brown, some silt wet	
13	8.25" H.S.A.						SS 3 14' to 16'	
14	4.25" I.D.			16"	10		14.0' to 15.3' SILTSTONE. Grey very stiff little clay, little sand	
15	15.3'			16"	20		slightly weather. Very moist	
16					50 1/4"		END OF BOREHOLE	
17							END OF BOREHOLE	
18							Monitoring Well Installation	
19							2" PVC 10-foot screen	
20							MW-10	
							casing + Lock	
							cap	
							Riser -3 to 3.7' concrete 0 to 1.5'	
							screen 3.7' to 13.7' Bentonite chip 1.5' to 3'	
							Cap 13.7' to 14' Filter sand 3' to 15.3'	

LOCATION SKETCH	DENSITY:	PROPORTIONS:	REMARKS/WEATHER
See Plan	GRANULAR: 0-10 Loose 10-30 Med Dense 30-50 Dense >50 Very Dense COHESIVE: 0-4 Soft 4-8 Med Stiff 8-15 Stiff 15-30 Very Stiff	0-10% Trace 10-20% Little 20-35% Some 35-50% And	60 F Sunny

LOG STATUS

PRELIMINARY: _____ FINAL: ☒



EnviroGroup Limited
 Centennial, Colorado

CLIENT Lafarge North America
 PROJECT LOCATION Windsor, CO
 PROJECT NO. LF-0538

BOREHOLE LOG

Andy & Richard

BH NO. 11
 PAGE 1 OF 3

NORTH	DRILLER <u>DRILLING ENGINEERS INC.</u>	DATE START <u>4/20/2007</u>
EAST	RIG <u>CME-75</u>	DATE FINISH <u>4/20/2007</u>
GRD ELEV.	BITS <u>8.25" H.S.A.</u> FLUIDS <u>—</u>	TOTAL DEPTH <u>17.3'</u>
TOC ELEV.	LOGGED BY <u>Charoen S.</u>	WATER DEPTH <u>9'</u>

SAMPLE TYPES:		SAMPLER SPECIFICATIONS:	
CT Cuttings	WS Wash	Length <u>2.5'</u>	Material <u>steel</u>
☒ Split Spoon	NX NX Core	O.D. <u>2"</u>	Liner <u>—</u>
DC Dry Core	CS Continuous Sampler	I.D. <u>1.7"</u>	Other <u>—</u>
Other <u>—</u>			

DEPTH (FT.)	BIT CASING	SAMP NO.	SAMP TYPE	RECOV. FT/FT	BLOWS per 6"	SYM	SURFACE CONDITION: <u>Grass</u>	SOIL VAPOR PID ☐ FID ☐	BG	HS	Core
0							Augered to 4'				
1							0 to 4.0' SILT AND CLAY. Dark brown, little sand, trace roots. Moist.				
2											
3	8.25" H.S.A.						SS1 4' to 6'				
4											
5	4.25" I.D.			18" 24"	12 12 17 20		4.0' to 5.5' SAND AND GRAVEL. Brown, med dense, some stones up to 2-inch diameter trace silt.				
6							5.5' to 6.0' NO RECOVERY				
7							Augered to 9'				
8							6.0' to 9.0' - Cutting - SAND AND GRAVEL. Brown. some stones up to 2-inch diameter, trace silt.				
9											
10				18" 24"	5 9		SS 2 9' to 11'				
							9' to 10.5' SAND AND GRAVEL. Brown med dense, some stones up to				

LOCATION SKETCH	DENSITY:	PROPORTIONS:	REMARKS/WEATHER	
See Plan	GRANULAR:	COHESIVE:	70 F Sunny	
	0-10 Loose	0-4 Soft		0-10% Trace
	10-30 Med Dense	4-8 Med Stiff		10-20% Little
	30-50 Dense	8-15 Stiff		20-35% Some
	>50 Very Dense	15-30 Very Stiff		35-50% And

LOG STATUS:

PRELIMINARY: _____ FINAL: ☒



EnviroGroup Limited
 Centennial, Colorado

CLIENT Latarge North America
 PROJECT LOCATION Windsor, CO
 PROJECT NO. LF-0538

BOREHOLE LOG

BH NO. 11
 PAGE 2 OF 3

NORTH	DRILLER <u>DRILLING ENGINEERS INC.</u>	DATE START <u>4/20/2007</u>
EAST	RIG <u>CME 75</u>	DATE FINISH <u>4/20/2007</u>
GRD ELEV	BITS <u>8.25" H.S.A.</u> FLUIDS <u>—</u>	TOTAL DEPTH <u>17.3'</u>
TOC ELEV	LOGGED BY <u>Charoen S.</u>	WATER DEPTH <u>9'</u>

SAMPLE TYPES:

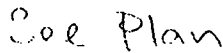
CT Cuttings
 (SS) Split Spoon
 DC Dry Core
 Other: _____

WS Wash
 NX NX Core
 CS Continuous Sampler

SAMPLER SPECIFICATIONS:

Length 2.5' Material Steel
 O.D. 2" Liner —
 I.D. 1.7" Other —

DEPTH (FT)	BIT CASING	SAMP NO.	SAMP TYPE	RECOV. FT/FT	BLOWS per 6"	SYM	SURFACE CONDITION: <u>Grass</u>	SOIL VAPOR PID ☐ FID ☐	BG	HS	Core
10					10		2-inch diameter, trace silt.				
11					13		Wet				
12							Augered to 14'				
13	8.25" H.S.A.						11.0' to 14.0' - Cutting - SAND AND GRAVEL. Brown, some stones up to 2-inch diameter, trace silt. Wet				
14	4.25" I.D.						SS 3 14' to 16'				
15				20"	10		14.0' to 15.5' SAND AND GRAVEL. Brown med dense, little stones up to 2-inch diameter, trace silt. Wet				
16				24"	15						
17				16"	18		15.5' to 15.7' SILTSTONE. Grey stiff, little sand, moderately weathered. Wet				
18				16"	20		15.7' to 16.0' NO RECOVERY				
19					50 1/4		Augered to 16'				
20							SS 4 16' to 18'				
							16.0' to 17.3' SILTSTONE. Grey very stiff, little sand, moderately weathered. very moist				

LOCATION SKETCH	DENSITY:	PROPORTIONS:	REMARKS/WEATHER	
	GRANULAR:	COHESIVE:	70F Sunny	
	0-10 Loose	0-4 Soft		0-10% Trace
	10-30 Med Dense	4-8 Med Stiff		10-20% Little
	30-50 Dense	8-15 Stiff		20-35% Some
	>50 Very Dense	15-30 Very Stiff		35-50% And

LOG STATUS

PRELIMINARY: _____ FINAL: ✓



EnviroGroup Limited
 Centennial, Colorado

EnviroGroup Limited
Centennial, Colorado

CLIENT Lafarge North America
 PROJECT LOCATION Windsor, CO
 PROJECT NO. LF-0538

BOREHOLE LOG

Andy & Richard

BH NO. 12
 PAGE 1 OF 2

NORTH	DRILLER <u>DRILLING ENGINEERS INC.</u>	DATE START <u>4/20/2007</u>
EAST	RIG <u>CME-75</u>	DATE FINISH <u>4/20/2007</u>
GRD ELEV.	BITS <u>8.25" H.S.A.</u> FLUIDS <u>---</u>	TOTAL DEPTH <u>14.3'</u>
TOC ELEV.	LOGGED BY <u>Charoen S.</u>	WATER DEPTH <u>9'</u>

SAMPLE TYPES:	SAMPLER SPECIFICATIONS:
CT Cuttings	Length <u>2.5'</u>
SS Split Spoon	O.D. <u>2"</u>
DC Dry Core	I.D. <u>1.7"</u>
Other: _____	Material <u>steel</u>
WS Wash	Liner <u>---</u>
NX NX Core	Other <u>---</u>
CS Continuous Sampler	

DEPTH (FT.)	BIT CASING	SAMP NO.	SAMP TYPE	RECOV. FT/FT	BLOWS per 6"	SYM	SURFACE CONDITION: <u>Grass</u>	SOIL VAPOR PID ☐ FID ☐
							SOIL/ROCK DESCRIPTION	BG HS Core
0							Augered to 4'	
1							0 to 4.0' - cutting - SILT AND CLAY.	
2							Brown, trace sand, trace roots.	
3	8.25"						Moist.	
4	H.S.A.						SS1 4' to 6'	
5				18"	1		4.0' to 5.5' FINE SAND. Brown to	
6	4.25"			24"	2		red brown, loose, some silt,	
7	I.D.				2		little gravel. Moist	
8							5.5' to 6.0' NO RECOVERY	
9							Augered to 9'	
10							6.0' to 9.0' - Cutting - FINE SAND.	
							Brown to red brown, some silt,	
							little gravel. Moist	
							SS2 9' to 11'	
				16"	8		9.0' to 10.3' MEDIUM SAND. Brown	
				24"	8		med. dense, some silt, little	
							gravel. Wet.	

LOCATION SKETCH	DENSITY:	PROPORTIONS:	REMARKS/WEATHER
See Plan	GRANULAR:	COHESIVE:	
	0-10 Loose	0-4 Soft	0-10% Trace
	10-30 Med Dense	4-8 Med Stiff	10-20% Little
	30-50 Dense	8-15 Stiff	20-35% Some
	>50 Very Dense	15-30 Very Stiff	35-50% And
			70F Sunny

LOG STATUS:

PRELIMINARY: _____ FINAL: ☒



EnviroGroup Limited
 Centennial, Colorado

CLIENT Lafarge North America
 PROJECT LOCATION Windsor, CO
 PROJECT NO. LF-0538

BOREHOLE LOG

BH NO. 12
 PAGE 2 OF 2

NORTH	DRILLER <u>DRILLING ENGINEERS INC.</u>	DATE START <u>4/20/2007</u>
EAST	RIG <u>CME 75</u>	DATE FINISH <u>4/20/2007</u>
GRD ELEV	BITS <u>8.25" H.S.A.</u> FLUIDS <u>-</u>	TOTAL DEPTH <u>14.3'</u>
TOC ELEV.	LOGGED BY <u>Charoen S.</u>	WATER DEPTH <u>9'</u>

SAMPLE TYPES:

CT Cuttings
 (SS) Split Spoon
 DC Dry Core
 Other: _____

WS Wash
 NX NX Core
 CS Continuous Sampler

SAMPLER SPECIFICATIONS:

Length 2.5' Material Steel
 O.D. 2" Liner -
 I.D. 1.7" Other -

DEPTH (FT)	RIG	SAMP NO.	SAMP TYPE	RECOV FT/FT	BLOWS per 6"	SYM	SURFACE CONDITION: <u>Grass</u>	SOIL VAPOR PID ☐ FID ☐
							SOIL/ROCK DESCRIPTION	BG HS Core
10					12		10.3' to 11.0' NO RECOVERY	
11					16		Augered to 13'	
12							11.0' to 13.0' Cutting - MEDIUM SAND, Brown, some silt, little gravel. WET.	
13	8.25" H.S.A.						SS 3 13' to 15'	
14	4.25" I.D.	14.3'	SS		10 22 50/4"		13.0' to 14.3' SILTSTONE. Grey very stiff, little sand, little clay stone. Moderately weathered. Very moist.	
15							Augered to 14'	
16							END OF BOREHOLE	
17							MONITORING WELL INSTALLATION	
18							2" PVC 8-foot screen	
19							MW-12	
20							Casing & Lock cap	
							Riser -3 to 5.7' Concrete 0 to 2'	
							screen 5.7' to 13.7' Bentonite chip 2' to 5'	
							cap 13.7' - 14' Filter sand 5' to 14.3'	

LOCATION SKETCH	DENSITY:	PROPORTIONS:	REMARKS/WEATHER
See Plan	GRANULAR:	COHESIVE:	
	0-10 Loose	0-4 Soft	0-10% Trace
	10-30 Med Dense	4-8 Med Stiff	10-20% Little
	30-50 Dense	8-15 Stiff	20-35% Some
	>50 Very Dense	15-30 Very Stiff	35-50% And
			70F Sunny

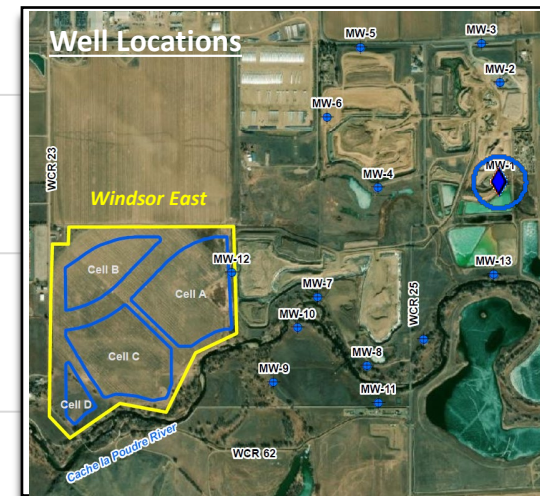
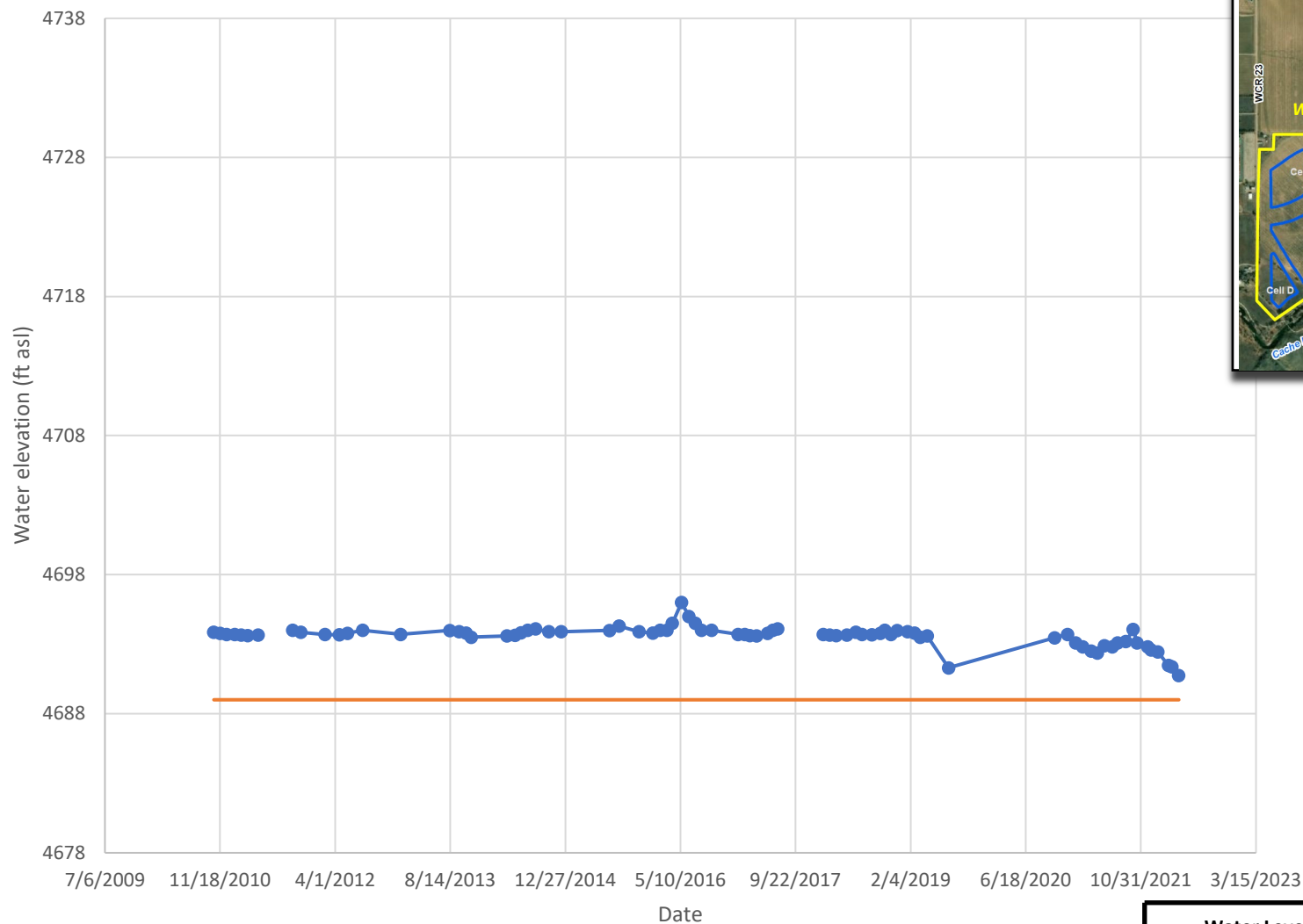
LOG STATUS:

PRELIMINARY _____ FINAL: ☒

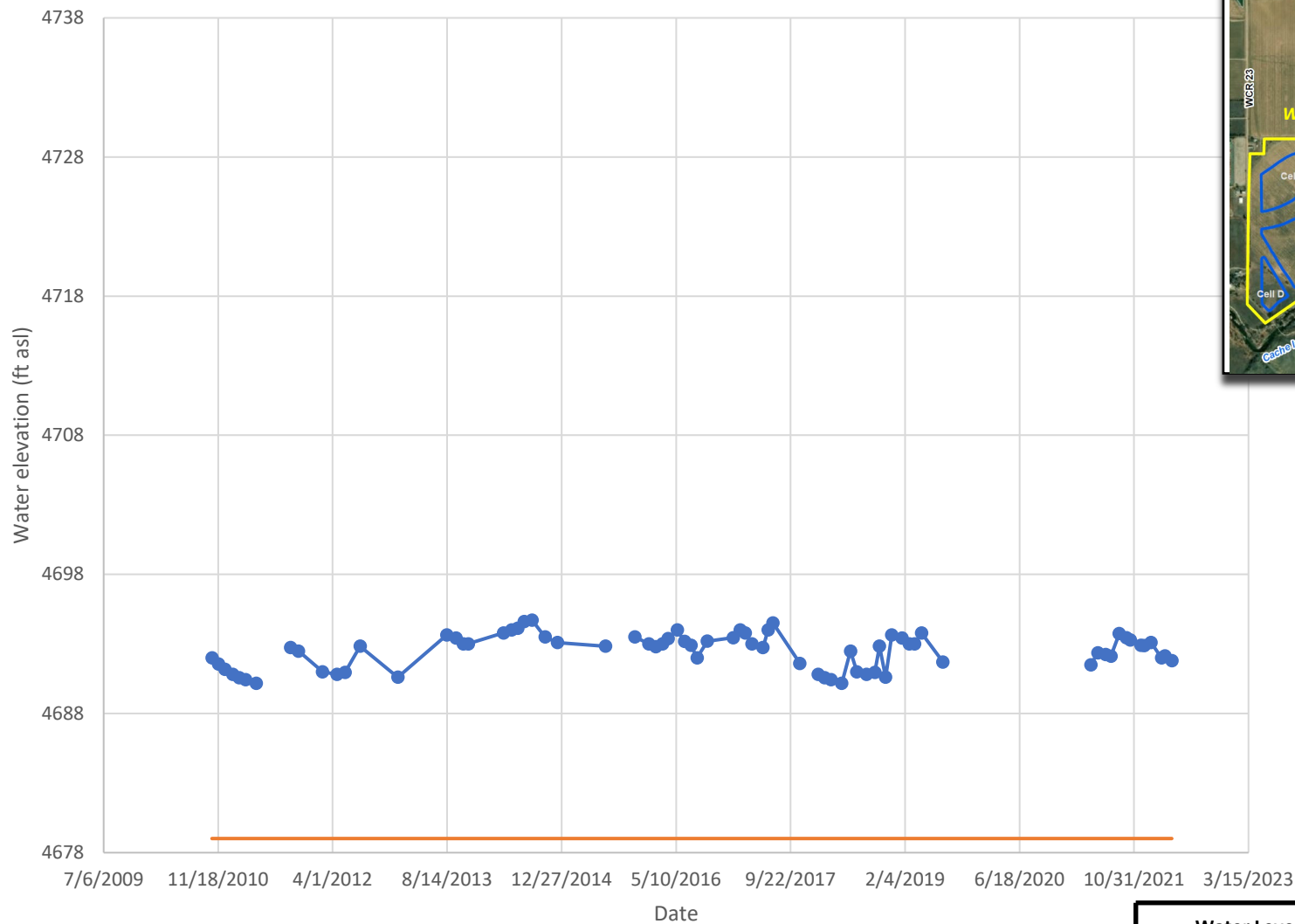


EnviroGroup Limited
 Centennial, Colorado

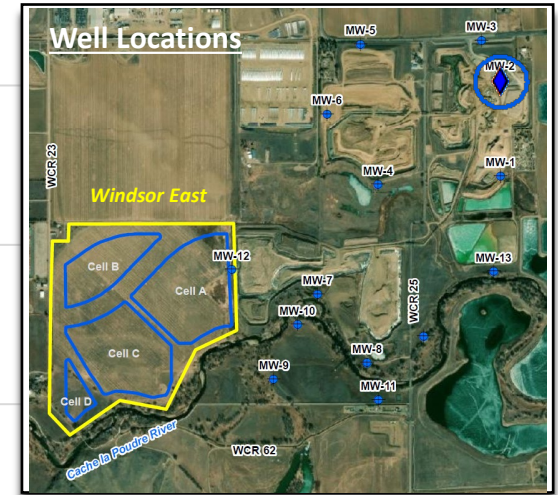
APPENDIX G-2
WATER LEVEL ELEVATION TIME-SERIES GRAPHS (HYDROGRAPHS)
PARSONS MINE MONITORING WELLS



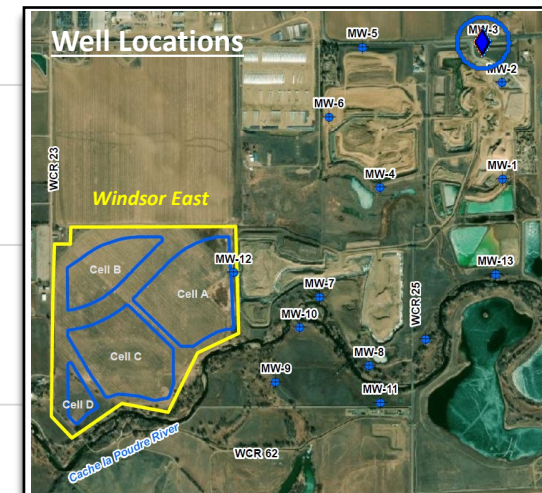
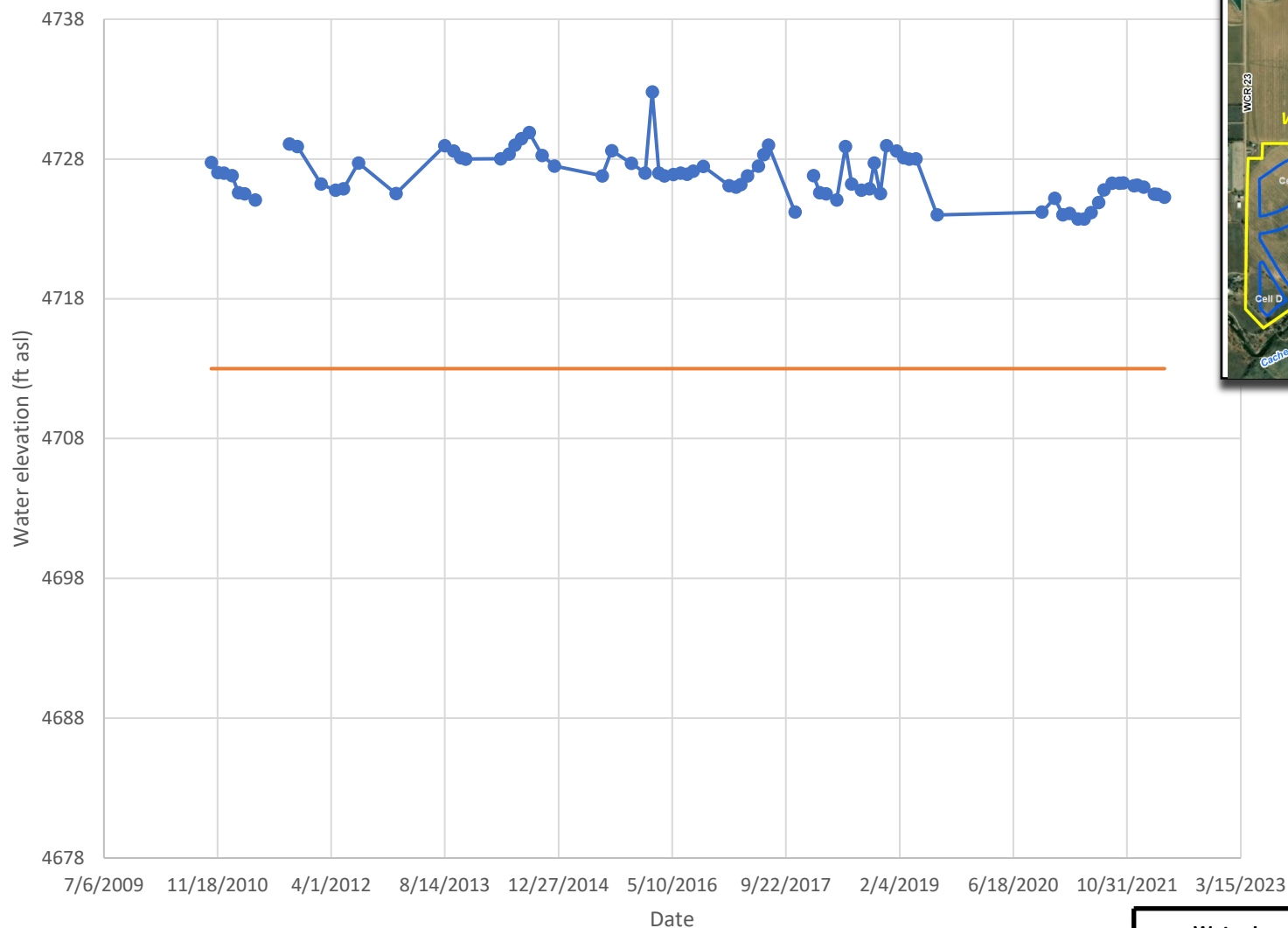
TITLE: Water Level Elevation at Parson Monitoring Well MW-1 MARTIN MARIETTA			
LOCATION: Windsor East Mine, Windsor, Colorado			
 TETRA TECH	APPROVED	CG	FIGURE G-1
	DRAFTED	KG, DS	
	PROJECT #	117-8741006	
	DATE	08/01/2022	



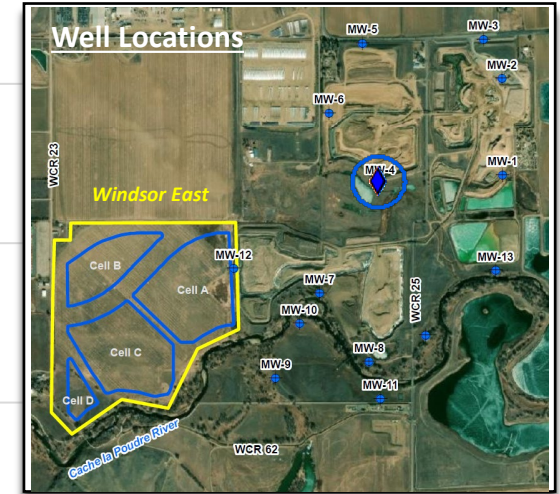
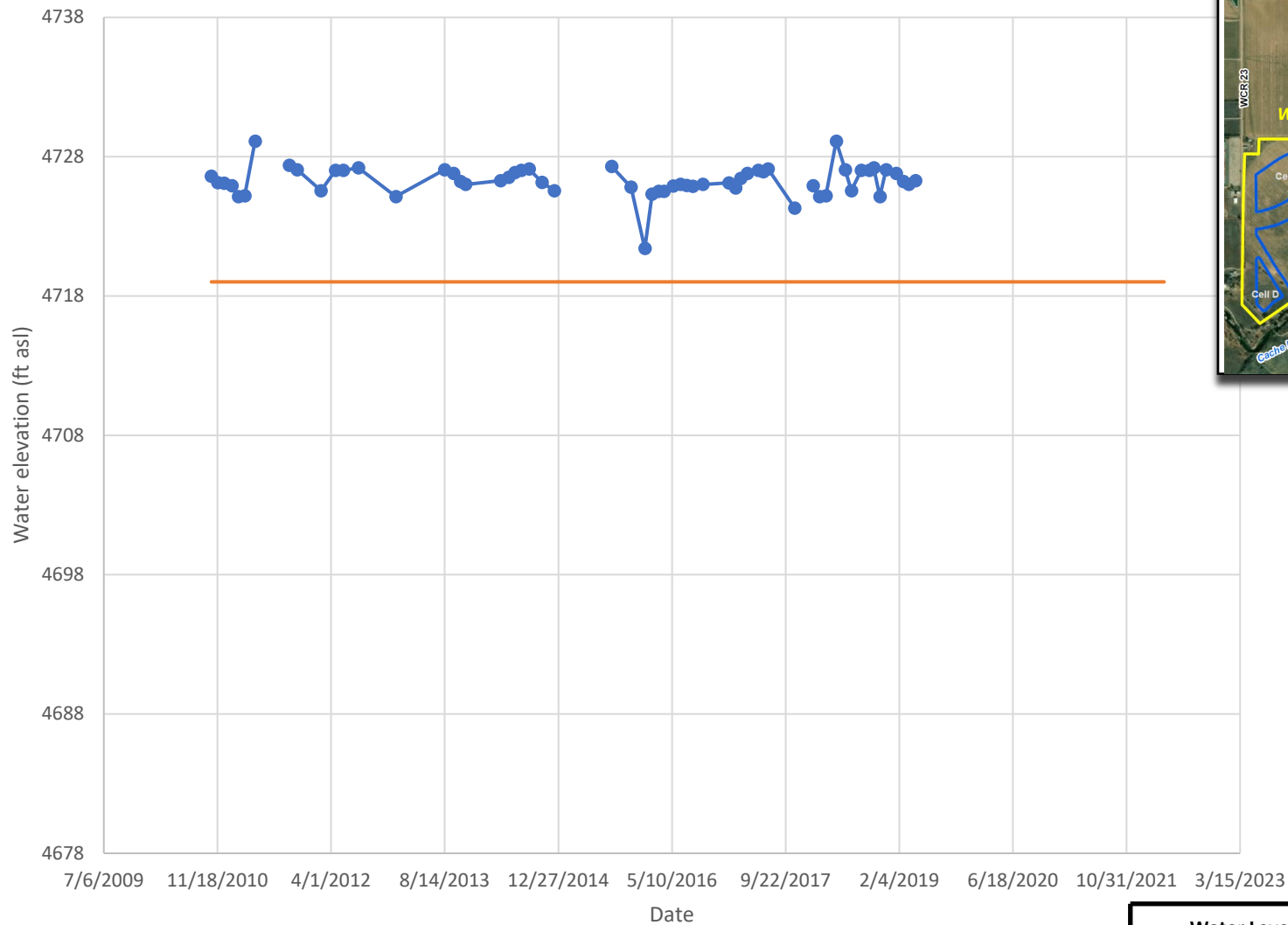
● Water Level
 — Bedrock Elevation



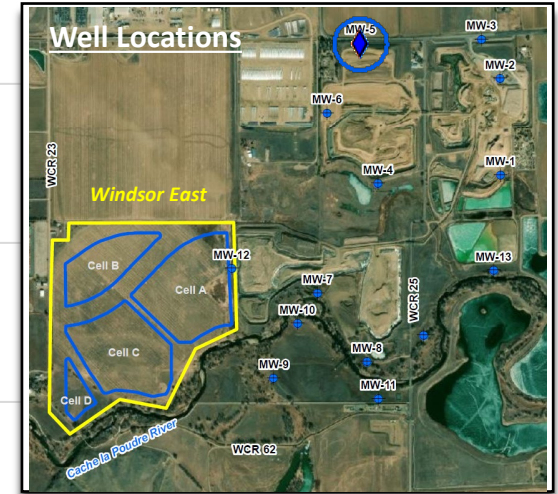
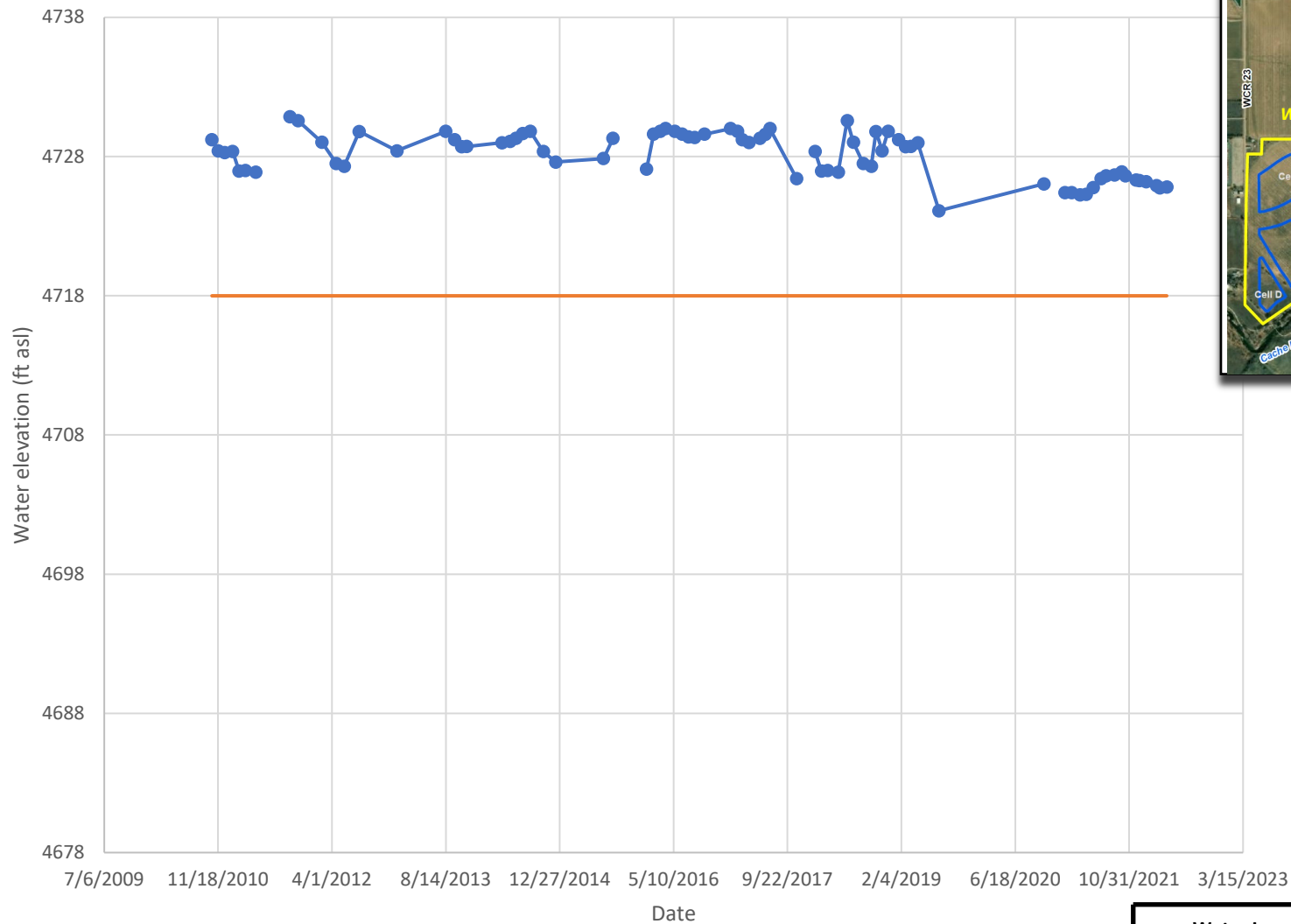
TITLE: Water Level Elevation at Parson Monitoring Well MW-2 MARTIN MARIETTA			
LOCATION: Windsor East Mine, Windsor, Colorado			
 TETRA TECH	APPROVED	CG	FIGURE G-2
	DRAFTED	KG, DS	
	PROJECT #	117-8741006	
	DATE	08/01/2022	



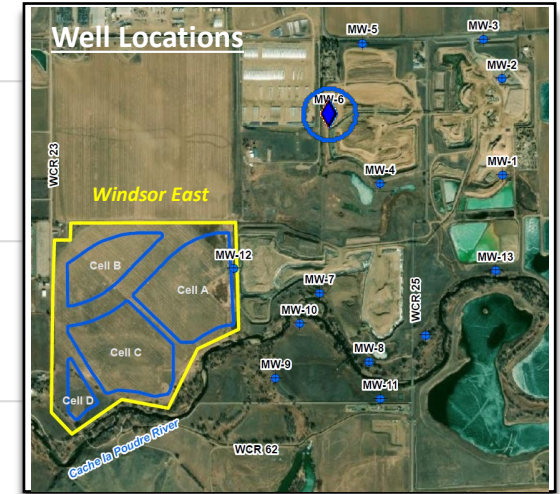
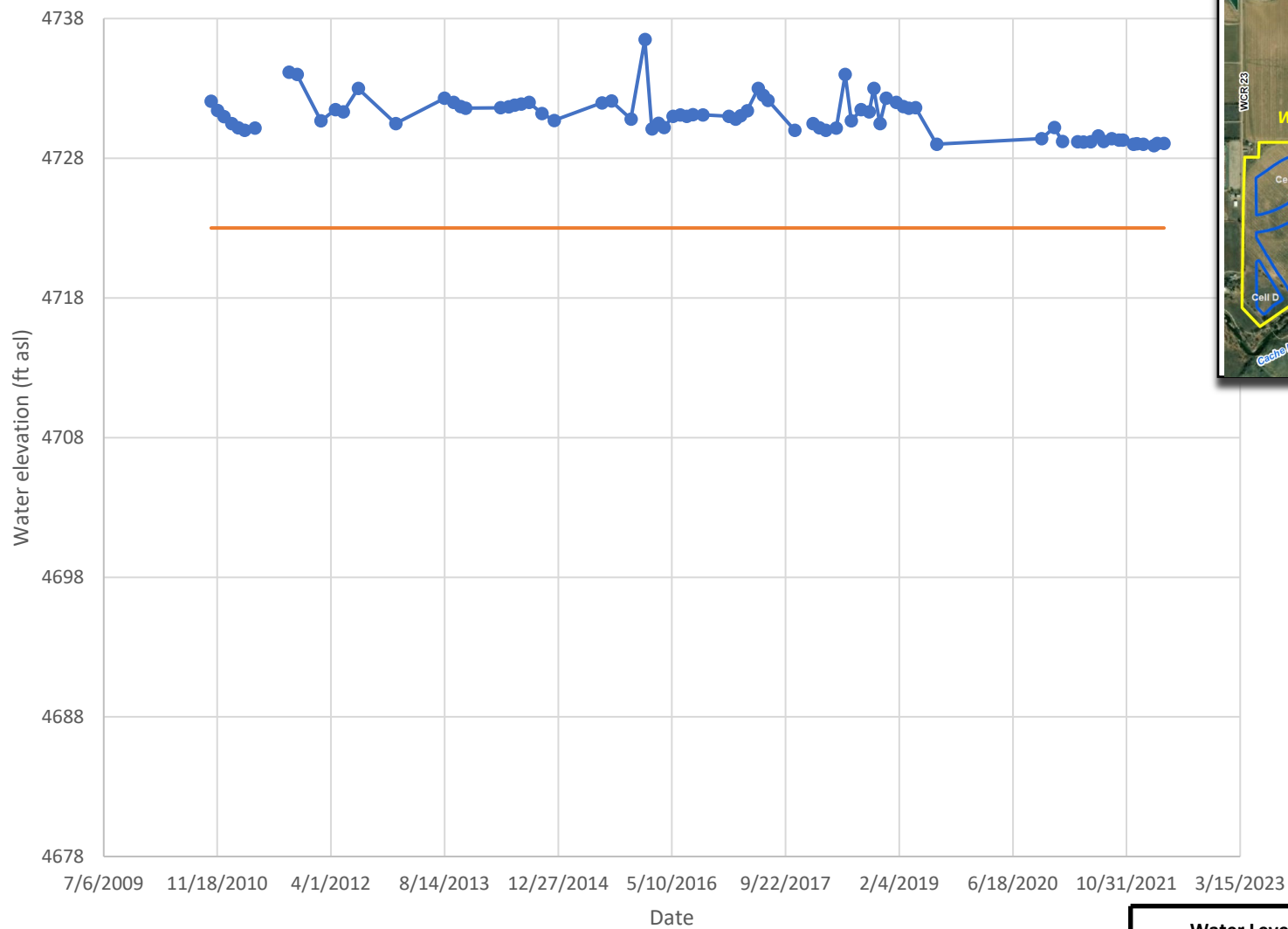
TITLE: Water Level Elevation at Parson Monitoring Well MW-3 MARTIN MARIETTA			
LOCATION: Windsor East Mine, Windsor, Colorado			
 TETRA TECH	APPROVED	CG	FIGURE G-3
	DRAFTED	KG, DS	
	PROJECT #	117-8741006	
	DATE	08/01/2022	



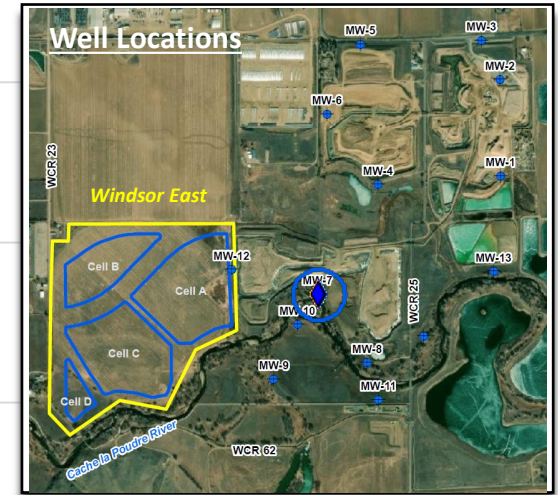
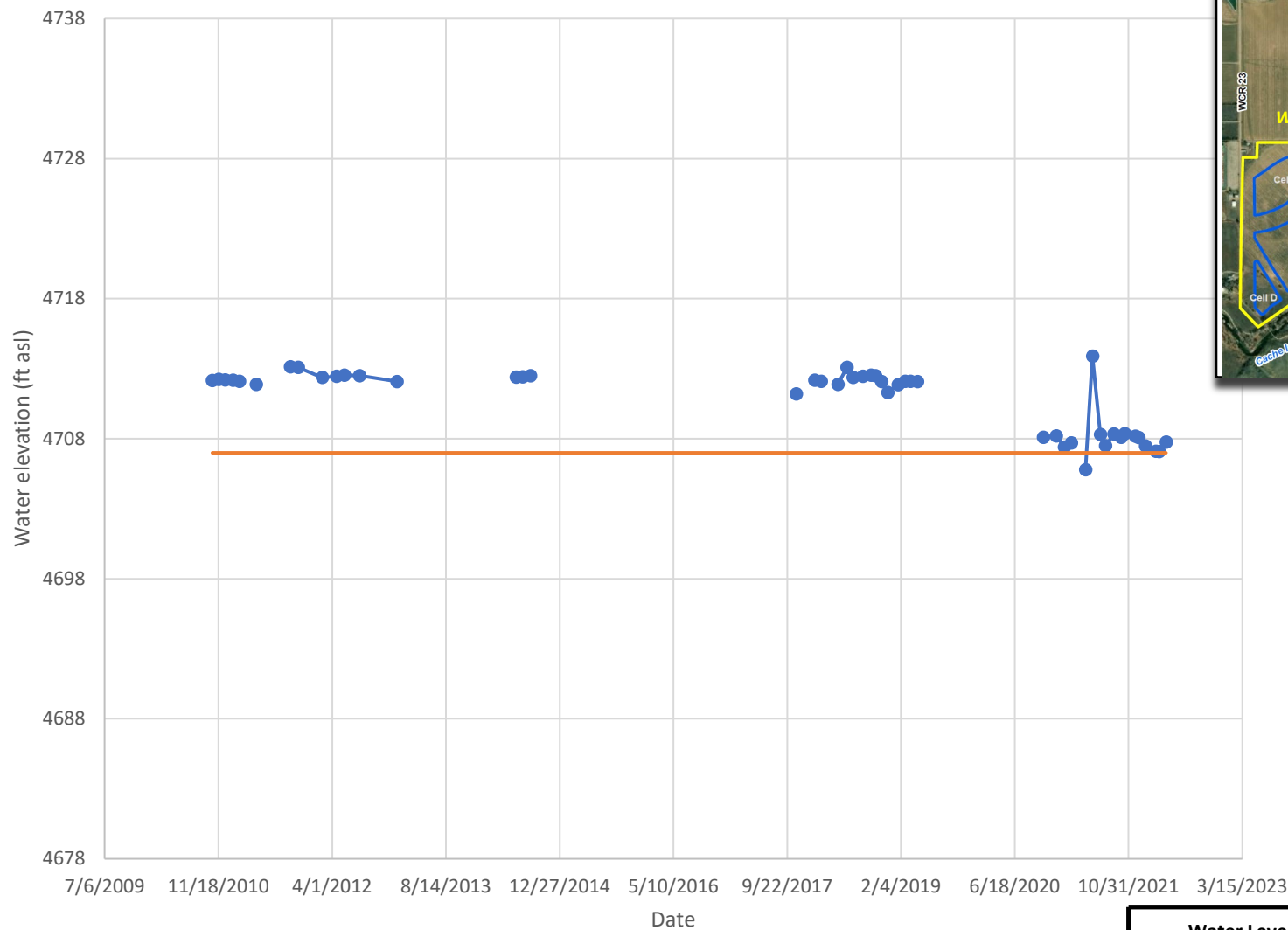
TITLE: Water Level Elevation at Parson Monitoring Well MW-4 MARTIN MARIETTA			
LOCATION: Windsor East Mine, Windsor, Colorado			
 TETRA TECH	APPROVED	CG	FIGURE G-4
	DRAFTED	KG, DS	
	PROJECT #	117-8741006	
	DATE	08/01/2022	



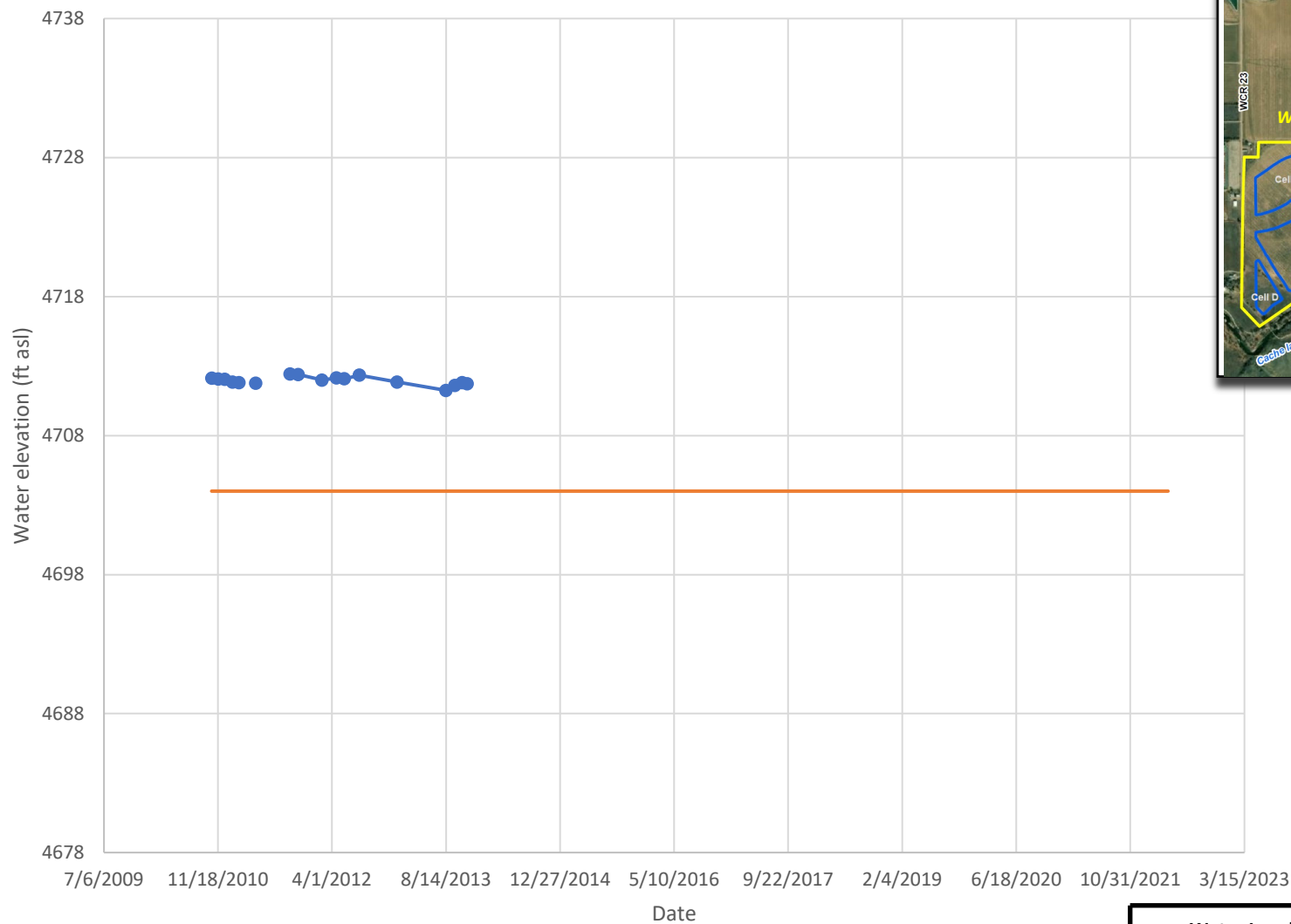
TITLE: Water Level Elevation at Parson Monitoring Well MW-5 MARTIN MARIETTA			
LOCATION: Windsor East Mine, Windsor, Colorado			
 TETRA TECH	APPROVED	CG	FIGURE G-5
	DRAFTED	KG, DS	
	PROJECT #	117-8741006	
	DATE	08/01/2022	



TITLE: Water Level Elevation at Parson Monitoring Well MW-6 MARTIN MARIETTA			
LOCATION: Windsor East Mine, Windsor, Colorado			
 TETRA TECH	APPROVED	CG	FIGURE G-6
	DRAFTED	KG, DS	
	PROJECT #	117-8741006	
	DATE	08/01/2022	

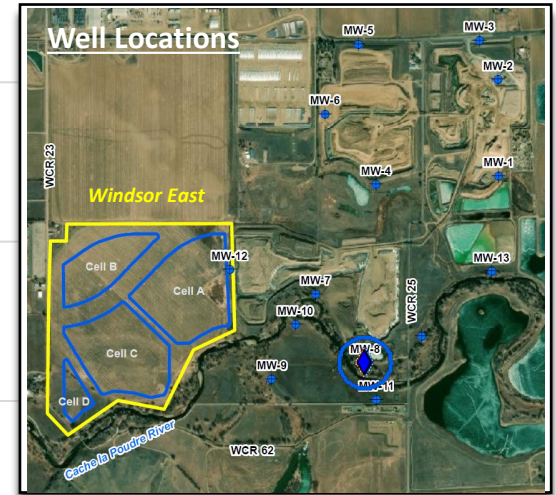


TITLE: Water Level Elevation at Parson Monitoring Well MW-7 MARTIN MARIETTA			
LOCATION: Windsor East Mine, Windsor, Colorado			
 TETRA TECH	APPROVED	CG	FIGURE G-7
	DRAFTED	KG, DS	
	PROJECT #	117-8741006	
	DATE	08/01/2022	

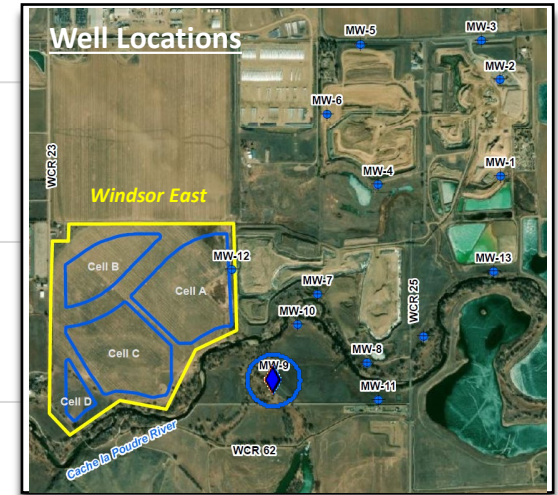
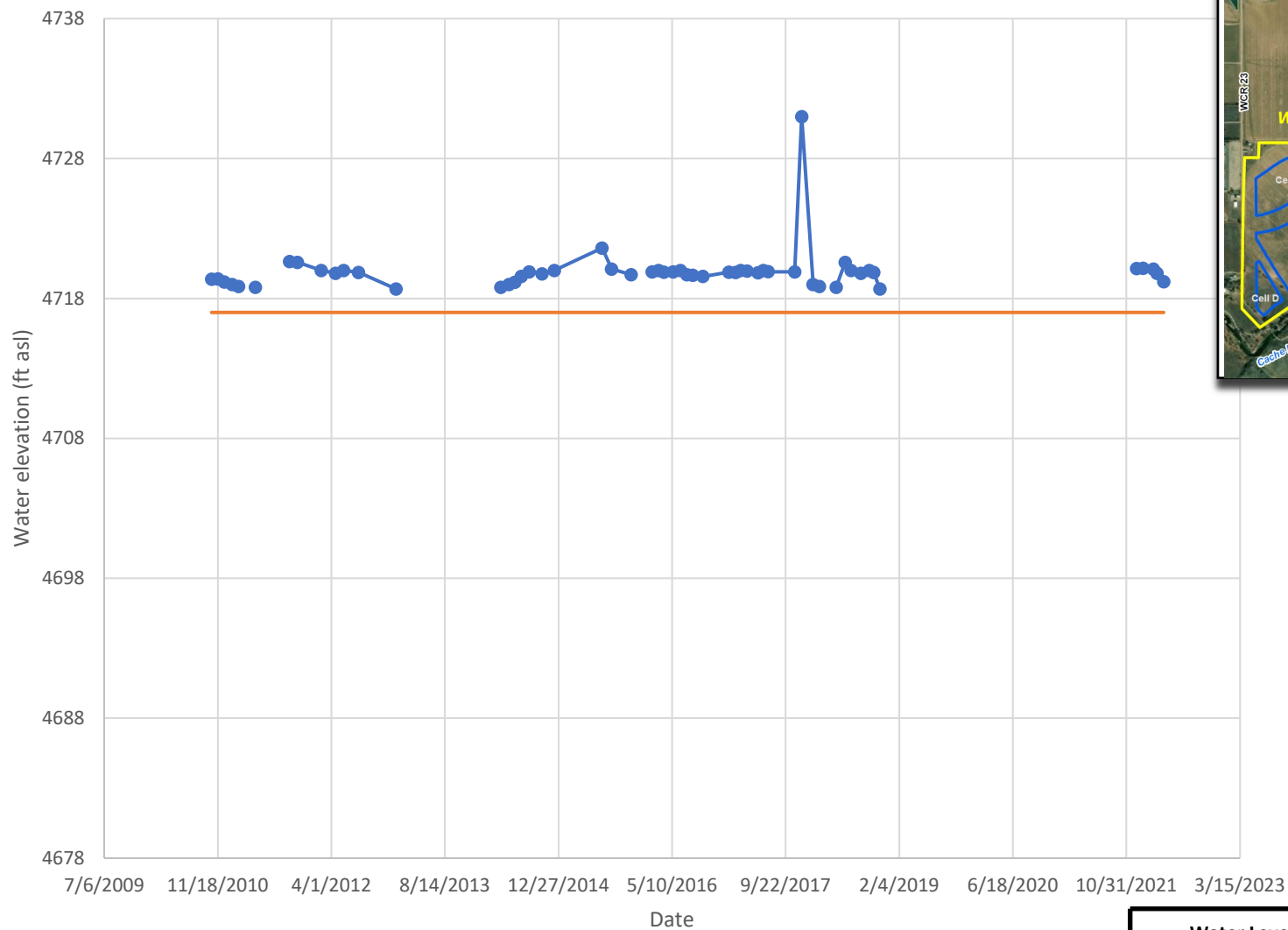


● Water Level
— Bedrock Elevation

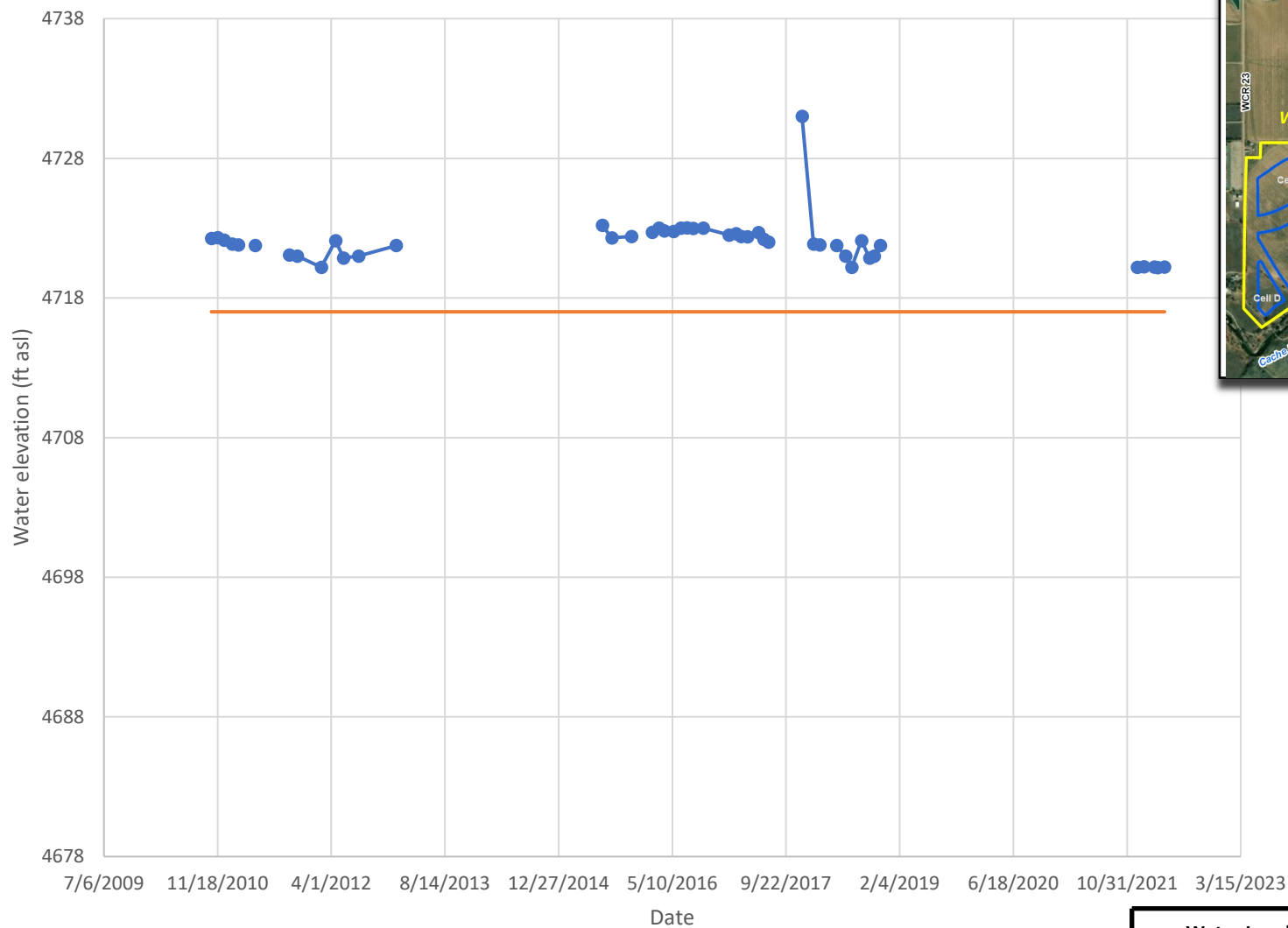
Land surface elevation = 4721 ft asl
Note: Elevations are referenced to the surface elevation provided by Martin Marietta, which is believed to be estimated from local topographic map contours.



TITLE: Water Level Elevation at Parson Monitoring Well MW-8 MARTIN MARIETTA			
LOCATION: Windsor East Mine, Windsor, Colorado			
 TETRA TECH	APPROVED	CG	FIGURE G-8
	DRAFTED	KG, DS	
	PROJECT #	117-8741006	
	DATE	08/01/2022	



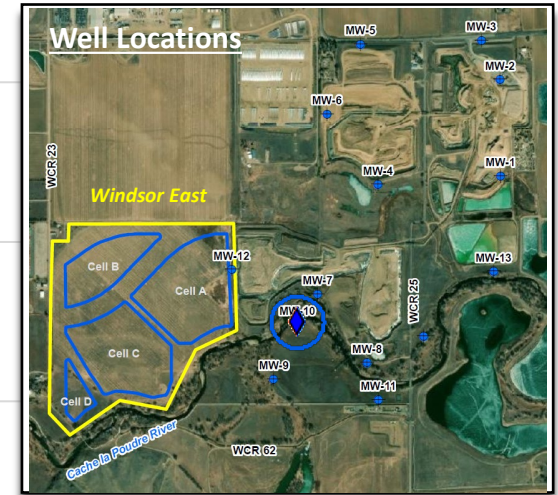
TITLE: Water Level Elevation at Parson Monitoring Well MW-9 MARTIN MARIETTA			
LOCATION: Windsor East Mine, Windsor, Colorado			
 TETRA TECH	APPROVED	CG	FIGURE G-9
	DRAFTED	KG, DS	
	PROJECT #	117-8741006	
	DATE	08/01/2022	



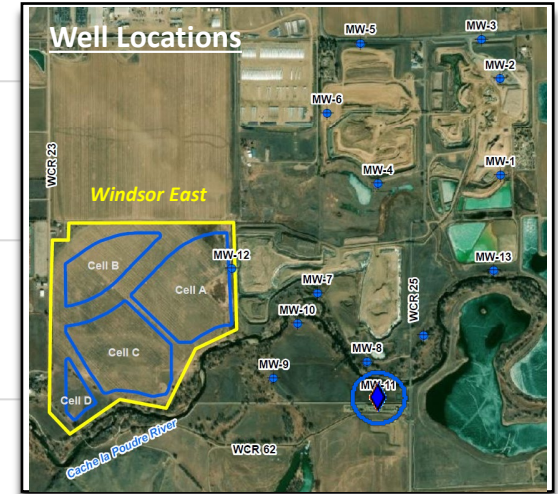
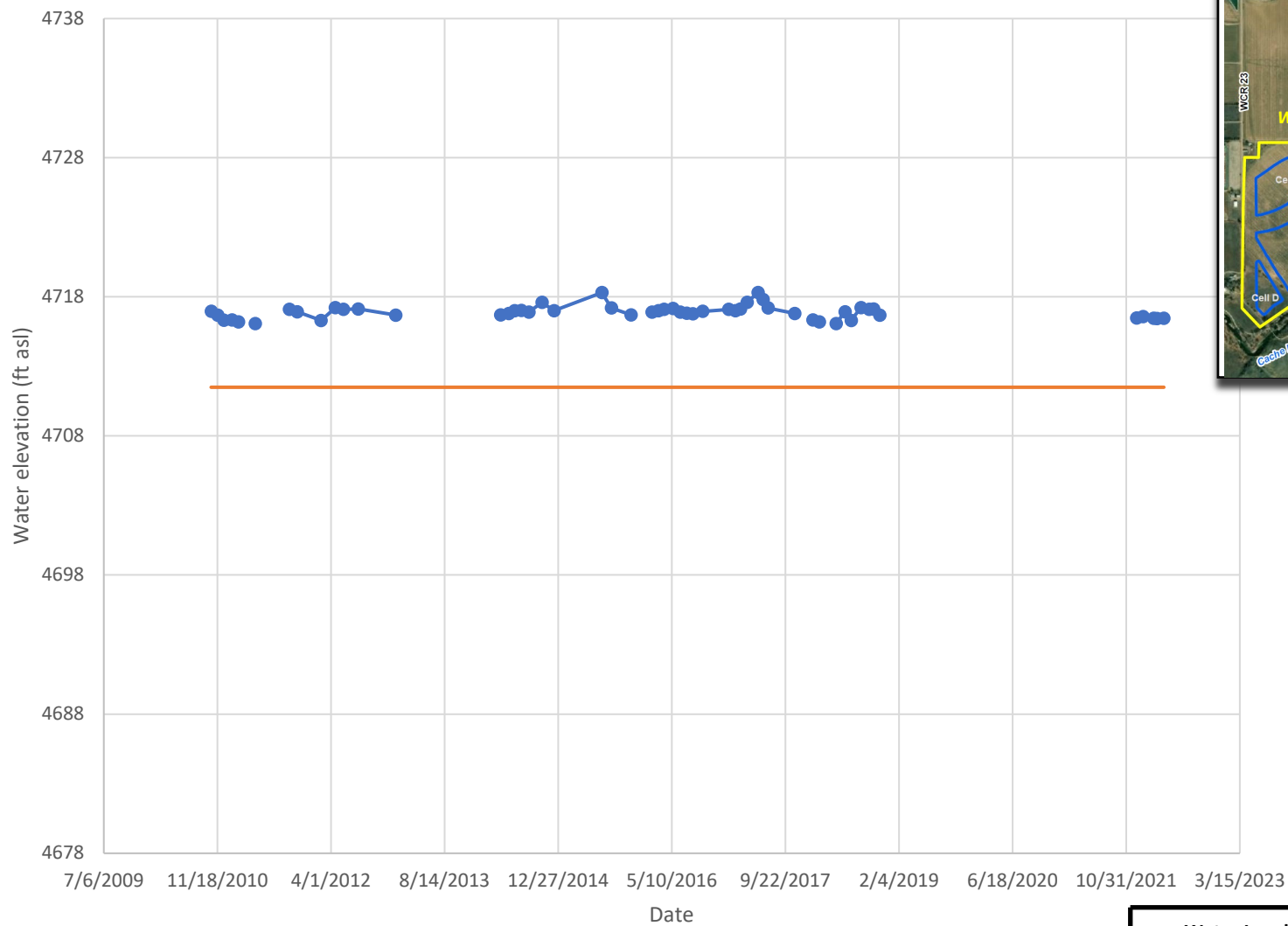
Water Level
 Bedrock Elevation

Land surface elevation = 4731 ft asl

Note: Elevations are referenced to the surface elevation provided by Martin Marietta, which is believed to be estimated from local topographic map contours.



TITLE: Water Level Elevation at Parson Monitoring Well MW-10 MARTIN MARIETTA			
LOCATION: Windsor East Mine, Windsor, Colorado			
TETRA TECH	APPROVED	CG	FIGURE G-10
	DRAFTED	KG, DS	
	PROJECT #	117-8741006	
	DATE	08/01/2022	



TITLE: Water Level Elevation at Parson Monitoring Well MW-11 MARTIN MARIETTA			
LOCATION: Windsor East Mine, Windsor, Colorado			
 TETRA TECH	APPROVED	CG	FIGURE G-11
	DRAFTED	KG, DS	
	PROJECT #	117-8741006	
	DATE	08/01/2022	

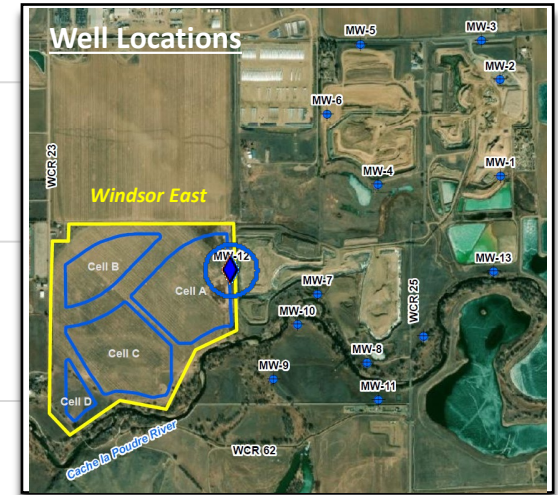


● Water Level

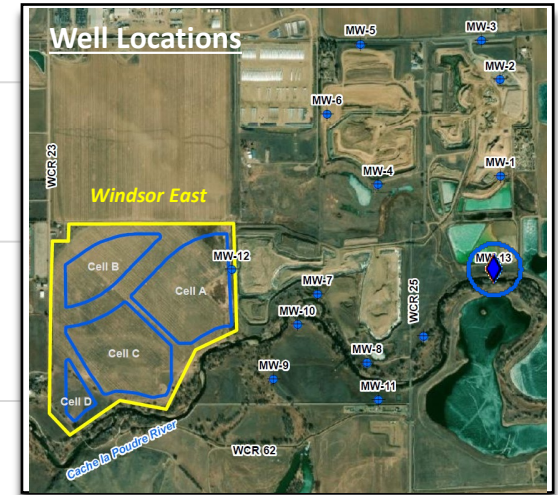
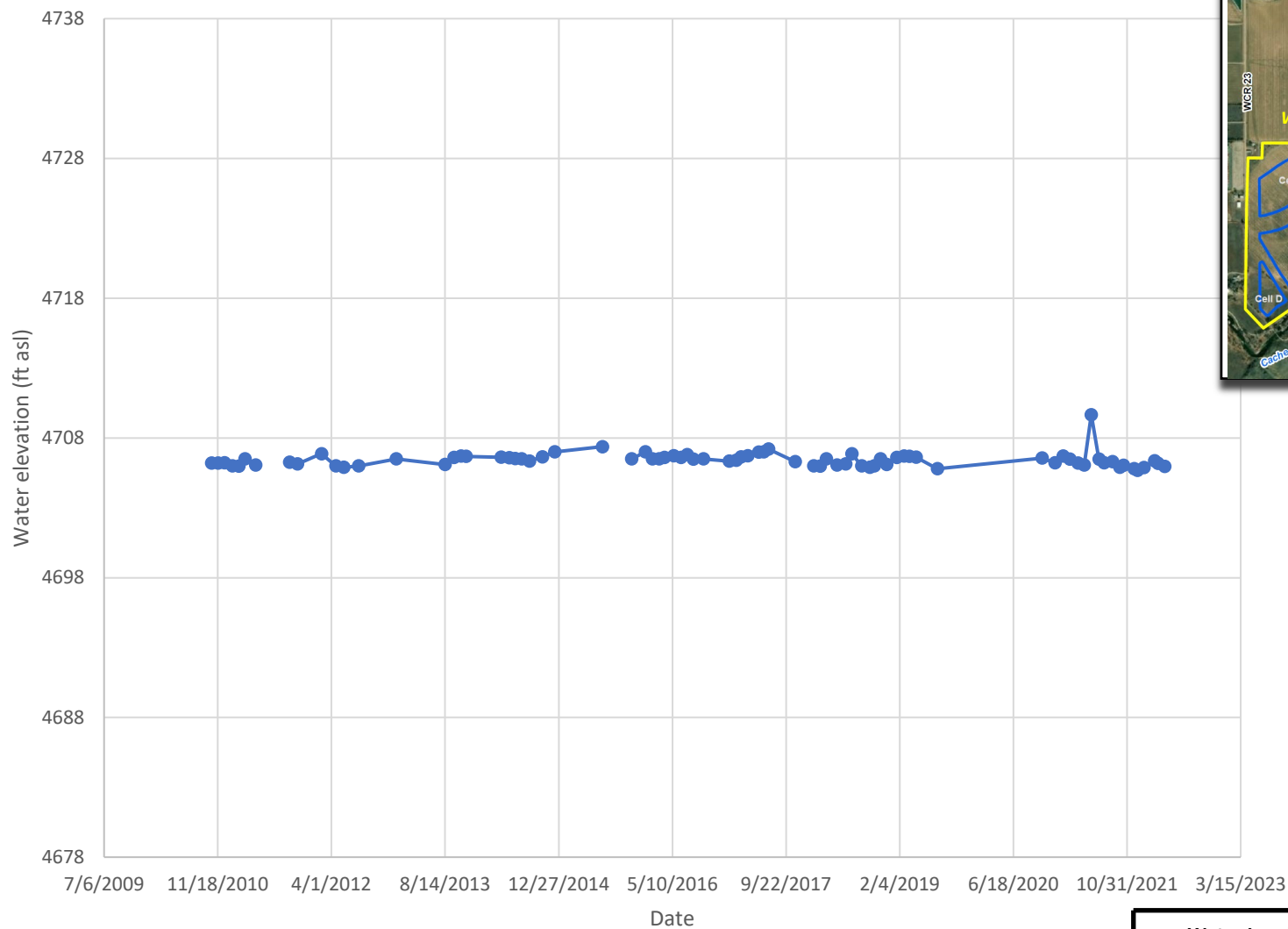
— Bedrock Elevation

Land surface elevation = 4728 ft asl

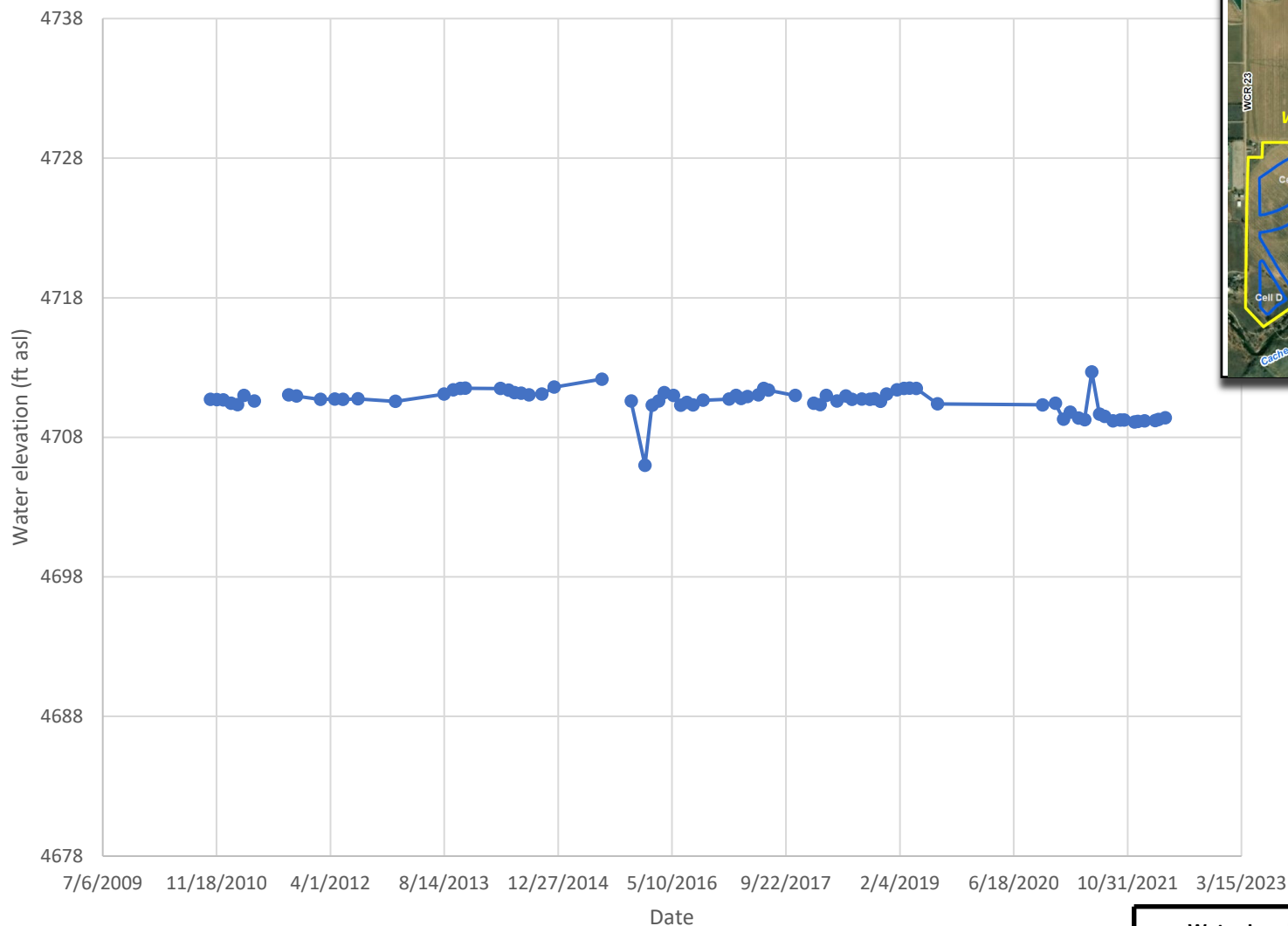
Note: Elevations are referenced to the surface elevation provided by Martin Marietta, which is believed to be estimated from local topographic map contours.



TITLE: Water Level Elevation at Parson Monitoring Well MW-12			
MARTIN MARIETTA			
LOCATION: Windsor East Mine, Windsor, Colorado			
 TETRA TECH	APPROVED	CG	FIGURE G-12
	DRAFTED	KG, DS	
	PROJECT #	117-8741006	
	DATE	08/01/2022	



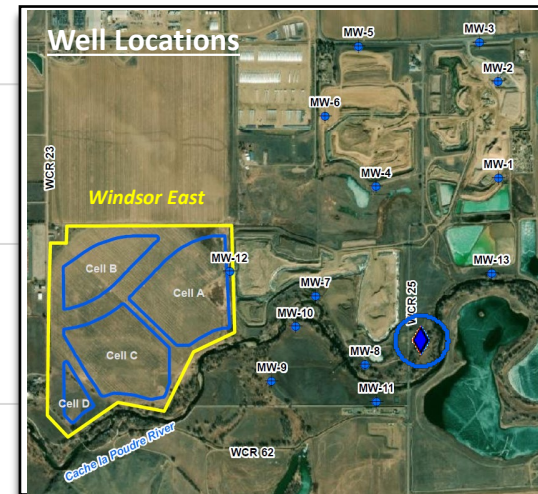
TITLE: Water Level Elevation at Parson Monitoring Well MW-13 MARTIN MARIETTA			
LOCATION: Windsor East Mine, Windsor, Colorado			
 TETRA TECH	APPROVED	CG	FIGURE G-13
	DRAFTED	KG, DS	
	PROJECT #	117-8741006	
	DATE	08/01/2022	



—●— Water Level

Land surface elevation = 4720 ft asl

Note: Elevations are referenced to the surface elevation provided by Martin Marietta, which is believed to be estimated from local topographic map contours.



TITLE: Water Level Elevation at Parson Monitoring Well MW-14
MARTIN MARIETTA

LOCATION: Windsor East Mine, Windsor, Colorado



APPROVED	CG
DRAFTED	KG, DS
PROJECT #	117-8741006
DATE	08/01/2022

FIGURE
G-14

APPENDIX G-3
SAMPLE COLLECTION PROTOCOLS

ATTACHMENT G-3: GROUNDWATER MONITORING AND SAMPLE COLLECTION PROCEDURES

1.1 SCOPE AND APPLICATION

The purpose of this Standard Operating Procedure (SOP) is to provide guidance for determining the depth to water in a well using an electronic water level indicator. In this SOP, wells are defined as monitoring wells, piezometers, temporary well points, and potable wells. Permanent wells should be surveyed such that wells can be located and water elevations can be determined. At sites where there are multiple wells, a complete round of water level measurements should be collected site-wide prior to commencement of activities that will affect groundwater levels.

A permanent survey mark should be placed on the top of the well casing (TOC) as a reference point for groundwater level measurements. If the lip of the riser pipe/well casing is not flat, a notch can be made on the polyvinyl chloride (PVC) riser and used as the reference point. Alternatively, the reference point may be located on the top of the outer protective casing (if present). If using a measurement reference point, it must be documented in a site-specific logbook or on a field data sheet. All field personnel must be informed of the measurement reference point used to ensure the collection of consistent data.

1.2 WATER-LEVEL MONITORING

An electronic water-level indicator is used to measure the depth to water in each well. The indicator consists of a wired cable with a probe at the end. When the probe contacts water, the water completes a circuit causing the indicator to emit a sound at the surface. The water-level indicator should be turned on, then lowered until the probe emits a tone indicating contact with water. The distance from the water surface to the TOC should then be recorded using the gradational scale on the cable. The water level measurement should be recorded on a water-level monitoring field form or notebook, then the measurement should be repeated to confirm the reading. All measurements should be recorded to one hundredth (0.01) of a foot. It is important to record the date and time of each measurement along with the well identification and the depth-to-water value since water levels can vary over time. Water level measuring equipment will be cleaned of visible water and particulate matter prior to and after use at each measuring location via wiping/rinsing.

The groundwater elevation can then be calculated by subtracting the depth-to-water measurement from the surveyed TOC elevation.

1.3 WATER QUALITY SAMPLE COLLECTION

The procedure for collecting a water quality sample involves the use of a pump or bailer to remove three well-volumes of water from the well to ensure that the water remaining is representative of aquifer water, then to use the pump or bailer to pass samples of water through a filter to remove suspended particles and collect the filtered sample in a bottle.

1.3.1 Well Purging

An adequate purge is normally achieved using this method by removing three well volumes of standing groundwater at relatively high flow rates prior to sampling while recording the pumping rate, discharge volume, water level and routine groundwater parameters over time. Routine groundwater parameters should include temperature, pH, and specific electrical conductance at a minimum, but may additionally include turbidity. It is

assumed that stabilization of the groundwater measurements indicates the purge water is representative of ambient water from the underlying aquifer. Groundwater quality parameters are generally considered stabilized after three consecutive sets of readings do not vary by more than 10 percent (%), however the criteria for sample collection will be based on purge volume, rather than parameter stability. The time between readings (typically 5 to 10 minutes) should be chosen to ensure enough data have been collected to document the stability of parameters. If the calculated purge volume is large, measurements taken every 15 minutes may be adequate.

To calculate the volume of a well, use the following equation:

$$\text{Well Volume (gallons)} = \pi r^2 h k$$

where:

$$\pi = 3.14$$

r = radius of monitor well (feet)

h = height of the water column (feet). (This may be determined by subtracting the:
depth to water from the total depth of the well as measured from the same
reference point).

k = conversion factor, 7.48 gallons per cubic foot (gal/ft³)

The volume, in gallons per linear foot, for various standard monitoring well diameters (nominal):

Well diameter (inches)	<u>2</u>	<u>3</u>	<u>4</u>
Volume (gal/ft.)	0.1631	0.3670	0.6528

1.3.2 Sample Preservation and Containers

Groundwater samples will be collected in bottles which are chosen to be appropriate for the analysis by an analytical laboratory, and may be supplied directly by the laboratory. The analytical method specifies the type of bottle, preservative, holding time and filtering requirements for a groundwater sample. Samples should be collected, when possible, directly from the sampling device into appropriate sample containers, with an appropriate sample identification label. Record all pertinent data in a site-specific logbook and on a laboratory-supplied chain of custody (COC) record.

The samples should be placed in a cooler and maintained at less than or equal ($\leq$) to 4 degrees Celsius (C) and protected from sunlight. Ideally, samples should be transported to the analytical laboratory within 24 hours of collection. If large numbers of samples are being collected, shipments may occur on a regular basis after consulting the analytical laboratory. In all circumstances, samples need to be analyzed before the holding time expires.

1.3.3 Sample Collection

After purging, groundwater samples may be collected using a bailer or the flow-stream from the pump. Samples collected for dissolved metals analysis require filtration. Groundwater is primarily filtered to exclude silt and other particulates from the samples that would interfere with the laboratory analysis. In-line filters (typically 0.45-micron) are used specifically for the preparation of groundwater samples for dissolved metals analysis, and for filtering large volumes of turbid groundwater. An in-line filter can be used with a peristaltic pump to transfer the sample from the original sample bottle, through the filter, and into a new sample container. The filter must be replaced between sampling locations.

The filters used in groundwater sampling are self-contained and disposable. Disposable filters are preferred and often used to reduce cross-contamination of groundwater samples. Disposable filter chambers are constructed of polypropylene material, with an inert filtering material within the housing.

The proper collection of a sample for VOC analysis requires minimal disturbance of the sample to limit volatilization. The following procedures are required to be used:

1. Open the vial, set cap in a clean place, and collect the sample. When collecting duplicate samples; collect both samples at the same time.
2. Fill the vial to almost overflowing. Do not rinse the vial, or let it excessively overflow. It needs to have a convex meniscus on the top of the vial before securing the cap.
3. Check that the cap has not been contaminated and place the cap directly over the top and screw down firmly. Do not over tighten the cap.
4. Invert the vial and tap gently. Observe vial for at least 10 seconds. If an air bubble appears, unscrew the cap and pop the bubble or refill with more sample then re-seal. Do not collect a sample with air trapped in the vial.
5. The holding time for unpreserved samples to be analyzed for VOCs is 7 or 14 days for preserved samples. Samples should be shipped or delivered to the laboratory as fast as practical in order to allow the laboratory time to analyze the samples within the holding time. Ensure that the samples are stored at ≤ 4 degrees C during transport but do not allow them to freeze.

1.3.3.1 Bailer Purging

Wells are typically purged using either pumps or bailing. Bailing is a process in which a plastic disposal bottom loading bailer with a string or thin rope attached is lowered by hand into a well, allowed to fill with water, and then retrieved. Once retrieved the water in the bailer is decanted into containers on the ground surface for subsequent disposal.

Manual bailing, or the use of dedicated or disposable bottom loading drop bailer approximating 3 feet in length and one liter storage capacity, attached by a string or rope to remove water from a small diameter well for well development and/or sampling is performed as follows:

- Open the well protector top, typically removing the protective lock and/or unbolting the cover, to access the well riser piping.
- Affix the bailer to the rope, string, or cord with a knotting technique that will ensure its permanent attachment and prevent bailer loss over the course of the purging cycle. Knots can loosen or slip when the rope becomes wet in conjunction with the application of the additional weight of the full bailer.
- Place the bailer in the well and lower it to the water table surface, slowly allowing the bailer to sink and fill with water (this avoids turbulent flow of water in the wells casing and minimizes off gassing).
- Retrieve the bailer by manually pulling the attached rope by either coiling it hand over hand or allowing it to collect onto the plastic sheeting on the ground until the bailer exits the well riser. Then grasp the bailer and decant the purge water into a bucket or other interim container. This procedure is repeated until the prescribed volume of water has been purged from the well.

1.3.3.2 Mechanical Pump Purging

Small diameter electric submersible pumps may be employed for some circumstances. Comparatively high volume pumps, such as a “Whale” or “Keck” model/brand employ a 12v battery or rechargeable power source may be used individually or in series to accommodate deep pumping situations or increase pumping volume.

Although this document does not provide a specific description for the use of each type of pump, the application and field use of a small diameter 12v pump such as a "Whale Pump" or equivalent is as follows:

- Measure the overall well depth and construct the pump with supply tubing "string" accordingly, allowing extra tubing length as necessary to accommodate discharge to storage and/or sampling containers. The electrical wire supply line should be of adequate gauge and constructed to a length sufficient to access a nearby power source. Multiple "in-line" pumps may be used in accordance with manufacturers suggested recommendations to facilitate an adequate pumping rate and volume in deep wells.
- Lower the supply tubing with attached pump(s) in the well to the desired depth, commonly near the well bottom or lower level of the screened interval. The pumping "string" can be affixed to a permanent object, typically the riser protective piping, with a small clamp to keep the pumps from contacting the bottom of the well or maintain a desired or prescribed sampling depth.
- Attached the electrical supply wires employing small clamps on the positive (+) and negative (-) battery terminal in the event a standard 12v automobile battery is utilized as power source or insert the plug to the cigarette plug-in if wired accordingly. There will be a short delay until the pumps engage and flow is actuated if wired correctly and the power source is adequate.
- As water flows from the supply tubing, place the purged water into an interim storage container, commonly a five-gallon bucket, for transport to a long term storage or staging area pending disposal analysis. The direct discharge of purged water may be warranted based on historical site findings or client direction.
- Continue with the pumping/storage/disposal routine until the desired or prescribed volume of water has been removed.