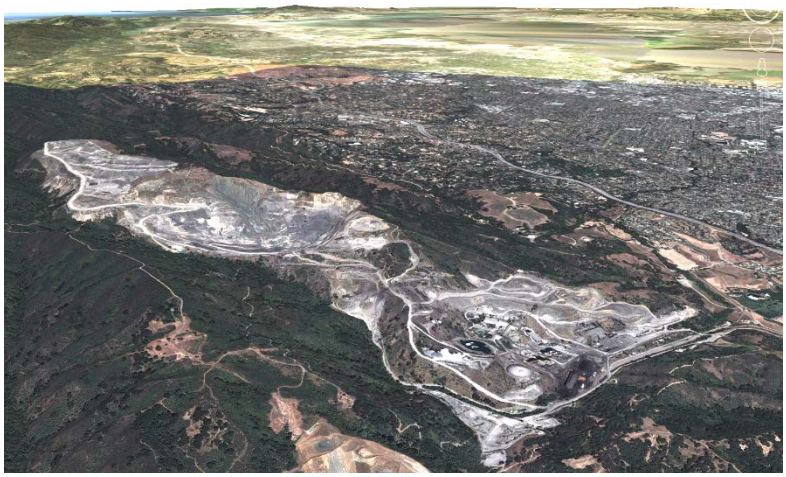
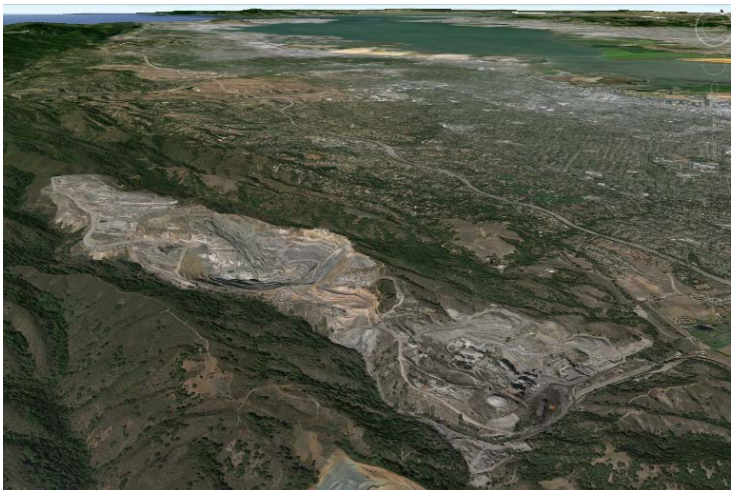
ANNUAL REPORT NO. 2

LEHIGH PERMANENTE QUARRY
RECLAMATION PLAN AMENDMENT (RPA)

Santa Clara County File # 2250-12PAM1
State Mine ID: 91-43-0004



JULY 2012



JULY 2014

LEAD AGENCY:

County of Santa Clara

NOVEMBER 2014

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Appendices

Due to file size, Appendices D, E, and F are on CD at the back of this report.

Figures

The Lehigh Permanente Quarry (Quarry) is a limestone and aggregate mining operation located in the unincorporated foothills of Santa Clara County. On June 26, 2012, the Santa Clara County Board of Supervisors approved the 2012 Reclamation Plan Amendment (referred to as RPA) for the Quarry. RPA Condition of Approval #8 requires that the County prepare an Annual Report summarizing compliance with the RPA and the associated conditions of approval.

This is the second Lehigh Permanente Quarry RPA Annual Report (AR 2) and provides public documentation of Quarry compliance for the monitoring period 2013-2014. Section 1 provides an introduction and overview of the content of AR 2. A description of current operations at the Quarry is provided in Section 2. Section 3 provides a summary of compliance with the conditions of approval, with additional information regarding compliance. Additional data including aerials, maps, site inspection information, and technical reports are provided in Appendices A through E, along with a table demonstrating specific compliance for each condition of approval. This report, as well as prior annual reports, can be viewed on the County's website links to Lehigh or Permanente Quarry at http://www.sccplanning.org.

For the current reporting period, Marina Rush, Planner III, was the project manager for the Santa Clara County Planning Office for the Lehigh Permanente Quarry Reclamation Plan condition compliance monitoring. Specific questions regarding this report should be directed to Marina Rush at Marina.Rush@pln.sccgov.org or (408)299-5784.

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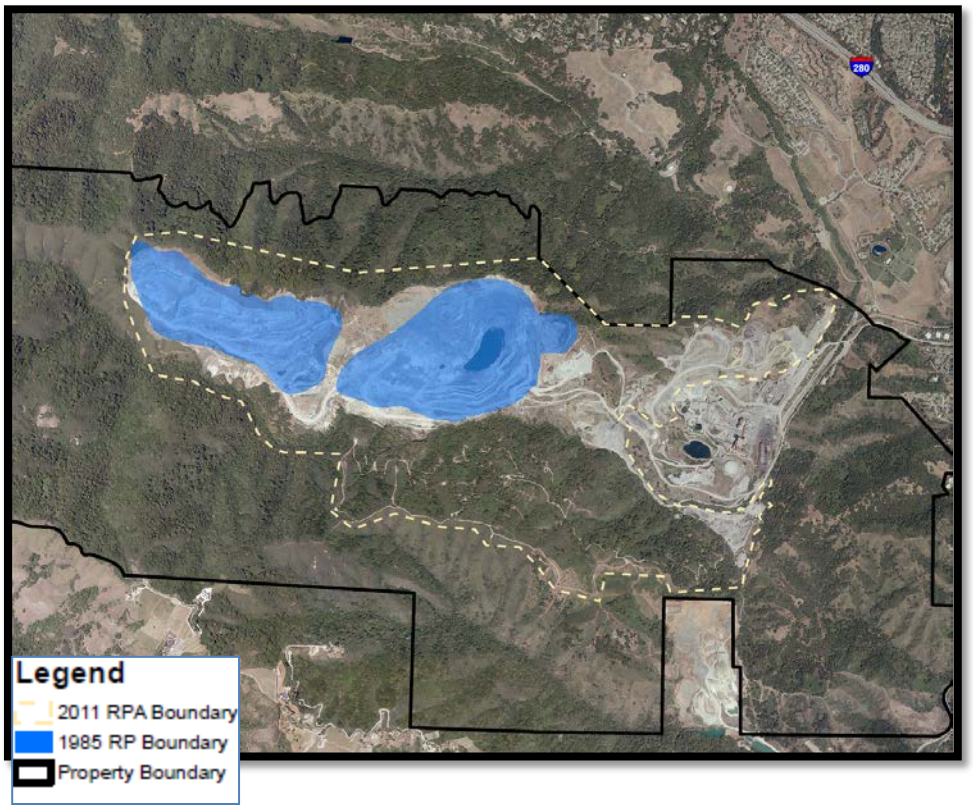
1.1 Background

The Lehigh Permanente Quarry is a limestone and aggregate mining operation, located in unincorporated Santa Clara County within the eastern foothills of the Santa Cruz mountain range, west of Cupertino. The mine contains a single large pit where limestone and aggregate are quarried. Quarrying operations commenced in the early 1900s. Permanente Corporation, owned by Henry J. Kaiser, acquired approximately 1,500 acres in 1939 and continued acquisition of surrounding land over the next several years to the current size of 3,510 acres. Hanson Permanente Cement, Inc. currently owns the 3,510-acre quarry site, and Lehigh Southwest Cement Company is the operator (herein referred to collectively as Lehigh).

The California Surface Mining and Reclamation Act (SMARA) requires that every mining operation in the state have a lead agency–approved reclamation plan. The County originally approved a Reclamation Plan for the Permanente Quarry in 1985. The 1985 Reclamation Plan covered the quarry pit and the West Materials Storage Area, for a total area of approximately 330 acres. In 2011, an application to amend the 1985 Reclamation Plan was proposed to include all areas of mining disturbance subject to SMARA. The 2012 Reclamation Plan Amendment (RPA), Environmental Impact Report (EIR), and Mitigation Monitoring and Reporting Program (MMRP) were approved by the County Board of Supervisors on June 26, 2012, supersedes the 1985 Reclamation Plan, and includes 89 conditions of approval (COAs). The 2012 RPA area includes the Main Pit, West Materials Storage Area (WMSA), East Materials Storage Area (EMSA), Permanente Creek Restoration Area (PCRA), Rock Plant, Rock Crusher and Support Area, and South Quarry Exploration Area as shown on **Figure 1**.



Neither the 1985 Reclamation Plan nor the current 2012 RPA includes the Lehigh Southwest Cement Plant. The Lehigh Cement Plant operation is an authorized use operating under a Use Permit, County File No. 173.023, originally issued on May 8, 1939, modified in June 1950 and May 1955 to add rotary kilns to the operations, and modified December 5, 1977 authorizing the modernization of the cement plant. The Department of Conservation's Office of Mine Reclamation (OMR) confirmed that the cement plant is not part of the Permanente mining operation and as such, is outside the Reclamation Plan area (OMR correspondence, August 23, 2007).

On February 8, 2011, the County Board of Supervisors made a determination that the quarry is a legal nonconforming use for surface mining activities, or commonly referred to as a vested right, on several of the quarry-owned parcels. Current mining operations are contained within these vested parcels (see **Figure 2)**. In compliance with SMARA, a Reclamation Plan is required for all areas affected by mining operations, and as such, the 2012 Reclamation Plan Amendment encompasses the areas of all mining operations.

Reclamation activities will be implemented in three phases over a twenty year period. Phase 1 would occur over approximately nine years and involves reclamation in the EMSA, and South Exploration Area.

Phase 2 would occur over approximately five years and includes reclamation activities in the WMSA, Quarry Pit, and PCRA. During Phase II, the WMSA overburden stockpile will be moved via a conveyor system to backfill the Quarry Pit.

Phase 3 would occur over approximately five years and involves continued reclamation activities in the PCRA and removal of equipment, buildings, and several roads from the Reclamation Plan Area.

A complete copy of the 2012 RPA, its associated EIR, and staff reports are available on the County's web site at: http://www.sccplanning.org

1.2 Annual Reporting Requirements

This Annual Report for reporting period July 1, 2013 through June 30, 2014 is the second annual report. It has been prepared in accordance with COA 8 to summarize compliance with the Reclamation Plan Amendment, COAs, MMRP, SMARA inspections, and financial assurance requirements.

COA 8 states:

An Annual Report shall be prepared by the County each year that summarizes compliance with the RPA and conditions of approval, Mitigation Monitoring and Reporting Program, and annual SMARA inspections and review of financial assurance cost estimates.

Annual Report shall be presented to the Planning Commission at a public meeting by December of each year, starting in 2013.

Mine Operator shall provide a reasonable amount of funding to the Department of Planning and Development for all aspects of report preparation, including but not limited to reimbursement for staff time, consultant fees, attorney's fees, and direct costs associated with report production and distribution.

Mine Operator shall provide by October 1 of each year, the information requested by the Planning Manager that is needed for the preparation of the Annual Report.

The County will include information provided by the Regional Water Quality Control Board related to the Water Board's determination regarding the Mine Operator's compliance with water quality standards, including waste load allocation and other permitting requirements, and the effective-

ness of best management practices (BMPs) on the site.

FIGURE 1 RPA AREA (RPA 1.0-6)

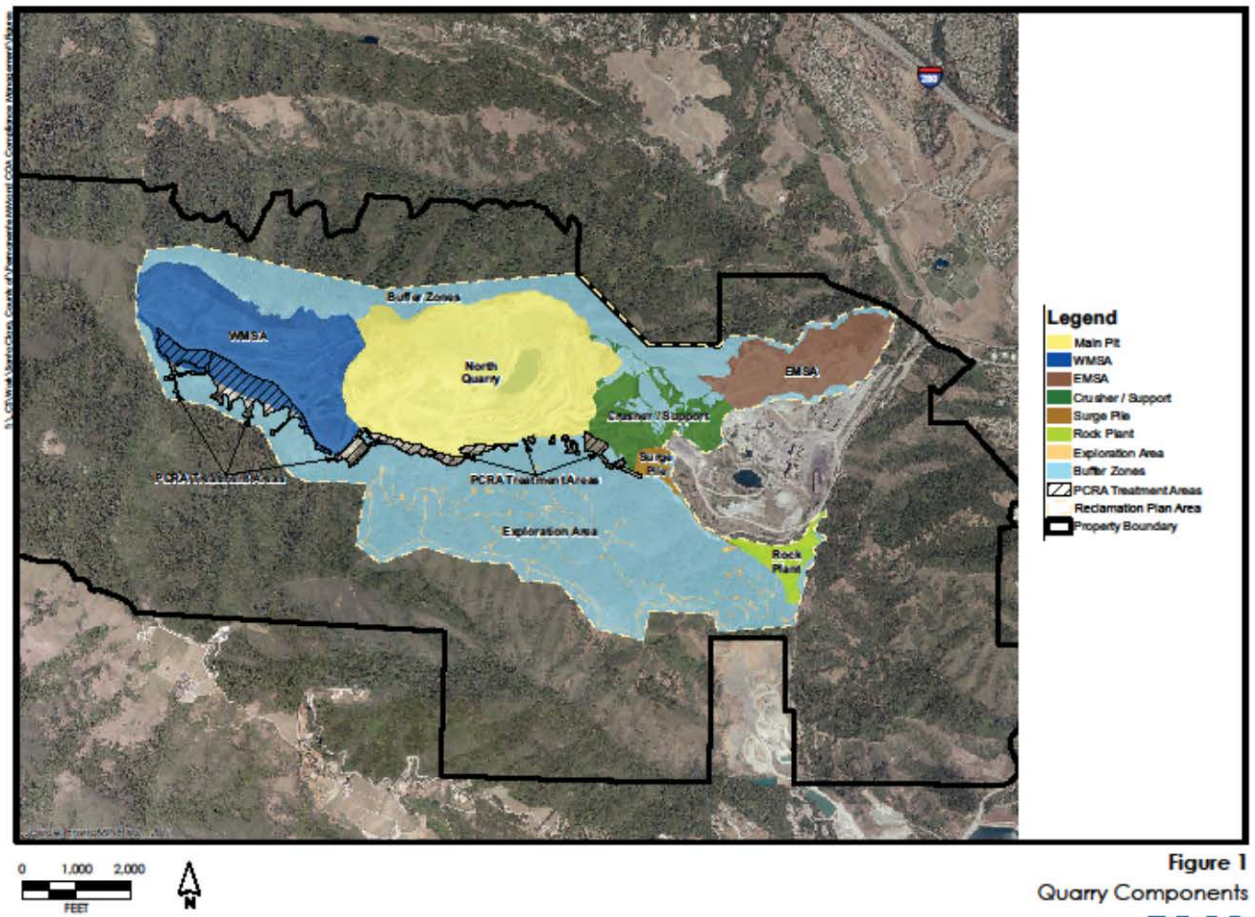


Figure 1
Quarry Components

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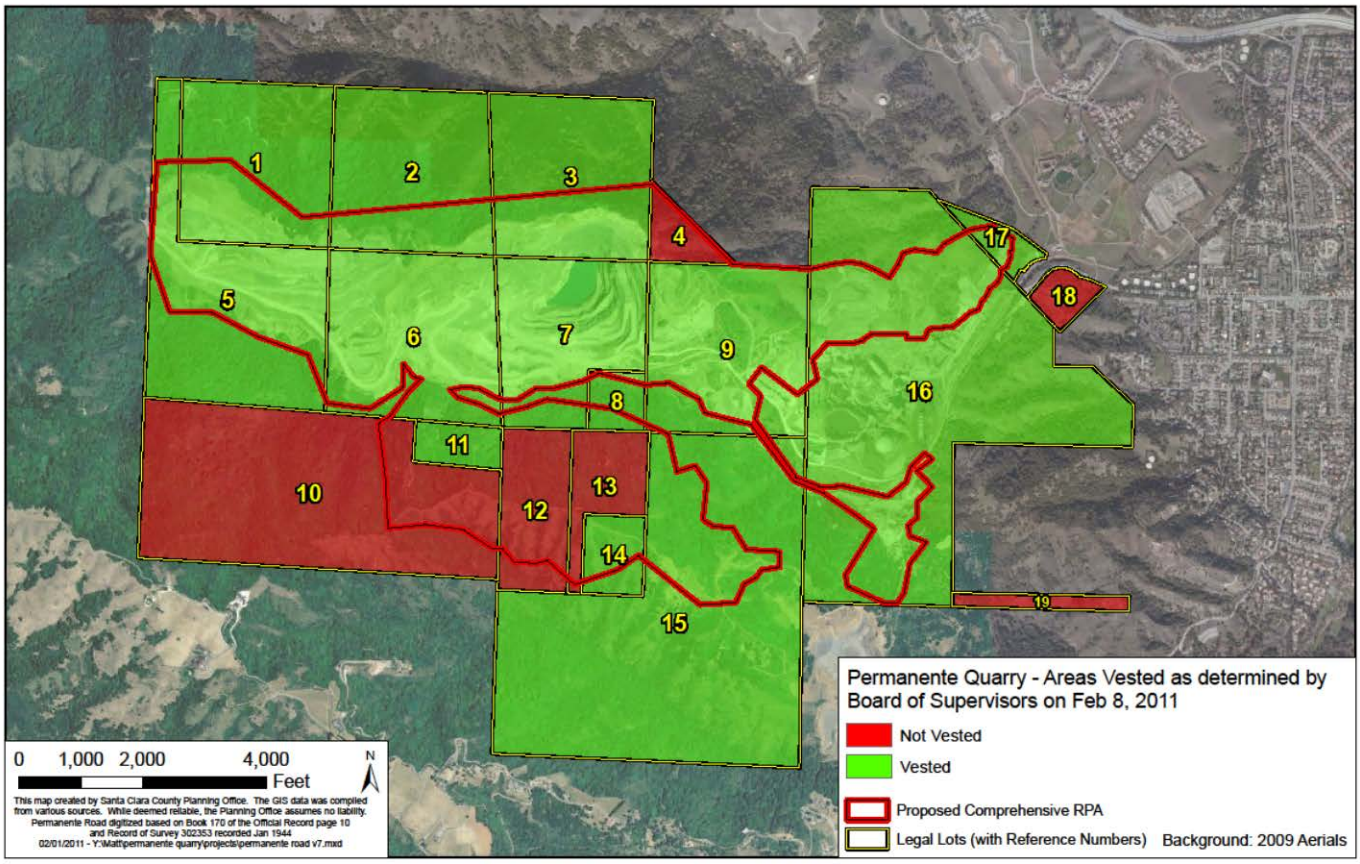
FIGURE 2 LEGAL NON-CONFORMING (VESTED) PARCELS



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1.3 Abbreviations Used

AR	Annual Report
BAAQMD	Bay Area Air Quality Management District
CDO	Cease and Desist Order
COA	condition of approval
CRLF	California red-legged frog
EIR	environmental impact report
FACE	Financial Assurance Cost Estimate
EMSA	East Materials Storage Area
gpm	gallons per minute
mg/L	milligrams per liter
MMRP	Mitigation Monitoring and Reporting Program
msl	mean sea level
NPDES	National Pollutant Discharge Elimination System
OMR	Office of Mine Reclamation
PCRA	Permanente Creek Restoration Area
RPA	Reclamation Plan Amendment
RWQCB	San Francisco Bay Regional Water Quality Control Board
SMARA	Surface Mining and Reclamation Act
SMGB	State Mining and Geology Board
µg/L	micrograms per liter
WMSA	West Materials Storage Area
WQO	Basin Plan Water Quality Objective

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The 2012 Reclamation Plan Amendment area includes the North Quarry, WMSA, EMSA, Crusher/Support, Rock Plant and Surge Pile, Permanente Creek Restoration Area (PCRA), and South Exploration Area (see **Figure 1** in Section 1.0).

2.1 Overview of Mining Operations and Reclamation Activity

This chapter provides an overall summary of the mining operations and reclamation activities that occurred during the reporting period, as well as detailed activity for each of the quarry areas. The information is a compilation of data based on the multiple County inspections, technical reports, and other reports submitted from Lehigh.

Mining

The mine continued to be active during the past year. Mining operations and reclamation activities conducted since the 2012 RPA approval through this reporting period is illustrated on **Figure 3**, and anticipated activities for the next two years is in **Figure 4**.

Approximately 620 acres of the Reclamation Plan's 1,268.6 acres had active mining disturbances. The overburden materials were placed in the pit against the toe of the western quarry wall. The current depth of the pit is approximately 675 feet above mean-sea-level (msl). The 2012 RPA identified an anticipated quarried depth of 440 feet msl.

Processing

Quarry materials are processed at the Crusher/Support Area and Rock Plant. This reporting period, the County issued building permits for construction of a new primary and secondary rock crusher equipment located southeast of the quarry pit. The crusher equipment connects to the existing conveyor system and replaced the prior crushers.

The Rock Plant also was operational during this reporting period, and includes the stockpiles of processed aggregate for sale, as well as crushing, sorting and conveying equipment.

Reclamation

Reclamation will occur generally over three phases. After backfilling the quarry pit, the final reclaimed elevation will be between 990 and 1,750 feet msl. The maximum angle of the western backfill slopes is proposed at 2.5H:1.0V. The maximum overall angle of the quarry rock slopes is proposed at 1.0H:1.0V. The northeastern highwall will not be regraded as part of reclamation, while the eastern highwall will have final rock slopes from 2H:1V to 1H:1V.

The Revegetation Plan identifies 40 percent coverage of native tree and shrub habitat interspersed among, and the remainder native grasses. A five-year test plot study was completed this reporting period (see Appendix D). The study evaluated the efficacy of different revegetation treatments that would meet the 2012 RPA performance standards.

Test plot area to the left of photo, contrasts with mined area with no revegetation.

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FIGURE 3 SURFACE MINING AND RECLAMATION ACTIVITY JUNE 2012- JUNE 2014

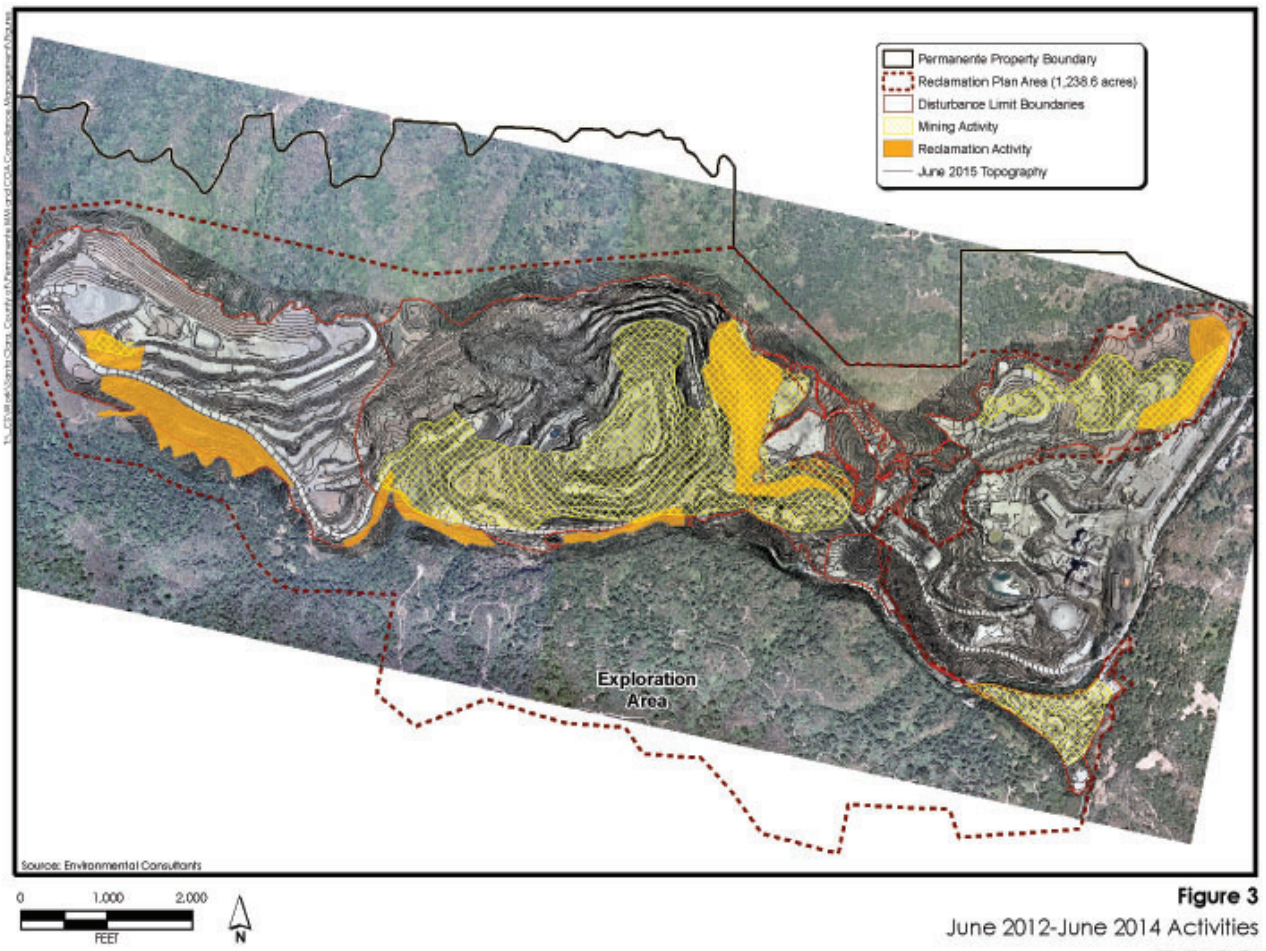

Figure 3
June 2012-June 2014 Activities

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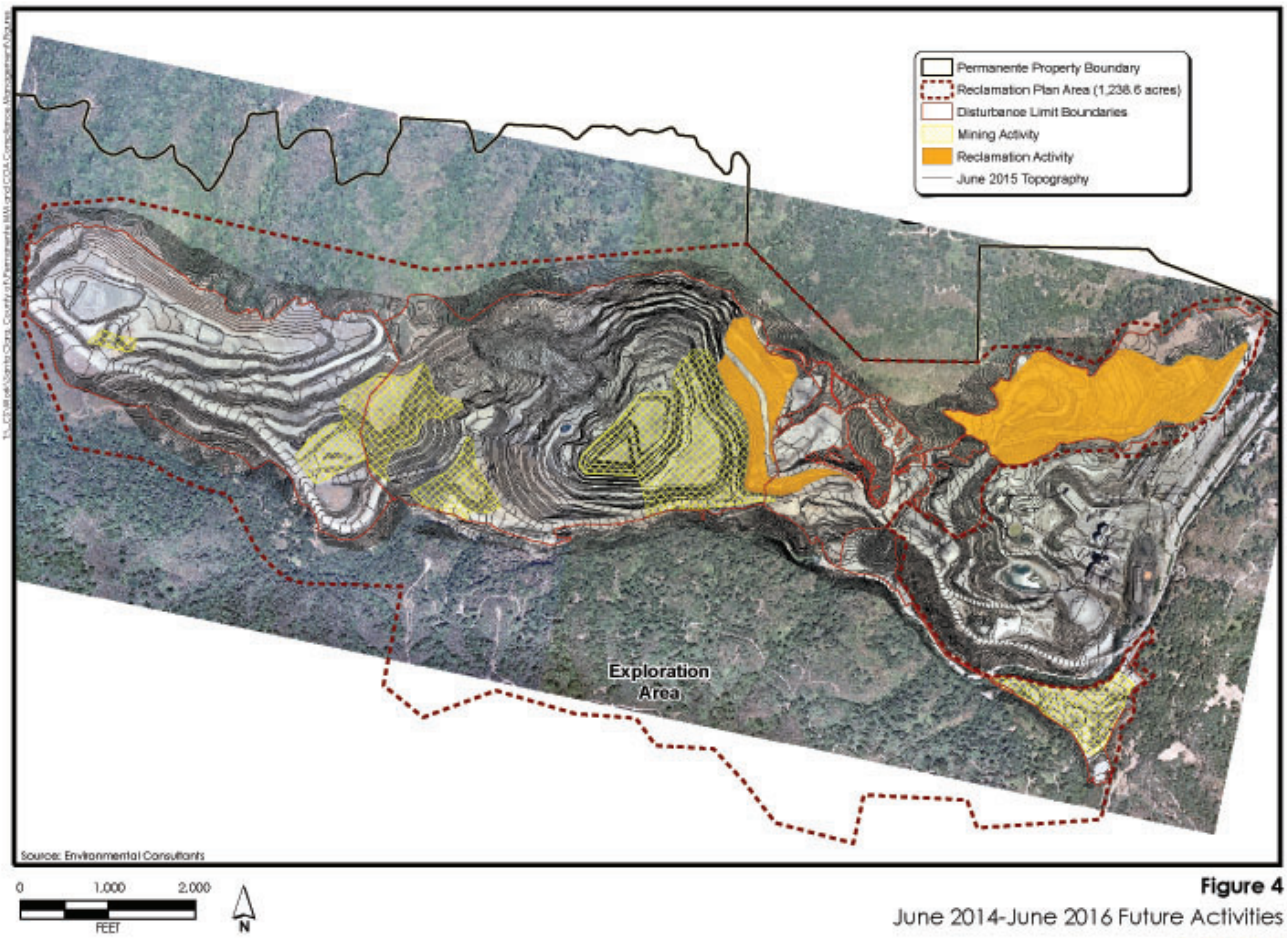
FIGURE 4 ESTIMATED SURFACE MINING AND RECLAMATION ACTIVITY JULY 2014 – JUNE 2016



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2.2 Activities within Each RPA Area

Quarry Pit

Quarrying activities continued through the current reporting period. As previously indicated, the overburden was placed in the Quarry Pit, along the western wall.

North Quarry, southwest portion.

As part of the site's stormwater management, rock checkdams are placed along the haul roads. These check dams are non-limestone greenstone rock.

Check dams on WMSA haul road, non-limestone materials.

West Material Storage Area (WMSA)

The WMSA will be reclaimed in accordance with the 2012 RPA, during Reclamation Phase 3. Those activities will include conveying the overburden materials to the quarry pit. The WMSA will then be at the natural grades.

Topsoil material stockpile areas are located in the WMSA. During the reporting year, a new topsoil material storage area was created near the old stockpile.

West Materials Storage Area topsoil stockpiles.

East Material Storage Area (EMSA)

No new deposits of overburden were placed in the EMSA during this reporting period. The EMSA grades conform to the 2012 RPA. The surface runoff from the EMSA drains to lower most stormwater pond on-site, Pond 30. Pond 30 discharges runoff through a culvert into Permanente Creek. During the reporting period, a sensor was installed in the outfall of Pond 30 providing notification when the when stormwater dis-

charge occurs to help with stormwater sampling collection.

Pond 30 lowest pond in EMSA and drains into Permanente Creek, looking south.

During AR1, the County re-surveyed the EMSA to ensure the elevation grades do not exceed permitted in the 2012 RPA, and confirmed the EMSA grades are in compliance. Presently, November 2014, the EMSA is in reclamation Phase 1 and non-limestone small diameter rock material are being placed for the final grading to approved slopes, benches and drainage structures. These activities will be reported in AR3.

Crusher/Support Area

The Crusher and Support area lies southeast of the Quarry Pit. It contains the primary and secondary crushers and numerous conveyors that transport limestone rock either to the cement plant or to the Surge Pile/Rock Plant. As indicated earlier in this report, a new primary and secondary crusher was permitted (County Building Permit No. 49408-00 and 53048-00) and constructed replacing the old primary and secondary crusher.

New primary and secondary crusher structures, looking southwest.

Reclamation of the Crusher area will begin in Phase 3, following the completion of mining and backfilling of the North Quarry. The conveyors and associated structures will be removed.

Rock Plant

At the time of the inspection, the Rock Plant was in operation. The Rock Plant area contains stockpiles of processed aggregate along with the crushing, sorting and conveying equipment. Runoff from the area is directed to the northeast into Pond 17 located east of the access road in the area of the Rock Plant gate.

Pond 17 collects runoff from Rock Plant.

The 2012 RPA requires that the Surge Pile area be reclaimed to pre-mining conditions. Following the removal of all stockpiled materials, the structures, including vibrating screens and conveyor belts, will be dismantled and transported off-site, and the natural topography would be restored. This reclamation work will be done during Phase 3.

Surge pile at Rock Plant area.

Revegetated area, East Road in South Quarry.

Revegetated area in South Quarry Exploration area.

South Quarry Exploration Area

The South Quarry Exploration Area lies south of Permanente Creek. This area consists of mine drilling holes for exploration for prior proposal of a quarry south of the creek. That application was withdrawn by Lehigh, and no mineral extraction is authorized at this time. Exploration activities have stopped, and the access roads and drill pads have been seeded and erosion control measure put in place. The revegetation has been ongoing for approximately five years and appears to be functioning properly.

Permanente Creek Restoration Area (PCRA)

Permanente Creek flows eastward along the southern edge of the quarrying area through the Lehigh property. Disturbance of the creek by mining activities pre-dates the 1976 SMARA legislation while some areas of disturbance continued post-1976. The 2012 RPA identifies seven subareas along the creek and for area-specific reclamation activities. The design of the reclamation for the PRCA will be submitted to all pertinent agencies for permitting approvals.

Permanente Creek segment, pre-SMARA disturbance.

2.3 County Inspections

SMARA Annual Inspection

The SMARA inspection occurred on September 23 and 24, 2013. The SMARA inspections found that the quarry was in compliance with SMARA. There were no SMARA violations, and the mine has complied with the 2012 Reclamation Plan Amendment. The September 2013 inspection report is included in Appendix E.

BMP Inspection

County staff performed stormwater management inspection of the BMPs on December 10, 2013. No erosion or sediment control issues were identified. In addition, the mine operator performed regular wet-season BMP inspections beginning in October 2013 through April 2014. Inspections were also performed in June and July 2014. Results are summarized under COA 78 in Section 3.1 (COA Current Compliance Status) based on information presented Appendices A and B of Lehigh's 2013-2014 Condition of Approval Compliance Report (Appendix D).

Monthly Site Visits

In addition to SMARA and BMP inspections, the County initiated and conducted monthly site visits to assess activities at the facility on a more frequent basis. These site visits have helped to identify site changes and potential issues early and make corrections if needed.

2.4 Financial Assurances

On February 21, 2014, the 2013 Financial Assurance Cost Estimate (FACE) in the amount of $54,723,295.00, was determined to be adequate and the calculations were certified in keeping with the Financial Assurance Guidelines published by the State Mining and Geology Board. The 2013 FACE was increased from the prior financial assurance ($51,391,835.00). The 2013 FACE is included in Appendix E.

2.5 Interagency Meeting

On September 24, 2014, the County facilitated a meeting with several regulatory agencies. The purpose of the meeting was to improve public agency communication involving regulatory activities for Permanente Quarry. Representatives from the following agencies attended the meeting: Bay Area Air Quality Management District, California Department of Conservation Office of Mine Reclamation, San Francisco Bay Regional Water Quality Control Board, California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, Santa Clara County Planning and Development Department, Santa Clara County Environmental Health Department, Santa Clara Valley Water District, cities of Cupertino and Sunnyvale, and the Town of Los Altos Hills. Topics of round-table discussion included the selenium treatment program, cement stack/ventilation system replacement project, and the Permanente Creek Restoration Project. No agency decisions were made at the meeting. The attendees expressed interest in attending another interagency meeting in 2015.

3.1 Current COA Compliance Status

The County Board of Supervisors approved the 2012 Permanent Quarry Reclamation Plan Amendment (RPA) on June 26, 2012. Eighty-nine conditions of approval (COAs) were applied that addressed both SMARA and non-SMARA requirements, and incorporated the mitigation and monitoring measures identified in the Environmental Impact Report.

This chapter summarizes the compliance activities that occurred during the current reporting period. Conditions not listed in this section had no reportable changes. Compliance for each 2012 RPA condition of approval are noted in the Condition Compliance Table (Appendix A).

General Requirements

General requirements are primarily standard conditions of approval that are required for most land development permits issued by the County and include COAs 1 through 14. Lehigh meets these general requirements. Activities during the current reporting year include:

COA 7 relates to payment for County staff time. The County invoices on a bimonthly basis, and Lehigh remitted payment on a timely basis.

COA 8 relates to documentation submittal; Lehigh submitted AR2 reporting documents on October 1, 2014.

COA 11 requires training for mining staff, including outside vendors, contractors, and consultants who are responsible for any part of mine operations or reclamation was performed for compliance with the conditions of approval. Evidence of training is included in Appendix C to Lehigh's annual reporting documentation in Appendix D.

COA 12 an updated stormwater water pollution prevention plan (SWPPP) was submitted on May 16, 2014.

COA 14 related to annual reclamation Financial Assurance Cost Estimates (FACE). The 2013 FACE was submitted July 2013 for County review. A revised FACE was submitted and certified calculations complied with SMARA regulations in February 2014. This required Lehigh to increase the bonding from $51,391,835.00 to $54,723,295.00.

Other Agencies/Jurisdictions

COA 15 requires Lehigh submit documentation regarding violations or abatement notices from other agencies/jurisdictions. Lehigh received a permit and notices from the San Francisco Bay Regional Water Quality Control Board. Refer to discussion under COA 34 for additional information.

Severability

There are no changes or issues to report.

Duty to Defend and Indemnify

There are no changes or issues to report.

Reclamation Requirements

COA 22 requires that the northern and eastern boundaries of the WMSA and the EMSA be clearly demarcated, this activity was originally done during AR1 and wooden monuments were replaced with metal T-posts in the same locations during this reporting year.

COA 23 requires that the operator survey coordinates of the limits of reclamation along with aerial photos every two years, and anticipated mining and reclamation activity for the next two years. Chapter 2 includes Figure 4 and Figure 5 compliance with this condition. The next aerial coordinates survey will be conducted in June 2015.

COA 26 and 27 requires mapping showing stockpile locations of topsoil, dirt, and soil amendments locations and protection measures be implemented. Two new topsoil stockpiles were created during this reporting period, one in the WMSA and one in the EMSA, as referenced in Stockpile Map, dated August 20, 2014 (included in Appendix L to Appendix D). The stockpiles are signed and erosion control measures in place.

COA 28 requires Lehigh to report on the revegetation test plots. A report on the monitoring of the test plots was prepared by a qualified biologist, and submitted in October 2014 (Appendix N to Appendix D). The data results indicate the revegetation performance criteria can be met following the guidelines of the testing plots for revegetation, and that straw bales and mulching around container plantings promoted successful growth.

COA 33 requires the quarry basins be maintained in good condition and cleaned as necessary. All basins were thoroughly inspected in December 2013, and re-inspected during the County monthly field visits. For this year, five basins required cleaned out (C-Station and ponds 13a, 13b, 17, 30, and 31b), and Pond 4a required vegetation removal. This work was completed by Lehigh.

COA 34 requires compliance with permits and plans required/issued by the Regional Water Quality Control Board (RWQCB). During this AR2, the San Francisco Bay RWQCB adopted Order No. R2-2014-0011 and issued a new NPDES Permit (CA0030201). In addition, the RWQCB staff acknowledged that Lehigh cannot immediately comply with the Order No. R2-2014-0022 and issued a Cease and Desist Order (CDO) to set forth a schedule for compliance. These documents are included in Appendix H to Appendix D.

COA 36 requires submittal of amended or newly issued permits from BAAQMD. No amendments or permits related to mining or reclamation activities were issued by BAAQMD. Lehigh received an authorization to construct (ATC) from BAAQMD for the cement plant kiln stack and clinker cooler stack replacement project, which relates only to the Lehigh Cement Plant and not the quarry and are not subject to the RPA.

Permanente Creek Restoration Area (PCRA)

COAs 38 through 41 address water quality, reclamation and restoration of Permanente Creek. During AR1, Lehigh submitted a detailed schedule to identify and remove limestone boulders consistent with the Best Management Practices for Removal of Limestone Boulders from Permanente Creek (Attachment J of the RPA). The analysis addressed issues regarding the boulder removal identifying that removal would require equipment that has a potential to destabilize the creek channel and mobilize sediments. In addition, the limestone boulders were tested and confirmed that the boulders are not a significant selenium source. The geotechnical consultant concluded the potential creek damage from further removal efforts far outweighed any adverse effect of leaving boulders in place. As such, COAs 38 and 39 have been completed.

Leigh entered into a settlement agreement with the Sierra Club (Sierra Club v. Lehigh Southwest Cement Company, and Hanson Permanente Cement, Inc.) in 2013 that requires the development and implementation of restoration to Permanente Creek. The settlement agreement extends beyond the conditions of approval; the County is not a party in this settlement agreement. The 2012 RPA conditions of approval regarding creek restoration still apply.

Environmental Conditions and EIR Mitigation Measures

COAs 42 through 89 address mitigation measures provided in the Reclamation Plan Amendment EIR.

Light and Glare

There are no changes or issues to report.

Air Quality – Health Hazards Risk

There are no changes or issues to report.

Biological Resources

Survey reports were submitted to the County (Appendices D and F to Appendix D).

COA 46 and ***COA 47*** address avian species. Breeding bird surveys were performed in 2014 in February 20, March 8, 11, 12, 15, 19, 20, April 14, and November 7 and 8 at planned disturbance locations. No evidence of breeding bird behavior was observed at the time of each survey, and no nest buffers were required.

COA 48, ***COA 49***, ***COA 50***, ***COA 51***, and ***COA 52*** address bats. Bat surveys were performed on February 8 and 20, 2014 and March 14, 15, and 20, 2014. No suitable habitat for roosting and/or hibernating bats in and around disturbance areas were present, and no potential roost locations were observed.

COA 53 and ***COA 54*** address San Francisco dusky-footed woodrat. Surveys were performed September 6 and 12, 2013, and February 20, March 11, 12, 13, and 15, April 14, and October 14, 2014 at locations where ground disturbance was planned. Middens and/or nests were found during the September 12, 2013 and March 12 and 13 and October 14, 2014 surveys. The required mitigation measures were conducted/implemented and nest removal, inspection for young, and nest relocation to suitable habitat were completed at the time of the surveys. The areas were resurveyed and no additional middens were found. During the March 12-13 surveys, three nests were found in canopies of large oak trees. They appeared to have been constructed by male rats and did not contain any young. The nests were not removed because of safety concerns. In accordance with the conditions, proper waste receptacles are available on-site, emptied on a regular basis, and signs prohibiting feeding wildlife within the property have been posted.

COA 59, ***COA 60***, and ***COA 61*** address California red-legged frog (CRLF). No grading activity took place within PCRA subareas 4 through 7. Cleaning, redesign, and grading were necessary at Sedimentation Basin 13a/13b, which is adjacent to Subarea 7. Because the activities were planned for November 2013, CRLF surveys were performed on November 7 and 8, 2013 in accordance with the mitigation measure and conditions of approval. No CRLF were found and a biological monitor was on-site to observe all vegetation clearing and sediment removal occurring from November 11 to 15. A biological exclusion fence was installed between Pond 13 and Permanente Creek and the area was monitored two times a day. All construction took place during dry days and daylight hours (Appendix F to Appendix D).

Cultural Resources

There are no changes or issues to report.

Geology and Soils

There are no changes or issues to report.

Greenhouse Gas Emissions (GHG)

There are no changes or issues to report.

Hydrology and Water Quality

COA 74 requires California-certified engineering geologist verification that non-limestone run-of-mine rock is used as cover

during reclamation. The overburden material generated during mining activities along the southeast portion of the quarry was inspected and samples collected for laboratory analysis. Selenium was not detected in any samples, and the overburden was determined to be suitable for use as cover material. As the area was mined, material was transported to the EMSA and segregated for later use as cover material by stockpiling at two designated areas. Final reclamation of the EMSA did not begin during this reporting period, but did begin July 2013 and will be addressed in the next annual report.

COA 76 (a through e) requires quarry pit water monitoring as applicable to reclamation activities. During this reporting period, overburden is being placed as backfill into the pit. As such, from July 1, 2013 through June 30, 2014, samples were collected quarterly from the quarry pit via Pond 4a. (Note: quarterly samples were also collected from Ponds 13a, 13b, 17, and 30). Samples were analyzed for general water chemistry and dissolved and total metals, including selenium. Daily volumes of water pumped from the pit area to Pond 4a were also measured, along with measurements of electrical conductivity and pH of quarry water. Seep surveys were performed on April 28, 2014 in the pit. Two seeps were identified, one in the southwest portion of the pit, and one by the western/northwestern portion. The seeps were sampled and analyzed for general water chemistry and dissolved metals. Overburden materials within the pit were tested for selenium. Results are included in Appendix E to Appendix D.

Under ***COA 78***, additional stormwater and sediment management controls are required throughout Phase I, II, and III to reduce impacts from selenium. Controls were installed during AR1, and maintenance is ongoing. This summarizes conditions in each of the RPA areas for the current reporting period.

PCRA Subareas. During 2013-2014, erosion control BMPs were installed and inspected. The erosion control BMPs in subareas 1 through 7 were effective, as no evidence of substantial erosion was observed during the 2013-2014 reporting period. In subarea 4 during a monthly inspection, a midgrade limestone stockpile on the haul road overtopped, sending some 3-inch-diameter rocks over the berm; however, none of the rocks entered the riparian area or the creek. A wire-backed silt fence was installed shortly after and no further rock movement has been observed.

WMSA. All previously installed stormwater control and erosion BMPs in the WMSA were reported functioning and in good condition.

Quarry Pit. All previously installed BMPs were inspected as functioning and in good condition.

Crusher/Support Area. All previously installed BMPs were inspected as functioning and in good condition.

EMSA. All previously installed BMPs were routinely inspected, and one repair was completed including removal of sediment and vegetation from Ponds 30 and 31a and ditch connecting the two ponds. All BMPs were reported as operational. A new silt fence along with straw wattles and hay bales was installed along the north side of the stormwater ditch opposite the EMSA haul road. The Pond 30 outfall to Permanente Creek was retrofitted with non-limestone boulders to prevent scouring and erosion of the creek. The EMSA will be hydroseeded in October 2014, and reported on next year.

Surge Pile/Rock Plant. All previously installed BMPs were reported functioning and in good condition. Several ba-

sins were cleaned of vegetation and sediment, and haul roads were clear.

COAs 79 through 82 address selenium in stormwater runoff. The COAs require various BMPs for selenium control, including ongoing sampling and testing for selenium and further evaluation of an interim treatment system (ITS) through a pilot study.

COA 79 and 80 require a stormwater sampling and testing program, and water quality testing to monitor the effectiveness of the EMSA BMPs in controlling selenium levels in stormwater discharges to Permanente Creek.

Water quality testing was performed during the AR1 and AR2 wet season in accordance with the Interim Stormwater Monitoring Plan (Appendix C as well as in Lehigh annual documentation in Appendix D). The EMSA discharges are measured at the outfall structure at Pond 30. During the 2012-2013, two samples were collected in December 2012. One was non-detect and one had a reported concentration of 5.9 µg/L. During the 2013-2014 wet season, samples were collected from Pond 30 on February 27, 2014 and April 2, 2014. These results showed selenium concentrations of 14.6 µg/L and 29.2 µg/L, respectively (Appendix C and Appendix D, Table 2: Metals Data Summary), which exceed the Basin Plan Water Quality Objective (WQO) of 5 µg/L for total recoverable selenium.

Lehigh prepared and submitted to the County a feasibility analysis for water treatment of EMSA discharges containing selenium titled, *Feasibility of Water Treatment for Discharges from the Permanente Quarry Containing Selenium* (received July 2014). The analysis considers various options to reducing selenium. Such options could include a stand-alone treatment facility, pumping or transporting water to the planned treatment facility at Pond 4a (see COA 82), or enlarging Pond 30 at the base of the EMSA. It proposed source control of the selenium discharges by commencing the final reclamation of the EMSA on an accelerated schedule. This would involve placement of a non-limestone cover with subsequent stormwater sampling to verify the cover is functioning as expected in terms of reducing selenium levels in EMSA discharges.

The County contracted with Peter Hudson, PG, CEG from Environmental Science Associates because of his technical expertise of the site conditions and selenium to peer review the Lehigh Feasibility report. These reports are in AR2, Appendix B. The Peer Review Report recommendations are:

Recommendation 1: Stand-alone surface water sampling report be prepared following each water sampling occurrence at Pond 30.

Recommendation 2: As required under Condition of Approval No. 79, Lehigh must continue to sample all discharges from Pond 30 to Permanente Creek during the 2014-2015 rainy season.

Recommendation 3: Lehigh prepare a Fill Placement and Sequencing Plan to inform the County of placement and grading progress at the East Materials Storage Area (EMSA).

Recommendation 4: Lehigh reexamine the feasibility of piping the Pond 30 (located at the EMSA) stormwater to the Interim Treatment System (ITS), located at Pond 4A near the Quarry Pit.

Recommendation 5: Pond 30 basin enlargement (alternate treatment approach) should consider design guidelines recommended by the Santa Clara County Drainage Manual, the SCVURPPP C.3 Stormwater Handbook, and SMARA.

In accordance with COA 80(a) and (b), the Planning Commission shall hold a public hearing to determine:

- Whether Lehigh is complying with stormwater discharge requirements for the EMSA; and,

- If the Planning Commission determines that Lehigh is not complying with discharge requirements, then Lehigh must install a treatment system (or alternative) if determined feasible by the Planning Commission in accordance with COA 82.

The public hearing before the Planning Commission is scheduled for November 20, 2014.

COA 81 requires monitoring and determination of BMP effectiveness for the WMSA and Quarry pit in comparison to base level within 30 days of the start of reclamation activities for Phase II[1]. Water quality testing at Pond 4a was performed during the 2013-2014 wet season in accordance with the Interim Stormwater Monitoring Plan. The results are presented in Appendix C and Appendix D, Tables 1and 2.

The selenium results from the 2013-2014 sampling, along with the 2012-2013 results for comparison, are listed in the following table:

Pond 4a Selenium Levels (2013-2014 Wet Season)			
10/13/13	12/17/13	3/6/14	4/1/14
29.6 µg/L	20.4 µg/L	33.8 µg/L	53.1 µg/L
Pond 4a Selenium Levels (2012-2013 Wet Season)			
--	12/26/12	3/20/13	3/30/13
--	40 µg/L	28 µg/L	31 µg/L

Selenium testing will continue during the 2014-20 reporting period.

COA 82 implements the pilot system testing and design of a treatment facility to reduce the levels of selenium in discharges to Permanente Creek. In fall 2013, Lehigh installed a pilot treatment system using Frontier Water Systems technology. The pilot system operated at the 750-level pond within the Quarry pit from October 16, 2013 to November 15, 2013. The pilot system reduced selenium levels to below the 5 µg/L WQO. The data generated by the pilot system indicated that the Frontier technology can be scaled to a larger treatment system with consistent result, and that it is technologically feasible to operate a water system capable of treating water from the Quarry pit and the WMSA to below the 5 µg/L criterion. Lehigh began installing the ITS adjacent to Pond 4a in early 2014 with completion of construction anticipated in October 2014. The ITS is scheduled to be operational during the 2014-2015 wet season. Data generated over the next two years' wet seasons (2014-2015 and 2015-2016) will enable Lehigh to determine (in April 2016 or later) whether it is technically possible to expand the system's inflow capacity to handle all water discharged from the Quarry pit and WMSA.

The Planning Commission will consider the feasibility of this treatment system at a public hearing on November 20, 2014.

Noise

There are no changes or issues to report.

EMSA Equipment Operation

There are no changes or issues to report.

3.2 Other Topics

<u>San Francisco Bay Regional Water Quality Control Board Activities</u>

The operator continues to work with the RWQCB to investigate water quality impacts from mining, which includes providing permit applications, work plans, technical

[1] COA 81 defines "base levels" as the water testing results for an average for two years immediately prior to the start of Phase II reclamation for discharge into Permanente Creek.

reports, and monitoring reports that address water quality requirements for the mine waste rock, stormwater, groundwater, and process waters. Notable activities during the reporting year are summarized below.

The RWQCB web site provides links to Lehigh Permanente documents at: http://www.waterboards.ca.gov/sanfranciscobay/water_issues/hot_topics/lehigh.shtml.

NPDES Permit

On March 12, 2014, the RWQCB adopted Order No. R2-2014-0010 (NPDES Permit No. CA0030210). The Order became effective May 1, 2014 and expires on April 30, 2019. The Order rescinded Lehigh's coverage under Order No. R2-2008-0011 (General Waste Discharge Requirements for Discharges of Process Wastewaters from Aggregate Mining, Sand Washing, and Sand Offloading Facilities to Surface Waters, NPDES Permit No. CAG982001) and SWRCB Order No. 97-03-DWQ (Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activities Excluding Construction Activities, NPDES Permit No. CAS000001). The requirements of Order No. R2-2104-0010 supersede the requirements of these general permits. The Order/Permit is included in Appendix H1 to Appendix D.

The Order acknowledges Lehigh plans major changes to the wastewater treatment and controls to comply with a settlement agreement with the Sierra Club (Sierra Club v. Lehigh Southwest Cement Company, and Hanson Permanente Cement, Inc.) and the effluent limitations of the Order. The requirements of the Order are based on the planned future wastewater treatment and controls. This Order does not authorize discharges inconsistent with future treatment and controls.

The permit allows for discharges to Permanente Creek from effluent generated at six locations at the facility: Ponds 4a, 13b, 9, 17, 20, and 30, and it sets forth specific effluent limitations for each discharge point. Discharge point 001 corresponds to Pond 4a. Maximum discharge rates and selenium limits, along with other effluent limitations, have been adopted for discharge point 001, which corresponds to Pond 4a (see Permanente Creek Selenium Testing, below). Discharges from points 002 through 006 are prohibited except as a result of precipitation or to discharge retained stormwater. The permit identifies other standard provisions that must be implemented and monitoring and reporting requirements, along with Special Provisions. Those provisions allow for the RWQCB to modify or reopen the Order prior to its expiration date in certain circumstances as allowed by law. Other Special Provisions include requirements for an effluent characterization study and report, an ambient background study and report, a pollutant minimization program, a facility reliability assurance plan and status report, and stormwater BMPs for discharge points 002 through 006. The Order required Lehigh to submit an updated SWPPP by May 16, 2014. The updated SWPPP was completed and is included in Appendix G to Appendix D.

Cease and Desist Order

On March 12, 2014, the RWQCB also issued a Cease and Desist Order (CDO) No. R2-2014-0011, which is included in Appendix H2 to Appendix D. The CDO requires construction and operation of an interim water treatment system, followed by a final treatment system to reduce selenium levels in all process wastewater prior to discharge at discharge point 001. The CDO requires a final treatment system to be operational by September 30, 2017, and establishes a time schedule of no more than five years for Lehigh to bring the discharge into compliance. Specific deadlines for compliance are identified in Table 3 of the CDO. Item 15 in the

CDO notes the time schedules are as short as possible, accounting for uncertainty in determining effective treatment measures to achieve compliance, and are based on reasonably expected times needed to test and select from among alternatives and to construct and operate the treatment system. During the reporting period and in the near-term, the interim treatment system required under the CDO is under construction, in accordance with the schedule set forth in the CDO. Upon operation of the interim system, weekly water quality monitoring is required. Under the CDO, by December 1, 2014, Lehigh must achieve a reduction in selenium concentrations discharged from the interim treatment system by at least 50 percent from influent concentrations, or to less than or equal to 10 µg/L when the influent selenium concentration is 20 µg/L or less. A report evaluating the effectiveness of the treatment system is required by March 31, 2015. The report results will be included in the 2014-2015 Annual Report.

Work Plans

At the request of the RWQCB, Lehigh submitted a work plan prepared by Golder Associates for the investigation of runoff and groundwater seepage in the EMSA/WMSA. The work plan was submitted October 31, 2013. The RWQCB issued a Conditional Concurrence letter for this work plan on November 5, 2013.

On October 31, 2013, Lehigh submitted at the request of the RWQCB a work plan prepared by Golder Associates to begin a groundwater investigation and monitoring program for the EMSA/WMSA. On December 3, 2013, the RWQCB issued a notice of violation (NOV) letter to Lehigh for failure to submit a technically acceptable report in response to the RWQCB's July 26, 2013 request. The RWQCB concluded the work plan would not provide the information necessary to meet the objectives of the investigation outlined in the July 26 letter and did not adhere to the standards of practice for subsurface investigations or reporting.

Investigative Orders

Order No. R2-2013-0005-A1 is an investigative order adopted by the RWQCB on June 27, 2013, directing Lehigh to submit technical and monitoring reports pertaining to water quality. On March 13, 2014, the RWQCB issued an informal NOV to Lehigh via email concerning failure to submit requested site history information concerning two locations ("Pearl Harbor" and Dry Well). RWQCB indicated this issue would be considered an informal enforcement matter.

Selenium TMDL

Section 303(d) of the federal Clean Water Act established the total maximum daily load (TMDL) process, which requires states to identify waters whose water quality is "impaired" (affected by the presence of pollutants or contaminants), and to establish a TMDL or the maximum quantity of a particular contaminant that a water body can assimilate without experiencing adverse effects on the beneficial use identified. [2]

In 2006, Permanente Creek was added to the State's 303(d) list as impaired by selenium. Permanente Creek is listed as impaired for selenium because observed water column concentrations in the creek were above the applicable National Toxics Rule (NTR) water quality criterion for total recoverable selenium for the chronic protection of fresh-

[2] Under Section 303(d) of the federal Clean Water Act, states are required to submit to the U.S. Environmental Protection Agency (EPA) a list of impaired and threatened waters (stream/river segments, lakes). The EPA is responsible for reviewing and approving each state's list.

water aquatic life of 5 µg/L. The 303(d) listing was based on data collected by the Water Board's Surface Water Ambient Monitoring Program (SWAMP) in 2002/2003 at an upper reach location of the Creek (PER070, which is the East Fork of Permanente Creek at Rancho San Antonio).

The RWQCB is in the process of compiling and reviewing data in an effort to develop the selenium TMDL. The TMDL is expected by 2021.

3.3 SMARA Compliance Status

SMARA inspections occurred on September 26 and 27, 2013 for this reporting period. The inspection report is included in Appendix E. The inspection confirmed no SMARA violations. The report was submitted to Office of Mine Reclamation on November 10, 2014.

3.4 FACE Review

The mine operator submitted the FACE to the County in August 2013. It was revised in February 2014 to increase the amount for the stockpile located at the Rock Plant. The County reviewed and certified the calculations were in keeping with the Financial Assurance Guidelines published by the State Mining and Geology Board, and provided the calculations to the Office of Mine Reclamation (OMR) in March 2014. OMR responded no comments or adjustments to the FACE calculations, and a revised financial assurance for the increased amount was approved.

3.5 Best Management Practices Inspections

County staff inspected BMPs on December 10, 2013. The winter inspection sites included sites that were noted in the July 2013 summer inspection. The results of the inspection are summarized below. County staff determined that there were no erosion or sediment control issues.

1. Ponds 9, 13a, and 13b were found to be free of annual weed growth and debris.
2. Pond 31a was found to be free of rock fines and operational.
3. Ponds 13a and 13b were in the process of being combined to create a new, lined pond. Flows had been temporarily diverted to Pond 9. Erosion control with silt fencing, straw wattles, and hay bales had been installed at 13a/b. Minor maintenance issues were noted.
4. During the Pond 13a/b work, additional filters were installed at Pond 9.
5. At the time of the inspection, the new rock crusher was under construction and finish grading had been completed. Long-term erosion control measures (straw wattles, silt fence, hydroseeding, straw bales) were installed. Lehigh staff has been investigating different hillside erosion control BMPs.

County staff also performed monthly site visits to observe operations and conditions throughout the quarry site to ensure condition compliance.

4.0 OTHER INFORMATION

4.1 References

Santa Clara County. 2012. *Reclamation Plan Amendment for Permanente Quarry (State Mine ID # 91-43-0004).* Prepared by Enviromine Inc., San Diego, CA. Approved on June 26, 2012. http://www.sccgov.org/sites/planning/PlansPrograms/SMARA/PermanenteQuarry/Pages/PermanenteMain.aspx.

4.2 Report Preparers

Santa Clara County

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APPENDIX A

Appendix A: Lehigh Permanente 2012 Reclamation Plan Amendment
EIR Mitigation Measures and Conditions of Approval
Compliance Status 2013-2014

Current operations consist of Phase I as identified in the Reclamation Plan Amendment, which is anticipated to continue to occur through 2020. Phase I involves reclamation activities in the EMSA and continuation of existing mining activities in the WMSA and North Quarry. The adopted EIR mitigation measures were incorporated into the Conditions of Approval (COA) for the RPA adopted in June 2012. A summary of the status of COAs is presented below.

CONDITIONS OF APPROVAL	COMPLIANCE STATUS
General Requirements	
1. The conditions of approval contained herein shall supersede and replace all previous conditions of approval from the 1985 Reclamation Plan approval.	As applicable.
2. All development, operations, and reclamation that occur under this RPA shall be consistent with the approved plans, unless modified per these conditions. The approved plans include maps, drawings, tables, and a narrative description within the RPA prepared by EnviroMINE Incorporated, including Attachments A through J, dated December 13, 2011 and received by the County on December 15, 2011. Plans also include engineered drawings prepared by Chang Consultants, dated December 12, 2011 (appended to the RPA), and Reclamation Water Quality prepared by Strategic Engineering & Science, Inc., dated December 2011 (RPA, Attachment G), and replacement Sheet 7 of 13 for Basin 40A by Chang Consultants, received by the County on March 13, 2012.	As applicable.
3. Within 60 days of approval of the RPA, Mine Operator shall submit six (6) copies plus one electronic copy of a "Final" RPA, incorporating changes required per the conditions of approval for the RPA, Mitigation Monitoring and Reporting Program, and Final Environmental Impact Report.	Completed during Annual Report No. 1.
4. Within 60 days following approval of the RPA, the Mine Operator shall submit to the Planning Manager or the Manager's designee (hereinafter referred to as Planning Manager), legal descriptions for all affected parcels of real property. Pursuant to Section 2772.7 of the Public Resources Code, specifically referred to as SMARA, the County will record a Notice of Reclamation Plan Approval with the County Recorder's Office covering those parcels affected by the approved RPA. The notice shall read: "*Mining Operations conducted on the hereinafter described real property are subject to a RPA approval by the County of Santa Clara Planning Commission. A copy of said approved RPA is on file with the Department of Planning and Development, located the Santa Clara County Government Center, East Wing, 7th Floor, 70 W.*	Completed during Annual Report No. 1.

Appendix D: Lehigh Permanente 2012 Reclamation Plan Amendment
EIR Mitigation Measures and Conditions of Approval
Compliance Status 2013-2014

CONDITIONS OF APPROVAL	COMPLIANCE STATUS
Hedding Street, San Jose, CA 95110." The Mine Operator shall be responsible for all the reasonable costs associated with recording said notice.	
5. If reclamation is not complete on or before June 30, 2032, the Mine Operator shall file an application for an amendment to the reclamation plan prior to that date.	Not applicable during this reporting period.
6. The proposed end use following reclamation is hillside open space.	Not applicable during this reporting period.
7. The Mine Operator shall be responsible for paying all reasonable costs associated with work by the Department of Planning and Development, or with work conducted under the supervision of the Department of Planning and Development, in conjunction with, or in any way related to the conditions of approval identified in this RPA, the mitigations contained in the Mitigation Monitoring and Reporting Program, and the annual SMARA inspections and annual review of financial assurance cost estimates. This includes but is not limited to costs for staff time, attorney's fees, consultant fees, and direct costs associated with report production and distribution.	As applicable.
8. An Annual Report shall be prepared by the County each year that summarizes compliance with the RPA and conditions of approval, Mitigation Monitoring and Reporting Program, and annual SMARA inspections and review of financial assurance cost estimates. a. Annual Report shall be presented to the Planning Commission at a public meeting by December of each year, starting in 2013. b. Mine Operator shall provide a reasonable amount of funding to the Department of Planning and Development for all aspects of report preparation, including but not limited to reimbursement for staff time, consultant fees, attorney's fees, and direct costs associated with report production and distribution. c. Mine Operator shall provide by October 1 of each year, the information requested by the Planning Manager that is needed for the preparation of the Annual Report. d. The County will include information provided by the Regional Water Quality Control Board related to the Water Board's determination regarding the Mine Operator's compliance with water quality standards, including waste load allocation and other permitting requirements, and the effectiveness of best management practices (BMPs) on the site.	*Received Lehigh's 2013-2014 Compliance Report, which has been incorporated into 2013-2014 Annual Report to be submitted to the Planning Commission. The 2013-2014 Annual Report describes information regarding compliance with RWQCB permits and water quality standards.*

Appendix D: Lehigh Permanente 2012 Reclamation Plan Amendment
EIR Mitigation Measures and Conditions of Approval
Compliance Status 2013-2014

CONDITIONS OF APPROVAL	COMPLIANCE STATUS
9. If at any time the Planning Manager determines that the Quarry is not in compliance with the RPA, Mitigation Monitoring and Reporting Program, or any condition of approval, and as such is in violation of the RPA, the Director may take any and all actions necessary to ensure compliance with the Plan in accordance with applicable laws and regulations.	*No issues requiring Planning Manager action during the reporting period.*
10. Copies of the RPA Mitigation Monitoring and Reporting Program, approved plans, conditions of approval shall be maintained at the premises of the Permanente Quarry, 24001 Stevens Creek Boulevard, at all times: one copy of all the documents shall be stored in the administration building at this location and one copy of all the documents shall be stored in the mine operations office.	*Copies are posted and maintained at the quarry at all times. In addition, during Annual Report No. 1 a poster of the COAs in their entirety was posted in the quarry office for reference and for training sessions.*
11. By October 1 of each year, starting in 2012, the Mine Operator shall provide to the Planning Manager a report summarizing the date of the annual training, topics reviewed, and list of all employees attending the training. The Mine Operator shall annually train all mining staff, including outside vendors, contractors, or consultants who are responsible for implementation of any part of the mine operations or reclamation at Permanente Quarry, on the requirements and provisions of the RPA, the conditions of approval, and the MMRP.	*Received Lehigh's 2013-2014 Compliance Report – Appendix C, which included documentation on training.*
12. Within 60 days following approval of the RPA, the Mine Operator shall submit to the Planning Manager a copy of its Storm Water Pollution Prevention Plan (SWPPP) of the approved RPA, which is hereby appended to the RPA by reference. The Mine Operator is responsible for providing the Department of Planning and Development with any and all updates to the SWPPP.	*Received updated SWPPP, included in Lehigh's 2013-2014 Compliance Report – Appendix G.*
13. All mitigation measures contained within the Mitigation Monitoring and Reporting Program (MMRP) prepared for the project are adopted as conditions of approval and noted as such. The language contained within the MMRP shall be the guiding language for implementation of the condition or measure unless as modified within these conditions of approval.	As applicable.
14. By August 1st of each year, or as required by the Santa Clara County SMARA Inspection Program, the Mine Operator shall submit annually Financial Assurance Cost Estimates (FACE) to the Planning Manager for review and approval, which shall serve as the basis for the amount of financial assurances required of the Mine Operator, account for disturbed and those lands to be disturbed in the following year by the surface mining operations,	*FACE certified calculations were in keeping with the SMARA Guidelines, and approved an increase financial assurance (bond) for the increased amount in March 2014.*

CONDITIONS OF APPROVAL	COMPLIANCE STATUS
inflation, and reclamation of lands accomplished in accordance Reporting Program, or any condition of approval, and as such is in violation of the RPA, the Director may take any and all actions necessary to ensure compliance with the Plan in accordance with applicable laws and regulations.	
Other Agencies/Jurisdictions	
15. Copies of all violations or abatement notices, requests for reports or information related to this RPA and its authorized uses by federal, state, or local jurisdictions/agencies, or subsequent modification of another agency's permit or submission of an application for any permit to another agency shall be provided to the Planning Manager within 10 business days of the County's request.	*Notices were issued during reporting period.* *2013-11-05. SFRWQCB issued conditional concurrence with work plan for investigation of runoff and groundwater seepage in the EMSA/WMSA.* *2013-12-03. SFBRWQCB issued Notice of Violation (NOV) to Lehigh for failure to submit acceptable work plan for groundwater investigation and monitoring program for EMSA/WMSA.* *2014-03-12. SFBRWQCB adopted Order No. R2-2014-0010 (new NPDES Permit) and issued Cease and Desist Order (CDO) No. R2-2014-0011.* *2014-03-14. SFBRWQCB issued informal NOV to Lehigh for failure to submit site history information requested in June 2013 Investigative Order No.R2-2013-0005-A1.* *2014-10-01. Received Lehigh's 2013-2014 Compliance Report – Appendix H included copies of NPDES permit and CDO and Appendix R included copies of BAAQMD permits.*
Severability	
16. If any of the RPA conditions of approval, or RPA approval, are held to be invalid, that holding shall not invalidate any of the remaining conditions or limitations set forth.	As applicable.
17. If any condition(s) of approval is invalidated by a court of law, and said invalidation would change the findings and/or mitigation measures associated with the approval of this RPA, the amendment may be reviewed, at the discretion of the Planning Commission, and substitute feasible condition(s)/mitigation measures may be imposed to adequately address the subject matter of the invalidated condition(s).	As applicable.
Duty to Defend and Indemnify	

Appendix D: Lehigh Permanente 2012 Reclamation Plan Amendment
EIR Mitigation Measures and Conditions of Approval
Compliance Status 2013-2014

CONDITIONS OF APPROVAL	COMPLIANCE STATUS
18. As a condition of RPA approval, including adjustment, modification or renewal, the Mine Operator agrees to: a. Defend, at the Mine Operator's sole expense, any action brought against the County by a third party challenging either its decision to approve the RPA or the manner in which the County is interpreting or enforcing the conditions of the RPA; and b. Indemnify the County against any settlements, awards, or judgments, including attorney's fees, arising out of or resulting from any such action.	As applicable.
19. Upon demand from the County, the Mine Operator shall reimburse the County for any court costs and or attorney's fees which the County may be required by a court to pay as a result of any such action the Mine Operator defended or which it had control of the defense. The County may, at its sole discretion, participate in the defense of any such action, but such participation shall not relieve the Mine Operator of its obligations under this condition.	As applicable.
20. The Mine Operator agrees to defend, indemnify and hold harmless the County, its agents, officers and employees, from any claim, action or proceeding against the County, to challenge any portions of the EIR certification, reclamation plan process or approval. In addition to damages, indemnification includes reimbursing the County for staff and consultant cost, and attorney's fees (including claims for private Attorney General fees).	As applicable.
21. Neither the approval of the RPA or compliance with conditions of approval shall relieve the Mine Operator from any responsibility otherwise imposed by law for damage to persons or property, nor shall the issuance of any RPA or related permit serve to impose any liability upon the County of Santa Clara, its officers, employees or agents for injury or damage to persons or property.	As applicable.
Reclamation Requirements	
22. Within 60 days of RPA approval, the RPA limit of disturbed area surrounding the northern and eastern edges of the EMSA, the northern and western edges of the WMSA, and the perimeter of the Rock Plant area shall be clearly demarcated in the field and shall remain in place until final reclamation has been completed. On an annual basis, demarcation shall be modified to encompass the RPA boundaries nearest the areas subject to surface mining and reclamation, as shown on aerials submitted per Condition #23. Demarcated areas shall be located and marked in the field by a licensed land surveyor or	*RPA boundary demarcation boundary memorandum, included in Lehigh's 2013-2014 Compliance Report – Appendix K.*

CONDITIONS OF APPROVAL	COMPLIANCE STATUS
registered civil engineer authorized to practice land surveying. Demarcation shall use orange construction fencing or other brightly colored material acceptable to the Planning Manager.	
23. At the same time as the proposed Annual Report each year, the operator shall submit to the Planning Manager a surveyed coordinate list file obtained by Global Positioning System (GPS), prepared by a licensed land surveyor or registered civil engineer authorized to practice land surveying, to be reviewed and approved by the County Surveyor, identifying the limits of reclamation, with aerial photographs of the RPA area, annotated to illustrate (a) where surface mining and reclamation activity occurred within the prior 24 months and (b) areas where mining and reclamation activities will occur in the next 24 months. Existing topographic data shall be included with the aerial photographs, and the operator shall provide projected topographic data demonstrate how the topography will look two years later. The aerial photographs must be flown and taken biennually between June 1 and June 30 starting with June 2013. If requested by the Planning Manager or Planning Commission the materials shall be in a readable scale.	*Appendix M included aerials for June 2012–2014 and June 2014–2016.*
24. Reclamation of finished slopes and benches shall commence at the earliest feasible date once the slopes and benches are established, as set forth in the RPA.	Not applicable this reporting period.
25. Rockfills, where used, should be spread in lifts not exceeding five-feet in thickness by tracked equipment, and compacted by track-walking or wheel-rolling using heavy dozers (Caterpillar D-9 or larger) and/or fully loaded rubber-tired hauling equipment, respectively. A minimum of three passes should be performed for each lift.	Not applicable this reporting period.
26. Within 60 days of RPA approval, Mine Operator shall submit a site plan identifying area(s) where topsoil, dirt, soil amendments shall be retained and used in the reclamation and re-vegetation process. Soil stored for reclamation purposes shall be clearly identified and marked in the field.	*Map showing potential and existing stockpiles for the period August 2014-July 2015, included in Lehigh's 2013-2014 Compliance Report – Appendix L. Compliance Report notes that a new topsoil storage area has been installed in the WMSA.*
27. The Mine Operator shall safeguard stockpiles of topsoil or overburden to be used for reclamation from wind and erosion by using controls including, but not limited to, hydroseeding, erosion control mats, and coir wattles (aka "straw wattles").	*Included in Lehigh's 2013-2014 Compliance Report, which notes that all stockpiles of topsoil or overburden to be used for reclamation have been treated. Provided installation and inspection reports (Compliance Report*

CONDITIONS OF APPROVAL	COMPLIANCE STATUS
	Appendix A)
28. The Mine Operator shall use soil amendments, in accordance with the RPA, to improve the effectiveness of the soils used for re-vegetation of final slopes. Re-vegetation shall satisfy the criteria identified in the RPA. Reporting of the test plots for the re-vegetation criteria identified in the RPA shall be submitted to the County as part of the Mine Operator's annual report. Re-vegetation shall include only plant materials identified in the re-vegetation palette contained in the approved RPA. The Mine Operator shall follow the "test plot" program in the RPA to determine the appropriateness and success rates of the proposed re-vegetation palette identified in the RPA. Reporting on the test plot program shall be part of the Mine Operator's annual report submitted by the County and shall be prepared by a qualified biologist.	*Received Lehigh's 2013-2014 Compliance Report – Appendix N (Final Revegetation Test Plot Program Final Monitoring Report).* *Note, final reclamation has not begun; therefore, data regarding soil effectiveness is not required yet. Any reclamation requiring revegetation will consider test plot results.*
29. Re-vegetation of all reclaimed slopes within the RPA Boundary shall meet the minimum success criteria listed in the approved RPA before any completed phase of reclamation may be deemed reclaimed by the County and Office of Mine Reclamation (OMR).	*Note, final reclamation has not begun; therefore, data regarding soil effectiveness is not required yet. Any reclamation requiring revegetation will consider test plot results.*
30. The Planning Manager shall have authority to administratively review and approve minor revisions to the re-vegetation palette contained in the approved RPA. Status report shall be given to the Planning Commission after any revisions and presented at the next available Planning Commission meeting.	*No requests received during the reporting period.*
31. Equipment, structures, nonessential roads, as identified in the RPA, shall be removed from the project area prior to that area being deemed reclaimed by the County and OMR.	2013-2014: Not applicable during this reporting period.
32. Construction or demolition waste or any other foreign materials are prohibited from being stored in overburden or used in reclamation. Overburden shall be compacted, tested, and documented to demonstrate it will support post-mining uses. Regarding compaction, testing, and documentation of the overburden, documentation shall be submitted to the Planning Manager within 30 days of completion.	*Received Lehigh's 2013-2014 Compliance Report, which notes that no foreign materials or overburden is being used in reclamation. Foreign materials are being separated and stored or disposed off-site.*
33. Stilling basins shall be maintained in good conditions and cleaned of silt and debris as necessary. A report shall be submitted to the Planning Manager as part of the Annual Report, fully depicting total quantities of silt removed from the basins (reported in cubic yards or tons) and where such silt is placed on the site or off the site.	*Stormwater and Erosion Control Annual Report 2013-2014, included in Lehigh's 2013-2014 Compliance Report (Appendix A), identifies basins requiring silt cleanout and the amount removed (C Station, Pond 13a, Pond*

CONDITIONS OF APPROVAL	COMPLIANCE STATUS
	13b, Pond 30, and Pond 31b. A total of 4,700 cubic yards was removed. Pond 4a only required vegetation removal.
34. The Mine Operator shall comply with the conditions of permits and plans required by and issued from the Regional Water Quality Control Board (RWQCB), including but not limited to approval of the Permanente Creek Restoration Plan and water discharge permits. The Mine Operator shall provide copies of all permits to the Planning Manager within 10 business days of issuance by RWQCB.	*SFBRWQCB issued Order No. R2-2014-0010 and new NPDES permit, which rescinds previous orders supersedes previous general permits, and Cease and Desist (CDO) Order No. R2-2014-0011. CDO requires installation and operation of interim treatment system by December 1, 2014 and specific selenium reductions that must be achieved. Report evaluating system required by March 15, 2015.* *2014-05-16. Lehigh completed Order-required submittal of updated SWPPP (included in Appendix G of Lehigh's 2013-2014 Compliance Report.* *2014-10-01. Received Lehigh's 2013-2014 Compliance Report – Appendix H, which included permits and orders issued by the RWQCB.*
35. Reclamation shall be deemed complete by the County and State Office of Mine Reclamation (OMR) once reclamation has been performed to the terms of the approved RPA, and required monitoring and inspections have demonstrated compliance with the reclamation performance standards and mitigation measures as prescribed in the Mitigation, Monitoring and Reporting Program, including compliance with all pertinent permits or other requirements for reclamation issued by non-Santa Clara County public agencies, including but not limited to the RWQCB and the State Department of Fish and Game.	*Final reclamation has not been completed.*
36. The Mine Operator shall comply with the conditions of permits required by and issued from the Bay Area Air Quality Management District (BAAQMD). Upon request by the County, the Mine Operator shall provide copies of all permits, and amendments to the Planning Manager within 10 business days of the request.	*No permits related to mining and reclamation were issued by BAAQMD. Although not applicable to this 2012 RPA, within the Lehigh Compliance Report submittal, Appendix R, included BAAQMD authorization to construct as it related to the cement plant stack replacement project.*
37. The Mine Operator shall obtain and comply with all applicable permits required by the Santa Clara County Hazardous Materials Division of the Department of	*No permits were issued during the reporting period.*

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Environmental Health. The Mine Operator shall provide copies of all permits to the Planning Manager within 10 business days of issuance.	
Permanente Creek Restoration Area (PCRA)	
38. Within 30 days of final RPA approval, submit to the Planning Manager a detailed schedule describing the implementation actions to control sedimentation, remove limestone boulders, and stabilize slopes within the Permanente Creek Restoration Area in the summer and fall of 2012, consistent with the RPA.	Completed during Annual Report No. 1.
39. **Limestone Boulder Removal**. By October 15, 2012, per the RPA, identified limestone boulders in the PCRA shall be removed. In addition, any limestone boulders identified in the future shall be removed. Submit to the Planning Manager by August 1, 2012, a report and map summarizing the field inspection and identification of all limestone boulders in the PCRA. Submit to the Planning Manager by December 15, 2012, a report and summarizing the actions to remove all limestone boulders in the PRCA, consistent with the "Best Management Practice for Removal of Limestone Boulders from Permanente Creek" (Attachment J to the RPA).	D*ocumentation regarding the results of assessment for removing boulders has been completed. Boulders were analyzed and determined to be either not a significant source of selenium or the disturbance would result in detrimental impacts to the creek for sedimentation disturbance.*
40. **Permanente Creek Restoration**. Prior to the start of Permanente Creek restoration activities in Phase III for PCRA subareas 3, 4, 5 and 7, as identified in the RPA, the Mine Operator shall submit to the Planning Manager a Permanente Creek Restoration Plan. The Restoration Plan shall include the elements of the Permanente Creek Long Term Restoration Plan (URS, March 11, 2011) to the extent set forth in the RPA. The Restoration Plan shall include, at minimum, engineered drawings for creek restoration, a riparian re-vegetation plan, hydrology/hydro-geomorphology studies supporting concepts to be used in creek restoration, and a long term monitoring and reporting program. The Creek Restoration Plan shall be reviewed and approved by the County prior to implementation. The Mine Operator shall obtain all necessary permits and approvals from all applicable local, state, and federal authorities, including without limitation the Regional Water Quality Control Board, Department of Fish and Game, and U.S. Army Corps of Engineers to implement the work.	No creek restoration activities have commenced during the reporting period.
41. Prior to the start of any grading or any grading activity that affects jurisdictional resources of the California Department of Fish and Game, Regional Water Quality	No *grading activities that affected jurisdictional waters.*

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Control Board, or U.S. Army Corps of Engineers, the Mine Operator must provide to the Planning Manager proof of permits/clearances (or documentation that a permit is not needed).	
Environmental Conditions and EIR Mitigation Measures	
Light and Glare	
42. No night lighting shall be allowed or permitted on the east-facing slope of the EMSA or any other location within the EMSA that would be visible from public locations on the Santa Clara Valley floor including roadways. *(Implements Mitigation Measure 4.1-7)*	Completed during Annual Report No. 1.
Air Quality – Health Hazards Risk	
43. Superseded by COA 45.	Not Applicable
44. Superseded by COA 45.	Not Applicable
45. In lieu of Condition No. 43 and No. 44 (Mitigation Measures 4.3-3a and 4.3-3b), the Mine Operator may submit within 90 days of the RPA approval evidence establishing to the Planning Manager's satisfaction that there are legally binding restrictions precluding any occupancy of the caretaker's residence located at 2961 Stevens Creek Boulevard, Cupertino (APN 342-63-003) during the entirety of Phase I of the Project. *(Implements Mitigation Measure 4.3-3c)*	*Relates to work within the EMSA. Lehigh obtained a lease agreement, dated 9/18/2012, for 9 years no occupancy.*
Biological Resources	
46. **Avian Species – Preconstruction Surveys.** Ground disturbance into undisturbed areas and vegetation (tree and shrub) removal should occur between September 1 and January 30, outside of the breeding season for most bird species. If ground disturbance or tree and shrub removal occurs between February 1 and June 15, preconstruction surveys will be performed within 14 days prior to such activities to determine the presence and location of nesting bird species. If ground disturbance or removal of vegetation occurs between June 16 and August 31, pre-construction surveys will be performed within 30 days prior to such activities. Thirty (30) days prior to the start of any ground disturbance into undisturbed areas or vegetation removal, the Mine Operator shall submit to the Planning Manager a copy of a contract with a qualified ornithologist to conduct pre-activity surveys. The pre-construction surveys shall be submitted to the Planning Manager no later than five (5) business days prior to the start of such activities. If the tree removal or vegetation clearing shall occur during the non-nesting	*2014-02-21. WRA biological survey memo documenting results (western wall).* *2014-03-13. WRA biological survey memo documenting results (EMSA regrading area Phase 1).* *2014-03-17. WRA biological survey memo documenting results (EMSA regarding area Phase 1).* *2014-03-22. WRA biological survey memo documenting results (EMSA regarding area Phases 2 and 3).* *2014-04-14. WRA biological survey memo documenting results (Pond 4a vegetation removal).* *Surveys conducted in 2014 on 2/20, 3/8, 3/11, 3/12, 3/15, 3/19, 3/20, and 3/14 found no evidence of breeding bird behavior, and no nest buffers were required.*

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season, submit documentation both before and after tree removal/vegetation clearing confirmation completion of work within this time frame.	
47. **Avian Species – Use of Buffers for to Avoid Nests**. If preconstruction surveys determine that active nests are found close enough to the land clearing and tree removal area to be disturbed by these activities, the ornithologist, in consultation with CDFG, will determine the extent of a construction-free buffer zone (typically 250 feet) to be established around the nest to prevent nest abandonment and direct mortality during construction.	
48. **Bat Species – Non-Roosting Season**. Removal of potential bat roost habitat (buildings, large trees, snags, vertical rock faces with interstitial crevices) or construction activities within 250 feet of potential bat roost habitat should occur in September and October to avoid impacts to bat maternity or hibernation roosts. *(Implements Mitigation Measure 4.4-2a)*	*2014-02-21. WRA biological survey memo documenting results (western wall).* *2014-03-13. WRA biological survey memo documenting results (EMSA regrading area Phase 1).* *2014-03-17. WRA biological survey memo documenting results (EMSA regarding area Phase 1).* *2014-03-22. WRA biological survey memo documenting results (EMSA regarding area Phases 2 and 3).* *2014-04-14. WRA biological survey memo documenting results (Pond 4a vegetation removal).* *Surveys conducted in 2014 on 2/20, 3/8, 3/11, 3/12, 3/15, 3/19, 3/20, and 3/14 found no evidence of suitable habitat for bat hibernation/roosting.*
49. **Bat Species – Maternity Roosting Season.** If removal of potential bat roost habitat cannot occur during September and October, bat roost surveys will be conducted to determine if bats are occupying roosts. Nighttime evening emergence surveys and/or internal searches within large tree cavities shall be conducted by a qualified biologist during the maternity season (April 1 to August 31) to determine presence/absence of bat maternity roosts within 100 feet of wooded Project boundaries. All active roosts identified during surveys shall be protected by a minimum buffer determined by a qualified bat biologist, in consultation with California Department of Fish and Game (CDFG). The buffer shall be	*See COA 48. Surveys were conducted during roosting season in areas planned for disturbance and were submitted to the County. No evidence of roosts was found.*

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determined by the type of bat observed, topography, slope aspect, surrounding vegetation, sensitivity of roost, type of potential disturbance. Each exclusion zone shall remain in place until the end of the maternity roosting season. If no active roosts are identified, then work may commence as planned. Survey results are valid for 30 days from the survey date. Should work commence later than 30 days from the survey date surveys shall be repeated. Operations may continue for many years. Surveys do not need to be repeated annually unless additional clearing of potential roosting or hibernation habitat could occur outside of the non-roosting season. Thirty days prior to the removal of potential bat roost habitat, the Mine Operator shall submit to the Planning Manager a copy of a contract with a qualified biologist to conduct pre-activity surveys. The pre-construction surveys shall be submitted to the Planning Manager no later than five (5) business days prior to the removal of any potential habitat. *(Implements Mitigation Measure 4.4-2b)*	
50. **Special Status Bat Species – Hibernation Season**. During the November 1 to March 31 hibernation season, work shall not be conducted within 100 feet of any woodland habitat (as identified in the Draft EIR Figures 4.4-1 through 4.4-4), unless a qualified bat biologist determines that woodland areas do not provide suitable hibernating conditions for bats and they are unlikely to be present in the area. Submit a report by a qualified bat biologist to the Planning Manager verifying the absence of suitable habitat as described above if work is proposed within 100 feet of woodland habitat between November 1 and March 31. *(Implements Mitigation Measure 4.4-2a)*	*See COA 48. Surveys were conducted during hibernating season in areas planned for disturbance and were submitted to County. No evidence of suitable habitat for hibernating bats was found.*
51. **Special Status Bat Species – Maternity Season Emergence.** Any trees felled during vegetation removal will not be chipped or otherwise disturbed for a period of 48 hours to allow any undetected bats potentially occupying these trees to escape. *(Implements Mitigation Measure 4.4-2b)*	*See COA 48. Surveys were conducted during hibernating season in areas planned for disturbance and submitted to the County. No evidence of suitable habitat for roosting bats requiring implementation of this mitigation was found.*
52. **Bat Roost Replacement.** All special-status bat roosts destroyed by the Project shall be replaced by the Mine Operator at a 1:1 ratio onsite with a roost suitable for the displaced species (e.g., bat houses for colonial roosters). The design of such replacement habitat shall be in consultation with CDFG. The new roost shall be in place	*Based on COA 48–51 negative findings.*

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prior to the time that the bats are expected to use the roost (e.g., prior to April 1 if the roost destroyed by the Project was used by a maternity colony), and shall be monitored periodically for 5 years to ensure proper roosting habitat characteristics (e.g., suitable temperature and no leaks). The roost shall be modified as necessary to provide a suitable roosting environment for the target bat species. *(Implements Mitigation Measure 4.4-2c)*	
53. **San Francisco Dusky Footed Woodrat.** Within 30 days prior to initial ground disturbance in woodland or scrub/chaparral communities, (as identified in the Draft EIR Figures 4.4-1 through 4.4-4), conduct pre-construction surveys for active woodrat stick nests that could be directly impacted. Surveys should take place in all suitable habitat types within the Project Area. Any stick nests within active work areas will be flagged and dismantled under the supervision of a biologist. If young are encountered during the dismantling process, the material shall be placed back on the nest and remain unmolested for three (3) weeks in order to give the young enough time to mature and leave of their own accord. After that period, the nest dismantling process may begin again. Nest material shall be moved to suitable adjacent areas (oak woodland, scrub, or chaparral) that will not be disturbed. If construction does not occur within 30 days of the pre-construction survey, surveys shall be repeated. Sixty (60) days prior to initial ground disturbance within woodland or scrub/chaparral communities, the Mine Operator shall submit to the Planning Manager a copy of a contract with a qualified biologist to conduct pre-activity surveys. The pre-construction surveys shall be submitted to the Planning Manager no later than five business days prior to the start of initial ground disturbance.	*2013-09-07. WRA biological survey memo documenting results (Quarry Crusher area Phase 3).* *2013-09-12. WRA biological survey memo documenting results (Quarry pipeline installation).* *2014-02-21. WRA biological survey memo documenting results (western wall).* *2014-03-13. WRA biological survey memo documenting results (EMSA regarding area Phase 1).* *2014-03-17. WRA biological survey memo documenting results (EMSA regarding area Phase 1).* *2014-03-22. WRA biological survey memo documenting results (EMSA regarding area Phases 2 and 3).* *2014-04-14. WRA biological survey memo documenting results (Pond 4a vegetation removal)* *2014-10-15. WRA biological survey memo documenting results (EMSA vegetation removal).* *Middens were found during the 9/12/13, 3/11/14, 3/12/14, 3/13/14, and 10/14/14 surveys. Middens were inspected for presence of young. Midden materials were relocated, as necessary, and reinspected.*
54. **San Francisco Dusky Footed Woodrat.** To reduce indirect impacts on San Francisco dusky-footed woodrat by attracting urban-adapted predators, trash and food waste shall be disposed of in proper waste receptacles and emptied on a regular basis. Additionally, quarry personnel, contractors, and visitors shall not feed wildlife within the Permanente Property and appropriate site	*2014-10-01. Received Lehigh's 2013-2014 Compliance Report, which notes that proper waste receptacles are available on-site and are emptied on a regular basis. Signs have been posted.*

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signage and employee education shall facilitate this condition.	
55. **Introduction of Invasive Plants or Pathogens**. If regulated or restricted plant materials are to be transported between the Project Area and a location in a non-infested county or state, the spread of the Sudden Oak Death pathogen shall be avoided by obtaining the necessary certificates of transport pursuant to the regulations described in the Biological Resources Assessment prepared for the Lehigh Permanente Quarry by WRA Environmental Consultants, dated December 2011.	*No plant material was transported in or out of the RPA Area.*
56. **Sudden Oak Death.** To reduce the possibility of spreading Sudden Oak Death to oak woodlands in the Study Area, the Mine Operator shall implement the following measures: a. Prior to any reclamation work within the Project Area, equipment shall be sanitized, including shoes, pruning equipment, trucks, and heavy equipment such as earthmoving, tree trimming, chipping, or mowing equipment. Except for trucks, this equipment shall remain onsite for the duration of Project activities and shall not be transferred between this and other worksites, as doing so increases the potential of transferring infected spores to or from another site. b. After the completion of work activities, any accumulation of plant debris (especially leaves), soil, and mud shall be washed off of equipment or otherwise removed onsite, and air filters shall be blown out. c. All contractors shall have sanitation kits onsite for cleaning equipment. Sanitation kits should contain chlorine bleach (10/90 mixture bleach to water) or Clorox Clean-Up or Lysol, scrub brush, metal scraper, boot brush, and plastic gloves. d. All organic material imported for mixing with Quarry pit backfill shall have been composted at a facility that meets the standards of Title 14 California Code of Regulations, Division 7, Chapter 3.1; alternative sources of organic material may be used if approved by the County of Santa Clara Agricultural Commissioner as being as effective as the composting process to sanitize SOD-infected materials. e. All other imported fill material, soil amendments, gravel, etc. required for construction and/or restoration activities to be placed within the upper 12 inches of the ground	*All equipment that does not remain on-site is decontaminated prior to and after any work in vegetated areas and that sanitation kits are kept at the quarry office.*

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surface shall be free of vegetation or plant material. *(Implements Mitigation Measure 4.4-7)*	
57. **Wetland Identification and Avoidance.** A qualified wetland biologist shall physically delineate all federal and state waters and wetland features identified in the 2008 wetland delineation (WRA, 2008) before any Permanente Creek Reclamation Area (PCRA) activities begin, and when feasible, reclamation activities shall avoid filling these areas unless authorized by the appropriate permitting agencies. Silt fence or other appropriate barriers and buffer zones shall be installed between jurisdictional waters or wetlands and areas sprayed with hydroseed to prevent filling of wetlands with tackifier or other hydroseed material; alternatively, the use of hand-seeding or working with hand tools may be utilized to avoid filling wetlands. *(Implements Mitigation Measure 4.4-8a)* Prior to the start of PCRA activities, the wetland biologist shall submit a report to the Planning Manager showing the wetland areas delineated and the installation of all fencing and barriers (photos and map). This condition shall not apply to Phase III Permanente Creek Restoration Activities in subareas 3, 4, 5, and 7, as identified in the RPA. Such activities are expected to require an independent review and permitting process, as decribed in the RPA.	*No wetlands were disturbed during the reporting period.*
58. **Wetland Mitigation Plan.** If filling of jurisdictional waters or wetlands is not feasible, the following measures shall be implemented: a. A qualified wetland biologist shall prepare a wetland Mitigation and Monitoring Plan (MMP) for impacts to wetlands and waters under state or federal jurisdiction. The MMP shall be submitted for review and approval by the Planning Manager, and as required by law by the Regional Water Quality Control Board and US Army Corps of Engineers. The MMP shall outline any anticipated mitigation obligations for temporary and permanent impacts to waters of the state and/or U.S., including wetlands, resulting from PCRA activities. The MMP shall include: i. Baseline information; ii. Anticipated habitat enhancements to be achieved through compensatory actions, including whether mitigation will occur within the Project Area along Permanente Creek or at an offsite location, as well as including mitigation site location and hydrology; iii. When possible, a preference for mitigation within	*No wetlands were disturbed during the reporting period.*

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thePermanente Quarry property, for impacts to both jurisdictional waters and wetlands; iv. Performance and success criteria for habitat enhancement of Permanente Creek or other waterways to compensate for impacts to Other Waters, including: 1. A replanting plan for appropriate native riparian woody vegetation, including but not limited to arroyo willow, white alder, California wild rose, and snowberry, bigleaf maple, western creek dogwood, and Oregon ash; 2. An 80% overall re-vegetation planting success for all mitigation areas over a ten-year period; 3. A minimum overall mitigation ratio of 1.1:1 acres for permanent impacts and 1:1 acres for temporary impacts; 4. Plantings that are self-reliant, exhibit average or better health and vigor and have observable growth in stems and leaves at least two years prior to the end of the ten-year monitoring period; 5. Visual inspection of all re-vegetation sites during each growing season, with qualitative and quantitative measures of plant cover and performance; 6. Observations of total percent plant cover in the planting area, natural recruitment of native species, and establishment of new non-native species; and 7. Annual monitoring reports submitted to CDFG and RWQCB documenting re-vegetation conditions, including recommendations to adapt maintenance and replacement of failed plantings. b. Performance and success criteria for wetland creation or enhancement including, but not limited to, the following: i. At least 70 percent survival of installed plants for each of the first three years following planting. ii. Performance criteria for vegetation percent cover in Years 1-4 as follows: 1. at least 10 percent cover of installed plants in Year 1; 2. at least 20 percent cover in Year 2; 3. at least 30 percent cover in Year 3; 4. at least 40 percent cover in Year 4. c. A performance criteria for hydrology in Years 1-5 as follows:	

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i. Fourteen or more consecutive days of flooding, ponding, or a water table 12 inches or less below the soil surface during the growing season at a minimum frequency of three of the five monitoring years; OR establishment of a prevalence of wetland obligate plant species. ii. Invasive plant species that threaten the success of created or enhanced wetlands should shall not be allowed to contribute relative cover greater than 35 percent in year 1, 20 percent in years 2 and 3, 15 percent in year 4, and 10 percent in year 5. d. MMP monitoring reports shall be submitted to the Planning Manager and responsible permitting agencies. *(Implements Mitigation Measure 4.4-8b)*	
59. To minimize disturbance to dispersing or foraging CRLF, all grading activity within PCRA subareas 4 through 7 shall be conducted during the dry season, generally between May 1 and October 15, or before the onset of the rainy season, whichever occurs first, unless exclusion fencing is utilized. Construction that commences in the dry season may continue into the rainy season if exclusion fencing is placed around the construction zone to keep the frog from entering the construction area.	*Received Lehigh's 2013-2014 Compliance Report, which notes that no grading activity took place within PCRA subareas 4–7 during this reporting period. However, cleaning and grading was required at Pond 13a/b, adjacent to subarea 7. 2014-08-21. WRA due diligence biological survey memo documenting exclusion fencing was used grading during activities 11/25/13-12/5/13. Grading occurred on dry days only.*
60. Pre-construction surveys for CRLF shall be conducted prior to construction activities within PCRA subareas 4 through 7. If CRLF are observed in the construction area or access areas, they shall be removed from the area by a USFWS permitted biologist and temporarily relocated to nearby suitable aquatic habitat.	*WRA biological survey memo documenting survey conducted 11/11/13-11/15/13, and that no signs of CRLF were found. A biological monitor was present during grading.*
61. Because dusk and dawn are often the times when CRLF are most actively foraging, all restoration activities within PCRA subareas 4 through 7 shall cease one half hour before sunset and shall not begin prior to one half hour after sunrise. Additionally, restoration activities shall not occur during rain events, as CRLF are most likely to disperse during periods of precipitation.	*WRA biological survey memo documenting grading occurred during daylight hours only.*
Cultural Resources	
62. The Mine Operator shall document the physical characteristics and their historic context of the contributing features of the Kaiser Permanente Quarry Mining District, including archival photo-documentation, mapping, and recording of historical and engineering information including measured drawings about the	Not applicable during this reporting period.

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property according to the standards of the Historic American Building Survey/Historic American Engineer Record/Historic American Landscapes Survey (HABS/HAER/HALS), to be placed in a local public archive such as the Archives of the County of Santa Clara. Verification of documentation as described above shall be submitted to the Planning Manager within sixty (60) days prior to removal of the Permanente Quarry Conveyor System as described under Condition #63. *(Implements Mitigation Measure 4.5-1a)*	
63. Prior to any of the following: modification, relocation, removal, or demolition of the Permanente Quarry Conveyor System, the Mine Operator shall salvage and/or relocate a representative portion of the Permanente Quarry Conveyor System and the remains of the early 1940s crusher, which constitute character-defining features that otherwise would be lost as a part of implementation of the Project. Verification of salvage/relocation as described above shall be submitted to the Planning Manager within thirty (30) days prior to start of mining/reclamation activities in the existing Conveyor System and 1940's crusher area. Conveyor is located west of the EMSA and southeast of the Quarry Pit, the crusher is located south of the Quarry Pit adjacent to Permanente Creek (reference Historic Resource Evaluation, Permanente Quarry Facility Comprehensive Reclamation Plan Project – Lehigh Southwest Cement Company, prepared by Archives and Architecture, LLC, October 2011). (implements Mitigation Measure 4.5-1b)	*Lehigh is in the process of documenting the historical features. Documentation is expected to be available for the 2014-2015 Annual Report.*
64. At least sixty (60) days prior to commencement of any work as described above Condition #63, the Mine Operator shall prepare public information programs to educate the general public on the historic nature of the potential Kaiser Permanente Quarry Mining District, including but not limited to exhibits at the Quarry office, publications available at the Quarry office, and an online presentation available on the their website (currently, www.lehighpermanente.com). Verification of documentation as described shall be submitted to the Planning Manager. *(Implements Mitigation Measure 4.5-1c)*	*No modification to the historic conveyor system occurred during the reporting period.*
65. If cultural resources are encountered during Project implementation the Mine Operator shall notify the Planning Manager and all activity within 100 feet of the find shall stop until the cultural resource is evaluated by a	*No cultural resources were encountered during the reporting period.*

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qualified archaeologist and a Native American representative. Prehistoric archaeological materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil ("midden") containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-period materials might include stone, concrete, or adobe footings and walls; filled wells or privies; and deposits of metal, glass, and/or ceramic refuse. If the archaeologist and Native American representative determine that the resources may be significant and cannot be avoided, they shall notify the Planning Manager and an appropriate treatment plan for the resources shall be developed by the Mine Operator in consultation with the Planning Manager, and the archaeologist. Measures in the treatment plan could include preservation in place (capping) and/or data recovery. The archaeologist shall consult with Native American representatives in determining appropriate treatment for prehistoric or Native American cultural resources. Ground disturbance shall not resume within 100 feet of the find until an agreement has been reached as to the appropriate treatment of the find. *(Implements Mitigation Measure 4.5-2)*	
66. If a paleontological resource is encountered during implementation of the RPA the Mine Operator shall notify the Planning Manager, and all activity within 100 feet of the find shall stop until it can be evaluated by a qualified paleontologist as defined by the Society of Vertebrate Paleontology Guidelines (SVP, 1995). The paleontologist shall evaluate the resource and determine its significance. If significant, the paleontologist shall notify the Planning Manager. The Mine Operator, in consultation with the County and the paleontologist, shall prepare a treatment plan such that the fossil would be recovered and scientific information preserved. The paleontologist shall implement the treatment plan in consultation with the Planning Manager and Mine Operator, prior to allowing work in the 100-foot radius to resume. *(Implements Mitigation Measure 4.5-3)*	Not applicable during this reporting period.
67. In the event that human skeletal remains are encountered, the Mine Operator is required by Health and Safety Code Section 7050.5, Public Resources Code	Not applicable during this reporting period.

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Section 5097.98, Title 14 California Code of Regulations Section 15064.5(e), and County Ordinance No. B6-18 to immediately notify the County Coroner. Upon determination by the County Coroner that the remains are Native American, the coroner shall contact the California Native American Heritage Commission, pursuant to subdivision (c) of §7050.5 of the Health and Safety Code and the County Coordinator of Indian affairs. No further disturbance of the site shall be made except as authorized by the County Coordinator of Indian Affairs in accordance with the provisions of state law and the County Ordinance. If artifacts are found on the site, a qualified archaeologist shall be contacted along with the Planning Manager. No further disturbance of the artifacts shall be made except as authorized by the Planning Manager. *(Implements Mitigation Measure 4.5-4)*	
Geological and Soils	
68. **Avoidance and containment of shallow slumps and/or fallback of overburden material.** In all areas requiring the use of excavators for grading within the Permanente Creek Reclamation Area (PCRA) (e.g., access road in-sloping, installation/repair of sedimentation basins, and removal of slide debris), the Mine Operator and/or its contractor shall begin excavations from the top of slope and proceed downward. The Mine Operator and/or its contractor shall not undercut sloped materials unless no other option is feasible as determined by a registered geotechnical engineer (e.g., excessively sloped or otherwise inaccessible terrain). In all areas of the PCRA where excavations would occur in sloped materials, the Mine Operator and/or its contractor shall install barriers immediately downslope of the activity. Downslope barriers shall be designed and installed in a manner that would be adequate to prevent overburden and/or native materials from falling, sloughing or sliding further downslope, or into Permanente Creek. Such measures may consist of temporary interlocking soldier piles, wooden shoring systems, wire mesh or other containment measures(s). The Mine Operator and/or its contractor shall not be permitted to conduct excavation or grading activities downgradient of the barrier, or prior to its installation. The ultimate location, design and installation method of such measures shall be prepared and certified, or reviewed and approved by a California State registered civil geotechnical engineer.	Not applicable during this reporting period.

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Thirty days (30) prior to the start of all excavation/grading activities as described above, submit to Planning Manager a plan showing the installation of all downslope barriers as described above. *(Implements Mitigation Measure 4.7-1)*	
69. Within thirty (30) days following approval of the RPA, submit a Geotechnical Engineer's Plan Review letter that confirms the RPA, as modified by other conditions of approval, conforms with the recommendations presented in Golder's Report (RPA Appendix C, dated November 2011). In regard to the EMSA, specifically, the letter must verify that the plans indicate where the native slope is steeper than 2.5H:1V, the topsoil and colluvium will be over-excavated within the area extending inward 100 feet from the toe of the outer slope.	Completed during Annual Report No. 1.
70. The geotechnical design recommendations provided by Golder Associates (RPA Appendix C, November 2011) are being implemented as part of the ongoing stockpiling activities within the EMSA and as a condition of approval Project. The measures are identified below: a. Foundation preparation should be completed prior to fill placement of the outer 50 feet beneath the EMSA fill. Foundation preparation should consist of over-excavation of outer 50 feet of topsoil, organic materials (trees, brush, grasses), fine-grained colluvium with a Plastic Index greater than 25, or other unsuitable soils until firm bedrock, granular soils, or clay soils with a Plastic Index less than 25 are exposed. If the exposed foundation surface is inclined at 5H:1V or steeper, the over-excavation distance from the outer slope should be extended from 50 feet to 100 feet. Furthermore, the fill placed on slopes of 5H:1V or steeper should be benched into the slope with individual bench heights of at least 2 feet and up to approximately 5 feet. b. A qualified California Registered Professional Geologist, Certified Engineering Geologist, or a California Registered Civil Engineer with geotechnical experience should inspect the foundation preparation to ensure all unsuitable materials are removed prior to placement of the outer 50 to 100 feet of EMSA fill. c. If seepage or wet zones are observed in the foundation, suitable drainage provisions should be incorporated into the foundation prior to fill placement. Suitable drainage provisions include the placement of a blanket of free-draining sand or gravel over the seepage/wet zone in conjunction with a perforated, polyvinyl (PVC) or high-	*This is an ongoing requirement. In addition, County Surveyor will perform another survey in October 2014.*

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density polyethylene (HDPE) drain pipe that drains positively toward and daylights at the slope face. The sand or gravel drainage material should be fully covered with a minimum 8-oz/square yard, non-woven, geotextile filter to provide separation from the EMSA materials. d. The fine waste materials shall be placed in lifts not to exceed 8 feet, and offset a minimum of 30 feet from the final slope face. Each lift of fine waste should be allowed to dry before being covered by overburden material. Each lift shall be overlain by a minimum 25-foot thick lift of overburden. e. Any modification to the EMSA fill geometry including increases to the maximum overall slope inclination, maximum inter-bench slope inclination, slope height, or footprint shall require an additional or revised slope stability analysis.	
Greenhouse Gas Emissions (GHG)	
71. **Develop Annual GHG Inventory.** The Mine Operator shall become a reporting member of The Climate Registry. Beginning with the first year of the Project and continuing for the duration of the Project, the Mine Operator shall conduct an annual inventory of GHG emissions and shall report those emissions to The Climate Registry. The annual inventory shall be conducted according to The Climate Registry protocols and third-party verified by a verification body accredited through The Climate Registry. Within 90 days of approval of the RPA, the Mine Operator shall submit documentation verifying registration with The Climate Registry to the Planning Manager. Copies of annual reporting to Climate Registry shall be submitted to the Planning Manager by October 1 of each year. *(Implements Mitigation Measure 4.8-1a)*	*Annual GHG emission inventory for reclamation-related activities for July 1, 2013 through June 30, 2014 completed and included in Lehigh's 2013-2014 Compliance Report (Appendix J).*
72. **Greenhouse Gas Emissions Reduction Plan.** The Mine Operator shall prepare, submit for County and BAAQMD approval, make available to the public, and implement a Greenhouse Gas Emissions Reduction Plan (GHG Plan) containing quantifiable strategies to ensure that the Project-related incremental increase of GHG emissions does not exceed 1,100 MT CO2e per year. The GHG Plan shall include, but not be limited to, the following measures: a. Replacement of on-road and off-road vehicles and construction equipment with lower GHG-emitting engines, such as electric or hybrid. b. Use of the Overland Conveyor System, powered by	*Annual GHG emission inventory for reclamation-related activities for July 1, 2013 through June 30, 2014 completed. Emissions below threshold.*

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electric motors, to move more than 75 percent of the waste rock from the WMSA to reclaim the Quarry pit. The Greenhouse Gas Emissions Reduction Plan shall be submitted to the Planning Manager within 90 days of final RPA Approval. *(Implements Mitigation Measure 4.8-1b)*	
73. **Greenhouse Gas Offsets.** If the Mine Operator is unable to reduce the Project-related incremental increase of GHG emissions to below 1,100 MT Co2e per year per Condition #72, the Mine Operator shall offset all remaining Project incremental emissions above that threshold. Any offset of emissions related to the RPA shall be demonstrated to be real, permanent, verifiable, and enforceable. To the maximum extent feasible, as determined by the County in coordination with the BAAQMD, offsets shall be implemented locally. Offsets may include but are not limited to, the following (in order of preference): a. Onsite offset of Project emissions, for example through development of a renewable energy generation facility or a carbon sequestration project (such as a forestry or wetlands project for which inventory and reporting protocols have been adopted). If the Mine Operator develops an offset project, it must be registered with the Climate Action Reserve or otherwise approved by the BAAQMD in order to be used to offset Project emissions. The number of offset credits produced would then be included in the annual inventory, and the net (emissions minus offsets) calculated. b. Funding of local projects, subject to review and approval by the BAAQMD that would result in real, permanent, verifiable, enforceable, and additional reduction in GHG emissions. If the BAAQMD or County of Santa Clara develops a GHG mitigation fund, the Mine Operator may instead pay into this fund to offset Project incremental GHG emissions in excess of the significance threshold. c. Purchase of carbon credits to offset Project incremental emissions to below the significance threshold. Carbon offset credits must be verified and registered with The Climate Registry, the Climate Action Reserve, or other source that is approved by the California Air Resources Board as being consistent with the policies and guidelines of the California Global Warming Solution Act of 2006 (AB 32), or available through a County- or BAAQMD-approved local GHG mitigation bank or fund. Documentation verifying that offsets have been accomplished, if required, must be submitted for review	*Annual GHG emission inventory for reclamation-related activities for July 1, 2013 through June 30, 2014 completed. Emissions below threshold. No offsets or additional actions required.*

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and approval to the Planning Manager and BAAQMD within 90 days of final RPA Approval. *(Implements Mitigation Measure 4.8-1b.*	
Hydrology and Water Quality	
74. **Certified Geologist Verification of Non-Limestone-Containing Material Use.** A California Certified Engineering Geologist shall be onsite during reclamation to verify that non-limestone run-of-mine rock is used as cover on the EMSA and WMSA. In addition, the Geologist shall observe and document activities associated with placing the final overburden on the Quarry Pit (i.e., ensuring that organic material is mixed to specifications). Using visual and field testing methods, with occasional bulk sampling and laboratory analysis, the geologist shall observe and document the type of rock placed over the limestone-containing material during reclamation activities. The geologist shall inspect and document whether limestone is present at the source area (Quarry Pit and WMSA), whether limestone rock is transported from the source area to segregation stockpiles, and whether limestone is present within the lifts of the proposed 1-foot layer of run-of-mine cover rock (in the EMSA, WMSA, and Quarry Pit). Inspection involves observing the excavation, hauling, stockpiling, and placement of the non-limestone cover material, performing a visual assessment of the rock, and conducting random spot sampling and field testing of suspect rock fragments. If observation, field-testing, or laboratory analysis indicates that significant amounts of limestone are intermixed with the supposed non-limestone cover material, the geologist shall document its presence, temporarily halt fill operations, and notify the Planning Manager and field superintendent. Once notified, the Mine Operator shall remove the limestone-containing materials and then perform verification field sampling in addition to laboratory verification. *(Implements Mitigation Measure 4.10-1a)* Within ninety (90) days of final RPA Approval, the Mine Operator shall submit to the Planning Manager a copy of a contract or an employee resume employed by the Mine Operation that is a California-certified Engineering Geologist responsible to conduct monitoring as described above. Quarterly reports shall be submitted from the Geologist to the Planning Manager describing effectiveness of mitigation and monitoring during final reclamation as described above.	*Resume submitted during Annual Report No. 1. Memo documenting inspection performed by certified engineering geologist in June 2014, and includes results of laboratory testing. Included in Lehigh's 2013-2014 Compliance Report (Appendix I).*

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75. The County reserves the right to retain, if it deems necessary, at the expense of the Mine Operator, a third-party California-certified Engineering Geologist, to provide independent oversight or monitoring to implement Condition #74.	*County determined third-party review not necessary during the reporting period.*
76. **Verification and Water Quality Monitoring**. Within ninety (90) days of RPA approval, the Mine Operator shall begin and continue throughout the backfilling and reclamation phases and for 5 years following completion of reclamation and for 5 years following the start of groundwater discharge from the Quarry Pit into Permanente Creek as described on page 4.10-39 of the Final Environmental Impact Report, a Verification and Water Quality Monitoring Program. The Mine Operator shall implement the following: a. Collect quarterly Quarry Pit water samples and analyze for general water chemistry and dissolved and total metals, including selenium. b. Perform quarterly electrical conductivity and pH measurements of the Quarry water. c. Measure and record daily volume of any water that is pumped from the pit area. d. Conduct annual seep surveys in March or April of each year within the Quarry Pit. Any seeps identified shall be sampled for general water chemistry and minerals and dissolved metals, and the seep flow rate shall be estimated. e. Perform routine testing of each of the various rock types that comprise the overburden to further characterize bulk and leachable concentrations of key metal constituents (selenium in particular). Such testing shall be performed until the average concentrations and the variability within a rock type is no longer changing significantly as new data are gathered. f. Sample and test runoff from the EMSA and WMSA throughout and following reclamation to confirm the concepts and closure plans (i.e., that cover with non-limestone material and re-vegetation results in runoff water quality that meets Basin Plan Benchmarks and all other applicable water quality standards, including, but not limited to, a site specific NPDES permit for the Quarry and a TMDL for selenium in Permanente Creek. Stormwater runoff monitoring and sampling shall be conducted following the placement and final grading of the 1-foot run-of-mine non-limestone cover material to ensure that surface water discharging from this cover	*Golder Associates technical memorandum documenting results of water quality monitoring for Quarry pit via Pond 4a (#76a- #76c), Quarry pit seep surveys (#76d), and overburden rock type testing (#76e).* *Received Lehigh's 2013-2014 Compliance Report – Appendix E, which provides water quality data as required.*

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does not contain selenium at concentrations exceeding Basin Plan Benchmark values. Three rounds of representative surface water samples shall be collected and analyzed to verify rock cover performance prior to the placement of the vegetative growth layer. g. Sample and test groundwater discharge from the Quarry Pit into Permanente Creek following reclamation as described on page 4.10-39 of the Final Environmental Impact Report to confirm that water quality in discharge meets Basin Plan Benchmarks and all other applicable water quality standards. h. The data obtained through this mitigation measure shall be used to reevaluate the water balance components such as runoff and groundwater inflow and the water quality associated with these within the last five years of active mining. Based on the results of any refined water balance and water quality projections, the Mine Operator shall also review and refine the water management procedures. *(Implements Mitigation Measures 4.4-5 and 4.10-1b)* All testing data shall be submitted to the Planning Office with the Annual Report by October 1 of each year.	
77. Reclamation of the Quarry Pit, EMSA, and WMSA areas shall not be considered complete until 5 years of water quality testing as described above demonstrate to the satisfaction of the Planning Manager that selenium in surface water runoff and any point source discharges has been reduced below all applicable water quality standards, including Basin Plan Benchmarks.	Not applicable during this reporting period.
78. Within 90 days of RPA approval, the Mine Operator shall implement the following stormwater and sediment management controls in addition to general BMPs required by the SWPPP in active and inactive reclamation areas throughout Phase I, II, and III of the RPA. The Mine Operator shall: a. Segregate limestone materials from the non-limestone materials (breccia, graywacke, chert, and greenstone) by way of operational phasing to ensure that non-limestone materials are placed beneath and are covered by non-limestone materials. A California Professional Geologist shall oversee stockpiling, segregation, and placement of non-limestone materials. b. Stabilize inactive areas, such as temporary stockpiles or dormant excavations that drain directly or indirectly to Permanente Creek using an appropriate combination of BMPs to cover the exposed rock material, intercept	*County staff inspected BMPs, including followup on July 2013 inspection, and determined that there were no erosion or sediment control issues.* *<u>2014-10-01</u>. Received Lehigh's 2013-2014 Compliance Report, which includes the 2013-2014 Stormwater and Erosion Control Annual Report (Appendix A) and 2013-2014 Wet Season Erosion Control Inspection Reports (Appendix B). Documentation of worker training for erosion control and SWPPP BMPs is included in Appendix C.* *The SMARA 2014 Annual Inspection*

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runoff, reduce its flow velocity, release runoff as sheet flow, and provide a sediment control mechanism (such as silt fencing, fiber rolls, or hydroseeded vegetation). Standard soil stabilization BMPs include geotextiles, mats, erosion control blankets, vegetation, silt fence surrounding the stockpile perimeter, and fiber rolls at the base and on side slopes. c. Temporarily stabilize active, disturbed reclamation areas undergoing fill placement before and during qualifying rain events expected to produce site runoff. Stabilization methods include combined BMPs that protect materials from rain, manage runoff, and reduce erosion. Reclamation activities involving grading, hauling, and placement of backfill materials cannot take place during periods of rain. d. In areas such as the WMSA where fill slopes are steep and composed of loose material, controls shall be in place to prevent material from sloughing off into the PCRA and Permanente Creek. These controls shall include debris/silt fencing placed on outer edge of grading and excavation operations back-sloping excavations to prevent grade slope towards the creek, operations buffer areas that require the use of smaller grading equipment, temporary berms along the outer extent of operations closest to the creek, Mine Operator training regarding the prevention of triggering debris slides. e. Cover active haul roads with non-limestone materials where exposed limestone surfaces are present. Roads that undergo dust control by watering must have fiber rolls or equivalent runoff protection installed along the road side to reduce runoff and avoid drainage to Permanente Creek. f. Divert all runoff generated from disturbed active and inactive reclamation areas to temporary basins, the Quarry pit, or temporary vegetated infiltration basins and kept away from drainage pathways entering Permanent Creek. To the extent possible, drainage of the non-limestone materials shall be diverted directly to sediment control facilities and natural surface drainages. g. Install up-gradient berms where limestone fines or stockpiles are placed, to protect against stormwater run-on, and install ditches and down-gradient berms to promote infiltration rather than runoff. h. Replace the limestone rock and materials that are currently used in the existing BMP ditches and cover or otherwise separate runoff from limestone rock in the	*Report submitted to County, contained one finding regarding BMPs: (1) Continue monitoring the WMSA and the EMSA for stability and erosion control. Prior to this winter, condition of check dams, drainage channel armor, and drainage outfalls should be inspected by the County. The mid-slope road south of the WMSA should be monitored for erosion control and instability. The drainage on the north side of the WMSA should continue to be monitored and modified, as necessary, to prevent erosion. The recently regarded northeastern EMSA should be inspected by the County as part of the pre-winter inspection to ensure that the drainage will function properly and erosion will be minimal.*

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existing sediment pond embankments. i. Cover large limestone surfaces that would remain exposed during the rainy season with interim covers composed of non-limestone rock types. j. Inspect and maintain BMPs after each qualifying rain event to ensure their integrity. k. Reconstruct or reline all existing stormwater conveyances and check dam structures that are constructed or lined with limestone rock using non-limestone material (greenstone, breccias, greywacke, metabasalt), available at the Quarry. l. Regularly inspect all stormwater and erosion controls, especially before and following qualifying rain events. Inspections shall be documented and periodically reported. Any violations shall be corrected immediately. m. Provide adequate erosion control training to all equipment and mine operators, site superintendants, and managers to ensure that stormwater and erosion controls are maintained and remain effective. n. Use only jute netting or other suitable replacement for erosion control in the PCRA; no plastic monofilament shall be used for erosion control or other purposes, as California Red Legged Frogs and other wildlife may become entangled in it. o. Ensure that all stormwater, erosion, and sediment control BMPs are installed, inspected, maintained, and repaired under the direction of either a California certified engineer, geologist, or landscape architect, a registered professional hydrologist, or a certified erosion control specialist. Implementation of the Best Management Practices described above shall begin within 30 days of final RPA Approval. Prior to October 1, 2012, the Operator shall provide a report, with photos, documenting and demonstrating that the aforementioned BMP's are being implemented in all areas as described above. Prior to October 15 of each year, a County Inspector shall verify installation of the aforementioned BMP's. Inspection of BMP's by a County Inspector shall occur monthly between October 15 and April 15 for each year when interim reclamation activities occur. *(Implements Mitigation Measures 4.4-5 and 4.10-2a)*	
79. **Interim Stormwater Monitoring Plan.** Prior to the start of reclamation activities, the Mine Operator shall develop a Stormwater Monitoring Plan for sampling and testing stormwater, that would supplement preexisting surface	Completed Annual Report No. 1.

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water monitoring required by General Industrial Storm Water and Sand and Gravel NPDES Permit and any other applicable permits designed to specifically monitor surface water during reclamation activities in active and inactive excavation and backfill areas, and locations where water discharges to Permanente Creek. The purpose of this plan is to evaluate performance of temporary BMPs and completed reclamation phases and to identify areas that are sources of selenium (measured on recoverable basis), sediment, or high TDS. At a minimum, the plan shall require the Mine Operator to inspect BMPs and collect water samples for analysis of TDS and metals, including selenium, within 24 hours after a qualifying rain event and sample non-stormwater discharges when they occur. If elevated selenium, sediment, or TDS is identified through sample analysis, the Mine Operator shall identify the source and apply any new or modified standard BMPs available. BMPs that show sign of failure or inadequate performance shall be repaired or replaced with a more suitable alternative. Following implementation, the Mine Operator shall retest surface water to determine the effectiveness of such modifications, and determine whether additional BMPs are necessary. *(Implements Mitigation Measures 4.4-5 and 4.10-2b)* For Phase I, submit the Stormwater Monitoring Plan for Phase I to the Planning Manager for review and approval prior to October 1, 2012. For Phase II and III, submit a Monitoring Plan to the Planning Manager for review and approval sixty (60) days prior to the start of Phase II. Stormwater testing results shall be submitted to Planning Manager on a monthly basis between October 15 and April 15 of each year. If a qualifying rain event did not occur during any month during this period (and stormwater testing was not conducted), notification shall be submitted to the Planning Manager in lieu of testing results.	
80. **Monitoring and Determination of BMP Effectiveness for the EMSA** a. Within 30 days of RPA approval, sampling and testing shall occur within 24 hours after a qualifying rain event. If no qualifying rain event occurs within 30 days of RPA approval, then testing shall begin at the first qualifying rain event. Testing shall be conducted in accordance with the Interim Stormwater Monitoring Plan developed and	*Lehigh Documentation Appendices E, Q, and P, include water quality sample results for Pond 30 EMSA discharge (Appendix E, Tables 1 and 2), identification of a possible source control BMP (Appendix Q), and a selenium reduction feasibility analysis (Appendix P).*

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approved in accordance with Condition #79. b. If test results for two consecutive years show that stormwater discharging from the EMSA into Permanente Creek exceeds total recoverable selenium of Basin Plan Water Quality Objective, currently 5 µg/L (micrograms per liter), or other applicable discharge requirement as determined by the RWQCB, then the County shall schedule a public hearing before the Planning Commission to determine whether the Mine Operator is complying with stormwater discharge requirements. For purposes of triggering Planning Commission review, the sampling shall occur at locations where water discharges to Permanente Creek. c. If the Planning Commission determines that the Mine Operator is not complying with discharge requirements, then the operator shall install a treatment system (or alternative) as described in Condition #82. *(Implements Mitigation Measures 4.4-5 and 4.10-2c)*	*Based on test results selenium levels have exceeded the water quality objective two consecutive years. A public hearing will be held before the Planning Commission on November 20, 2014 (#80b).*
81. **Monitoring and Determination of BMP Effectiveness for the WMSA and Quarry Pit** a. Within 30 days of the start of reclamation activities for Phase II, the Mine Operator shall conduct monthly water sampling and testing results in compliance with the Interim Stormwater Monitoring Plan, as described under Condition #79. b. If test results for two consecutive years show that selenium levels are higher than base levels, then the County shall schedule a public hearing before the Planning Commission to determine whether the reclamation activities are causing an increase in total selenium above the base levels. "Base levels" shall be defined as water testing results for an average for two years immediately prior to start of Phase II reclamation for discharge into Permanente Creek from the WMSA and Quarry Pit. For purposes of triggering Planning Commission review, the sampling shall occur at locations where water discharges to Permanente Creek. c. If the Planning Commission finds that reclamation activities are causing an increase in selenium over base levels, then the Mine Operator shall install a treatment system (or alternative) as described under Condition #82. *(Implements Mitigation Measures 4.4-5 and 4.10-2d)*	*THIS CONDITION IS NOT APPLICABLE SINCE PIT RECLAMATION DID NOT START UNTIL SEPTEMBER 2013. YOU NEED TWO YEARS OF MONITORING FROM SEPTEMBER 2013 FOR THIS CONDITION TO BE TRIGGERED.*
82. **Design, Pilot Testing, and Implementation of Selenium Treatment Facility or Alternative for the EMSA and/or WMSA and Quarry Pit** a. Within 30 days of RPA approval, the Mine Operator shall	*An interim water treatment facility, designed by Frontier Systems, was installed during the reporting period. Lehigh's 2013-2014 Compliance*

CONDITIONS OF APPROVAL	COMPLIANCE STATUS
begin designing a treatment facility (or alternative) and pilot system for discharge into Permanente Creek. The treatment shall be designed to achieve the Basin Plan Water Quality Objective for selenium (total recoverable selenium of 5 µg/L) for discharge from the EMSA as defined in Condition #80, and/or to achieve the "base level" standard for the WMSA and Quarry Pit as defined in Condition #81 *(reference to Mitigation Measure 4.10-2d)* b. The Mine Operator shall complete design, pilot testing, and feasibility analysis for a treatment facility within 24 months of RPA approval or by such other time as may be prescribed by the RWQCB. c. The Planning Commission shall hold a public hearing no later than 30 months after RPA approval to determine feasibility of the treatment facility (or alternative). The Planning Commission may defer the public hearing if the RWQCB determines that additional time is necessary to complete the design, pilot testing, and feasibility analysis. If the Planning Commission determines that a treatment facility is feasible, the Planning Commission shall also establish a timeline for implementing the treatment facility. d. Construction, installation, and operation of a treatment facility (or alternative) shall be required if discharge requirements are not met as described under Conditions #80 and #81 based on a determination of the Planning Commission, and if it has been determined feasible by the Planning Commission following a public hearing. *(Implements Mitigation Measures 4.4-5 and 4.10-2e)*	*Report, describes the results of a pilot system for selenium treatment, which was tested in October and November 2013 (Appendix P). The pilot system has demonstrated selenium levels can be reduced to levels below the water quality objective. Construction of the interim treatment system began in early 2014. Under the CDO, the SFBRWQCB has established a timeline for operation of the interim treatment system to demonstrate the reduction required in the CDO, with a final report due March 31, 2015. A final system must be operational by September 30, 2017.* *A public hearing will be held before the Planning Commission on November 20, 2014 to determine feasibility of treatment facility (or alternative) .*
Downstream Flood Protection	
83. **Construction of Onsite Detention Facility.** The Mine Operator shall design and construct detention facilities that would 1) manage increased runoff caused by the reclaimed Quarry pit, 2) reduce excessive discharges to Permanente Creek, and 3) develop the capacity to detain and release the 100-year flow using onsite detention pond basins while optimizing groundwater infiltration. The final drainage design shall ensure that offsite, downstream flows would not cause an increased flooding potential or lead to hydro-modification effects. Design considerations for onsite detention basins shall include the following performance standards: a. Maintain turbidity of receiving water outflows within discharge limitations for Permanente Creek, as set forth by the San Francisco Bay Regional Water Quality Control Board Basin Plan or other more stringent, site-specific	*Not applicable, final reclamation has not begun and no excess runoff was caused by the reclaimed quarry pit.*

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limitations set forth by the RWQCB. b. Effectively drain between storm events within the period of time specified by the Santa Clara County 2007 Drainage Manual. c. Enhance the settlement of fine sediment while limiting the potential for sediment-laden water to be discharged to Permanente Creek. d. Incorporate appropriate sediment traps (i.e., low areas that promote sediment settlement) in areas away from outflow structures to limit discharge of sediment at high flow periods. e. Control surface water inflows to the detention facility using energy reduction features (i.e., rip-rap aprons, vegetated swales) to reduce inflow velocity and agitation of sediment within the basin. f. Infiltrate surface water, to the extent practicable and consistent with the water-quality recommendations for the backfill material as described in the RPA, while accounting for and protecting the local groundwater condition and water quality. g. In addition to the detention facilities for the Quarry pit, the Mine Operator shall ensure that the desiltation ponds proposed in other smaller project areas such as the EMSA, are engineered to function as detention basins and attenuate stormwater flows to the extent practical. The Mine Operator shall also consider a broader watershed approach and consult with Santa Clara Valley Water District (SCVWD) on ways to detain peak flows offsite in relation to areas of existing flooding and to the current SCVWD flood control improvement project. *(Implements Mitigation Measure 4.10-4)*	
84. **Stormwater Control to Avoid Ponded Water and Selenium Accumulation**. The Mine Operator shall incorporate drainage features into the final drainage design for the Quarry pit area to eliminate the potential for surface ponding on the floor of the Quarry pit once it has reached its final elevation (990 amsl). The drainage design for the finished Quarry pit fill shall include engineered elements (e.g., conveyance channels, infiltration galleries) that facilitate groundwater recharge and percolation from limestone area to groundwater in the Quarry backfill with the objective of accommodating high groundwater elevation without creating surface water bodies that may contain elevated levels of selenium. These measures shall be incorporated into the design of the proposed basin for the floor of the Quarry pit once the floor is raised to its final	*Not applicable, final reclamation has not begun and no excess runoff was caused by the reclaimed quarry pit.*

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elevation. (*Implements Mitigation Measure 4.10-6*) Prior to the start of Phase III, submit final drainage design demonstrating compliance with the standards described above.	
85. Any body of water created during the operation of the quarry, both during excavation and processing the material, shall be maintained to provide for mosquito control and to prevent creation of any health hazards or public nuisance.	*All water created has been maintained to provide mosquito control and to prevent the creation of any health hazards or public nuisance.*
86. Sixty (60) days following RPA approval, the Mine Operator shall provide to the Planning Manager revised plans that show redesigned rip-rap energy dissipaters per the Association of Bay Area Governments (ABAG) standard for the 25 year storm for all discharge points on the reclamation plans.	*Completed in August 2012, Annual Report No. 1.*
Noise	
87. The Mine Operator shall prohibit all heavy equipment operations in the northeasterly 11.5 acres of the EMSA (as shown in Draft EIR, Figure 4.13-8) during nighttime hours (i.e., between 10:00 p.m. to 7:00 a.m.). *(Implements Mitigation Measure 4.13-1a)*	*No nighttime equipment operations occur in the EMSA during this reporting period.*
88. The Mine Operator shall either: (1) limit all operations in the EMSA within 1,600 feet of the caretaker's residence (as shown in Figure 4.13-8) to no more than one 8-hour shift per day, or (2) submit evidence establishing to the County's satisfaction that there are legally-binding restrictions precluding any occupancy of the caretaker's residence during the entirety of Phase 1 of the RPA. *(Implements Mitigation Measure 4.13-1b)*	2013-2014: Compliant through 9/18/2021. *See COA 45.*
EMSA Equipment	
89. Within thirty (30) days of the RPA Approval, the Mine Operator shall post a sign inside all mine equipment operating in the EMSA area with the text from Condition #42 (Light and Glare) and Conditions # 87 and # 88 (Noise). The sign shall be posted prominently within view of the vehicle operator. Within 30 days of the RPA approval, the Mine Operator shall submit to the Planning Manager photo documentation demonstrating compliance of this.	*Completed during Annual Report No. 1, and signs are in place and in good condition as of August 2014.*

APPENDIX B

ESA

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Memorandum

date October 31, 2014

to **Marina Rush**
Department of Planning and Development
County of Santa Clara

Rob Eastwood
Department of Planning and Development
County of Santa Clara

Patrick Angell
Principal-in-Charge
Pacific Municipal Consultants (PMC)

from Peter Hudson PG, CEG
Environmental Science Associates

subject Peer Review of Document titled: *Feasibility of Water Treatment for Discharges From The Permanente Quarry Containing Selenium*
Lehigh Southwest Cement Company

Memorandum Summary

ESA peer-reviewed documents submitted to the County of Santa Clara by Lehigh Southwest Cement Company (Lehigh). The documents relate to previous water sampling activities and the feasibility of water treatment at Lehigh's Permanente Quarry. This memorandum includes ESA's detailed comments from its peer-review and where appropriate, provides recommendations for managing and treating stormwater containing selenium. The full text of ESA's recommendations are provided in the sections below but are summarized here as:

Recommendation 1: ESA recommends that a stand-alone surface water sampling report be prepared following each water sampling occurrence at Pond 30.

Recommendation 2: As required under Condition of Approval No. 79, Lehigh must continue to sample all discharges from Pond 30 to Permanente Creek during the 2014-2015 rainy season.

Recommendation 3: ESA recommends that Lehigh prepare a Fill Placement and Sequencing Plan to inform the County of placement and grading progress at the East Materials Storage Area (EMSA).

Recommendation 4: ESA recommends that Lehigh reexamine the feasibility of piping the Pond 30 (located at the EMSA) stormwater to the Interim Treatment System (ITS), located at Pond 4A near the Quarry Pit.

Recommendation 5: Pond 30 basin enlargement (alternate treatment approach) should consider design guidelines recommended by the Santa Clara County Drainage Manual, the SCVURPPP C.3 Stormwater Handbook, and SMARA.

At your request, ESA has peer-reviewed the document titled, *"Feasibility of Water Treatment for Discharges From The Permanente Quarry Containing Selenium"* (subject document) and attachments. In addition to the subject document and its attachments, ESA also received from you and reviewed results of water sampling completed by Lehigh at Pond 30 in December 2012, February 2014, and April 2014. This memorandum presents our comments on the subject document and where applicable, our comments on other materials received from you. Our comments are also based on telephone conversations in June 2014 and October 2014 regarding the current status of selenium monitoring and reclamation activities at the Lehigh Southwest Cement Company (Lehigh), Permanente Quarry, located in Cupertino, California.

It should be noted that the subject document we reviewed was not dated and was provided to us via email with no cover page, title page, or table of contents and therefore it is not clear whether this was a draft document, a portion of a larger, final document, or a final document. The package that we received also contained Attachment 1 "*East Materials Storage Area Condition No. 79 – Modifications to Best Management Practices*, and Attachment 2, which is the Project Description for the Interim Treatment System (ITS) project. For reference, these documents are attached. Also attached is a map showing the ponds on the Permanente Quarry property that are discussed in this memorandum.

ESA understands that Lehigh has submitted the subject document to the Santa Clara County Planning Office (County) in accordance with the 2012 Reclamation Plan Amendment (2012 RPA) conditions of approval in order to provide the County current information on the feasibility of constructing a water treatment system at the Quarry Pit, West Materials Storage Area (WMSA), and East Materials Storage Area (EMSA) of the Quarry. It appears from information provided to us that the Interim Treatment System (ITS) at the Quarry Pit/WMSA has been completed and is awaiting start up. Therefore, the comments in this memorandum are focused on the actions currently planned by Lehigh to address current sampling results from the EMSA and the feasibility of selenium treatment at the EMSA.

Surface Water Sampling and Analysis at Pond 30

From ESA's review of the provided documentation, we understand that Lehigh sampled surface water discharges from the EMSA at Pond 30 twice in December 2012, once in February 2014, and once in April 2014. These samples were collected within 24-hours after the storm events from the point where Pond 30 discharges into Permanente Creek. As reported by Lehigh, the 2012 samples were just at [(5.9 micrograms per Liter (µg/L)] or below the water quality objective of 5 µg/L. The sample results from February and April 2014 indicated results that exceeded the water quality objective (14.6 µg/L and 29.2 µg/L, respectively).

Unfortunately, there are only 4 water sample results over a two year period. This is not a large enough sample set to identify trends or to isolate individual EMSA grading activities that might have caused the elevated selenium concentration in the runoff. Selenium concentration at Pond 30 are likely quite variable and may have instantaneous increases (spikes) immediately after storm events. Nevertheless, the analytical results from two consecutive years of testing show that selenium concentrations in the discharge exceeded the Water Quality Objective of 5 µg/L. In accordance with Condition of Approval No. 80, these documented exceedences should trigger Planning Commission review to determine if Lehigh is complying with stormwater discharge requirements.

> ***Comment 1*:** Submitting raw laboratory reports of water sampling results to the County for its review is necessary but the reports alone fail to provide adequate information about the individual sampling event or how the results of one single sampling occurrence compares with previous events. Without additional

details of the sampling activity such as field conditions, sampling methodologies, and water sampling handling procedures, there is no way for the County to put the raw results in any useful context or draw meaningful conclusions.

Recommendation 1: ESA recommends that a stand-alone surface water sampling report be prepared following each water sampling occurrence at Pond 30 to provide the details of the sampling activities. The report should include, but is not limited to: 1) a brief project background, 2) description of climatic conditions including length of time since last storm event and storm intensity, 3) description of Pond 30 conditions at the time of sampling (e.g. depth, water temperature, turbidity), 4) details of water sampling methodologies including sample locations, equipment used, field water quality monitoring protocols, and sample handling and quality control procedures, 5) discussion of EMSA activities at the time just prior to sampling, and 6) overall discussion of water sampling results. Each report should include a cumulative data table, a map figure showing sampling location, and have the raw laboratory data attached.

Attachment 1 to the subject document states that, "*Once the non-limestone cover is installed, Lehigh will conduct stormwater sampling to verify that the cover is functioning to reduce or eliminate selenium in EMSA runoff. Lehigh will perform at least three rounds of stormwater sampling . . . during the 2015-16 rainy season . . .*" There is no indication provided in the subject document or its attachments that surface water sampling at Pond 30 will continue and be conducted through the 2013 – 2014 rainy season.

Comment 2: It is unclear why Lehigh specifies water sampling will not begin at the EMSA until the 2015–2016 rainy season. The work to cover the limestone material on the EMSA will likely not be completed until mid-2015, so we would expect that Lehigh sample any and all rain period discharges from Pond 30 during the 2014 -2015 rain season to at least collect additional baseline stormwater data and gauge the success of its limestone cover/removal operations that were slated to begin this month.

Recommendation 2: As required under Condition of Approval No. 79, Lehigh must continue to sample all discharges from Pond 30 to Permanente Creek during the 2014-2015 rainy season as was done during the previous two winters (2012-2013 and 2013-2014). Results from these sampling occurrences should be reported in a format consistent with that described in Recommendation 1, above.

Installation of the Non-Limestone Cap at the EMSA

Grading and stockpiling activity causes limestone material to become exposed and leach selenium when contacted by stormwater runoff. Nevertheless, the water sample results reviewed do indicate exceedances that trigger corrective actions under Condition of Approval No. 79. Attachment 1, to the subject document (*East Materials Storage Area Condition No. 79 – Modifications to Best Management Practices)* outlines the steps Lehigh proposes to take in order to reduce selenium concentrations in stormwater runoff at the EMSA. The activities, which according to Lehigh were initiated in July 2014, involve identifying areas of concentrated limestone and then removing it or covering it with non-limestone material. Lehigh indicates that the non-limestone cover began in mid-October 2014 under supervision of a certified engineering geologist.

Comment 3a: ESA concurs with Lehigh's claim that removing, regrading, or covering areas containing exposed limestone material should reduce selenium concentrations in stormwater runoff from the EMSA. However, the success of this effort could only be documented by performing consistent sampling and analysis of surface water discharges during and after the placement of the non-limestone cover (see Recommendation 2, above).

Comment 3b: ESA recommends that the County require Lehigh to provide confirmation that the composition and thickness of the EMSA cover cap is in conformance with the 2012 RPA. Any deviations

from the cover cap specified in the 2012 RPA must be evaluated for effectiveness and stability and documented by a certified engineering geologist for review and approval by the County.

Comment 3c: ESA understands that the placement of the cover cap (containing non-limestone bearing material) commenced in mid-October and is currently underway at the EMSA. ESA is concerned that placement of fill at the beginning of the rainy season may lead to erosion and degradation of the cap if a large storm event occurred during the cap construction phase (expected to last until mid-2015), especially if top vegetative layer has not taken root and can provide support against surface runoff.

Recommendation 3: ESA recommends that Lehigh prepare a Fill Placement and Sequencing Plan to inform the County of placement and grading progress at the EMSA. This plan should identify areas undergoing cover operations and provide a proposed sequence and schedule of future cover placement. Lehigh shall also include details of Best Management Practices to address potential stormwater runoff and erosion during wintertime construction.

EMSA Water Treatment Feasibility

Available Technologies for Selenium Treatment

The feasibility of treating selenium at the Permanente Quarry has been studied since 2012. CH2M-Hill, an engineering firm with extensive experience in exploring options for selenium treatment and reduction, completed a feasibility study in April 2012 to determine if a technology existed that could reduce selenium concentrations in quarry property stormwater to less than 5 µg/L. Only biological-based treatment systems have been found to be effective in reducing selenium concentrations to levels as low as 5 µg/L. Based on their experience and previous work with selenium treatment, CH2M-Hill considered several possible technologies for selenium treatment including attached growth biological (Fluidized Bed Reactor) systems, Advanced Biological Metals Removal (ABMet), course coal reject bioreactor (CCR), and immobilized cell bioreactor (ICB), evaporation/crystallization, ion exchange, passive (e.g., biochemical reactor and constructed wetlands), and zero valent iron (ZVI). These technologies have provided the most consistent treatment of selenium down to 5 µg/L levels and biological-based active and passive treatment systems generally provide the lowest cost and most effective treatment. After considering the feasibility of the technological options, CH2M-Hill based its 2012 feasibility assessment on a fluidized bed reactor ("FBR") system that was capable of achieving the current 5 µg/l selenium standard. CH2M Hill concluded that while selenium treatment by biological means was feasible at the quarry property, it would have technological challenges (e.g. water quality and flow optimization) and would be too expensive.

In August 2013, Lehigh explored the possibility of utilizing a new microbial treatment system developed by Frontier Water Systems (Frontier), the same team who previously developed the ABMet system for selenium treatment. As discussed in the subject document, the Frontier system utilizes non-hazardous bacteria to establish anaerobic "reducing" conditions. Under these conditions, selenium is precipitated out of solution and then can be collected for disposal. Lehigh and Frontier Water Systems have constructed a pilot plant at Pond 4A to treat water extracted from the Quarry Pit prior to discharge to Permanente Creek. Lehigh expects this system will effectively reduce selenium concentrations in stormwater to at or below the 5 µg/L standard.

ESA understands that Lehigh has explored the feasibility of installing at the EMSA a stand-alone water treatment system similar to the ITS that was recently constructed near the Quarry Pit to treat water from the pit and the WMSA. A stand-alone ITS at the EMSA was determined to be infeasible due to timing, cost, site configuration, and the lack of available, consistent water inflow.

Comment: Based on our background with the Permanente Quarry site, our familiarity with the technological challenges of selenium treatment to below a 5 µg/L standard, and our review of the recent feasibility analysis provided by Lehigh, ESA concurs that a stand-alone stormwater treatment facility, similar to the ITS installed at Pond 4A, would likely not be the most feasible solution for the EMSA. An ITS would not a be a feasible solution because 1) the inability of Pond 30 to provide a constant influent water supply, 2) the limited available area for the ITS, and 3) the amount of time needed for design, pilot testing, and construction may exceed the time required to complete reclamation at the EMSA.

Piping /Transporting EMSA Stormwater to Pond 4A Treatment System

One of the alternatives discussed in Lehigh's recent feasibility assessment involved piping or trucking the water from the EMSA to the newly installed ITS located at Pond 4A near the Quarry Pit. Lehigh concluded that this alternative would be infeasible because of incompatibility of the EMSA influent, timing, cost, and legal restriction to redirect storm flow. ESA has three comments regarding the alternative to pipe/truck the Pond 30 water to the ITS and the determination of this alternative's infeasibility.

Comment 4a: First, Lehigh states that "there is a risk of upsetting the treatment system by the variations in water temperature and quality represented by the EMSA influent." And that the "[t]he performance of the microbial system depends on the characteristics of the influent." ESA realizes that there may be a difference in temperature, chemistry, and suspended solids between the water in Pond 30 and the water from the Quarry Pit that is being processed through the ITS. Introducing Pond 30 water could disrupt the treatment process due to chemical incompatibility. To overcome this issue, it is ESA's opinion that it would be worthwhile for Lehigh to explore the feasibility of piping the water from Pond 30 and discharging it to the Quarry Pit rather than Pond 4A at the ITS. By doing this, it would allow the water from Pond 30 to mix, dilute, and become dispersed with the water in the Quarry Pit prior to becoming influent at the ITS. In addition, the residence time in the Quarry Pit is likely much longer than that in Pond 4A, which would allow for suspended solids from Pond 30 to settle-out. Considering the large volume of water in the Quarry Pit compared to the lesser volumes arriving from Pond 30, the dilution of the Pond 30 water in the Quarry Pit would likely overcome the temperature and water chemistry incompatibilities through dilution and mixing.

Comment 4b: Second, as discussed above, stormwater could be piped/trucked and discharged to an outfall at the Quarry Pit rather than Pond 4A at the ITS. This alternative discharge location would require a shorter overall pipeline length. Also, the alternative route could possibly require fewer pumps and less road crossings, thereby reducing the time required for design and construction.

Comment 4c: Third, Lehigh states that they currently do not have "*legal authority to deliver water from the EMSA to the ITS for treatment and discharge."* Lehigh claims that its permit does not allow them to redirect stormwater runoff from other areas of the Quarry and thus, this alternative would be legally infeasible at this time. Based on the information we have been provided, it is ESA's opinion that the potential legal issue could be explored further and suggests that the Regional Water Quality Control Board (RWQCB) may permit the redirection and/or transportation of stormwater if that stormwater was to be piped to an active and successful treatment system. Receiving RWQCB approval to redirect stormwater to a treatment system could overcome the legal challenges with the alternative to pipe or transport water to the ITS.

Recommendation 4: As stated in the three comments above, factors that could deem the alternative of piping/transporting Pond 30 water to the ITS infeasible—namely the water quality incompatibilities, the pipeline length, and legal hurdles—could possibly be overcome if water from Pond 30 is delivered to the ITS via Quarry Pit rather than Pond 4A. For that reason, ESA recommends that Lehigh reexamine the feasibility of piping the Pond 30 stormwater to the ITS. Assessment of the feasibility should include consultation with the RWQCB regarding the perceived lack of legal authority to deliver water elsewhere on the Quarry property.

Alternate Approach to Treatment: Expanding Capacity of Pond 30

ESA understands that Lehigh is considering a water treatment alternative at the EMSA that involves expanding the size of the Pond 30. ESA concurs that this could be a practicable alternative but points out that the expanded pond alone cannot be considered a treatment alternative. The pond would be effective in containing additional stormwater and thus reducing the frequency of discharges to Permanente Creek. In addition, the larger pond would also allow for more mixing and dilution of stormwater flows off the EMSA whereby the stormwater with high concentrations of selenium would be dispersed when mixed with stormwater with lower selenium concentrations.[1] However, the expanded pond would not guarantee no discharge to Permanente Creek and can only be considered as an alternative if the program to cover, remove and regrade the limestone-bearing materials continues and the limestone-bearing materials are successfully removed from the exposure surface of the EMSA. Only then would selenium concentrations in the stormwater continue to diminish. Other considerations for the expansion of Pond 30 include sizing and design. Lehigh states that the pond expansion design would comply with RWQCB requirements.

> ***Comment 5a:*** ESA concurs that the RWQCB requirements should be incorporated into the sizing and design requirements of the expanded pond. However, Lehigh should also consider in its design the design criteria set forth by Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPP) for detention basins.
>
> ***Comment 5b:*** It is not clear if the proposed, larger Pond 30 would be lined. It is ESA's opinion that an enlarged pond should be lined to 1) facilitate cleaning and 2) avoid infiltration of selenium-bearing surface water to the underlying groundwater bearing zones.
>
> ***Recommendation 5:*** The enlarged Pond 30 basin should be designed in accordance with the Santa Clara County Drainage Manual, the SCVURPPP C.3 Stormwater Handbook, and SMARA. SMARA requires that erosion control methods be designed for the 20-year storm. The County Drainage Manual provides parameters for the 25-year event but not for the 20-year event. The enlargement of Pond 30 may require consideration of the 25-year, 24-hour storm event and that a safe release be provided for the design 100-year flow. The final drainage design shall ensure that offsite, downstream flows would not cause an increased flooding potential or lead to hydromodification effects.

Attachments

Attachment 1: [Lehigh] Feasibility of Water Treatment for Discharge From the Permanente Quarry Containing Selenium

- Attachment a - "*East Materials Storage Area Condition No. 79 – Modifications to Best Management Practices"*
- Attachment b - Project Description for the Interim Treatment System (ITS) Project
- Attachment c - State of the Art Biological Selenium Solutions for Mining (Frontier Water Systems)

Attachment 2: Lehigh Pond Map

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[1] The mixing of stormwater with high concentrations of selenium with water containing low concentrations in a larger pond could likely reduce the concentrations of selenium at the Pond 30 discharge point to Permanente Creek. However, determining the dilution rates and confirming the effectiveness would require development of a surface water sampling and analysis program for the expanded pond.

ATTACHMENT 1

[Lehigh] Feasibility of Water Treatment for Discharge From the Permanente Quarry Containing Selenium

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Feasibility of Water Treatment for Discharges From The Permanente Quarry Containing Selenium

This report provides information on the feasibility of constructing a water treatment system at the Permanente Quarry with respect to the Quarry Pit, West Materials Storage Area, and East Materials Storage Area. Lehigh Southwest Cement Company ("Lehigh") is submitting this information at the request of the Planning Department and in connection with the Planning Commission's review of the Quarry pursuant to Condition 82 of the County's June 26, 2012 Reclamation Plan Approval.

Background

The Permanente Quarry is a limestone and aggregate mining operation in the unincorporated foothills of western Santa Clara County, approximately two miles west of the City of Cupertino. The Quarry occupies a portion of a 3,510-acre property owned by Hanson Permanente Cement, Inc., and is operated by Lehigh Southwest Cement Company (collectively, "Lehigh"). Mining operations commenced at the Quarry in 1903.

The Quarry includes approximately 614 acres of existing and future operational areas. These areas consist of mining excavations, overburden stockpiling, crushing and processing facilities, exploration areas, access roads, administrative offices and equipment storage. The Quarry also contains undisturbed areas that are either held in reserve for future mining, or which buffer Lehigh's mining operations from adjacent land uses. Permanente Creek is a seasonal stream that runs through the Quarry in a northeasterly direction before emptying into the San Francisco Bay. Most runoff from Quarry operations enters Permanente Creek.

Lehigh excavates limestone and other rock types from the Quarry, which are processed into cement and aggregate products. Limestone is extracted from a single excavation area, the Quarry pit, which has elevations ranging from 750 to 1,750 feet above mean sea level (amsl). The pit also produces other rock types (including greenstone, metabasalts, and graywacke) that are not suitable for producing cement or aggregates, known as "overburden." Overburden is placed in permanent storage in the West Materials Storage Area ("WMSA"), which is located immediately west of the pit, or the East Materials Storage Area ("EMSA") which is located farther to the east.

Mining operations are subject to California's Surface Mining and Reclamation Act ("SMARA") and the County's surface mining ordinance. Both SMARA and County ordinances state that mining operations must have an approved reclamation plan which describes how mined lands will be prepared for post-mining use. The County serves as lead agency under SMARA. In March 1985, the County first approved a Reclamation Plan for the Quarry. In June 2012, the County approved an amended Reclamation Plan, as described in more detail below.

Reclamation Strategy for Selenium

Selenium is a naturally-occurring metal. It is an important nutrient for mammals and other species, but can have toxic effects if ingested at high doses. At the Quarry, selenium is contained within the limestone that is quarried to produce cement and aggregate. When limestone is quarried, selenium can become exposed to atmospheric levels of oxygen (compared to the low levels of oxygen in groundwater). This causes the selenium to become oxidized to a soluble selenite form (Se 6+) that may become dissolved in the storm runoff.

Selenium concentrations in Permanente Creek have been recorded at levels above the applicable water-quality standards. The San Francisco Bay Regional Water Quality Control Board has established chronic and acute limits of 5 and 20 parts per billion (µg/L), respectively. Dissolved selenium concentrations in the creek have been found between 13 µg/L and 81 µg/L. These conditions have not had an apparent effect on fish or benthic organisms in the creek, based on biological studies and laboratory testing using fathead minnows (*Pimephales Promelas*). (WRA, 2010.)

Selenium was studied in detail in connection with the 2012 Reclamation Plan amendment. The proposed amendment contained detailed information on selenium in surface water, groundwater and quarried rock. This included the results of surface water and groundwater (i.e., monitoring well) testing in and around Permanente Creek. It also included the results of field and laboratory testing to determine the amount of selenium in the various rock types at the Quarry, the leachable percentage of selenium in rock, and the capacity of the rock to release selenium when exposed to oxygen and water.

The proposed Reclamation Plan amendment also included reclamation strategies to reduce or eliminate selenium in the Quarry's discharges. For decades, regulatory agencies have focused on preventing stormwater pollution by eliminating contact between runoff and source materials. This "source control" approach, which prevents pollutants from mobilizing into water in the first place, is generally favored over water treatment facilities. This approach is the fundamental Reclamation Plan strategy for closure of most areas in the Quarry, including the EMSA.

The reclamation strategy for the Quarry pit was backfilling, to a minimum elevation of 990 feet amsl, using onsite material from the WMSA. The final backfilled surface would be covered with a layer of non-limestone material and a vegetation growth layer, to isolate runoff from any limestone in the backfill. In addition, organic matter (i.e., green waste) would be mixed in the backfill material to create anaerobic, non-oxygenated conditions that prevent the generation of selenium. Using these techniques, the Reclamation Plan amendment projected that selenium concentrations in pit discharges would fall to between 2-4 µg/L, which meets the applicable water-quality standards.

The reclamation approach to the EMSA and WMSA emphasized the concept of source control to minimize the exposure of limestone rock to oxygen and water. The Reclamation Plan amendment proposed to cover both the EMSA and WMSA at the time of final reclamation with a

layer of non-limestone material, followed by a second layer of revegetation growth media. This would isolate stormwater runoff in the EMSA and WMSA from any limestone rock within the overburden. The cover-and-isolation strategy would function to prevent a release or entrainment of selenium in runoff. The amended Reclamation Plan projected that these reclamation actions would reduce the concentrations of selenium in EMSA and WMSA runoff to levels which meet the current water-quality standards.

2012 Feasibility Study

The Planning Department reviewed the proposed Reclamation Plan amendment with assistance from independent, third-party consultants. The consultants agreed that the reclamation strategies in the amendment were sound, and would effectively reduce selenium in the Quarry's discharges to concentrations meeting the applicable water-quality standards. These conclusions were stated in a draft environmental impact report ("DEIR") in December 2011. The DEIR noted, however, that because final reclamation was not scheduled to begin until 2015 in the EMSA, and 2025 in other areas, there was a possibility that "interim" selenium impacts could occur as reclamation work was occurring but before reclamation was completed.

To address the potential interim impact, the DEIR considered whether technologies were available to reduce selenium in runoff to levels below the current standard of 5 µg/l. The DEIR concluded that a treatment system was not feasible, based on the anticipated high cost of installing and operating such a system. Before preparing the final environmental impact report ("FEIR"), however, the Planning Department retained another independent consultant, CH2M Hill, to study whether a treatment system was feasible.

In April 2012, CH2M Hill prepared a "Feasibility Assessment" which evaluated the engineering and cost considerations for a fluidized bed reactor ("FBR") system that was capable of achieving the current 5 µg/l selenium standard. CH2M Hill concluded that the technical feasibility of such a system was uncertain, without further study, because of varying runoff rates and other site-specific factors. CH2M Hill also projected installation and operating costs of approximately $165 million (excluding additional costs for "technology confirmation," or pilot testing, which CH2M Hill had recommended).

On June 26, 2012, the Board of Supervisors approved the amended Reclamation Plan, and certified the FEIR. With respect to water treatment, the Board expressly found that "a mitigation measure requiring the installation and operation of a treatment facility to treat selenium runoff during reclamation activities is not feasible, at this time" based on technological and economic factors. The Board did, however, impose conditions of approval that required Lehigh to perform further study of whether a water treatment facility was feasible for interim selenium discharges in advance of final reclamation.

Conditions of Approval

The June 2012 Conditions of Approval included four specific conditions (Nos. 79, 80, 81, 82) that addressed the possibility of interim selenium impacts. In general, these required numerous "best management practices" for selenium control; ongoing sampling and testing for selenium; and further study of a treatment facility through a pilot system. The conditions also required the Planning Commission to consider whether a treatment system was warranted in the event that interim discharge requirements were not met.

Condition 79 provides:

> 79. **Interim Stormwater Monitoring Plan**:
>
> Prior to the start of reclamation activities, the Mine Operator shall develop a Stormwater Monitoring Plan for sampling and testing stormwater, that would supplement preexisting surface water monitoring required by General Industrial Storm Water and Sand and Gravel NPDES Permit and any other applicable permits designed to specifically monitor surface water during reclamation activities in active and inactive excavation and backfill areas, and locations where water discharges to Permanente Creek. The purpose of this plan is to evaluate performance of temporary BMPs and completed reclamation phases and to identify areas that are sources of selenium (measured on recoverable basis), sediment, or high TDS. At a minimum, the plan shall require the Mine Operator to inspect BMPs and collect water samples for analysis of TDS and metals, including selenium, within 24 hours after a qualifying rain event and sample non-stormwater discharges when they occur. If elevated selenium, sediment, or TDS is identified through sample analysis, the Mine Operator shall identify the source and apply any new or modified standard BMPs available. BMPs that show sign of failure or inadequate performance shall be repaired or replaced with a more suitable alternative. Following implementation, the Mine Operator shall retest surface water to determine the effectiveness of such modifications, and determine whether additional BMPs are necessary. *(Implements Mitigation Measures 4.4-5 and 4.10-2b)*
>
> For Phase I, submit the Stormwater Monitoring Plan for Phase I to the Planning Manager for review and approval prior to October 1, 2012. For Phase II and III, submit a Monitoring Plan to the Planning Manager for review and approval sixty (60) days prior to the start of Phase II. Stormwater testing results shall be submitted to Planning Manager on a monthly basis between October 15 and

April 15 of each year. If a qualifying rain event did not occur during any month during this period (and stormwater testing was not conducted), notification shall be submitted to the Planning Manager in lieu of testing results.

Condition 80 provides:

> 80. **Monitoring and Determination of BMP Effectiveness for the EMSA**:
>
> a. Within 30 days of RPA approval, sampling and testing shall occur within 24 hours after a qualifying rain event. If no qualifying rain event occurs within 30 days of RPA approval, then testing shall begin at the first qualifying rain event. Testing shall be conducted in accordance with the Interim Stormwater Monitoring Plan developed and approved in accordance with Condition #79.
>
> b. If test results for two consecutive years show that stormwater discharging from the EMSA into Permanente Creek exceeds total recoverable selenium of Basin Plan Water Quality Objective, currently 5 μg/L (micrograms per liter), or other applicable discharge requirement as determined by the RWQCB, then the County shall schedule a public hearing before the Planning Commission to determine whether the Mine Operator is complying with stormwater discharge requirements. For purposes of triggering Planning Commission review, the sampling shall occur at locations where water discharges to Permanente Creek.
>
> c. If the Planning Commission determines that the Mine Operator is not complying with discharge requirements, then the operator shall install a treatment system (or alternative) as described in Condition #82. *(Implements Mitigation Measures 4.4-5 and 4.10-2c)*

In addition, Condition 81 states:

> 81. **Monitoring and Determination of BMP Effectiveness for the WMSA and Quarry Pit**:
>
> a. Within 30 days of RPA approval, sampling and testing shall occur within 24 hours after a qualifying rain event. If no qualifying rain event occurs within 30 days of RPA approval, then testing shall begin at the first qualifying rain event. Testing shall be

conducted in accordance with the Interim Stormwater Monitoring Plan developed and approved in accordance with Condition #79.

b. If test results for two consecutive years show that stormwater discharging from the EMSA into Permanente Creek exceeds total recoverable selenium of Basin Plan Water Quality Objective, currently 5 µg/L (micrograms per liter), or other applicable discharge requirement as determined by the RWQCB, then the County shall schedule a public hearing before the Planning Commission to determine whether the Mine Operator is complying with stormwater discharge requirements. For purposes of triggering Planning Commission review, the sampling shall occur at locations where water discharges to Permanente Creek.

c. If the Planning Commission determines that the Mine Operator is not complying with discharge requirements, then the operator shall install a treatment system (or alternative) as described in Condition #82. *(Implements Mitigation Measures 4.4-5 and 4.10-2c)*

a. Within 30 days of the start of reclamation activities for Phase II, the Mine Operator shall conduct monthly water sampling and testing results in compliance with the Interim Stormwater Monitoring Plan, as described under Condition #79.

b. If test results for two consecutive years show that selenium levels are higher than base levels, then the County shall schedule a public hearing before the Planning Commission to determine whether the reclamation activities are causing an increase in total selenium above the base levels. "Base levels" shall be defined as water testing results for an average for two years immediately prior to start of Phase II reclamation for discharge into Permanente Creek from the WMSA and Quarry Pit. For purposes of triggering Planning Commission review, the sampling shall occur at locations where water discharges to Permanente Creek.

c. If the Planning Commission finds that reclamation activities are causing an increase in selenium over base levels, then the Mine Operator shall install a treatment system (or alternative) as described under Condition #82. *(Implements Mitigation Measures 4.4-5 and 4.10-2d.)*

Finally, Condition 82 states:

a. Within 30 days of RPA approval, the Mine Operator shall begin designing a treatment facility (or alternative) and pilot system for discharge into Permanente Creek. The treatment shall be designed to achieve the Basin Plan Water Quality Objective for selenium (total recoverable selenium of 5 μg/L) for discharge from the EMSA as defined in Condition #80, and/or to achieve the "base level" standard for the WMSA and Quarry Pit as defined in Condition #81 *(reference to Mitigation Measures 4.10-2d).*

b. The Mine Operator shall complete design, pilot testing, and feasibility analysis for a treatment facility within 24 months of RPA approval or by such other time as may be prescribed by the RWQCB.

c. The Planning Commission shall hold a public hearing no later than 30 months after RPA approval to determine feasibility of the treatment facility (or alternative). The Planning Commission may defer the public hearing if the RWQCB determines that additional time is necessary to complete the design, pilot testing, and feasibility analysis. If the Planning Commission determines that a treatment facility is feasible, the Planning Commission shall also establish a timeline for implementing the treatment facility.

d. Construction, installation, and operation of a treatment facility (or alternative) shall be required if discharge requirements are not met as described under Conditions # 80 and # 81 based on a determination of the Planning Commission, and if it has been determined feasible by the Planning Commission following a public hearing. *(Implements Mitigation Measures 4.4-5 and 4.10-2e.)*

Post-Approval Stormwater Testing in EMSA

Lehigh tested its stormwater discharges from the EMSA and other areas during the two years since the Reclamation Plan's approval. Stormwater testing in the 2012-2013 wet season showed negligible selenium in runoff from the EMSA, measured at the discharge of Pond 30 to Permanente Creek. These tests showed that selenium was either Non Detect ("ND") or at concentrations slightly higher (<1 ug/L) than the current water quality criteria, 5 ug/L. During the 2013-2014 wet season, sampling from two Pond 30 discharges were higher and exceeded the current criteria for selenium.

Lehigh responded to these testing results by instituting the procedure required by Condition 79. That condition requires, if elevated selenium is detected by sampling and testing, that Lehigh identify the source and modify its "best management practices" as needed to address the issue.

In July 2014, Lehigh provided the County with a report which described the actions that Lehigh would employ to prevent elevated concentrations of selenium from discharging from the EMSA. (See Attachment 1.)

In its report, Lehigh informed the County that it would commence final reclamation in the EMSA on an advance schedule, including installing a non-limestone cover. These actions implement the "source control" strategies in the Reclamation Plan that were peer reviewed by the County's consultants, and which will reduce selenium to levels meeting the current water quality criteria. Lehigh will begin to install the non-limestone cover by October 15, 2014, and complete the process in the 2015 dry season. During the 2015-16 wet season, Lehigh will perform at least three rounds of stormwater testing (pursuant to Conditions 76(f) and 79) to verify that the cover is effectively controlling selenium, before applying a topsoil layer and planting the EMSA with native grasses, shrubs and trees.

Feasibility Analysis

The Planning Commission must determine, pursuant to Condition 82, whether it is "feasible" to build and operate a water treatment system that is capable of controlling selenium to levels consistent with the current discharge standard, 5 ug/L. The term "feasible" has a specific meaning under CEQA. Public Resources Code section 21061.1 defines it as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors." CEQA's Guidelines add that a determination of feasibility may take into account "legal" factors. (Cal. Code of Regulations, tit. 14, § 15364.)

The circumstances that bear on the feasibility of water treatment vary for different areas of the Quarry. The issue of feasibility must be analyzed separately for the Quarry Pit/WMSA, versus the EMSA.

Quarry Pit and West Materials Storage Area ("WMSA")

Since the Reclamation Plan's approval, Lehigh has diligently pursued emerging technologies to control selenium discharges from the pit and WMSA. Lehigh's focus has centered on the pit and WMSA because these areas together are the source of the majority of water discharges from the Quarry. For the same reasons, discharges containing selenium from the pit/WMSA have been the focus of the Regional Water Board's permitting efforts. Runoff from the EMSA, in contrast, is episodic and comparatively small.

In August 2013, Lehigh shared an early proposal with the County to build a water treatment system in a location east of the pit near the Quarry offices. The project description that Lehigh submitted to the Planning Department is included in Attachment 2. The project proposed to install a number of anaerobic bioreactors that remove selenium from pit/WMSA water. This proposal had certain drawbacks, however. The system would have required a sizeable influent pond (300 ft. x 150 ft.) of up to 14 acre-feet of capacity to ensure that flows entering the

bioreactors were uniformly low in suspended sediments. The system also required cylindrical steel tanks (150,000 gal/each) and a metal building (90 ft. x 85 ft. x 32 ft.) for housing equipment. The footprint, location, visual profile and potential environmental impacts of this system presented a range of concerns. Lehigh subsequently withdrew this proposal.

Concurrently, Lehigh continued to explore alternative technologies. In August 2013, Lehigh learned of a new microbial treatment system designed by Frontier Water Systems. The Frontier water treatment system was developed by the individuals who pioneered the "ABMet" systems that had been considered the state of the art in selenium treatment. The Frontier system utilizes non-hazardous bacteria to establish anaerobic "reducing" conditions, which change the selenium from a dissolved state to a solid state that can precipitate out in a solid form and be collected for disposal.

The Frontier treatment system represents the only commercially-available technology that appears capable of treating the highly-variable, yet consistent (i.e. occurs on a large number of days annually) inflow rates which characterize the Quarry pit dewatering flows and runoff, while meeting the extremely low selenium effluent limits established by the current water quality standards. Its compact, modular design offers a major advantage over other systems. The system does not require an influent pond, reducing the overall footprint. Equipment is housed mainly in trailer-sized modules that can be easily relocated, and do not need fixed foundations.

In fall 2013, Lehigh installed a pilot system using the Frontier technology. The pilot system operated at the 750-level pond within the Quarry pit (see Attachment 3 photographs). The pilot system received an inflow of approximately three gallons per minute from the pit/WMSA over a four-week period in October and November 2013. The results exceeded expectations. The pilot system repeatedly reduced selenium to levels below the current standard, 5 ug/L. The pilot system results are contained in the report provided in Attachment 3, and also shown in the table below.

Pilot System Selenium Results
(Values in ug/L)

Date	Influent SE	Stage 1 SE	Stage 2 SE	Final SE
10/16/13	1.8	1.7	0.48	--
10/21/13	ND	ND	ND	--
10/28/13	26	21	15	--
10/30/13	31	22	14	15
10/31/13	60	40	23	22
11/4/13	57	26	8	7.7
11/6/13	57	25	5	4
11/7/13	62	28	5.7	5
11/11/13	57	25	5.2	3.1
11/13/13	65	23	3.4	2.3
11/15/13	58	17	2	1.3

The data generated by the pilot system indicated that the Frontier technology can be scaled to a larger treatment system with consistent results. Consequently, Lehigh is currently proceeding to implement a larger, interim treatment system ("ITS") that will be completed by October 2014 in a location adjacent to Pond 4A, south of the Quarry pit. The location and approximate footprint of the ITS is illustrated in the report provided under Attachment 3. The ITS will treat and remove selenium from up to 24,000 gallons per hour from the pit. The ITS is scheduled to be operational during the 2014-15 wet season. The data generated over the next two years will permit Lehigh to determine whether it is technically possible to expand the system's inflow capacity to handle all water discharged from the Quarry pit and WMSA.

In summary, the information developed by Lehigh since the Reclamation Plan's approval indicates, on a preliminary basis, that it is feasible to install a water treatment system that is capable of treating water from the Quarry pit and WMSA to levels below the current 5 ug/L standard for selenium. Lehigh anticipates that the data generated during the following two wet seasons (2014-15, 2015-16) will permit a final determination. Lehigh submits that it is appropriate to amend the Conditions of Approval to acknowledge that the ITS will operate, and to thereafter reassess (in April 2016 or later) the feasibility of this technology to treat all pit and WMSA water.

East Materials Storage Area ("EMSA")

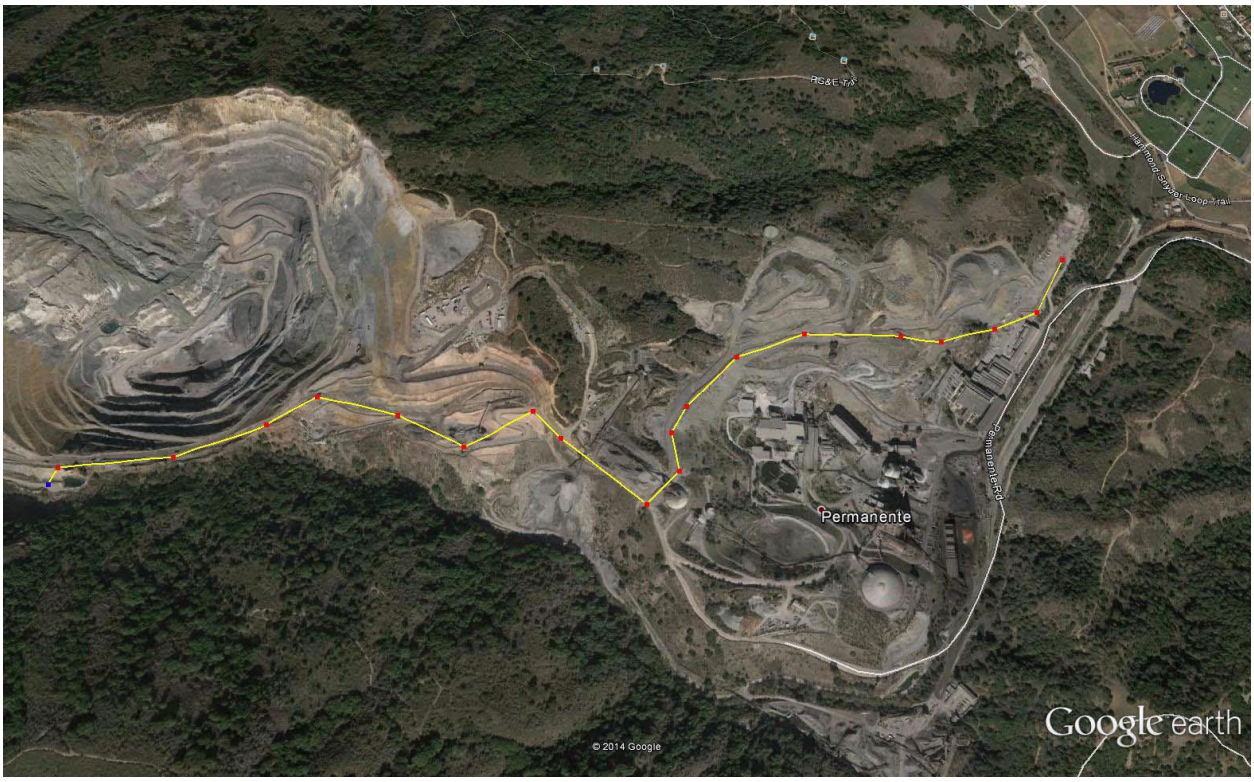
A water treatment system for EMSA discharges presents a different set of considerations. At the outset is a timing issue. The approved Reclamation Plan requires reclamation to commence in the EMSA earlier than in other areas of the Quarry. Final reclamation, including placement of a non-limestone cover, must begin by 2015 in the EMSA, whereas reclamation in other areas will not begin until at least 2025. Moreover, Lehigh has committed to starting final reclamation on an even earlier schedule. As stated in Lehigh's July 2014 report, Lehigh will begin installation of a non-limestone cover in October 2014 and complete the cover in mid-2015. As such, a treatment system would have utility for no more than one wet season (2014-15), after which the protective non-limestone cover will be in place.

The EMSA's physical configuration is also a factor. The EMSA is a stockpile which occupies approximately 54 acres. The EMSA is designed so that storm runoff flows to a series of ditches, and then to a series of sedimentation basins, including a final basin (Pond 30), which discharges into Permanente Creek. Because of the EMSA's size and drainage controls, and because the EMSA is composed mainly of pervious fill, it generates relatively little runoff to the creek. For example, the EMSA produced only two measurable discharges during the 2012-13 and 2013-14 wet seasons, respectively. (See Attachment 1.) The EMSA contrasts with the pit/WMSA area, which covers a much larger drainage area and delivers a consistent flow of water to Permanente Creek for much of the year.

In light of the above factors, Lehigh has considered whether a stand-alone water treatment facility for the EMSA is feasible. Feasibility means that that an action is capable of being accomplished in a successful manner within a reasonable period, taking into account

"technological factors." It is well known, however, that current treatment technologies, including the Frontier system, require a steady inflow to establish and maintain anaerobic "reducing" conditions. A treatment system is not able to function effectively based on the small, intermittent discharges which characterize the EMSA. Unlike the pit, which collects and stores water from a large area that can be pumped in a continuous flow, the EMSA rarely generates a treatable volume of runoff. Based on these considerations, it is clear that a stand-alone treatment facility at the EMSA is technologically infeasible.

As an alternative, Lehigh also has considered if it is feasible to treat EMSA stormwater runoff by pumping the water to Pond 4A, where the ITS facility is located. Such a project would require a series of pumps and pipes to deliver water from the EMSA to the treatment facility. The project would require approximately 1.7 miles of pipe to link Pond 30 (in the EMSA) to the location of the treatment facility at Pond 4A. It also would require pumps to lift water over a 700-foot vertical gradient, in order to cross a ridge separating the EMSA from the facility. The approximate alignment of the piping and pumping system is illustrated below.



A water delivery system presents timing issues, however, as prefaced above. Lehigh estimates that it would require approximately two years to design and construct a water delivery system (excluding any time that may be required for the Planning Department to prepare an environmental review). By the time this system would be operational, the EMSA will already have been covered with the non-limestone layer called for by the Reclamation Plan to protect against selenium, and the delivery system would no longer have usefulness. In short, this

alternative is not "capable of being accomplished in a successful manner within a reasonable period of time…" (Pub. Resources Code, § 21061.1.)

In addition, Lehigh currently does not have legal authority to deliver water from the EMSA to the ITS for treatment and discharge. In March 2014, the Regional Water Board issued Lehigh a water discharge permit and a cease and desist order. The permit and CDO authorize a very specific set of discharges from the Quarry. In particular, the permit and CDO allows Lehigh to use the ITS for treating process water discharges from the Quarry pit. It does not, however, authorize Lehigh to redirect stormwater runoff from other areas of the Quarry (such as the EMSA) to the ITS for treatment. As such, an alternative that involves pumping EMSA water to the treatment facility is legally infeasible at this time. (Cal. Code of Regulations, tit. 14, § 15364.)

Delivering EMSA water to the ITS also raises technological issues. A primary concern is the risk of upsetting the treatment system by the variations in water temperature and quality represented by the EMSA influent. The performance of the microbial system depends on the characteristics of the influent. A microorganism's ability to survive in water depends on the oxidation/reduction potential ("ORP") of the water, which is affected by the temperature and quality of the influent. During pilot testing in 2013, Frontier observed that fluctuations in the influent temperature affected system performance, and recommended that Lehigh draw water from its well system rather than surface water. As the EMSA produces only surface water, water from the EMSA would have a different profile for temperature and suspended solids than the pit/WMSA influent. It cannot be determined at this time whether the ITS can effectively absorb and tolerate such influent variations without reducing performance. As a result, this alternative is not feasible at this time based on technological factors. (Pub. Resources Code, § 21061.1.)

The anticipated costs of a water delivery system also bear consideration. Lehigh estimates that the cost of designing and installing a water delivery system would exceed $4 million. As previously noted, however, a delivery system would be rarely used because the EMSA seldom generates enough runoff to cause a discharge. It is appropriate to balance the usefulness of delivery system against the costs of the system. In this case, because the anticipated costs of the delivery system appear to far outweigh any usefulness which the delivery system may have, this alternative appears to be economically infeasible. (Pub. Resources Code, § 21061.1.)

Similar to a water delivery system, Lehigh also analyzed the option of transporting water from the EMSA to the treatment facility using off-road trucks. In this scenario, water collected in Pond 30 would be pumped into off-road water trucks that Lehigh would be required to purchase (although the Quarry has existing water trucks, it does not have any available water trucks that are capable of driving through the cement plant which may not exceed an 8,000 gallon capacity). Loaded trucks would travel an approximately 1.9-mile route from the EMSA to the treatment facility and then return. The alternative of trucking water to the treatment system confronts many of the same issues posed by a pumping delivery system. The Regional Water Board permit and CDO do not provide Lehigh with the legal authority to deliver water from the EMSA to the ITS. In addition, introducing EMSA water into the treatment facility can unbalance the

microbial system. Thus, for the same reasons that a pump-based delivery system is infeasible, trucking EMSA water to the treatment facility is infeasible as well.

Finally, Lehigh has considered whether there are alternatives to a water treatment facility that will prevent untreated runoff from entering Permanente Creek, in the event that discharges from the EMSA following installation of the cover do not meet the current 5 ug/L selenium standard. In this regard, Condition 82(c) states the Planning Commission may consider an "alternative" to a treatment facility. In this regard, Lehigh has considered the possibility of enlarging Pond 30 (at the base of the EMSA) to a capacity that will minimize the likelihood of a stormwater discharge to Permanente Creek under foreseeable storm events. The enlarged pond would be designed and sized based on the Regional Water Board's requirements.

At this time, the alternative of enlarging Pond 30 appears to be feasible, subject to the need for a subsurface analysis to ensure that the area surrounding Pond 30 can accept an enlarged pond. Lehigh believes it would be appropriate for the Planning Commission to require Lehigh to provide a status update regarding the feasibility of enlarging Pond 30 at the time of the 2015 annual report.

Conclusion

Lehigh appreciates the opportunity to provide this input to the Planning Commission, and looks forward to answering questions.

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Attachment a

"*East Materials Storage Area Condition No. 79 – Modifications to Best Management Practices*"

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East Materials Storage Area
Condition No. 79 – Modifications to Best Management Practices

This document describes the actions currently planned by Lehigh Southwest Cement Company to address the recent sampling results from the East Materials Storage Area ("EMSA") to comply with the June 26, 2012 Conditions of Approval.

On June 26, 2012, the Santa Clara County Board of Supervisors approved an amended Reclamation Plan for the Permanente Quarry, which encompasses the EMSA. Among the range of issues addressed by the amended plan was the presence of selenium in elevated concentrations in stormwater runoff from portions of the quarry, including the EMSA. To address this issue, the Reclamation Plan and Conditions of Approval contained several requirements designed to reduce or eliminate selenium. A wide range of water monitoring provisions, best management practices, and sediment controls are set forth in Condition Nos. 74 through 81.

Among them, Condition 79 provides that Lehigh must monitor stormwater discharges from the EMSA for selenium and other pollutants. Lehigh does this by sampling its stormwater discharges from the EMSA at the outfall structure located at Pond 30. In the 2012-13 and 2013-14 wet seasons, Lehigh tested four measurable discharges. Samples in December 2012 indicated that selenium was non-detectable or dropping compared to past results. Sampling in early 2014, however, showed a comparative increase in selenium.

Pond 30 Sampling Results 2012-2014	
Date	Result (in ug/l)
12/5/12	5.9
12/26/12	Non-Detect
2/27/14	14.6
4/2/14	29.2

The increase in selenium is the likely result of activities in the EMSA that may have exposed areas holding higher concentrations of limestone, which is known to release selenium when exposed to air and water.

In circumstances where elevated selenium levels have been detected in EMSA stormwater discharges, Condition of Approval No. 79 requires Lehigh to identify the source of the selenium and modify its best management practices to address the issue. Condition No. 79 provides, in relevant part:

> If elevated selenium, sediment, or TDS is identified through sample analysis, the Mine Operator shall identify the source and apply any new or modified standard BMPs available. BMPs that show sign of failure or inadequate performance shall be repaired or

replaced with a more suitable alternative. Following implementation, the Mine Operator shall retest surface water to determine the effectiveness of such modifications, and determine whether additional BMPs are necessary.

Lehigh will take the following steps to implement these modified best management practices, and according to the following schedule:

1. By July 31, 2014, Lehigh will retain geological and geotechnical consultants to complete an inspection of the EMSA to identify concentrated areas of limestone for removal or regrading. Lehigh expects that removal or cover of this material alone will return runoff concentrations of selenium to 2012 levels.

2. By July 31, 2014, Lehigh will retain geological and geotechnical consultants to identify the sources of suitable non-limestone rock cover material and to oversee the placement of cover materials (a contract/resume for this consultant already has been provided to the County).

3. By October 15, 2014, Lehigh will commence installing the non-limestone cover. Non-limestone rock will be harvested as it is produced from mining operations. Rock will be delivered directly to the EMSA from the quarry after mining, or temporarily stockpiled if it is infeasible to deliver material directly to the EMSA for placement. Lehigh will advise staff of any temporary stockpiles in advance. Placement and testing of cover materials will be supervised by a certified engineering geologist as required by Condition No. 74.

4. Once the non-limestone cover is installed, Lehigh will conduct stormwater sampling to verify that the cover is functioning to reduce or eliminate selenium in EMSA runoff. Lehigh will perform at least three rounds of stormwater sampling under Condition No. 76(f) and No. 79. Samples will be collected during the 2015-16 rainy season, and successive wet seasons until rains are sufficient to permit three or more rounds of sampling. Sampling and testing will be conducted and reported as follows:

- Lehigh will sample EMSA discharges for selenium, total dissolves solids and metals.
- Lehigh will collect samples within 24 hours after each qualifying rain event.
- Lehigh will provide laboratory testing results to County staff on a monthly basis during the wet season (October 15-April 15).

The cover design received a detailed review by the County's consultants prior to Reclamation Plan approval. The County's consultants concurred that the cover will be effective to reduce or eliminate selenium in runoff. Should the cover not perform as expected, Lehigh will

consider its options for routing EMSA stormwater runoff to the interim water treatment system which Lehigh is developing in furtherance of Condition No. 82.

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Attachment b
Project Description for the Interim Treatment System (ITS) Project

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Project Description

1. Project Overview

On June 26, 2012, Santa Clara County ("County") approved the Reclamation Plan for the Permanente Quarry ("Quarry"), a limestone and aggregate quarry located at 24001 Stevens Creek Boulevard, Cupertino, Santa Clara County, California (Figure 1). The County granted approval upon the condition that the operator, Lehigh Southwest Cement Company ("Lehigh")[1], study the feasibility of building and effectively operating a treatment system to ensure that discharges from the Quarry meet certain standards for water quality, and specifically, for selenium. Additionally, in April 2013 Lehigh entered into a consent decree with the Sierra Club which requires Lehigh to install a treatment system to remove selenium and other constituents from the Quarry's water discharges.

At this time, Lehigh proposes to build an interim water treatment system ("ITS") to remove selenium from water discharged from the Quarry pit into Permanente Creek. The ITS is intended to further Lehigh's effort to determine if it is feasible to build and operate a treatment system for all Quarry runoff according to the June 26, 2012 conditions of approval. The ITS also is intended to meet the consent decree's requirements. Lehigh seeks the County's approval of a Reclamation Plan amendment ("Project") to recognize the installation of the ITS, and to describe its operation and its eventual reclamation.

The ITS will cover 2.5 acres (the "Project Area") entirely within the existing Reclamation Plan boundary (Figure 2). The ITS will treat up to 400 gallons per minute of water from the Quarry pit using treatment equipment to be installed along the pit's eastern rim. Treated water would be pumped to an existing outfall which discharges to Permanente Creek. The ITS is not designed to treat water from other areas of the Quarry that do not drain into the Quarry pit.

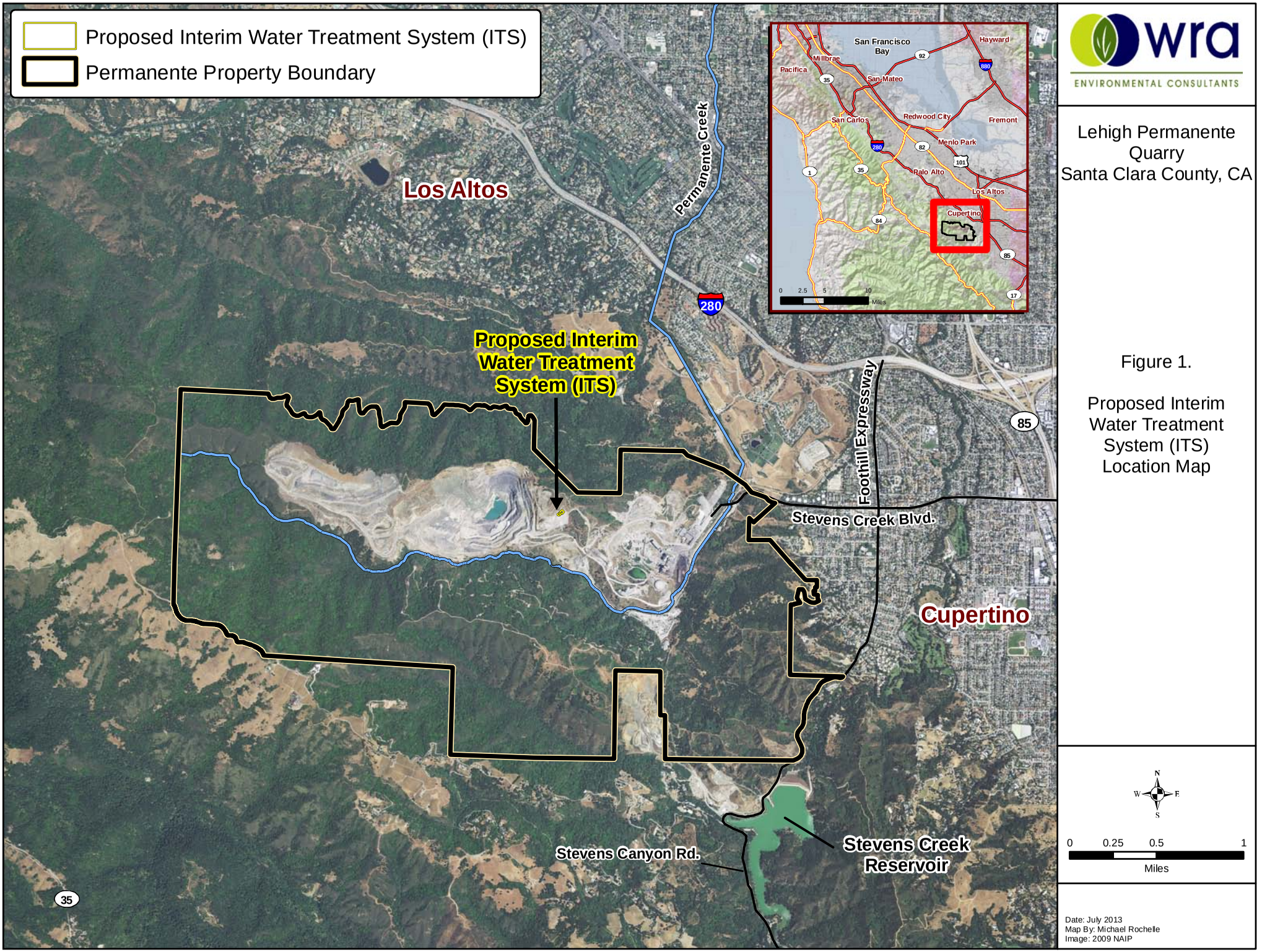
Lehigh anticipates that it will eventually install a "final" treatment system to treat water discharged from other portions of the Quarry. The final treatment system is not addressed by this Reclamation Plan amendment. Although the final system is expected to utilize some of the same equipment and infrastructure used by the ITS, the ultimate design, configuration and selection of technology in the final system will depend on data collected during operation of the ITS, and it is speculative to forecast the details of the final system at this point in time. If a later amendment is necessary to accommodate a comprehensive final system, it will be processed after the final system design is selected.

2. Project Location

2.1 Regional Setting

The Quarry is located in an unincorporated area of the County to the west of the City of Cupertino, and approximately two miles west of the Interstate 280 intersection with Highway 85.

[1] The Permanente Quarry (Mine ID No. 91-43-0004) is owned by Hanson Permanente Cement, Inc. and operated by Lehigh. Lehigh and Hanson both are part of the HeidelbergCement Group, a worldwide producer of construction materials.



ENVIRONMENTAL CONSULTANTS

Lehigh Permanente Quarry
Santa Clara County, CA

Figure 1.

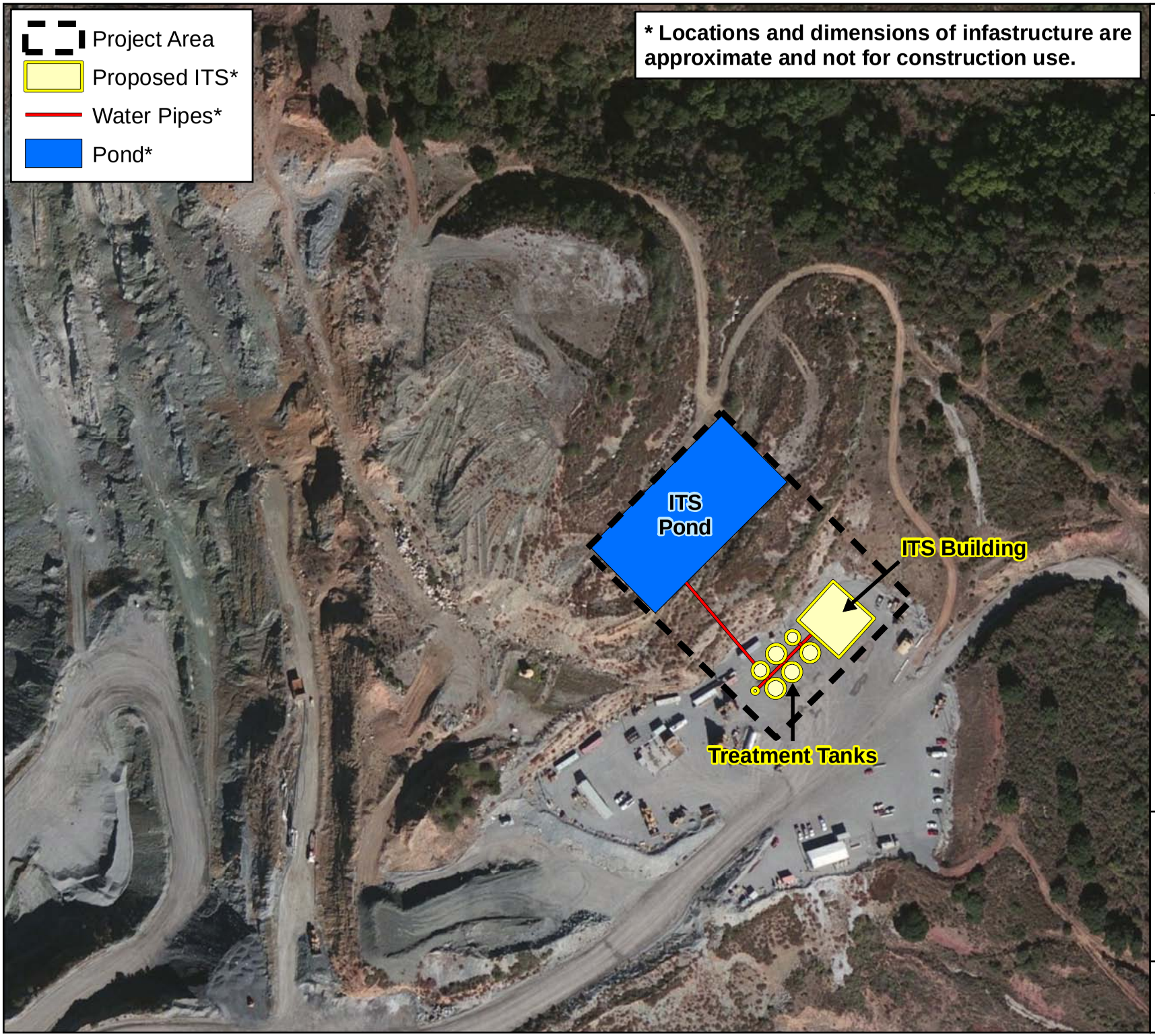
Proposed Interim Water Treatment System (ITS) Location Map

N
W E
S

0 0.25 0.5 1
Miles

Date: July 2013
Map By: Michael Rochelle
Image: 2009 NAIP

Path: L:\Acad 2000 Files\16000\16143-4\ArcMap\Viewshed\Location.mxd



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ENVIRONMENTAL CONSULTANTS

Lehigh Permanente Quarry
Santa Clara County, CA

Figure 2.

Site Map for Proposed Interim Water Treatment System (ITS)

N
W E
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0 50 100 200
Feet

Date: July 2013
Map By: Michael Rochelle
Image: 2009 NAIP

Path: L:\Acad 2000 Files\16000\16143-4\ArcMap\Viewshed\Site Plan.mxd

Vehicle access to the Quarry is provided via Stevens Creek Boulevard or Foothill Expressway and Permanente Road. The property address is 24001 Stevens Creek Boulevard, Cupertino, California, 95014.

The Quarry is located in the eastern foothills of the Santa Cruz Mountains, which are part of California's Coast Range and which separate the San Francisco Bay Area from the Pacific Ocean along the San Francisco Peninsula. Lehigh's approximately 3,510-acre ownership is bordered by large open space areas to the north, south and west, and is in proximity to urban areas to the east. North and northeast are the Rancho San Antonio County Park and Mid-Peninsula Regional Open Space District land. The closest residential areas are in the cities of Cupertino, Los Altos, Palo Alto, and Saratoga.

The existing Reclamation Plan boundary covers approximately 1,238 acres of Lehigh's ownership. From this boundary, the City of Cupertino is approximately 0.45 mile to the east, the City of Los Altos is 1 mile northeast, and the City of Saratoga is 3.25 miles to the southeast. Two census-designated residential areas (Loyola and Los Altos Hills) are approximately 1 mile north. A separate surface mining operation, the Stevens Creek Quarry, is located approximately 1 mile south.

The Project Area is within the unincorporated County and is subject to the County's land use jurisdiction.

2.2 Project Area

The Project Area is the area occupied by the ITS, which includes the treatment equipment and related infrastructure, including the pumps, pipes, tanks, and pond. The Project Area occupies a total of 2.5 acres in the central portion of the Quarry. The Project Area includes the influent pond, the treatment system/building, and pipelines connecting the two (Figure 2). The ITS does not include all of the areas over which storm runoff flows which will be treated by the ITS because the Project will cause no physical change to such areas. Topography in and around the Project Area is generally steep with elevations from 450 feet above sea level ("asl") at the eventual pit bottom to 1,350 asl at the inflow pond. The Project Area lies north of Permanente Creek, a perennial stream which is a tributary to San Francisco Bay.

3. Existing Land Use

3.1 Existing Land Use in the Project Area

The Project Area is within an ongoing surface mining operation. These land uses are characterized by a range of mining activities which include overburden removal, drilling and blasting, extraction of rock, and hauling and rock processing. These activities also are marked by the use of heavy mining equipment, including excavators, bulldozers, drill rigs and off-road haul trucks to extract and transport mined material. These land uses will not change with either the construction of the water treatment system or the proposed amendment to the Reclamation Plan.

Surface mining operations at the Quarry take place without a use permit from the County because the Quarry is considered a legally nonconforming use. In March 2011, the Santa Clara County Board of Supervisors formally determined that the Quarry was "vested" and delineated

the geographic scope of the vested right. The Project Area is entirely within the area determined by the Board of Supervisors to be vested.

3.2 Existing Land Uses in the Vicinity

Existing land uses within the immediate vicinity of the Project Area, and within Lehigh's ownership, are surface mining and processing, and cement manufacturing at the Cement Plant. To the west, the nearest land that is not operated by Lehigh is open space approximately 0.5 mile away. To the south, the nearest non-Lehigh land use is the Stevens Creek Quarry, another mining operation. Other existing uses farther south and more than 0.5 mile from the Project Area include rural residential and small agricultural uses. To the east, the nearest non-extractive uses are open space and recreational uses related to the Rancho San Antonio County Park, the Gates of Heaven Cemetery and residential subdivisions. North, the nearest non-extractive uses are open space and recreational (i.e., Mid-Peninsula Regional Open Space District and Rancho San Antonio County Park lands). The nearest residences to the Project Area is located a minimum of one mile to the north and northeast.

4. Project Purpose and Need

4.1 Overview

The Project is a Reclamation Plan amendment that would recognize the installation and operation of the ITS, and provide for its removal and reclamation.

As background, SMARA and the County's surface mining ordinance require that mining operators have an approved reclamation plan which describes how land affected by mining lands will be reclaimed to allow post-mining land uses. (Pub. Res. Code § 2770; Santa Clara County Code § 4.10.370(C).) Reclamation is defined by state law as:

> [T]he combined process of land treatment that minimizes water degradation, air pollution, damage to aquatic or wildlife habitat, flooding, erosion, and other adverse effects from surface mining operations, including adverse surface effects incidental to underground mines, so that mined lands are reclaimed to a usable condition which is readily adaptable for alternate land uses and create no danger to public health or safety. The process may extend to affected lands surrounding mined lands, and may require backfilling, grading, resoiling, revegetation, soil compaction, stabilization, or other measures.

(Pub. Res. Code § 2733.)

The Reclamation Plan originally was approved by the County in March 1985. The 1985 Reclamation Plan covered a 25-year period and an area of 330 acres. In 2007, the Quarry began the process of updating the reclamation plan to account for changes in site conditions and also to address certain compliance issues. The County approved the amendment on June 26, 2012. As amended, the Reclamation Plan describes the process of reclaiming all operational components, and areas of historic disturbance from with earlier periods of site operation.

The need for the ITS is based partially upon the 2012 Reclamation Plan amendment approval. The County recognized at that time that some water discharges may contain selenium, which is a naturally-occurring substance. As a result, the June 26, 2012 approval included conditions which were designed to reduce or eliminate selenium from groundwater and storm runoff. Condition 82 identified the option of building a treatment plant. However, in light of uncertainty over whether such a plant could be feasibly built and operated, Condition 82 required that Lehigh first operate a pilot program to determine if treatment was feasible and second, to assess whether interim best management practices could effectively control selenium, before requiring a treatment system.

Lehigh has since installed a small-scale pilot treatment system. The results of the small-scale program indicate that the technology for treating selenium with the prevailing site conditions and flow volumes is potentially achievable, and the next step towards that goal is the operation of the ITS, an intermediate system. The ITS' performance will assist Lehigh to determine whether it is feasible to build and operate a treatment system for all Quarry runoff, pursuant to Condition 82. Also, in April 2013, Lehigh ended litigation by the Sierra Club by entering into a consent decree which required Lehigh to construct an interim treatment system to remove selenium from the Quarry's discharges. The ITS is also intended to accommodate the requirements of the consent decree.

4.2 Objectives

The Project's objectives are to:

- Approve an amendment to the Reclamation Plan to recognize the installation and operation of a water treatment system.
- Ensure that structures, equipment and facilities associated with the water treatment facility are properly reclaimed to avoid or eliminate residual hazards to public health and safety.

5. Project Elements

5.1 Overview

The ITS would function by delivering water stored in the Quarry pit to a pond and a series of treatment tanks located on the eastern edge of the Quarry pit (see Figure 2). Treated water will be pumped to Pond 4A and discharged to Permanente Creek from Pond 4A using the same outfall which the Quarry currently uses to discharge water that either collects in the pit or is captured by the system of groundwater wells in the pit. A supplemental technical description is provided as part of the application package following this Project Description. The following is a summary of the main operational elements.

5.2 Physical Features

The ITS will include the following physical components:

Storage Pond: The ITS will include a lined pond to ensure that flows entering the treatment equipment are uniformly low in suspended sediments. The pond will be between 10 and 14 acre-feet in capacity at the maximum water level with at least two feet of freeboard. Pond edges will be bermed to eliminate stormwater inflow to the pond from runoff. The pond dimensions will be

approximately 150 feet by 300 feet. Inflow and outflow control structures will allow suspended solids to settle before water is drawn into the treatment equipment. The pond will have a single geomembrane liner, protected by a granular surface over the liner, so that sediment can be removed without damaging the liner. The pond serves the following purposes:

- Surge control – The pond will protect the treatment processes from rapid changes in flow rate in the quarry dewatering system and associated with high flow rate backwash and recycle flows.
- Constant flow – The pond will allow for the ITS to be set for a constant flow rate, with level controls in the pond signaling when gradual flow rate changes are needed.
- Sedimentation – The pond will reduce peaks in suspended solids to the ITS which may occur in the dewatering system from time to time, especially during the wet season.

Tank System: The ITS is comprised of a series of treatment tanks, up to 150,000 gallons each in volume, connected by piping, valves, and pond pumps to move the water through the system, and controls and instruments to manage and monitor treatment performance. The tanks will be sited outside of the building, described below (see Figure 2).

Building: A steel building will be constructed to house additional treatment equipment, including filtration and pH adjustment (Figure 2). The building will be approximately 85 feet wide by 90 feet long, with wall heights of 20 feet and a maximum roof peak of 32 feet. Process controls, electrical connections and other minor process support equipment will be housed in the building. The ITS will not require upgrades to the existing electrical lines to the Quarry office area.

The tanks and building profiles are expected to be sufficiently low to avoid visibility from the Santa Clara Valley floor. Additionally, structures will be painted with a color compatible with the surrounding landscape to minimize their visual impact.

Lehigh anticipates that operation of the ITS will not change the overall volume of water discharged into Permanente Creek at the current time. Presently, flows are variable and generally represent the volume of water needed to dewater the Quarry pit. Flows into Permanente Creek through the ITS will be designed to accomplish the same objective.

5.3 Hours and Personnel

The ITS will operate continuously. Up to two (2) full-time employees will be required to monitor system performance using a workstation within the building structure. Employees will be present only during normal business hours. Employees will utilize the neighboring Quarry offices for restroom and break facilities.

5.4 Hazardous Materials Management

Hazardous materials associated with the project include chemicals necessary for use in the treatment process. Residuals from the process itself, including biological and chemical residues generated by the treatment equipment during the process of water treatment, are not expected to exhibit hazardous characteristics. The technical supplement includes a further description of the expected characteristics of the ITS inflow, the storage and use of chemicals in the treatment process, the disposal of residuals generated by the process, and operational health and safety.

5.5 Operational Electricity Usage

The ITS will utilize electrical power for system operations. The expected 460V, 3-Phase electrical loadings are as follows:

- ITS – 150 Kilowatt-hours (KwH) per year
- Building (heating/ventilation) – 31 KwH per year

Electricity during operations will be supplied by a line drawing power from PG&E.

6. Construction Equipment and Labor

6.1 Grading and Earthworks

The ITS will require earthworks grading to construct a pad for construction of the structures, tankage, and the lined inflow pond (Figure 2). Currently, Lehigh anticipates that grading in the following volumes will be necessary (estimates may be updated prior to construction):

- Bulk grading excavation: 15,000 cubic yards (cy).
- Bulk grading fill (18" base rock on rock pad): 10,000 cy.
- Pond liner / soil veneer fill: 800 cy (using 3/8-inch diameter or smaller rock, obtained on-site or through import).

6.2 Construction Equipment

The detailed list of construction equipment for the ITS project is provided in the Air Quality Impact Analysis. A summary of that is provided in Table 1.

The construction phase of the project will require the following truck trips for delivery of construction material and fuel:

- 203 round trips (RTs) made by an over-the-road diesel tractor-trailer for delivery of construction material
- 12 RTs by a diesel powered fuel truck for diesel fuel delivery
- 2400 RTs by light-duty (gasoline) pickups for personnel and craftsmen ingress/egress

Table 1
ITS Diesel Construction Equipment Use

Equipment Type	ITS Plant	Pond	Total Hours	HP	Hp-hours
Front End Loader (Cat 962)	135		215	221	47515
Excavator (Cat 245)	80	80	160	325	52000
Excavator (Cat 320)			80	138	11040
Rubber-tired Backhoe (Cat 450F)	135	24	159	125	19875
4WD Forklift Cat GP50K	425	40	465	97	45105
Bobcat, JD257 or equal (S250 used)	65		65	75	4875
Boom Crane (Grove AP206)	20		20	66	1320
JLG Man Lift (JLG 260 MRT)	1000		1000	25	25000
Compactor/drum roller (Cat CS 64)	40	48	88	156	13728
Generator (49 HP)	1200	40	1000	49	49000
777 On-site Truck		20	20	870	17400
Articulated Dump Truck (Volvo A40F)		160	160	476	76160
Tracked Dozer (Cat D9)		128	128	410	52480
Welder (diesel)			450	45	20250

6.3 Construction Labor

Construction of the ponds will involve the following labor:

- Ten (10) heavy equipment operators and off-road truck drivers;
- One superintendent;
- One foreman;
- Four laborers for the earthworks and inlet/outlet control portion of the project;
- One geomembrane superintendent;
- One geomembrane quality control technician;
- Two geomembrane welding technicians;
- Six geomembrane laborers; and
- Additional truck drivers for delivery of pipe, geomembrane, and select soil veneer.

6.4 Construction Schedule

ITS construction will begin in January 2014 and is planned to become operational by October 1, 2014, according to the following schedule.

- Design engineering – currently ongoing through Q2 2014

- Completion of onsite pilot testing – August 2013
- Submittal of RPA Application – August 2013
- Technology selection – September 2013
- Execution of technology purchase contract – Q4 2013
- ITS construction commencement – January 2014
- System operational - October 1, 2014

7. Geotechnical Analysis

The inflow pond, treatment tanks and building will be sited in areas that have received geotechnical review to ensure that soil and slope stability conditions meet Good Engineering Practices. Golder Associates completed core drilling, laboratory testing, and slope stability analyses in August 2013 which verify the following minimum slope stability criteria:

- Pond level: *To be added following completion of geotechnical review*.
- Tanks and Building level: *To be added following completion of geotechnical review*.

8. Reclamation

The ITS will be reclaimed within Phase 3 of the existing reclamation phasing, after most disturbed areas have been reclaimed. Reclamation of the Project Area will match the approved reclaimed condition for the "Crusher and Quarry Office Area" in the existing Reclamation Plan, without change in the ultimate reclamation end use. Generally, reclamation of the ITS will entail the following:

- Removal and proper disposal (or re-purposing) of all appurtenant water control structures and piping.
- Removal and proper disposal of all pond liners.
- Re-grading of the pond excavation, with fill as-needed to create smooth final grades according to the existing Reclamation Plan.
- Removal of any temporary stockpiles.
- Application of a vegetation layer consistent with that required by the Reclamation Plan
- Re-vegetation of the restored pond areas consistent with that required by the Reclamation Plan.

Additional details regarding the steps for reclaiming the ITS will be included in revisions to the 2012 Reclamation Plan.

9. Amendments to the 2012 Reclamation Plan

The addition of the ITS to the Quarry facility will require amending the June 26, 2012 Reclamation Plan text to recognize the new facility infrastructure and use. The proposed additions to the text are depicted below in bold text. There are no deletions to the text.

Page 27:

Crusher and Support Area: The Crusher and Support Area is an existing area which contains primary and secondary crushing stations, Quarry offices, **water treatment facilities** and maintenance areas. The Crusher and Support Area is located to east of the North Quarry and to the west of the EMSA. This part of the Quarry currently totals approximately 60 acres and serves as a general support area for ongoing operations. Approximately 7 acres of the Crusher and Support Area will be incorporated into the North Quarry under this Amendment, reducing the final acreage to approximately 53.4 acres.

Page 42:

Crusher and Support Area

Reclamation of the Crusher and Support Area will involve the dismantling and demolition of structures as required. The scrap will be sold for salvage value or removed from the site. Facilities located within the Crusher and Support Area include the primary crusher, secondary crushers, **water treatment facilities** and an equipment maintenance facility. A small amount of hazardous materials such as fuels, oils and other vehicle fluids are stored at the equipment maintenance facility. **In addition, the water treatment facilities will generate a small amount of residual material (less than 4,000 lbs. annually) that will be tested for hazardous waste characteristics.** Containers holding these materials will be transported off-site by an approved carrier per State and Local regulations. The Quarry offices are portable and will be removed from the site. The above ground fuel tank located adjacent to the Quarry offices will be emptied, cleaned and tested per State and Local regulations prior to transporting offsite by an approved carrier.

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Attachment c
State of the Art Biological Selenium Solutions for Mining (Frontier Water Systems)

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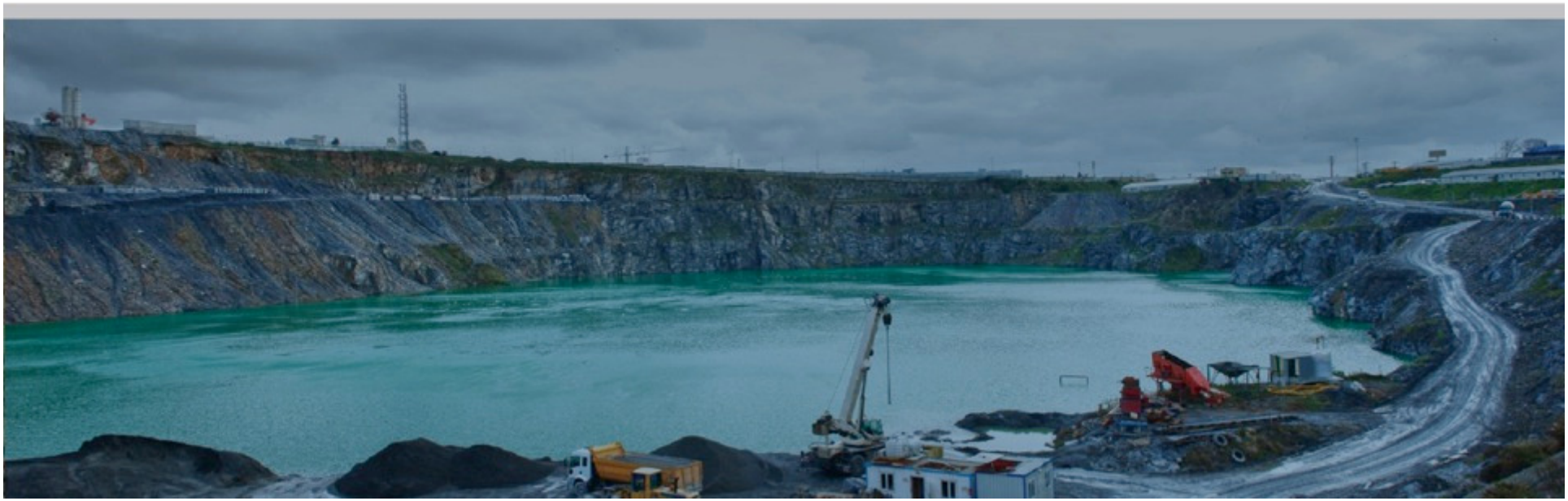
State of the Art Biological Selenium Solutions for Mining

FRONTIER WATER SYSTEMS



Who is Frontier Water Systems?

- Tim Pickett Co-Founds Applied Biosciences Corporation in SLC, UT
- Selenium product line launched
- Multiple ***full scale*** installations and pilot trials

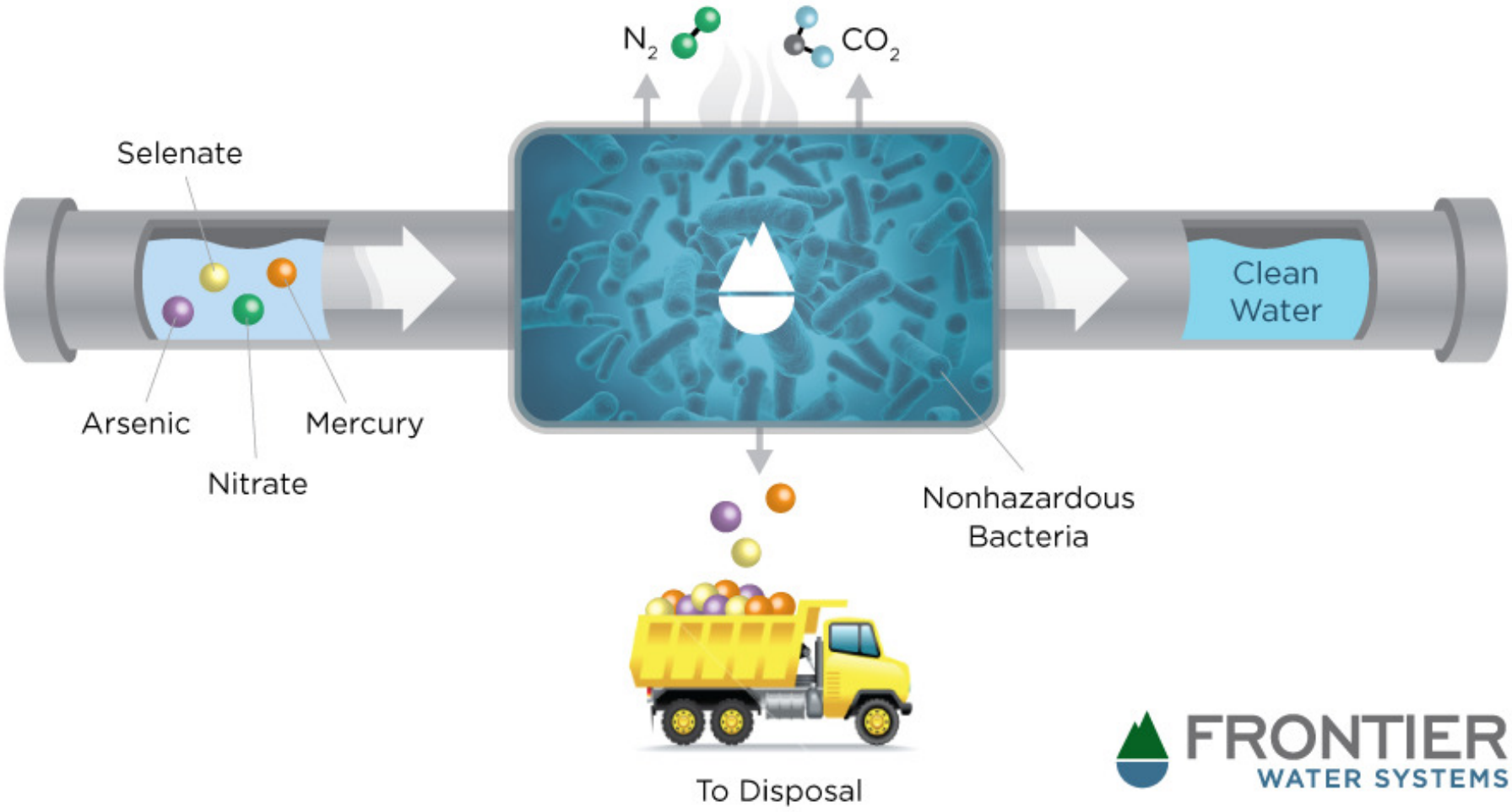
- Applied Biosciences is ***acquired by GE***
- ABMet® recognized as ***best available technology*** *for selenium treatment*

- ***Founders*** Tim Pickett and James Peterson exit GE *May, 2012 to form* ***Frontier Water***
- ***Next generation*** anoxic biofilter system developed for selenium treatment

Biological Selenium Reduction

SeO_4^{2-} + org. C → SeO_3^{2-} + org. C → Se^0 + CO_2 + H_2O

NO_3^- + org. C → NO_2^- + org. C → N_2 + CO_2 + H_2O



FRONTIER WATER SYSTEMS

Biological Selenium Project Experience

Plant	Vendor/Engineer/ Contractor	Year	Design Flow
Wharf Resources, Ross Valley Project South Dakota.	Applied Biosciences/ Wharf Resources	2002	300 gpm
Wharf Resources, Annie Creek Biotreatment System, South Dakota	Applied Biosciences/ Wharf Resources	2002	300 gpm
Wharf Resources, Foley Liner Project, Selenium And Nitrate Biotreatment System	Applied Biosciences/ Wharf Resources	2003	300 gpm
Zortman Landusky Mine Biotreatment System	Applied Biosciences/ Spectrum Eng	2003	300 gpm
Goldcorp, Couchenour Mine Tailings Biotreatment Plant, Ontario, CANADA	Applied Biosciences/ Merit Consulting	2004	250 gpm
Progress Energy, ABMet Bioreactor System, FGD Blowdown, Roxboro, NC	Zenon/Pharmer Eng/ Whorley Parsons	2008	1400 gpm
Duke Energy Belews Creek ABMet Bioreactor System, NC USA	Zenon/Siemens/ Crowder	2008	640 gpm
Progress Energy Mayo Station ABMet Bioreactor System, NC USA	GE/Zachry/	2009	260 gpm
Duke Energy Allen Station ABMet Bioreactor System, NC USA	GE/Siemens/ Crowder	2009	440 gpm
AEP Mountaineer ABMet Bioreactor System, WV USA	GE/HDR/Bowen	2011	600 gpm
Umicore ABMet Bioreactor System Belgium	GE/TBD	In design	800 gpm

Taking Selenium Treatment a Step Forward

3 Product Objectives:

1. Smallest Footprint and Height

1. Modular Packaged Equipment (Transportable)

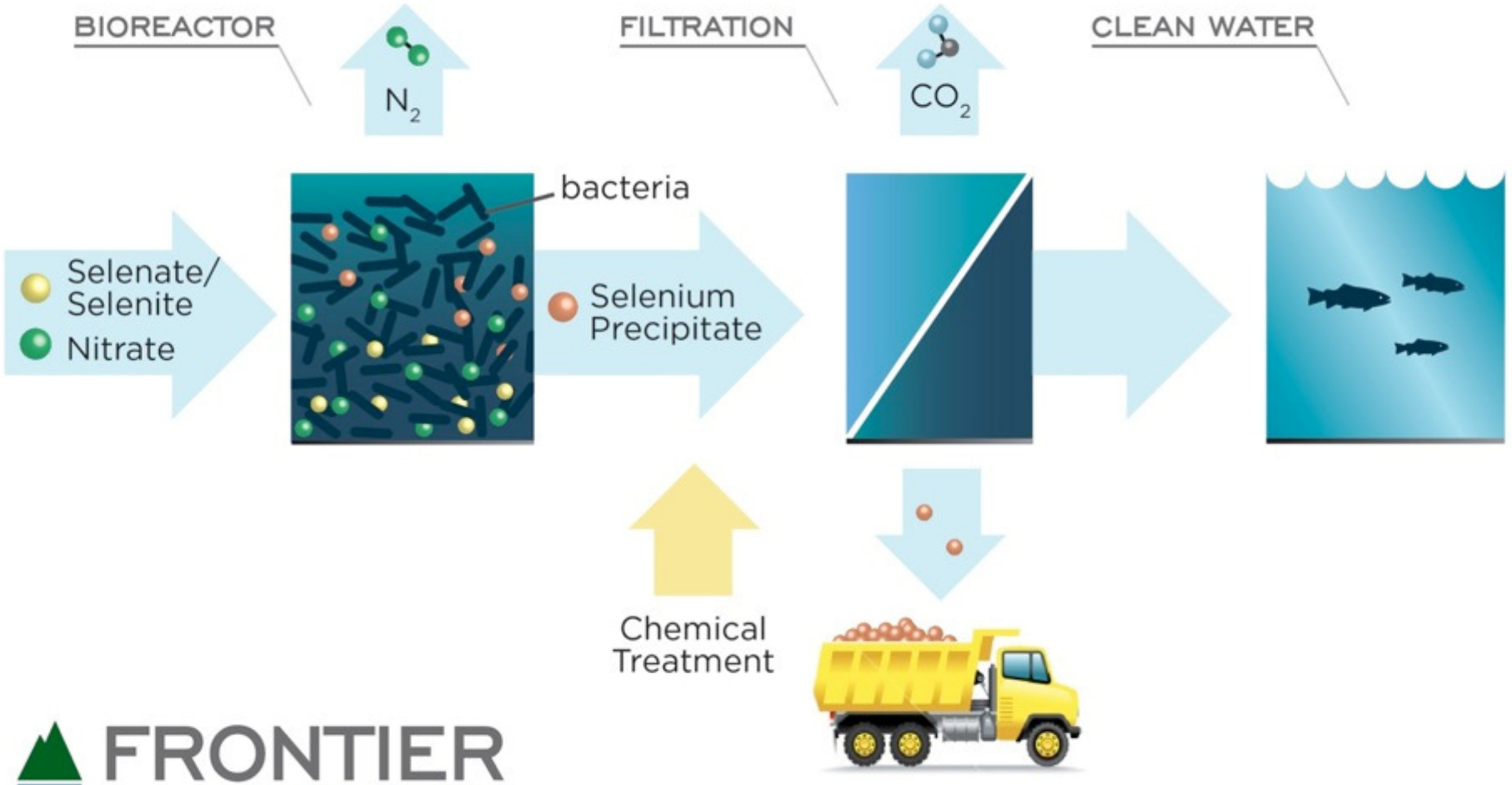
2. Complete Effluent Quality From a Single Process Solution:

Constituent	Target
Selenium	<5 ug/L
Nitrate	<0.1 mg/L
BOD	< 10 mg/L
TSS	<5 mg/L

Mine Options for Selenium Treatment

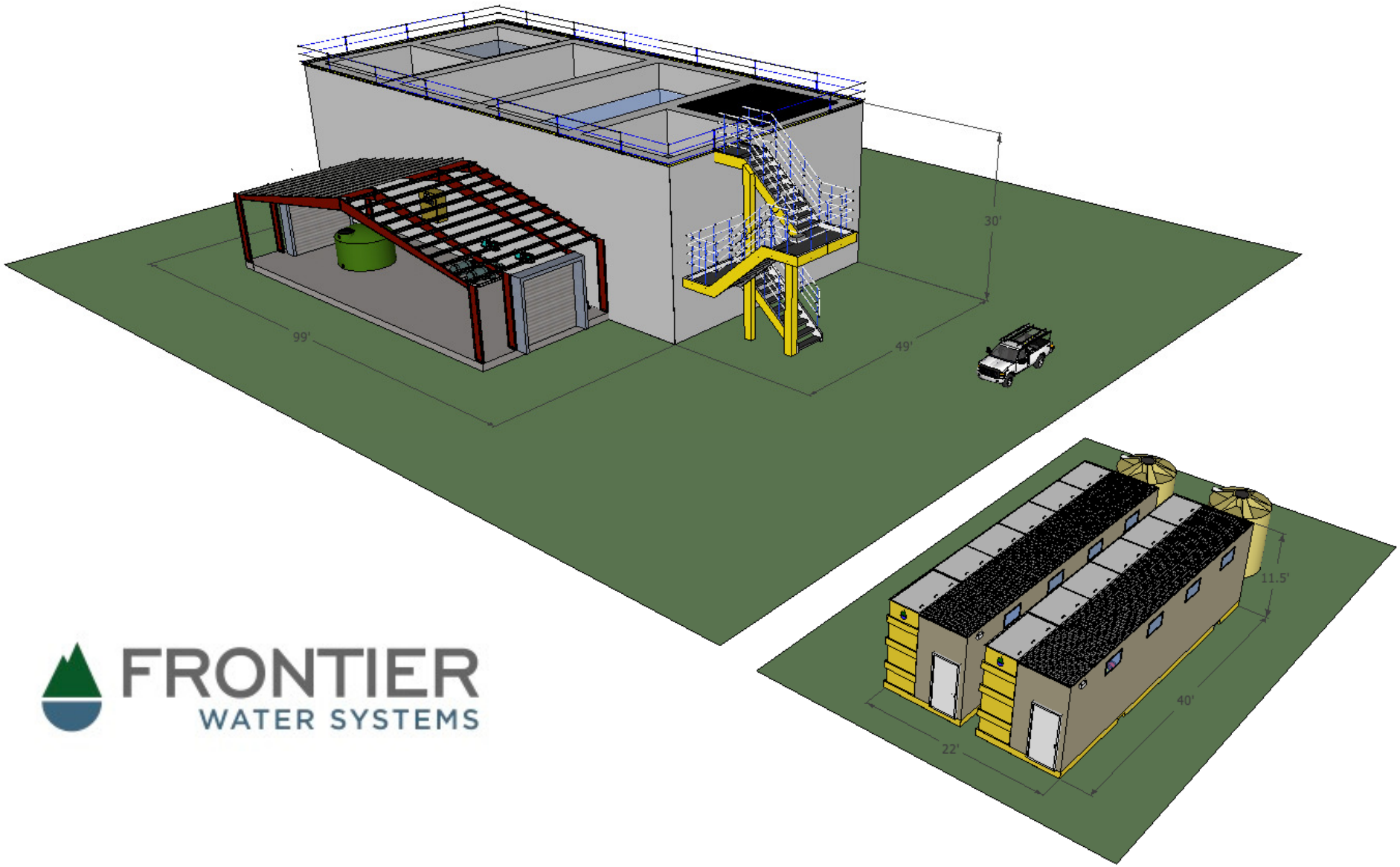
	Total Effluent Selenium (< 5 ug/L)	Footprint	Effluent BOD/TSS	Solids/Residuals	O+M Cost	Installed Cost
Chemical - ZVI	✖	✔	✖	✖	✖	✔
Fixed Bed Bioreactor (ABMet®)	✔	✖	✔	✔	✔	✖
Fluid Bed Bioreactor	✖	✔	✖	✔	✖	✖
Frontier Water Systems	✔	✔	✔	✔	✔	✔

The Frontier Selenium Process



FRONTIER
WATER SYSTEMS

500 gpm Selenium Treatment Comparison

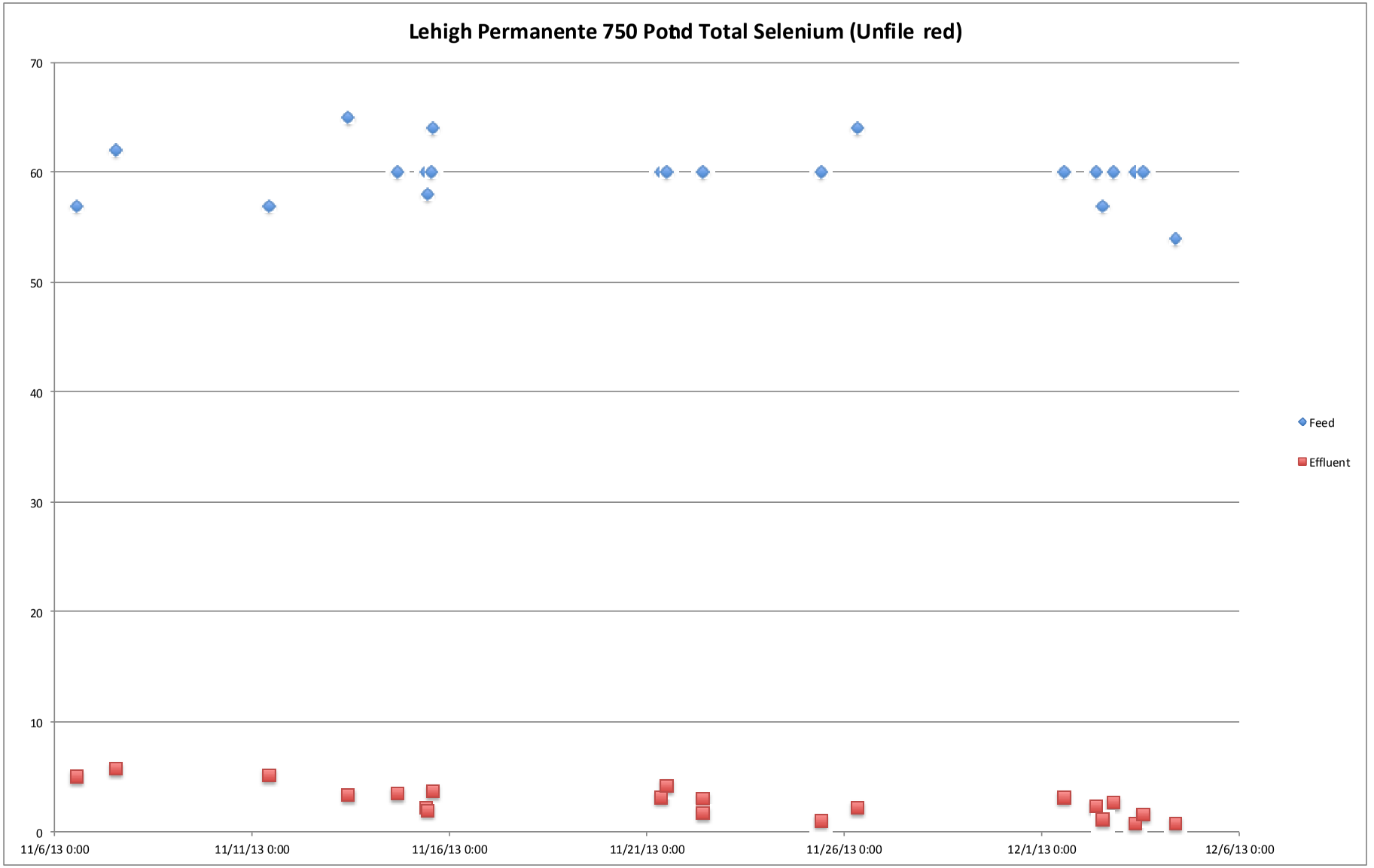


FRONTIER
WATER SYSTEMS

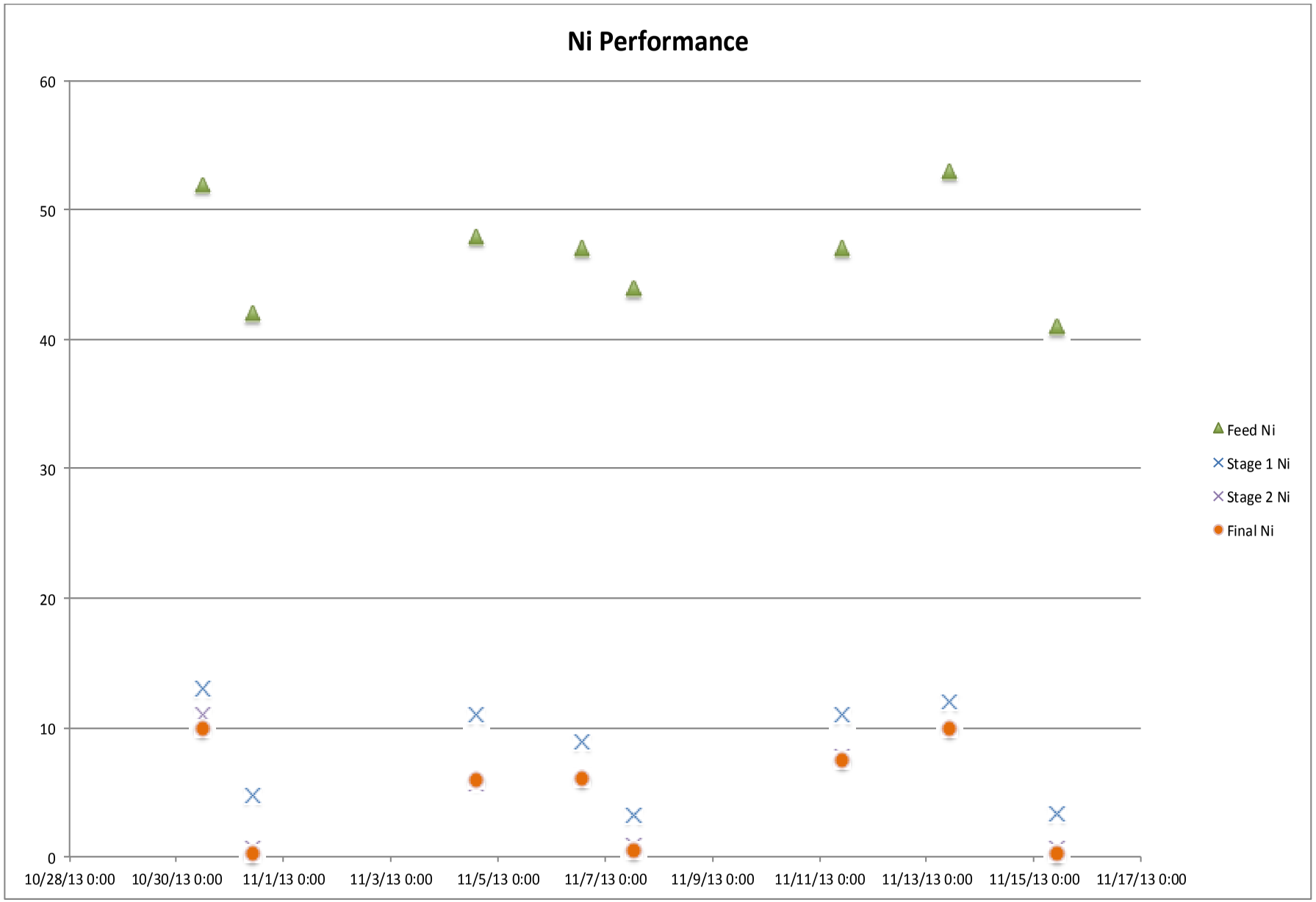
The BX Module - State of the Art Biological Selenium Treatment

- Shorter Retention Time
- Lower Reactor Height
- Less Nutrient Consumption
- Effluent BOD < 10 mg/L
- Total selenium < 5 ug/L

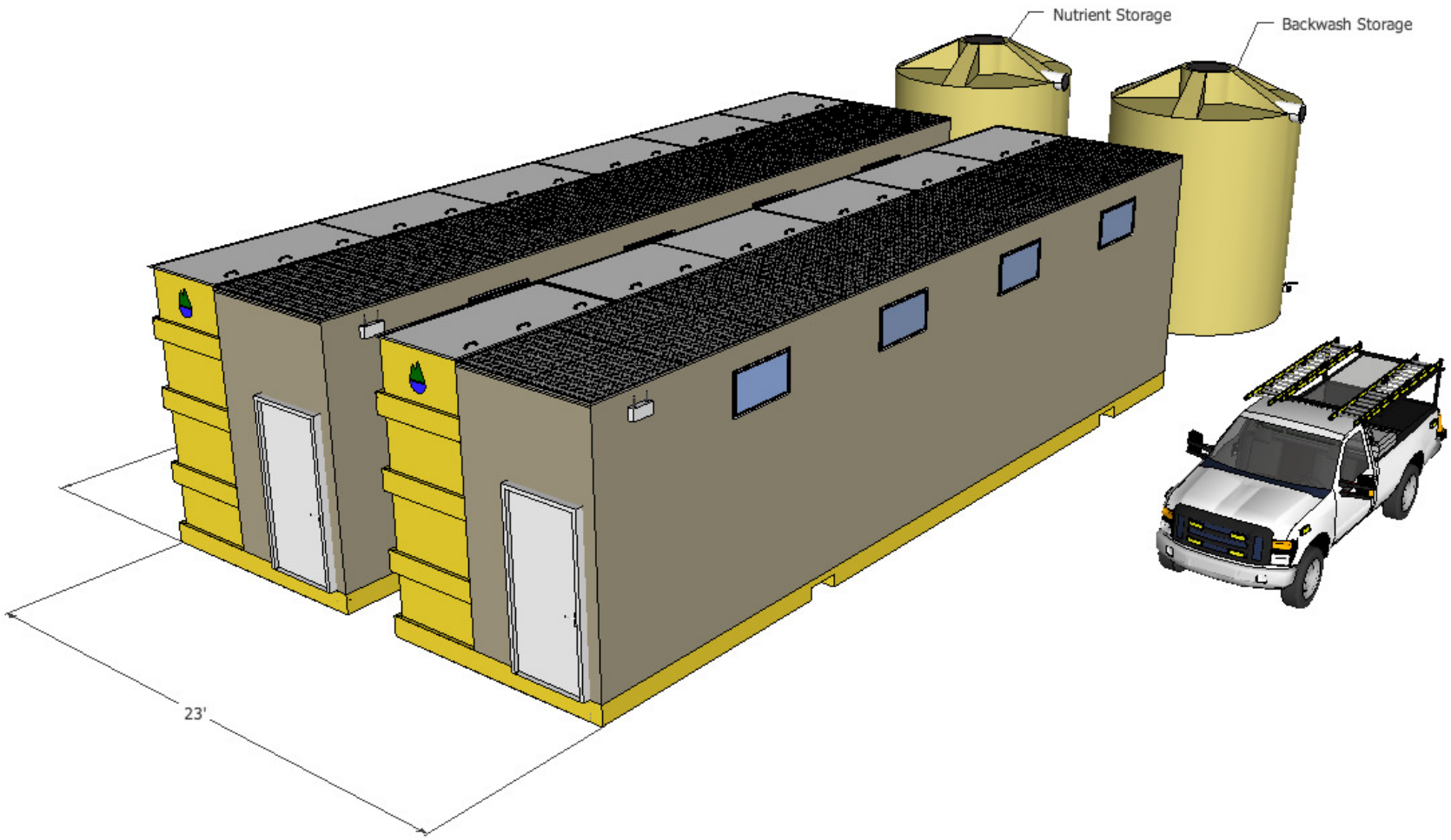
Frontier Pilot at 750 Pond

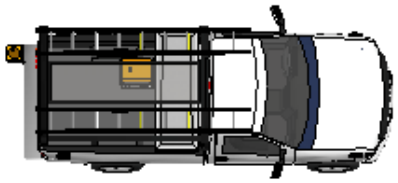


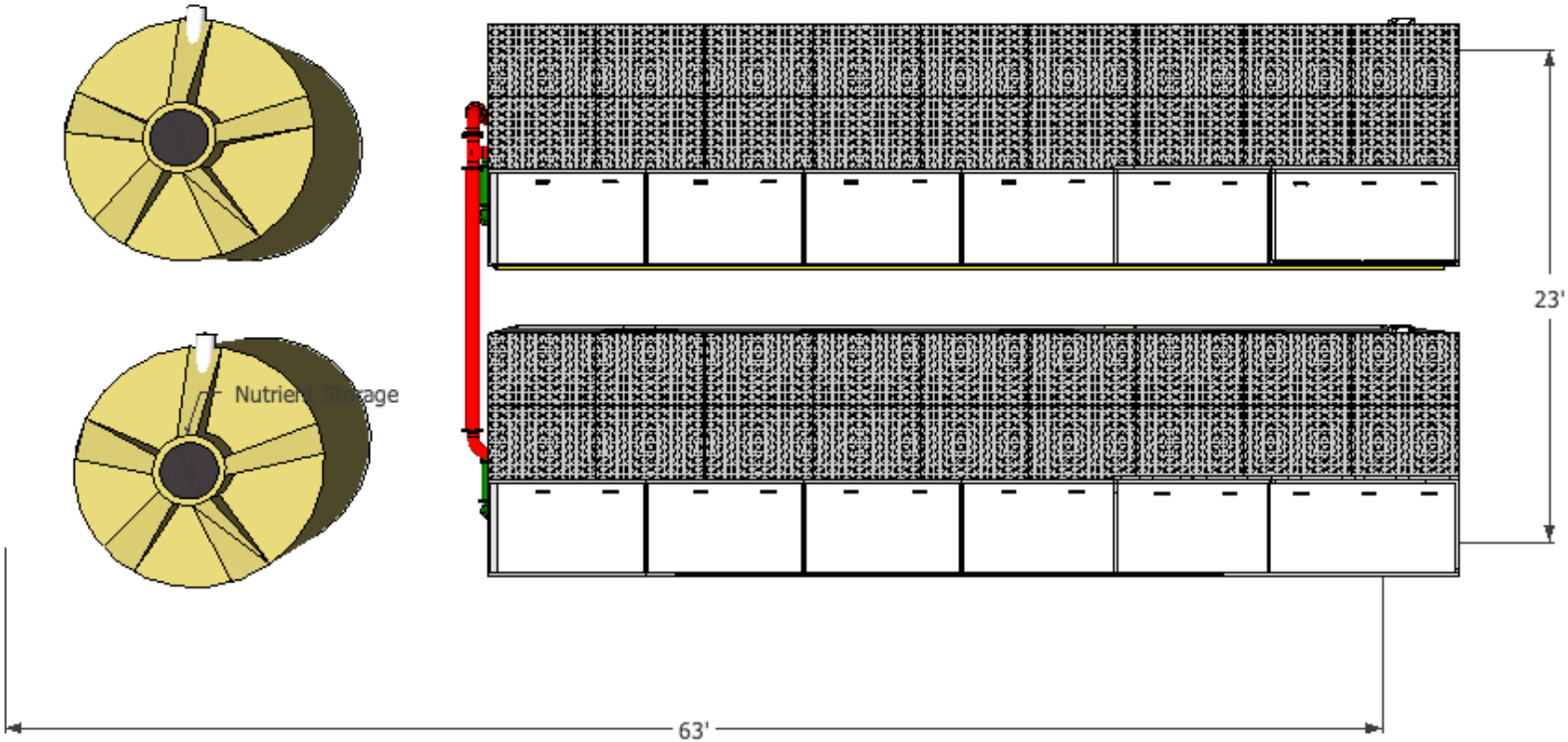
Note: Feed water concentrations were artificially elevated due to low selenium in quarry well water.


Ni Performance
60
50
40
30
20
10
0
10/28/13 0:00
10/30/13 0:00
11/1/13 0:00
11/3/13 0:00
11/5/13 0:00
11/7/13 0:00
11/9/13 0:00
11/11/13 0:00
11/13/13 0:00
11/15/13 0:00
11/17/13 0:00
Feed Ni
Stage 1 Ni
Stage 2 Ni
Final Ni

Frontier Installation at Pond 4A


Nutrient Storage
Backwash Storage
23'




Nutrient Storage
23'
63'

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ATTACHMENT 2

Lehigh Pond Map

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N
Pond 4A Discharge 001
Pond 13A/13B
Pond 13B Discharge 002
Pond 11
Pond 30
Pond 22
Pond 30 Discharge 006
Pond 21
Pond 20
Pond 19
Pond 20 Discharge 005
Pond 17 Discharge 004
Pond 17
Pond 9
Pond 9 Discharge 003
LEGEND
Stormwater Collection Conveyance Infrastructure or Swale
Fresh Water Conveyance Infrastructure
Reclaim Water Conveyance Infrastructure
Sewer Water Conveyance Infrastructure
Discharge Point
Ponds
NOTES
1) Conveyance infrastructure locations are approximate based on references and Golder site visit.
REFERENCES
1) Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community
2) Hanson Permanente Cement Plant Water Line
PROJECT
LEHIGH SOUTHWEST CEMENT COMPANY
PERMANENTE QUARRY
TITLE
WATER SYSTEM AND PIPING
Golder Associates
FIGURE 4A-1

APPENDIX C

TECHNICAL MEMORANDUM

Date:	9/23/14	**Project No.:**	0637109914
To:	Greg Knapp	**Company:**	Lehigh Southwest Cement Company
From:	George Wegmann, PG Bill Fowler, CEG		
cc:	Sean Avant	**Email:**	Greg.Knapp@hanson.biz

RE: COA 76 ANNUAL SUMMARY, LEHIGH PERMANENTE QUARRY

Golder Associates (Golder) has prepared this technical memorandum to document the activities completed at the Lehigh Permanente Quarry from July 1, 2013 through June 30, 2014 related to the Reclamation Plan Condition of Approval (COA) 76. COA 76 pertains to water quality monitoring and states the following:

> Within ninety (90) days of RPA approval, the Mine Operator shall begin and continue throughout the backfilling and reclamation phases and for 5 years following completion of reclamation and for 5 years following the start of groundwater discharge from the Quarry Pit into Permanente Creek as described on page 4.10-39 of the Final Environmental Impact Report, a Verification and Water Quality Monitoring Program. The Mine Operator shall implement the following:
>
> a. Collect quarterly Quarry pit water samples and analyze for general water chemistry and dissolved and total metals, including selenium.
> b. Perform quarterly electrical conductivity and pH measurements of the Quarry water.
> c. Measure and record daily volume of any water that is pumped from the pit area.
> d. Conduct annual seep surveys in March or April of each year within the Quarry pit. Any seeps shall be sampled for general water chemistry and minerals and dissolved metals, and the seep flow rate shall be estimated.
> e. Perform routine testing of each of the various rock types that comprise the overburden to further characterize bulk and leachable concentrations of key metal constituents (selenium in particular). Such testing shall be performed until the average concentrations and the variability within a rock type is no longer changing significantly as new data are gathered.
> f. Sample and test runoff from the EMSA and WMSA throughout and following reclamation to confirm the concepts and closure plans (i.e., that cover with non-limestone material and re-vegetation results in runoff water quality that meets Basin Plan Benchmarks and all other applicable water quality standards, including, but not limited to, a site specific NPDES permit for the Quarry and a TMDL for selenium in Permanente Creek). Stormwater runoff monitoring and sampling shall be conducted following the placement and final grading of the 1 foot run-of-mine non-limestone cover material to ensure that surface water discharging from this cover does not contain selenium at concentrations exceeding Basin Plan Benchmark values. Three rounds of representative surface water samples shall be collected and analyzed to verify rock cover performance prior to the placement of the vegetative growth layer.
> g. Sample and test groundwater discharge from the Quarry Pit into Permanente Creek following reclamation as described on page 4.10-39 of the Final Environmental Impact Report to confirm that water quality in discharge meets Basin Plan Benchmarks and all other applicable water quality standards.

Golder Associates Inc.
425 Lakeside Drive
Sunnyvale, CA 94085 USA
Tel: (408) 220-9223 Fax: (408) 220-9224 www.golder.com

h. The data obtained through this mitigation measure shall be used to reevaluate the water balance components such as runoff and groundwater inflow and the water quality associated with these within the last five years of active mining. Based on the results of any refined water balance and water quality projections, the Mine Operator shall also review and refine the water management procedures. *(Implements Mitigation Measures 4.4-5 and 4.10-1b.).* All testing data shall be submitted to the Planning Office with the Annual Report by October 1 of each year.

The following provides a summary of tasks completed:.

a. Collect quarterly Quarry pit water samples and analyze for general water chemistry and dissolved and total metals, including selenium.

From July 1, 2013 through June 20, 2014, Golder collected samples from the Quarry pit via Pond 4A. The samples were analyzed for total metals and general water chemistry parameters. The sampling results of the Quarry pit water, including quarterly metals data, are listed on the attached Tables 1 and 2. Tables 1 and 2 also include the discharge data from Ponds 13b, 17, and 30.

b. Perform quarterly electrical conductivity and pH measurements of the Quarry water.

Electrical conductivity and pH measurements of the Quarry water (Pond 4a) are included on Table 1.

c. Measure and record daily volume of any water that is pumped from the pit area.

Daily records of volume of water pumped from the pit are included on Table 1 under Pond 4a.

d. Conduct annual seep surveys in March or April of each year within the Quarry pit. Any seeps shall be sampled for general water chemistry and minerals and dissolved metals, and the seep flow rate shall be estimated.

On April 28, 2014, Golder performed a seep survey within the Quarry pit. Two seeps were identified during the survey: one seep (Seep-850) was located in the southwest portion of the pit where it day-lighted on the 900 and 850 ft elevation benches; and the second seep (Seep-750) was identified by the western/northwestern portion of the pit emanating from above the pit floor along the northwestern pit wall by the Main Slide. Golder did not identify any additional seeps within the Quarry pit. During the seep survey, the two identified seeps were sampled and analyzed for general water chemistry and dissolved metals. The results of the sampling and the estimated flow rates are shown on Table 3 below.

Table 3: Quarry Pit Seep Data

Quarry Pit Seeps	Seep-750	Seep-850
Sample Date	4/28/2014	4/28/2014
Metals (dissolved, 200 series)		
Antimony (ug/L)	0.50 J	3.0
Arsenic (ug/L)	7.8	2.6
Barium (ug/L)	85	32
Beryllium (ug/L)	ND	ND
Cadmium (ug/L)	ND	0.71 J
Chromium (ug/L)	ND	ND
Cobalt (ug/L)	0.046 J	0.28 J
Copper (ug/L)	3.8	2.1
Lead (ug/L)	ND	ND

Quarry Pit Seeps	Seep-750	Seep-850
Sample Date	4/28/2014	4/28/2014
Mercury (ug/L)	ND	ND
Molybdenum (ug/L)	130	120
Nickel (ug/L)	2.7	65
Selenium (ug/L)	7.7	34
Silver (ug/L)	ND	ND
Thallium (ug/L)	ND	0.056 J
Vanadium (ug/L)	220	120
Zinc (ug/L)	ND	140
Calcium (mg/L)	24	190
Magnesium (mg/L)	6.9	62
Potassium (mg/L)	2.1	1.1
Sodium (mg/L)	270	20
Additional Parameters		
Bicarbonate (mg/L)	190	270
Total Dissolved Solids (mg/L)	860	980
Total Suspended Solids (mg/L)	ND	28
Hardness	89	740
Nitrate as NO3	2.9	1.2
Chloride (mg/L)	16	16
Fluoride (mg/L)	ND	ND
Sulfate as SO4 (mg/L)	430	500
Turbidity (NTU)	272	3.81
pH - Field (s.u.)	7.74	7.60
Temperature - Field (°C)	23.10	18.41
DO - Field (mg/L)	7.90	9.23
Electrical Conductivity - Field (µS/cm)	1418	769
ORP - Field (mV)	109.8	83.7
Estimated Flow Rate (GPM)	Less than 1	100

Notes:
Samples for dissolved metals analysis were field filtered.
J= Estimated Value (CLP Flag)

e. Perform routine testing of each of the various rock types that comprise the overburden to further characterize bulk and leachable concentrations of key metal constituents (selenium in particular). Such testing shall be performed until the average concentrations and the variability within a rock type is no longer changing significantly as new data are gathered

Golder and WRA collected samples of the following overburden material located within the pit: Santa Clara Formation, Greenstone, and Graywacke. The samples were analyzed for selenium. The results are summarized below:

Table 4: Quarry Overburden Data

Sample Type	Selenium TTLC (mg/kg)	Selenium STLC (mg/L)
Santa Clara Formation	ND	ND
Greenstone	ND	0.00062
Graywacke	ND	0.00150
Method Detection Limit	0.022	0.00026

ND = Not detected above the laboratory method detection limit; TTLC = total threshold limit concentration; STLC = soluble threshold limit concentration.

COA 76 f, g, and h

These tasks will be completed going forward when appropriate based on the timeline outlined in COA 76 f, g, and h.

Attachments

Table 1
Table 2

Table 1: Monitoring Data Summary
Lehigh Southwest Cement Company Permanente Quarry
October 2014

Sample Location		Flow Rate		Turbidity	pH	Chlorine Residual	Temp	DO	EC	Chloride			TSS			Total Set Mat			TDS			O&G			TOC		
	Units	gpm	MGD	NTU	s.u.	mg/L	C	mg/L	µS/cm	mg/L			mg/L			mL/L/hr			mg/L			mg/L			mg/L		
	Test Method			Field	Field	Field	Field	Field	Field	EPA 300.0			SM2540D			SM2540F			SM2540C			EPA 1664			SM5310C		
	Date	Field		Result	Result	Result	Result	Result	Result	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL
Pond 4A Discharge	7/1/2013	424.6	0.611	4.32	8.03	ND				15	0.03	5.0				ND	0.1	0.10	860	5	10						
	7/2/2013	436.3	0.628	2.88	7.97								ND	0.3	1.0												
	7/3/2013	373.7	0.538	3.86	7.79																						
	7/4/2013	233.3	0.336																								
	7/5/2013	340.5	0.490	8.86	8.05																						
	7/6/2013	338.6	0.488	5.12	7.92																						
	7/7/2013	402.3	0.579	3.93	8.07																						
	7/8/2013	355.1	0.511	4.66	7.95																						
	7/9/2013	353.8	0.509	4.58	7.97	ND				16	0.03	12				ND	0.1	0.10	880	5	10						
	7/10/2013	353.7	0.509	7.01	7.98								ND	0.3	1.0												
	7/11/2013	299.0	0.431	4.78	8.08																						
	7/12/2013	271.8	0.391	7.34	7.93																						
	7/13/2013	421.2	0.607	7.05	7.95																						
	7/14/2013	311.4	0.448	2.58	7.99																						
	7/15/2013	414.8	0.597	2.25	7.97																						
	7/16/2013	223.2	0.321	3.22	7.98																						
	7/18/2013	2.0	0.003	3.44	7.89	ND				15	0.03	5.0				ND	0.1	0.10	830	5	10						
	7/19/2013	2.0	0.003	4.02	7.90								1.7	0.3	1.0												
	7/29/2013	0.0	0.000	3.52	8.01	ND				18	0.03	5.0							760	5	10	ND	0.80	5.0			
	7/30/2013	0.0	0.000	2.45	8.02								1.9	0.3	1.0												
	7/31/2013	0.0	0.000	4.34	7.87																						
	8/1/2013	0.0	0.000	4.50	7.78																						
	8/7/2013	2.0	0.003	2.27	7.90	ND				26	0.03	5.0				ND	0.1	0.10	780	5	10						
	8/8/2013	2.0	0.003	2.06	8.04								ND	0.3	1.0												
	8/10/2013	2.0	0.003	1.53	7.69																						
	8/17/2013	2.0	0.003	1.69	7.97																						
	8/19/2013	2.0	0.003	4.00	8.05																						
	8/20/2013	2.0	0.003	9.22	8.18																						
	8/23/2013	2.0	0.003	2.79	7.84	ND				41	0.03	5.0	0.40 J	0.3	1.0	ND*	0.1	0.10	870	5	10						
	8/26/2013	2.0	0.003	2.91	8.12																						
	8/29/2013	2.0	0.003	1.44	8.00	ND				44	0.03	5.0				ND	0.1	0.10	860	5	10	1.2 J^	0.80	1.4			
	9/6/2013	2.0	0.003	2.16	8.14																						
	9/7/2013	2.0	0.003	2.21	8.19																						
	9/8/2013	2.0	0.003	2.27	8.15				1103																		
	9/11/2013	2.0	0.003	2.54	8.09	ND				49	0.03	5.0	ND	0.3	0.50	ND	0.1	0.10	920	5	10						
	9/13/2013	2.0	0.003	3.09	7.95																						
	9/19/2013	2.0	0.003	1.03	8.07	ND				52	0.03	5.0				ND	0.1	0.10	840	5	10						
	9/20/2013	2.0	0.003	2.82	8.19																						

Table 1: Monitoring Data Summary
Lehigh Southwest Cement Company Permanente Quarry
October 2014

Sample Location	Units / Test Method	Flow Rate gpm	Flow Rate MGD	Turbidity NTU Field	pH s.u. Field	Chlorine Residual mg/L Field	Temp C Field	DO mg/L Field	EC µS/cm Field	Chloride mg/L EPA 300.0			TSS mg/L SM2540D			Total Set Mat mL/L/hr SM2540F			TDS mg/L SM2540C			O&G mg/L EPA 1664			TOC mg/L SM5310C		
	Date	Field		Result	Result	Result	Result	Result	Result	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL
Pond 4A Discharge	9/23/2013	2.0	0.003	7.05	8.30																						
	9/25/2013	2.0	0.003	2.89	7.74	ND				55	0.03	5.0				ND	0.1	0.10	920	5	10						
	9/26/2013	2.0	0.003	2.20	7.98																						
	10/1/2013	2.0	0.003	2.22	8.12	ND	20.59	8.13	988	57^	0.60	10				ND	0.20	0.20	920	5.0	10						
	10/2/2013	2.0	0.003	3.97	8.10																						
	10/3/2013	2.0	0.003	5.65	8.19																						
	10/4/2013	2.0	0.003	4.10	8.14																						
	10/5/2013	0.0	0.000	3.80	7.33								3.0	0.30	0.50												
	10/7/2013	2.0	0.003	7.33	8.05																						
	10/10/2013	2.0	0.003	0.77	7.91	ND	18.36	7.94		61	0.60	10				ND	0.10	0.10	970*	5.0	10	1.4	0.80	1.4			
	10/11/2013	0.0	0.000	3.04	8.04								2.6^	0.30	0.50												
	10/15/2013	0.0	0.000	1.04	7.38	ND	17.40	7.78		71	0.75	12				ND	0.10	0.10	860	5.0	10						
	10/16/2013	2.0	0.003	1.32	8.08								1.2	0.30	0.50												
	10/17/2013	2.0	0.003	2.42	7.99																						
	10/18/2013	2.0	0.003	4.48	8.09																						
	10/21/2013	2.0	0.003	3.51	8.40																						
	10/22/2013	0.0	0.000	2.2	7.96	ND	18.8	6.9		70	0.60	10				ND	0.10	0.10	860	5.0	10						
	10/23/2013	0.0	0.000	1.2	6.75								3.2	0.30	0.50												
	10/28/2013	2.0	0.003	2.11	7.07																						
	10/29/2013	0.0	0.000	1.91	8.16	ND	14.75	7.48		66	0.60	10				ND	0.10	0.10	950	5.0	10						
	10/30/2013	2.0	0.003	2.57	8.28								5.6^	0.30	0.50												
	11/6/2013	2.0	0.003	2.51	8.29																						
	11/7/2013	2.0	0.003	4.31	7.41	ND	17.37	7.81	1092	69	0.60	10				ND	0.10	0.10	980	5.0	10						
	11/8/2013	2.0	0.003	4.53	7.82								2.8	0.30	0.50												
	11/13/2013	2.0	0.003	7.17	8.23																						
	11/14/2013	2.0	0.003	4.91	6.91	ND	14.63	7.82		72	0.75	12				ND	0.10	0.10	1100	5.0	10						
	11/15/2013	0.0	0.000	5.12	7.89								1.0^	0.30	0.50												
	11/19/2013	2.0	0.003	2.17	8.08																						
	11/20/2013	2.0	0.003	2.42	7.89	ND	13.42	7.85		78	0.30	0.50				ND	0.10	0.10	950	5.0	10	2.0^	0.80	1.4			
	11/21/2013	0.0	0.000	2.76	8.44								1.2	0.30	0.50												
	11/22/2013	0.0	0.000	3.14	7.88																						
	11/24/2013	0.0	0.000	3.16	7.81																						
	11/25/2013	2.0	0.003	3.97	7.04	ND	12.20	10.34		97	0.60	10				ND	0.10	0.10	950	5.0	10						
	11/26/2013	0.0	0.000	5.01	7.81								3.8	0.30	0.50												
	11/27/2013	2.0	0.003	1.22	7.94																						
	11/29/2013	2.0	0.003	8.62	8.13																						
	12/2/2013	2.0	0.003	4.00	7.81																						
	12/3/2013	2.0	0.003	2.87	7.21	ND	10.66	9.62		78 K	0.60	10				ND	0.10	0.10	880	5.0	10						
	12/4/2013	0.0	0.000	4.05	7.76								4.0	0.30	0.50												

Table 1: Monitoring Data Summary
Lehigh Southwest Cement Company Permanente Quarry
October 2014

Sample Location		Flow Rate		Turbidity	pH	Chlorine Residual	Temp	DO	EC	Chloride			TSS			Total Set Mat			TDS			O&G			TOC		
	Units	gpm	MGD	NTU	s.u.	mg/L	C	mg/L	µS/cm	mg/L			mg/L			mL/L/hr			mg/L			mg/L			mg/L		
	Test Method			Field	Field	Field	Field	Field	Field	EPA 300.0			SM2540D			SM2540F			SM2540C			EPA 1664			SM5310C		
	Date	Field		Result	Result	Result	Result	Result	Result	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL
Pond 4A Discharge	12/5/2013	0.0	0.000	3.84	7.09																						
	12/10/2013	0.0	0.000	2.23	7.09	ND	5.76	11.14		77	0.60	10				ND	0.10	0.10	930	5.0	10						
	12/11/2013	0.0	0.000	2.29	7.44								4.8	0.30	0.50												
	12/17/2013	0.0	0.000	1.55	7.81	ND	6.48	11.65		83	0.60	10				ND	0.10	0.10	990	5.0	10	1.1 J	0.80	1.4			
	12/18/2013	0.0	0.000	2.48	7.98								0.60^	0.30	0.50												
	2/28/2014	3.0	0.004	1.67	8.56	ND	13.55	10.00	1111	74	0.15	2.5	1.7	0.30	0.50	ND	0.10	0.10	900	5.0	10	ND	0.80	1.4			
	3/1/2014	634.8	0.914	2.52	8.14																						
	3/2/2014	609.6	0.878	3.92	7.91																						
	3/3/2014	536.9	0.773	14.26	8.07																						
	3/4/2014	485.1	0.698	6.41	7.82																						
	3/5/2014	511.4	0.736	3.76	8.04																						
	3/6/2014	545.4	0.785	1.71	8.01	ND	21.77	6.76		13	0.75	12				ND	0.10	0.10	1000	5.0	10						
	3/7/2014	543.9	0.783	1.87	8.10								1.5	0.30	0.50												
	3/8/2014	542.5	0.781	1.73	7.55																						
	3/9/2014	542.4	0.781	1.94	7.95																						
	3/10/2014	595.7	0.858	2.53	7.98																						
	3/11/2014	531.2	0.765	1.62	8.00																						
	3/12/2014	541.0	0.779	2.23	7.96																						
	3/13/2014	549.8	0.792	2.8	7.95	ND	21.63	8.24		12	0.15	2.5				ND	0.10	0.10	970	5.0	10						
	3/14/2014	548.5	0.790	1.57	8.09			9.93					3.6	0.30	0.50												
	3/15/2014	548.1	0.789	1.37	7.93																						
	3/16/2014	547.8	0.789	0.96	-																						
	3/17/2014	625.0	0.900	0.78	7.79																						
	3/18/2014	735.4	1.059	2.21	7.94																						
	3/19/2014	738.3	1.063	1.03	7.91																						
	3/20/2014	702.9	1.012	1.41	7.92	ND	20.57	6.65		13	0.60	10				ND	0.10	0.10	1000	5.0	10						
	3/21/2014	702.2	1.011	1.46	7.98								ND	0.30	0.50												
	3/22/2014	701.5	1.010	0.92	8.02																						
	3/23/2014	701.1	1.010	1.83	7.26																						
	3/24/2014	680.4	0.980	1.39	8.01																						
	3/25/2014	634.5	0.914	1.04	8.02																						
	3/26/2014	653.3	0.941	0.62	7.98	ND	20.90	9.02														1.2 J	0.80	1.4			
	3/27/2014	674.3	0.971	0.99	8.03			7.18		13	0.15	2.5	0.84	0.30	0.50	ND	0.10	0.10	1000	5.0	10						
	3/28/2014	618.0	0.890	0.95	7.98																						
	3/29/2014	602.8	0.868	1.09	7.95																						
	3/30/2014	602.0	0.867	0.82	8.05																						
	3/31/2014	665.1	0.958	2.16	7.55																						
	4/1/2014	614.5	0.885	7.44	7.55	ND	18.33	11.01	1171	16	0.60	10				ND	0.10	0.10	940	5.0	10	2.4^	0.80	1.4			

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Lehigh Southwest Cement Company Permanente Quarry
October 2014

Sample Location	Units / Test Method	Flow Rate gpm	Flow Rate MGD	Turbidity NTU Field	pH s.u. Field	Chlorine Residual mg/L Field	Temp C Field	DO mg/L Field	EC µS/cm Field	Chloride mg/L EPA 300.0			TSS mg/L SM2540D			Total Set Mat mL/L/hr SM2540F			TDS mg/L SM2540C			O&G mg/L EPA 1664			TOC mg/L SM5310C		
	Date	Field		Result	Result	Result	Result	Result	Result	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL
Pond 4A Discharge	4/2/2014	615.4	0.886	3.12	8.18								4.2	0.30	1.0												
	4/3/2014	614.6	0.885	1.95	7.38																						
	4/4/2014	612.8	0.882	7.92	7.81																						
	4/6/2014	567.1	0.817	2.17	8.01																						
	4/7/2014	536.4	0.772	1.44	8.10																						
	4/8/2014	559.8	0.806	1.76	7.93	ND	22.35	7.16		14	0.60	10				ND	0.10	0.10	930	5.0	10						
	4/9/2014	507.2	0.730	1.93	7.97								0.84	0.30	0.50												
	4/10/2014	537.5	0.774	1.54	7.94																						
	4/11/2014	619.8	0.892	1.68	7.96																						
	4/12/2014	527.8	0.760	1.63	8.06																						
	4/14/2014	531.7	0.766	1.70	8.00																						
	4/15/2014	545.4	0.785	1.25	8.00	ND	22.42	7.74		15	0.60	10				ND	0.10	0.10	840	5.0	10						
	4/16/2014	545.0	0.785	2.20	7.90								1.3	0.30	0.50												
	4/17/2014	504.8	0.727	1.37	7.72																						
	4/18/2014	480.5	0.692	2.00	7.99																						
	4/19/2014	470.4	0.677	2.36	8.04																						
	4/21/2014	436.9	0.629	1.71	8.00	ND	22.52	7.46		15	0.60	10				ND	0.10	0.10	960	5.0	10						
	4/22/2014	260.8	0.376	2.35	8.05								0.84	0.30	0.50												
Pond 30 Discharge	2/27/2014	15.0	0.022	58.23	7.49	ND	12.69	9.34	1261				26	0.30	1.0							ND	0.80	5.0			
	4/2/2014			8.37	6.69		12.45	14.74	966				13	0.30	1.0				1100	5.0	10	1.7 J	0.80	5.0	2.90	0.100	0.300
Pond 17 Discharge	9/10/2013	75.0	0.108	1.60	7.84	ND				29	0.03	12				ND	0.1	0.10	2100	5	10						
	9/11/2013	75.0	0.108	1.50	8.16								ND	0.3	0.50												
	9/12/2013	75.0	0.108	0.84	8.13																						
	9/13/2013	10.0	0.014	0.85	8.23	ND																1.2 J	0.80	1.4			
	9/14/2013	60.0	0.086	1.58	7.68																						
	9/15/2013	10.0	0.014	0.92	8.14																						
	9/16/2013	50.0	0.072	1.48	7.57																						
	9/17/2013	50.0	0.072	1.51	7.62																						
	9/18/2013	20.0	0.029	1.65	8.09	ND				110	0.03	25				ND	0.1	0.10	2000	5	10						
	9/19/2013	75.0	0.108	4.28	8.14								ND	0.3	0.50												
	9/20/2013	10.0	0.014	1.88	8.16																						
	9/21/2013	70.0	0.101	1.28	7.52																						
	9/22/2013	10.0	0.014	0.71	7.92																						
	9/23/2013	20.0	0.029	1.55	8.17																						
	9/24/2013	75.0	0.108	1.52	7.96	ND				110	0.03	5.0				ND	0.1	0.10	2000	5	10						
	9/25/2013	60.0	0.086	0.65	8.16								1.4	0.3	0.50												
	9/26/2013	60.0	0.086	1.18	8.04																						
	9/27/2013	60.0	0.086	0.55	7.01																						
	9/28/2013	30.0	0.043	0.83	8.11																						
	9/30/2013	75.0	0.108	0.90	8.09																						

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Lehigh Southwest Cement Company Permanente Quarry
October 2014

Sample Location		Flow Rate		Turbidity	pH	Chlorine Residual	Temp	DO	EC	Chloride			TSS			Total Set Mat			TDS			O&G			TOC		
	Units	gpm	MGD	NTU	s.u.	mg/L	C	mg/L	µS/cm	mg/L			mg/L			mL/L/hr			mg/L			mg/L			mg/L		
	Test Method			Field	Field	Field	Field	Field	Field	EPA 300.0			SM2540D			SM2540F			SM2540C			EPA 1664			SM5310C		
	Date	Field		Result	Result	Result	Result	Result	Result	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL
Pond 17 Discharge	10/1/2013	0.5	0.001	0.19	8.15	ND	20.12	7.10		110^	1.5	25				ND	0.10	0.10	1700	5.0	10						
	10/2/2013	40.0	0.058	3.56	8.17																						
	10/3/2013	2.0	0.003	0.50	8.23																						
	10/4/2013	2.0	0.003	1.22	8.16								0.40 J	0.30	0.50												
	10/5/2013	80.0	0.115	1.78	8.16																						
	10/6/2013	10.0	0.014	0.55	8.03																						
	10/7/2013	20.0	0.029	1.60	8.12																						
	10/8/2013	5.0	0.007	0.83	8.15																						
	10/9/2013	20.0	0.029	1.35	8.15																						
	10/10/2013	0.3	0.000	4.37	8.04	ND	15.50	8.92		110	0.75	12				ND	0.10	0.10	1600*	5.0	10	1.3 J	0.80	1.4			
	10/11/2013	100.0	0.144	7.91	8.08								10^	0.30	0.50												
	10/12/2013	300.0	0.432	-	8.09																						
	10/13/2013	75.0	0.108	5.37	8.24																						
	10/14/2013	200.0	0.288	3.84	8.11																						
	10/15/2013	100.0	0.144	3.00	8.09	ND	16.80	8.13		160	0.75	12				ND	0.10	0.10	1100	5.0	10						
	10/16/2013	60.0	0.086	2.01	8.25																						
	10/17/2013	25.0	0.036	0.90	8.14																						
	10/18/2013	50.0	0.072	2.81	8.13								2.2	0.30	0.50												
	10/19/2013	50.0	0.072	1.36	8.00																						
	10/20/2013	20.0	0.029	1.22	7.94																						
	10/21/2013	10.0	0.014	3.39	7.93																						
	10/22/2013	100.0	0.144	2.69	8.05	ND	18.6	7.80		100	1.5	25				ND	0.10	0.10	1800	5.0	10						
	10/23/2013	3.5	0.005	3.60	8.24																						
	10/24/2013	10.0	0.014	3.00	7.90								7.0	0.30	0.50												
	10/27/2013	15.0	0.022	6.26	8.03																						
	10/30/2013	80.0	0.115	7.22	7.68	ND	15.47	7.22		65	0.75	12				ND	0.10	0.10	1800	5.0	10						
	10/31/2013	75.0	0.108	1.12	7.91								40^	0.30	0.50												
	11/1/2013	75.0	0.108	1.09	7.68																						
	11/2/2013	80.0	0.115	0.61	7.73																						
	11/3/2013	60.0	0.086	0.66	7.69																						
	11/4/2013	60.0	0.086	0.72	7.59																						
	11/5/2013	37.5	0.054	2.26	7.77																						
	11/6/2013	70.0	0.101	0.71	7.52																						
	11/7/2013	80.0	0.115	1.09	8.32	ND	15.42	7.11		110	0.15	2.5				ND	0.10	0.10	1700	5.0	10						
	11/8/2013	100.0	0.144	4.50	7.79																						
	11/9/2013	50.0	0.072	1.45	7.92								2.4	0.30	0.50												
	11/10/2013	50.0	0.072	1.64	7.78																						
	11/11/2013	50.0	0.072	1.67	8.11																						
	11/12/2013	50.0	0.072	1.92	8.27																						

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October 2014

Sample Location	Units / Test Method	Flow Rate gpm	Flow Rate MGD	Turbidity NTU Field	pH s.u. Field	Chlorine Residual mg/L Field	Temp C Field	DO mg/L Field	EC µS/cm Field	Chloride mg/L EPA 300.0			TSS mg/L SM2540D			Total Set Mat mL/L/hr SM2540F			TDS mg/L SM2540C			O&G mg/L EPA 1664			TOC mg/L SM5310C		
	Date	Field		Result	Result	Result	Result	Result	Result	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL
Pond 17 Discharge	11/13/2013	80.0	0.115	2.67	7.98																						
	11/14/2013	80.0	0.115	4.08	7.74	ND	17.91	7.27		93	0.75	12				ND	0.10	0.10	1300	5.0	10						
	11/15/2013	80.0	0.115	4.91	7.81								1.6^	0.30	0.50												
	11/16/2013	100.0	0.144	4.96	8.05																						
	11/17/2013	100.0	0.144	4.62	8.06																						
	11/18/2013	60.0	0.086	2.50	7.95																						
	11/19/2013	100.0	0.144	3.85	7.49																						
	11/20/2013	100.0	0.144	6.85	7.87	ND	15.15	8.02		80	0.60	10				ND	0.10	0.10	1300	5.0	10	1.1 J^	0.80	1.4			
	11/21/2013	100.0	0.144	4.47	7.63								6.0	0.30	0.50												
	11/22/2013	80.0	0.115	2.66	8.10																						
	11/23/2013	80.0	0.115	2.45	7.76																						
	11/24/2013	25.0	0.036	2.46	8.11																						
	11/25/2013	50.0	0.072	4.03	7.81	ND	12.33	9.34		110	0.75	12				ND	0.10	0.10	1200	5.0	10						
	11/26/2013	40.0	0.058	1.90	7.88								1.6	0.30	0.50												
	11/27/2013	25.0	0.036	1.65	8.08																						
	11/29/2013	30.0	0.043	1.72	7.88																						
	12/2/2013	15.0	0.022	1.39	7.92																						
	12/3/2013	20.0	0.029	1.91	7.75	ND	10.94	9.29		450 K	0.75	12				ND	0.10	0.10	1600	5.0	10						
	12/4/2013	30.0	0.043	1.41	7.74								2.2	0.30	0.50												
	12/5/2013	100.0	0.144	2.26	7.72																						
	12/6/2013	100.0	0.144	5.56	7.51																						
	12/7/2013	30.0	0.043	14.3	7.67																						
	12/10/2013	80.0	0.115	11.6	8.03	ND	4.89	12.42		100	0.60	10				ND	0.10	0.10	920	5.0	10						
	12/11/2013	0.0	0.000	8.8	8.11								1.2	0.30	0.50												
	12/12/2013	60.0	0.086	7.85	7.88																						
	12/17/2013	40.0	0.058	4.14	7.97	ND	10.18	10.11		110	0.60	10				ND	0.10	0.10	1100	5.0	10	1.5	0.80	1.4			
	12/18/2013	75.0	0.108	3.84	7.81								3.4^	0.30	0.50												
	12/19/2013	50.0	0.072	3.46	7.91																						
	12/21/2013	80.0	0.115	1.82	7.84																						
	12/23/2013	60.0	0.086	1.61	7.91																						
	12/24/2013	20.0	0.029	1.16	7.93																						
	12/26/2013	70.0	0.101	0.86	7.92																						
	12/27/2013	30.0	0.043	1.57	7.71	ND	7.65	10.70		89^	0.75	12	2.6	0.30	0.50	ND	0.10	0.10	1500	5.0	10						
	12/28/2013	75.0	0.108	1.22	7.55																						
	12/30/2013	150.0	0.216	2.21	7.76																						
	12/31/2013	70.0	0.101	3.58	7.82																						
	1/3/2014	75.0	0.108	4.05	7.72	ND	8.42	10.73		91	0.75	12	5.2	0.30	0.50	ND*	0.10	0.10	1800	5.0	10						
	1/4/2014	75.0	0.108	1.74	7.70																						
	1/6/2014	60.0	0.086	0.86	7.66																						
	1/7/2014	5.0	0.007	1.08	7.68																						

Table 1: Monitoring Data Summary
Lehigh Southwest Cement Company Permanente Quarry
October 2014

Sample Location		Flow Rate		Turbidity	pH	Chlorine Residual	Temp	DO	EC	Chloride			TSS			Total Set Mat			TDS			O&G			TOC		
	Units	gpm	MGD	NTU	s.u.	mg/L	C	mg/L	µS/cm	mg/L			mg/L			mL/L/hr			mg/L			mg/L			mg/L		
	Test Method			Field	Field	Field	Field	Field	Field	EPA 300.0			SM2540D			SM2540F			SM2540C			EPA 1664			SM5310C		
	Date	Field		Result	Result	Result	Result	Result	Result	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL
Pond 17 Discharge	1/8/2014	5.0	0.007	2.90	7.41																						
	1/9/2014	60.0	0.086	2.65	7.73	ND	9.17	10.63		110	0.75	12				ND	0.10	0.10	1600	5.0	10						
	1/10/2014	60.0	0.086	1.93	7.71								8.7	0.30	0.50												
	1/11/2014	100.0	0.144	1.35	7.66																						
	1/13/2014	75.0	0.108	3.32	7.65																						
	1/14/2014	40.0	0.058	3.18	7.70																						
	1/15/2014	40.0	0.058	4.55	7.73	ND	8.83	12.74		130	0.75	12				ND	0.10	0.10	1600	5.0	10						
	1/16/2014	20.0	0.029	3.77	7.55								2.9	0.30	0.50												
	1/17/2014	20.0	0.029	2.94	7.58																						
	1/18/2014	50.0	0.072	2.61	7.67																						
	1/22/2014	15.0	0.022	0.85	7.48																						
	1/23/2014	10.0	0.014	1.45	7.72	ND	10.73	9.91		110	0.75	12				ND	0.10	0.10	2000	5.0	10	1.0 J	0.80	1.4			
	1/24/2014	75.0	0.108	0.97	7.64								3.6	0.30	0.50												
	1/25/2014	50.0	0.072	2.99	7.56																						
	1/26/2014	15.0	0.022	1.09	7.47																						
	1/27/2014	50.0	0.072	2.87	7.49																						
	1/28/2014	70.0	0.101	3.68	7.42																						
	2/1/2014	5.0	0.007	2.02	7.76																						
	2/2/2014	70.0	0.101	1.31	8.25																						
	2/3/2014	15.0	0.022	1.61	7.7																						
	2/4/2014	1.0	0.001	1.74	7.25																						
	2/5/2014	40.0	0.058	0.92	7.85																						
	2/6/2014	70.0	0.101	13.7	7.83	ND	10.80			90	1.5	25	3.4	0.30	0.50	ND	0.10	0.10	1900	5.0	10	1.3 J	0.80	1.4			
	2/7/2014	10.0	0.014	27.1	7.78																						
	2/8/2014	60.0	0.086	30	7.61																						
	2/9/2014	50.0	0.072	14.7	7.88																						
	2/10/2014	40.0	0.058	16.3	7.88																						
	2/11/2014	40.0	0.058	18.6	7.41																						
	2/12/2014	50.0	0.072	4.73	7.85	ND	11.33	9.30		120	1.5	25				ND	0.10	0.10	1800	5.0	10						
	2/13/2014	5.0	0.007	4.38	7.93								3.0^	0.30	0.50												
	2/14/2014	150.0	0.216	3.18	7.91																						
	2/15/2014	40.0	0.058	1.48	7.97																						
	2/17/2014	10.0	0.014	2.13	7.75																						
	2/18/2014	10.0	0.014	1.56	7.71																						
	2/19/2014	80.0	0.115	1.21	7.76																						
	2/20/2014	40.0	0.058	3.02	7.77	ND	13.02	9.29		130	1.5	25				ND	0.10	0.10	2300	5.0	10						
	2/21/2014	50.0	0.072	9.51	7.98								20^	0.30	0.50												
	2/22/2014	40.0	0.058	9.13	7.82																						
	2/24/2014	75.0	0.108	5.04	7.70																						
	2/25/2014	20.0	0.029	4.14	7.86																						

Table 1: Monitoring Data Summary
Lehigh Southwest Cement Company Permanente Quarry
October 2014

Sample Location	Units / Test Method	Flow Rate gpm	Flow Rate MGD	Turbidity NTU Field	pH s.u. Field	Chlorine Residual mg/L Field	Temp C Field	DO mg/L Field	EC µS/cm Field	Chloride mg/L EPA 300.0			TSS mg/L SM2540D			Total Set Mat mL/L/hr SM2540F			TDS mg/L SM2540C			O&G mg/L EPA 1664			TOC mg/L SM5310C		
	Date	Field		Result	Result	Result	Result	Result	Result	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL
Pond 17 Discharge	2/26/2014	80.0	0.115	4.27	7.93																						
	2/27/2014	150.0	0.216	44.36	7.68																						
	2/28/2014	100.0	0.144	35.1	8.14	ND	14.65	8.09		73	0.75	12	19	0.30	0.50	0.10	0.10	0.10	1000	5.0	10						
	3/1/2014	100.0	0.144	16.1	7.88																						
	3/2/2014	105.0	0.151	20.77	7.88																						
	3/3/2014	50.0	0.072	16.86	7.62																						
	3/4/2014	60.0	0.086	10.85	7.92																						
	3/5/2014	75.0	0.108	12.63	7.86																						
	3/6/2014	1.0	0.001	3.05	8.06	ND	15.99	8.44		130	1.5	25				ND	0.10	0.10	1500	5.0	10						
	3/7/2014	0.0	0.000										80	0.30	0.50												
	3/22/2014	5.0	0.007	3.81	7.66																						
	3/29/2014	5.0	0.007	3.31	7.80																						
	3/30/2014	3.0	0.004	13.2	8.11	ND	16.07	9.83		96^	0.60	10	20	0.30	0.50	ND	0.10	0.10	720	5.0	10	3.0	0.80	1.4			
	3/31/2014	50.0	0.072	19.8	7.83																						
	7/1/2013	1.0	0.001	4.39	8.28	ND				55	0.03	5.0				ND	0.1	0.10	1200	5	10						
Pond 13A Discharge	7/2/2013	1.0	0.001	6.85	7.83								3.5	0.3	1.0												
into Pond 13B	7/3/2013	1.5	0.002	6.98	8.29																						
	7/5/2013	1.0	0.001	6.31	8.25																						
	7/6/2013	3.0	0.004	4.14	7.11																						
	7/7/2013	1.0	0.001	5.12	8.35																						
	7/8/2013	1.0	0.001	5.16	8.30																						
	7/9/2013	1.0	0.001	5.45	8.27	ND				50	0.03	12				ND	0.1	0.10	1200	5	10						
	7/10/2013	1.0	0.001	10.10	8.30								8.2	0.3	1.0												
	7/11/2013	1.0	0.001	5.45	8.12																						
	7/12/2013	1.0	0.001	7.33	8.26																						
	7/13/2013	2.0	0.003	10.09	8.32																						
	7/14/2013	1.0	0.001	6.50	8.33																						
	7/15/2013	1.0	0.001	4.91	8.33																						
	7/16/2013	1.0	0.001	4.58	8.25																						
	7/17/2013	1.0	0.001	5.26	8.31																						
	7/18/2013	1.0	0.001	2.64	8.23	ND				55	0.03	5.0				ND	0.1	0.10	1400	5	10						
	7/19/2013	1.0	0.001	3.12	8.31								3.1	0.3	1.0												
	7/20/2013	1.0	0.001	10.14	8.29																						
	7/21/2013	1.0	0.001	2.43	8.30																						
	7/22/2013	1.0	0.001	2.17	8.15																						
	7/23/2013	1.0	0.001	10.22	8.34																						
	7/24/2013	2.0	0.003	4.32	8.23																						
	7/25/2013	1.0	0.001	2.50	8.21	ND				53	0.03	5.0				ND	0.1	0.10	1200	5	10						
	7/26/2013	2.0	0.003	6.04	8.16								1.0	0.3	1.0												

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Lehigh Southwest Cement Company Permanente Quarry
October 2014

Sample Location	Units / Test Method	Flow Rate gpm	Flow Rate MGD	Turbidity NTU Field	pH s.u. Field	Chlorine Residual mg/L Field	Temp C Field	DO mg/L Field	EC µS/cm Field	Chloride mg/L EPA 300.0			TSS mg/L SM2540D			Total Set Mat mL/L/hr SM2540F			TDS mg/L SM2540C			O&G mg/L EPA 1664			TOC mg/L SM5310C		
	Date	Field		Result	Result	Result	Result	Result	Result	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL
Pond 13A Discharge into Pond 13B	7/27/2013	1.0	0.001	2.84	8.16																						
	7/29/2013	1.0	0.001	4.95	8.27	ND				68	0.03	5.0				ND	0.1	0.10	1300	5	10	ND	0.80	5.0			
	7/30/2013	1.0	0.001	4.21	8.24								3.7	0.3	1.0												
	7/31/2013	1.0	0.001	3.40	8.27																						
	8/1/2013	1.0	0.001	1.85	8.37																						
	8/2/2013	1.0	0.001	1.65	8.33																						
	8/3/2013	1.0	0.001	10.16	8.34																						
	8/4/2013	1.0	0.001	4.23	8.34																						
	8/5/2013	1.0	0.001	9.84	8.11																						
	8/6/2013	2.0	0.003	9.92	8.19																						
	8/7/2013	1.0	0.001	1.79	8.29	ND				66	0.03	5.0				ND	0.1	0.10	1300	5	10						
	8/8/2013	1.0	0.001	2.85	8.31								1.7	0.3	1.0												
	8/9/2013	1.0	0.001	1.92	8.27																						
	8/10/2013	1.0	0.001	1.84	8.24																						
	8/11/2013	1.0	0.001	1.70	8.12																						
	8/12/2013	1.0	0.001	2.14	8.16																						
	8/13/2013	0.0	0.000																								
	8/14/2013	1.0	0.001	1.50	8.34	ND				56	0.03	5.0				ND	0.1	0.10	1400	5	10						
	8/15/2013	1.0	0.001	2.22	8.21								10	0.3	1.0												
	8/17/2013	1.0	0.001	2.55	7.11																						
	8/18/2013	1.0	0.001	4.91	7.29																						
	8/19/2013	1.0	0.001	2.45	8.41																						
	8/20/2013	1.0	0.001	2.30	8.32																						
	8/21/2013	2.0	0.003	5.22	7.31																						
	8/22/2013	0.5	0.001	2.88	8.29	ND				54	0.03	12				ND	0.1	0.10	1400	5	10						
	8/23/2013	0.5	0.001	2.39	8.37								1.9	0.3	1.0												
	8/24/2013	2.0	0.003	2.91	8.39																						
	8/25/2013	0.5	0.001	2.40	8.29																						
	8/26/2013	2.0	0.003	3.10	8.21																						
	8/27/2013	0.5	0.001	11.60	7.94																						
	8/28/2013	0.5	0.001	2.91	8.18	ND				54	0.03	5.0				ND	0.1	0.10	1300	5	10	1.7 J^	0.80	5.0			
	8/29/2013	0.5	0.001	2.84	8.32								6.0	0.3	1.0												
	8/30/2013	0.5	0.001	15.50	8.03																						
	8/31/2013	0.5	0.001	3.17	8.11																						
	9/1/2013	0.5	0.001	3.25	8.23																						
	9/3/2013	0.3	0.000	1.65	7.91																						
	9/4/2013	0.3	0.000	3.23	8.39	ND				53	0.03	12				ND	0.1	0.10	1400	5	10	1.5^	0.80	1.4			
	9/5/2013	1.0	0.001	1.56	8.37								ND	0.3	0.50												
	9/6/2013	0.5	0.001	6.52	8.26																						
	9/7/2013	0.5	0.001	6.44	8.19																						

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Lehigh Southwest Cement Company Permanente Quarry
October 2014

Sample Location	Units / Test Method	Flow Rate gpm	Flow Rate MGD	Turbidity NTU Field	pH s.u. Field	Chlorine Residual mg/L Field	Temp C Field	DO mg/L Field	EC µS/cm Field	Chloride mg/L EPA 300.0			TSS mg/L SM2540D			Total Set Mat mL/L/hr SM2540F			TDS mg/L SM2540C			O&G mg/L EPA 1664			TOC mg/L SM5310C		
	Date	Field		Result	Result	Result	Result	Result	Result	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL
	9/8/2013	0.5	0.001	6.39	8.21																						
	9/9/2013	0.5	0.001	6.29	8.19																						
Pond 13A Discharge	9/10/2013	0.0	0.000	15.40	8.30	ND				16	0.03	12	25	0.3	0.50	0.22	0.1	0.10	1400	5	10						
into Pond 13B	9/11/2013	0.0	0.000	0.99	8.11																						
	9/12/2013	0.0	0.000	5.23	8.07																						
	9/13/2013	0.0	0.000	1.57	8.31																						
	9/14/2013	0.5	0.001	2.92	8.35																						
	9/15/2013	0.1	0.000	1.33	8.21																						
	9/16/2013	180.0	0.259	0.29	8.13																						
	9/17/2013	40.0	0.058	0.23	8.19																						
	9/18/2013	4.0	0.006	3.26	7.73	ND				100	0.03	12				ND	0.1	0.10	1600	5	10						
	9/19/2013	0.5	0.001	1.53	8.20								1.4	0.3	0.50												
	9/20/2013	0.5	0.001	1.95	8.26																						
	9/21/2013	0.5	0.001	2.91	8.33																						
	9/22/2013	1.0	0.001	2.33	8.10																						
	9/23/2013	0.3	0.000	1.41	8.30																						
	9/24/2013	0.3	0.000	1.34	8.18	ND				71	0.03	5.0				ND	0.1	0.10	1500	5	10						
	9/25/2013	0.5	0.001	0.88	8.18																						
	9/26/2013	0.5	0.001	1.01	8.19																						
	9/27/2013	0.2	0.000	0.68	8.30																						
	9/28/2013	0.5	0.001	1.59	8.38																						
	9/30/2013	0.3	0.000	1.66	8.29																						
	10/1/2013	0.3	0.000	0.84	8.28	ND	18.20	8.33		65^	0.60	10				ND	0.20	0.20	1600	5.0	10						
	10/2/2013	0.3	0.000	3.35	8.28																						
	10/3/2013	0.3	0.000	0.77	8.33																						
	10/4/2013	0.3	0.000	1.2	8.36								1.0	0.30	0.50												
	10/5/2013	0.5	0.001	2.37	8.36																						
	10/6/2013	0.0	0.000	1.12	8.39																						
	10/7/2013	0.0	0.000	0.68	8.37																						
	10/8/2013	0.3	0.000	0.99	8.09																						
	10/9/2013	0.3	0.000	1.33	8.16																						
	10/10/2013	0.3	0.000	0.75	8.21	ND	18.22	7.59		58	0.75	12				ND	0.10	0.10	1300*	5.0	10	1.1 J	0.80	1.4			
	10/11/2013	0.3	0.000	1.26	8.24																						
	10/12/2013	1.0	0.001	1.06	7.95								0.60^	0.30	0.50												
	10/13/2013	0.3	0.000	0.54	8.11																						
	10/14/2013	0.5	0.001	1.03	7.91																						
	10/15/2013	0.0	0.000	0.85	8.26	ND	19.62	2.00		69	0.75	12				ND	0.10	0.10	1500	5.0	10						
	10/16/2013	0.0	0.000	0.65	8.41																						
	10/17/2013	0.0	0.000	1.81	8.34																						
	10/18/2013	0.0	0.000	3.03	8.28								ND	0.30	0.50												

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Lehigh Southwest Cement Company Permanente Quarry
October 2014

Sample Location	Units / Test Method	Flow Rate gpm	Flow Rate MGD	Turbidity NTU Field	pH s.u. Field	Chlorine Residual mg/L Field	Temp C Field	DO mg/L Field	EC µS/cm Field	Chloride mg/L EPA 300.0			TSS mg/L SM2540D			Total Set Mat mL/L/hr SM2540F			TDS mg/L SM2540C			O&G mg/L EPA 1664			TOC mg/L SM5310C		
	Date	Field		Result	Result	Result	Result	Result	Result	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL	Result	MDL	RL
	10/19/2013	0.0	0.000	1.9	8.36																						
Pond 13A Discharge	10/20/2013	1.0	0.001	0.88	8.32																						
into Pond 13B	10/21/2013	1.0	0.001	1.68	8.35																						
	10/22/2013	0.0	0.000	1.07	8.12	ND	17.5	6.73		67	0.75	12				ND	0.10	0.10	1300	5.0	10						
	10/23/2013	2.0	0.003	1.14	8.23								ND	0.30	0.50												
	10/24/2013	2.0	0.003	0.78	8.23																						
	10/25/2013	0.3	0.000	0.77	8.11																						
	10/26/2013	0.5	0.001	0.73	8.07																						
	10/27/2013	0.3	0.000	2.52	8.11																						
	10/28/2013	0.5	0.001	1.07	8.11																						
	10/29/2013	0.5	0.001	1.01	8.16	ND	14.04	3.91		64	0.75	12				ND	0.10	0.10	1400	5.0	10						
	10/30/2013	0.5	0.001	0.68	8.19								1.8^	0.30	0.50												
	10/31/2013	0.3	0.000	1.03	7.92																						
	11/1/2013	0.3	0.000	0.60	8.30																						
	11/2/2013	0.5	0.001	0.72	8.18																						
	11/3/2013	0.5	0.001	0.78	8.21																						
	11/4/2013	0.5	0.001	0.73	8.17																						
	11/5/2013	2.5	0.004	0.97	7.99																						
	11/6/2013	0.5	0.001	0.66	8.21																						
	11/7/2013	0.5	0.001	1.01	8.19	ND	17.41	7.11		63	0.75	12				ND	0.10	0.10	1600	5.0	10						
	11/8/2013	1.5	0.002	13.3	7.96								7.4	0.30	0.50												
	11/9/2013	0.5	0.001	0.98	8.09																						
	11/10/2013	0.5	0.001	1.19	8.07																						
	11/11/2013	0.3	0.000	1.07	8.04																						
	11/12/2013	20.0	0.029	>1000	7.51																						
	11/13/2013	20.0	0.029	27.8	7.94																						
	11/14/2013	0.5	0.001	61	8.02	ND	16.98	6.94		59	0.75	12				ND	0.10	0.10	1400	5.0	10						
	11/15/2013	0.0	0.000										220^	0.30	0.50												
	2/27/2014	3.0	0.004	833.8	7.99	ND	16.44	8.90		36	0.75	12	28	0.30	0.50	ND	0.10	0.10	1200	5.0	10	ND	0.80	1.4			
	2/28/2014	10.0	0.014	74.0	8.16																						
	3/1/2014	3.0	0.004	49.5	8.06																						

Notes: all samples are grab samples, except for TSS samples. TSS sampes are 24-hr composites from the Pond discharge samples. The date listed for 24-hour composites is when sampling was finished.
J = Detected but below the Reporting Limit; therefore, result is an estimated concentration, detected but not quantified (DNQ).
ND = Analyte not detected at or above the reporting limit.
^ Lab blank contained trace amount of oil & grease.
* Analysis exceeded sampling holding time limit.
Only days are shown for when discharges occurred.

Table 2: Metals Data Summary
Lehigh Southwest Cement Company Permanente Quarry
October 2014

Sample Location	Sample Date	Antimony (ug/L)				Arsenic (ug/L)				Beryllium (ug/L)				Cadmium (ug/L)				Copper (ug/L)				Chromium (ug/L)				Hexachrome (ug/L)			
		1638				1638 DRC				1638				1638				1638				1638 DRC				218.6			
		Result	MDL	RL	Qualifier	Result	MDL	RL	Qualifier	Result	MDL	RL	Qualifier	Result	MDL	RL	Qualifier	Result	MDL	RL	Qualifier	Result	MDL	RL	Qualifier	Result	MDL	RL	Qualifier
Pond 4A	10/30/13	3.11	0.011	0.042	-	1.32	0.047	0.158	-	ND	0.053	0.158	U	1.22	0.007	0.021	-	1.72	0.042	0.126	-	0.652	0.079	0.237	-	-	-	-	-
	12/17/13	2.87	0.011	0.042	-	1.07	0.009	0.032	-	ND	0.053	0.158	U	0.373	0.007	0.021	-	2.55	0.042	0.126	F	0.643	0.395	1.18	B, Ft	ND	0.0050	0.010	-
	3/6/14	5.68	0.011	0.042	-	1.63	0.009	0.032	-	ND	0.053	0.158	U	1.31	0.007	0.021	-	1.63	0.042	0.126	F	0.265	0.009	0.032	F	ND	0.0050	0.010	-
	4/1/14	5.11	0.011	0.042	-	1.70	0.009	0.032	-	ND	0.053	0.158	U	1.11	0.007	0.021	-	2.33	0.042	0.126	F	0.623	0.009	0.032	F	ND	0.0050	0.010	-
Pond 17	9/13/13	2.10	0.011	0.042	-	0.478	0.006	0.026	-	ND	0.053	0.158	-	0.285	0.007	0.021	-	2.48	0.042	0.126	-	0.425	0.047	0.158	-	0.41	0.02	0.20	-
	12/17/13	1.21	0.011	0.042	-	0.504	0.009	0.032	-	ND	0.053	0.158	U	0.102	0.007	0.021	-	3.45	0.042	0.126	F	0.956	0.395	1.18	B, Ft	ND	0.0050	0.010	-
	2/6/14	1.91	0.011	0.042	-	0.606	0.047	0.158	-	ND	0.053	0.158	U	0.221	0.007	0.021	-	4.77	0.042	0.126	F	3.53	0.158	0.474	Ft	ND	0.0050	0.010	-
Pond 13A/13B	9/4/13	0.613	0.010	0.040	J	1.22	0.006	0.025	-	ND	0.051	0.152	-	0.043	0.007	0.020	-	2.83	0.040	0.121	-	0.499	0.045	0.152	-	ND	0.02	0.20	-
	2/27/14	0.779	0.011	0.042	-	0.705	0.009	0.032	-	ND	0.053	0.158	U	0.094	0.007	0.021	-	5.64	0.042	0.126	-	3.43	0.009	0.032	-	ND [1]	0.0050	0.010	-
Pond 30	2/27/14	0.505	0.011	0.042	-	1.93	0.009	0.032	-	ND	0.053	0.158	U	0.134	0.007	0.021	-	7.47	0.042	0.126	F	11.1	0.009	0.032	Ft	ND	0.0050	0.010	-
	4/2/14	0.720	0.011	0.042	-	0.854	0.009	0.032	-	ND	0.053	0.158	U	0.156	0.007	0.021	-	4.07	0.042	0.126	-	6.73	0.009	0.032	-	ND	0.0050	0.010	-

Notes:

1 = sample collected on 2/28/2014 for hexchrome.

9/4/13 field and bottle blanks contained concentrations of Cr, Cu, Pb, and Zn above the reporting limit. Ni was also found in the bottle blank.

9/13/2013 field blank contained concentrations of Cr, Cu, Pb, and Zn above the reporting limit.

All locations were grab samples collected via "clean hands/dirty hands" EPA sampling method

J = Estimated value because blank spike had a low recovery of 70%.

MDL = Method detection limit

N = Spike recovery was not within acceptance criteria. Result is estimated.

F = Analyte detected above the RL in field blank.

Ft = Analyte detected at trace concentration in field blank.

M = Method blank contained trace detection of this analyte.

MDL = Method detection limit

B = Detected by the instrument, the result is > the MDL but ≤ the MRL. Result is reported and considered an estimate.

ND = Not detected at or above the indicated MDL or RL.

mg/L = milligrams per liter; ng/L = nanograms per liter; ug/L = micrograms per liter

RL = Reporting limit; U = Result is ≤ the method detection limit.

Table 2: Metals Data Summary
Lehigh Southwest Cement Company Permanente Quarry
October 2014

Sample Location	Sample Date	Lead (ug/L)				Mercury (ng/L)				Nickel (ug/L)				Selenium (ug/L)				Silver (ug/L)				Thallium (ug/L)				Zinc (ug/L)			
		1638				1631E				1638 DRC				1638 DRC				1638				1638				1638			
		Result	MDL	RL	Qualifier	Result	MDL	RL	Qualifier	Result	MDL	RL	Qualifier	Result	MDL	RL	Qualifier	Result	MDL	RL	Qualifier	Result	MDL	RL	Qualifier	Result	MDL	RL	Qualifier
Pond 4A	10/30/13	0.075	0.006	0.026	-	10.4	0.200	0.500	-	16.9	0.263	1.05	-	29.6	0.105	0.316	-	ND	0.005	0.021	N, U	0.317	0.003	0.011	-	4.68	0.06	0.21	-
	12/17/13	0.042	0.006	0.026	F	6.24	0.200	0.500	-	14.1	1.32	5.26	-	20.4	0.021	0.063	-	ND	0.005	0.021	U	0.237	0.003	0.011	-	4.65	0.06	0.21	F
	3/6/14	0.047	0.006	0.026	F	1.30	0.200	0.500	-	59.4	0.053	0.211	-	33.8	0.021	0.063	-	ND	0.005	0.021	U	0.174	0.003	0.011	-	56.8	0.06	0.21	F
	4/1/14	0.024	0.006	0.026	B, F	1.30	0.200	0.500	-	73.7	0.053	0.211	-	53.1	0.021	0.063	-	ND	0.005	0.021	U	0.183	0.003	0.011	-	58.0	0.06	0.21	F
Pond 17	9/13/13	0.029	0.006	0.026	-	10.8	0.200	0.500	-	8.36	0.247	1.05	-	19.0	0.024	0.072	-	ND	0.005	0.021	N	0.157	0.003	0.011	-	8.94	0.06	0.21	-
	12/17/13	0.055	0.006	0.026	F	13.2	0.200	0.500	-	8.36	1.32	5.26	-	7.66	0.021	0.063	-	0.006	0.005	0.021	B	0.154	0.003	0.011	-	7.04	0.06	0.21	F
	2/6/14	0.124	0.006	0.026	F	17.1	0.200	0.500	-	25.6	0.526	2.11	-	27.6	0.105	0.316	-	0.012	0.005	0.021	B	0.318	0.003	0.011	-	12.1	0.06	0.21	F
Pond 13A/13B	9/4/13	0.071	0.006	0.025	-	9.22	0.200	0.500	-	3.96	0.237	1.01	-	2.42	0.023	0.069	-	ND	0.005	0.020	-	0.027	0.003	0.010	-	12.1	0.06	0.20	-
	2/27/14	0.644	0.006	0.026	-	19.7	0.200	0.500	-	7.37	0.053	0.211	-	22.8	0.021	0.063	-	0.011	0.005	0.021	B	0.041	0.003	0.011	-	9.01	0.06	0.21	-
Pond 30	2/27/14	0.300	0.006	0.026	F	22.4	0.200	0.500		15.0	0.053	0.211	-	14.6	0.021	0.063	-	0.011	0.005	0.021	B	0.068	0.003	0.011	-	18.9	0.06	0.21	F
	4/2/14	0.151	0.006	0.026	-	12.0	0.200	0.500	-	8.86	0.053	0.211	-	29.2	0.021	0.063	-	0.008	0.005	0.021	B	0.061	0.003	0.011	-	15.9	0.06	0.21	-

Notes:

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