ENGINEERING EVALUATION - DRAFT
Lehigh Southwest Cement Company
Plant No. 17
Banking Application No. 31772

BACKGROUND

Lehigh Southwest Cement Company (Lehigh) has applied for emission reduction credits (ERCs) corresponding to the shutdown of the following equipment:

S-141 Raw Mill 4-GM-1
Abated by: A-141 Baghouse, Reverse Air
A-142 Baghouse, Reverse Air
Emissions at: P-154 Stack

S-142 Raw Mill 2 4-GM-2
Abated by: A-141 Baghouse, Reverse Air
A-142 Baghouse, Reverse Air
Emissions at: P-154 Stack

S-154 Pre-calciner Kiln
Abated by: A-157 Selective Non-Catalytic Reduction (SNCR
A-156 Adsorption, Activated Carbon/Charcoal
A-161 Baghouse, Reverse Air
A-154 Flue Gas Desulfurization
A-141 Baghouse, Reverse Air
A-142 Baghouse, Reverse Air
A-171 Baghouse, Pulse Jet
A-172 Baghouse, Pulse Jet
Emissions at: P-161 Stack
P-154 Stack

S-161 Clinker Cooler 5-CC-1
Abated by: A-161 Baghouse, Reverse Air
Emissions at: P-161 Stack

S-171 Kiln Fuel Mill System
Abated by: A-171 Baghouse, Pulse Jet
A-172 Baghouse, Pulse Jet
Emissions at: P-154 Stack

S-172 Pre-calciner Fuel Mill System
Abated by: A-171 Baghouse, Pulse Jet
A-172 Baghouse, Pulse Jet
Emissions at: P-154 Stack

Lehigh is located at 24001 Stevens Creek Blvd. in Cupertino, CA (BAAQMD Plant No. 17) and is a major facility, as defined by Regulation 2-6-212.

Lehigh produces Portland cement, a fine gray powder that binds sand and aggregate into concrete. Portland cement is the generic term for hydraulic cement (cement that hardens with the addition of water) used in virtually all concrete. Raw materials used in Portland cement manufacturing are comprised of calcium, silica, alumina, and iron.

Although cement can be formed from a wide variety of materials, one of the most common combinations is of limestone, clay and sand. At Lehigh, materials containing these minerals are mined in a quarry, ground to a fine powder, and blended in specific proportions needed for the final cement product. The finely ground mixture of raw materials is heated until partially molten (to temperatures of 2,550 to 2,750 °F) in a cement kiln to produce a pellet-shaped, glass-hard material called clinker. The clinker is then ground with gypsum to an extremely fine powder, Portland cement.

The Portland cement manufacturing process at Lehigh consists of mining and handling of raw materials, raw milling and kiln feed preparation, pyro-processing, coal and petroleum coke preparation, clinker cooling, and finish milling. The principal operations at Lehigh consist of:

- Quarry Operations
- Primary Storage Piles
- Tertiary Crushing/Pre-blending
- Raw Milling
- Homogenizing
- Pyro-processing
- Clinker Storage/Finish Milling
- Finish Product Storage and Load Out
- Fuel Preparation
- Concrete Aggregate Products (Rock Plant)

Plant operations at Lehigh are monitored and controlled by computer. The real-time computer system monitors feed rates and other parameters to optimize combustion control. Combustion emissions are generated in the pyro-processing operation. Particulate emissions are generated throughout the facility from numerous stationary and mobile operations.

Baghouses are installed and used to recover product and control dust emissions from the kiln, mills, clinker cooler, fuel mill, belt conveyor transfer points, bulk unloading stations and at numerous other locations at the facility. Water is sprayed on haul roads and uncovered storage piles to control fugitive dust generation. Facility maintenance activities and practices such as watering of road surfaces and enforcement of the speed limits reduce the quantity of fugitives generated on-site and limit their transport off-site.

Under this banking application, Lehigh has requested ERCs for the shutdown of its calcining kiln (S-154) along with other key incorporated sources directly tied to the kiln. S-154 is the only cement manufacturing kiln that operated in the Bay Area. Therefore, with the shutdown of it, the demand for the services or product is not expected to shift to other facilities or sources within the BAAQMD's jurisdiction. Lehigh plans to continue to run its rock plant (aggregate facility) and the cement distribution. At the cement distribution, Lehigh plans to continue to bring cement onsite, store, and then ship it to customers.

Initially Lehigh also proposed to bank ERCs from the shutdown of S-220 (6-GM-2 Mill and Peripherals), abated by A-220 (Baghouse, Pulse Jet) as well. However, Lehigh was unable to provide information on the operation of the baghouse required for the Air District to estimate the ERCs due to the limited staff on-site, causing difficulty in extracting date from their data acquisition system. For that reason, Lehigh decided to exclude S-220 and A-220 from this banking application.

Lehigh has ceased operation of its calcining kiln along with other key incorporated sources directly tied to the kiln since May of 2020. However, Lehigh kept the sources on its Permit to Operate. In November of 2022, Lehigh submitted a request to shut down sources S-141, S-142, S-154, and S-161 with an effective shutdown date of 5/31/2022. In January of 2023, Lehigh submitted a request to shut down sources S-171 and S-172. Therefore, the permits for the sources have been surrendered. In addition, Lehigh has locked out its kiln by blocking the natural gas fuel line to the kiln. By doing so, Lehigh essentially will not be able to restart the kiln because natural gas is needed in order to start the equipment.

The criteria pollutants for which Lehigh has requested ERCs are nitrogen oxides (NOx), carbon monoxide (CO), precursor organic compounds (POC), sulfur dioxide (SO_2), and particulate matter (PM_{10}). All of these pollutants are briefly discussed on the Air District's web site at www.baaqmd.gov.

This evaluation report will estimate the ERCs associated with the permanent shutdown of S-141, S-142, S-154, S-161, S-171, and S-172 at Lehigh and will discuss the compliance of the project with applicable rules and regulations.

EMISSIONS REDUCTION CREDITS SUMMARY

The Air District's ERC banking rule is Regulation 2, Rule 4. The emission calculation procedure in Section 2-4-601 refers to the emission calculation procedures in the New Source Review (NSR) Rule, which is Regulation 2, Rule 2. For ERCs, the calculation procedure is described in Section 2-2-605.

Lehigh submitted the information necessary to evaluate the request to bank the ERCs on July 14, 2022. The date of receipt of this information was used to establish the date that the application was complete for purposes of determining the baseline period under Section 2-2-605. Therefore, the baseline period for this application is July 1, 2019 through June 30, 2022.

Emissions at P-154 – from sources S-141, S-142, S-154, S-171, and S-172:

- PM_{10} Emission Factor:
  - Since no tests were conducted during the baseline period for this banking application, the emission factor used to estimate the PM_{10} ERCs is based on the most recent tests conducted at the emission point: Outside Tests OS-8281 thru 8287. The tests were performed on May 6 – 15, 2019 and June 25 – 26, 2019. The tests provide 3 sets of emission factors for different scenarios:
    - With both raw mills "on" – PM_{10} emission factor = 0.018 (filterable) and 0.379 (condensable) lb/ton of clinker
    - With one raw mill "on" and another "off" – PM_{10} emission factor = 0.013 (filterable) and 0.457 (condensable) lb/ton of clinker
    - With both raw mills "off" – PM_{10} emission factor = 0.011 (filterable) and 0.501 (condensable) lb/ton of clinker

    Note that while the sources did not process clinker as the material, the regulatory limits and permit conditions applicable to the sources were based on the clinker production rate.
  - While Lehigh keeps records of actual operation hours for its raw mills, it does not keep any records of when the mills were operated simultaneously. Therefore, for conservative estimate, the lowest emission factor of the 3 scenarios will be used to estimate the PM_{10} ERCs: 0.011 (filterable) and 0.379 (condensable) lb/ton of clinker.
  - Monthly clinker production data are obtained from monthly CEMs reports, which also provide daily data, and are tabulated in Appendix A. The data have been reviewed and compared against the throughput amounts reported via annual data updates. The details of the comparison analyses are included in the appendix. The adjusted annual average clinker production amount within the baseline period for this banking application is 275,556 tons/yr.
- NOx, POC, CO, and SO_2 Emission Factors:
  - NOx, CO, and SO_2 ERCs are estimated based on the CEMs data provided by Lehigh. Monthly data were randomly selected and spot-checked against the monthly CEMs report submitted by Lehigh for accuracy.
  - The CEMs THC data are not used to estimate POC ERCs since the THC data include additional hydrocarbon compounds in addition to POC, which would result in overestimation of credits. Instead, POC ERCs are estimated based on source test results of NST-5448, which was conducted in May and June of 2019. The results, as tabulated in Appendix G, provide 3 sets of emission factors for different scenarios:
    - With both raw mills "on" – POC emission factor = 9.1E-03 lb/ ton of clinker

- With one raw mill "on" and another "off" – POC emission factor = 1.2E-02 lb/ ton of clinker
- With both raw mills "off" – POC emission factor = 9.5E-03 lb/ ton of clinker

Since Lehigh does not keep any records of when the mills were operated simultaneously, for conservative estimate, the lowest emission factor of the 3 scenarios will be used to estimate the POC ERCs: 9.1E-03 lb/ ton of clinker.

For the purposes of this evaluation report, "tons" are considered to be short tons whereas "long tons" will be specified as such.

Emissions at P-161 – from sources S-154 and S-161:

- PM_{10} Emission Factor:
  - There was only one test conducted at the emission point during the baseline period for this banking application: Outside Test OS-7397. Therefore, the emission factor used to estimate the PM_{10} ERCs is based on that test. The test was performed on Sep 19, 2019 with the following result:
    - PM_{10} emission factor = 0.013 lb/ton of clinker (filterable)
  - Lehigh has provided daily clinker production (see Appendix A), and the annual average clinker production amount within the baseline period for this banking application is 275,556 tons/yr.

Adjustments on throughputs and emission factors to comply with applicable permit conditions:

The sources covered under this banking application were subject to the following permit conditions:

- S-141, S-142, S-154 and S-161 are subject to Permit Condition No. 2786, which has the following emission limitations in its Parts A and B:
  - 481 lbs of SO_2 per hour, averaged over the 24-hour calendar day;
  - Clinker Cooler (S-161) = 0.04 lbs of particulate (filterable) per ton of clinker produced; and
  - Cement Kiln (S-154) = 0.04 lbs of particulate (filterable) per ton of clinker produced.
- S-154, S-171, and S-172 are subject to Permit Condition No. 603, which has the following limits:
  - 1.6 million tons per year of clinker in its Part 2; and
  - Part 21 of this permit condition requires the owner/operator of S-154 and A-154 to not exceed 76.84 ppmvw of total hydrocarbon (THC) or 12 ppmvd of total organic HAPs (at 7% O_2), calculated as a 30-operating day rolling average.
- S-154 is also subject to Permit Conditions No. 11780 and 20753:
  - Permit Condition No. 11780 has the same clinker production limit of 1.6 million tons per year as Permit Condition No. 603 (see Part 2 of the condition);
  - Permit Condition No. 11780 also limits NOx emissions from S-154 to more than 2.3 lb/ton of clinker as determined on a 30-operating day rolling average (see Part 3 of the condition); and
  - Permit Condition No. 20753 does not contain any emissions limit, but it specifies visible emissions monitoring requirements.
- A copy of all permit conditions can be found in Appendix B.

The daily average SO_2 emissions from CEMs reports have been reviewed and no data exceeded 481 lb/hr, and therefore emission rates of SO_2 are considered in compliance with Permit Condition No. 2786 and therefore need no adjustments. The daily data of average SO_2 emissions are presented in Appendix C.

The filterable PM_{10} emission factors used in this banking application do not exceed the limits specified in Permit Condition No. 2786.

Although not limited by permit condition, condensable PM_{10} emissions were included in the inventory and eligible for banking credits. PM_{10} emissions including condensables were as high as 522.31 TPY (as reported in 2020) and this banking application will not grant ERCs in excess of the amount in the inventory.

The annual clinker production data used in this banking application does not exceed the limit specified in Permit Condition No. 603 or 11780. For more details on this, see Appendix A.

Although HAPs or TAC emissions data are not used to estimate POC ERCs, for completeness the 30-operating day rolling average of total organic HAPs emissions from CEMs reports have been reviewed and no data exceeded 12 ppmvd and therefore emission rates of THC are considered in compliance with Permit Condition No. 603 and therefore need no adjustments. The daily data of THC and total HAPs concentration are presented in Appendix C.

The 30-operating day rolling average of NOx emissions from CEMs reports have been reviewed and no data exceeded 2.3 lbs of NOx per ton of clinker and therefore emission rates of NOx need no adjustments. For more details on this, see Table D2 in Appendix D.

Adjustments on throughputs and emission factors to comply with applicable rules, regulations, and other limits:

Regulation 2-2-603.6 requires adjustment of the baseline emission rate to comply with the most stringent of RACT, BARCT, and applicable federal and District rules and regulations in effect or contained in the most recently adopted Clean Air Plan (CAP). There are 40 stationary source control measures contained in the 2017 CAP, adopted on April 19, 2017. The proposed stationary source control measure SS19 applies to cement plants and recommends amendments to Regulation 9-13 to revise the operating day averaging period for ammonia emissions, imposition of an SO_2 standard consistent with other Air District rules, amendments to incorporate language regarding detached plumes, and amendments to the rule to reduce GHG emissions. The only pollutant relevant for this banking application is SO_2 and since sources S-141, S-142, S-154, S-171, and S-172 are already subject to the requirements of Regulation 9-1, the baseline emissions from these sources do not need to be adjusted downward to comply with SS19 of District's 2017 CAP.

Source S-161 are subject to Regulation 6-1. Section 6-1-310 limits the filterable PM emissions to no more than 0.15 gr/dscf. Per Outside Test OS-7397, filterable PM emissions from S-161 were measured at 0.003 gr/dscf, respectively. Therefore, emission rates of filterable PM_{10} need no adjustments.

Sources S-141, S-142, S-154, S-171, and S-172 are subject to Regulation 9-1. Section 9-1-304 limits the SO_2 concentration to not exceed 300 ppm. The monthly CEMs reports submitted by Lehigh have been reviewed and no data exceeded the limit as can be seen in Table E1 in Appendix E. Therefore, emission rates of SO_2 need no adjustments.

Sources S-141, S-142, S-154, S-171, and S-172 are subject to Regulation 9-13. Section 9-13-301 limits the emissions from Portland cement manufacturing facilities such as Lehigh as follows:

- Section 301.1 limits the 30-operating day rolling average of NOx emissions from the kiln to no more than 2.3 pounds per ton of clinker produced. As can be seen in Appendix D, 30-operating day rolling average of NOx emissions from CEMs reports have been reviewed and determined to be in compliance with this limit, and therefore emission rates of NOx need no adjustments.
- Section 301.2 limits PM emissions from the kiln to no more than 0.04 pounds per ton of clinker produced. As can be seen above, the emission factor used to estimate PM_{10} ERCs from the kiln is lower (0.011 lb/ton) than this regulatory limit.
- Section 301.3 limits PM emissions from the clinker cooler to no more than 0.04 pounds per ton of clinker produced. As can be seen above, the emission factor used to estimate PM_{10} ERCs from the clinker cooler is lower (0.013 lb/ton) than this regulatory limit.
- Section 301.7 limits the 30-operating day rolling average of THC emissions from the kiln to no more than 24 ppmv, dry at 7% O_2, or total organic HAP emissions to no more than 12 ppmvd at 7% O_2. Although HAPs or TAC emissions data are not used to estimate POC ERCs, for completeness the 30-operating day rolling average of THC and total organic HAPs emissions from CEMs reports have been reviewed and determined to be in compliance with this limit. For more details, see Appendix C. Note that Section 301.7 allows Lehigh to use compliance with the HAP limit as an alternative to meeting the THC limit. Appendix C shows that the HAPs emissions during the baseline period were in compliance with the limit in Section 301.7; therefore, the THC emissions were considered in compliance as well.

This THC and HAP data was only used to verify that the source test data used for emissions reduction credits was in compliance with the above requirements.

Sources S-141, S-142, S-154, S-171, and S-172 are subject to CFR § 63.1343, which limits existing kiln and clinker cooler to no more than 0.07 lb of PM /ton clinker, or new kiln and clinker cooler to no more than 0.02 lb of PM /ton clinker. These limits apply to filterable PM emissions. As can be seen above, the emission factors used to estimate filterable PM_{10} ERCs from the kiln and the clinker cooler for this banking application are lower (0.011 and 0.013 lb/ton, respectively) than the regulatory limits. The regulation also limits the THC emissions from either existing or new kilns or clinker coolers to no more than 24 ppmvd at 7% O_2 measured as propane, calculated as a rolling 30-day average. This limit is consistent with that set forth in Air District Regulation 9-13.

As mentioned in Appendix A, Lehigh's 2013 Compliance Agreement limits the clinker production rate to no more than 1.1275 million tons per year. However, since the agreement has a term period from 9/9/2013 through 2/28/2015, it does not apply to this banking application.2013 Compliance Agreements

2020 Consent Decrees for Lehigh Cement Company LLC and Lehigh White Cement Company, LLC sets forth the following emission limits to lower the kiln's NOx and SO_2 emissions as follows:

- NOx = 2.0 lbs/ton of clinker (30-day rolling average emission limit)
- SO_2 = 2.1 lbs/ton of clinker (30-day rolling average emission limit)

The emissions reported via monthly CEMs reports have been reviewed. Table D1 in Appendix D shows some days where the rolling 30-operation day NOx exceeded the above limit; therefore, the NOx/Clinker data for those days are adjusted downward (for more details, see Table D1). To demonstrate compliance with the above SO_2 limit, rolling 30-operation day SO_2 emissions data are tabulated in Table E1 in Appendix E; therefore, emission rates of SO_2 need no adjustments.

The ERCs for this banking application are calculated as follows:

<u>From Emission Point P-154</u>			
Clinker Production =	275,556	tons/yr	(See Appendix A)
Filterable PM_{10} Factor =	0.011	lb/ton clinker	
Condensable PM_{10} Factor =	0.379	lb/ton clinker	
Filterable PM_{10} ERCs =	1.455	TPY	(Clinker Production * EF)
Condensable PM_{10} ERCs =	52.283	TPY	(Clinker Production * EF)
NOx ERCs =	270.127	TPY	(See Appendix D)
POC Factor =	0.0091	lb/ ton clinker	(See Appendix G)
POC ERCs =	1.257	TPY	(Clinker Production * EF)
CO ERCs =	1,106.190	TPY	(See Appendix F)
SO_2 ERCs =	187.404	TPY	(See Appendix E)
<u>From Emission Point P-161</u>			
Clinker Production =	275,556	tons/yr	(See Appendix A)
Filterable PM_{10} Factor =	0.013	lb/ton clinker	
Filterable PM_{10} ERCs =	1.779	TPY	(Clinker Production * EF)
<u>Project Total</u>			
Filterable PM_{10} ERCs =	3.234	TPY	
Condensable PM_{10} ERCs =	52.283	TPY	
NOx ERCs =	270.127	TPY	
POC ERCs =	1.257	TPY	
CO ERCs =	1,106.190	TPY	

SO_2 ERCs = 187.404 TPY

Notes: ERCs for the condensable portion of PM_{10} will be issued separately from the filterable portion. The filterable PM_{10} ERCs shall not be used to offset an increase in condensable PM_{10} emissions and condensable PM_{10} shall not be used to offset an increase in filterable PM_{10}. This limitation will be included in the issued banking certificates.

SMALL FACILITY BANK AND BANKING ACCOUNT

Lehigh was a major facility and did not qualify for offsets from the Small Facility Banking Account (SFBA). Therefore, no such emission offsets are required to be repaid to the SFBA as per Regulation 2-4-303.5.

STATEMENT OF COMPLIANCE

The ERCs are subject to and expected to comply with the standards of Regulation 2-4-302 for Bankable Reductions for Closures. Per Regulation 2-4-302.1, the ERCs from the shutdown or closure of S-141, S-142, S-154, S-161, S-171, and S-172 are bankable because the emission reductions are permanent and will not be replaced by any emission increase elsewhere within the Air District. Per Regulation 2-4-302.2, issuance of a Banking Certificate for emission reductions resulting from the closure of S-141, S-142, S-154, S-161, S-171, and S-172 cancels the permits to operate the sources.

The ERC calculations were performed in accordance with the methodology outlined in Regulation 2-2-605. ERCs from the shutdown of S-141, S-142, S-154, S-161, S-171, and S-172 are calculated based on the actual average clinker production, CEMs data, and source test results during the three-year baseline period from July 1, 2019 through June 30, 2022.

There were two adjustments made as part of the ERC calculations. First, the clinker production data were reviewed and compared against the throughput amounts reported via annual data updates. Because the data for calendar year 2019 are higher than those reported during annual updates, they have been adjusted downward to be consistent with the annual updates data for the same period (for more details, see Appendix A). The second adjustment was on the NOx emissions for any day where the rolling 30-operation day NOx exceeds the limit in 2020 Consent Decrees for Lehigh Cement Company LLC and Lehigh White Cement Company, LLC. Therefore, the NOx emissions were adjusted downward to comply with the limit in 2020 Consent Decrees.

The Air District has already reviewed the most recently adopted Clean Air Plan (CAP): the 2017 CAP, adopted on April 19, 2017. The proposed stationary source control measure SS19 applies to cement plants and recommends amendments to Regulation 9-13 to revise the operating day averaging period for ammonia emissions, imposition of an SO_2 standard consistent with other Air District rules, amendments to incorporate language regarding detached plumes, and amendments to the rule to reduce GHG emissions. The only pollutant relevant for this banking application is SO_2 and upon review of other Air District rules (e.g., South Coast AQMD, Sacramento Metropolitan AQMD, San Joaquin Valley APCD), Air District staff did not find any other Air District rules more stringent than Bay Area AQMD Section 9-1-304 limit of 300 ppm. Note that Lehigh was subject to 2020 Consent Decrees for Lehigh Cement Company LLC and Lehigh White Cement Company, LLC, and it has been determined that the SO_2 emissions data used in this banking application comply with the limit set forth in the consent decree. Therefore, the baseline emissions from sources S-141, S-142, S-154, S-171, and S-172 do not need to be adjusted downward to comply with SS19 of District's 2017 CAP.

The bankable ERCs did not require further adjustments for S-141, S-142, S-154, S-161, S-171, and S-172.

Based on the data provided by Lehigh, the ERCs are real, quantifiable, enforceable, and permanent as required by the definition of Emission Reduction Credit in Regulation 2-2-211. Condensable PM_{10} emissions were not included within the original permit applications but were included in the inventory, which makes the emissions eligible for banking and the ERCs issued are lower than the emissions contained in the inventory.

The ERCs from the shutdown of S-141, S-142, S-154, S-161, S-171, and S-172 exceed 40 tons/yr of NOx, condensable PM_{10}, CO, and SO_2 each. Therefore, the application is subject to Publication, Public Comment and Inspection of Regulation 2-4-405.

The project is exempt from CEQA pursuant to Regulation 2-1-312.10. Lehigh has completed and signed a BAAQMD Appendix H Environmental Information Form to ensure that the project has no potential for causing a significant adverse impact on the environment.

A toxics risk screening analysis is not required since there is no emission increase associated with the project.

PSD, Offsets, NSPS, and NESHAPS do not apply.

CONDITIONS

Conditions are commonly imposed on banking applications when an emission reduction is permanent at the source but it is unclear whether the reduction will be replaced by an emissions increase elsewhere at the facility or within the Air District, or to ensure the permanency of the closure. Per Division policy, conditions are not necessarily needed in circumstances where the source, if operated in the future within the physical jurisdictional boundaries of the Bay Area Air Quality Management District, would be treated as a new source subject to New Source Review.

The following new condition will be imposed on the Banking Certificate to be issued under this banking application:

Condition 27873 ----------

1. The emission reduction credits (ERCs) for filterable PM10 shall not be used to offset emission increases of condensable PM10. The ERCs for condensable PM10 shall not be used to offset emission increases of filterable PM10. (Basis: Regulation 2-4-302)
2. This reduction shall be enforceable through enforcement of Regulation 2-1-302 pertaining to operating without a permit. (Basis: Regulation 2-4-302)

End of Condition

As part of the review of this banking application, existing conditions linked to any of the sources being shut down as part of this banking application have been reviewed and will be revised upon issuance of the ERCs as follows:

- Condition 603 will be removed from Lehigh's Permit to Operate. S-167 is currently linked to this condition but does not appear to be referenced anywhere in the condition. Therefore, this condition will be de-linked from S-167.
- No change to Conditions 779 and 1545 (applicable to S-210 and S-211, respectively) is proposed. However, for clarity, it is to be noted that the provisions around clinker import (Part 3 of both conditions) are intended to allow clinker import only if S-154 kiln breaks down or ceases to work because of a fault. However, during review of this banking application, the Air District staff was made aware by Lehigh that the plant has approximately 70,000 metric tons of weathered clinker onsite; clinker previously produced by S-154. Weathered clinker is clinker that has been stockpiled outside, exposed to the natural elements during storage. To produce cement from the onsite weathered clinker, approximately 50,000 metric tons of fresh clinker needs to be delivered to the site so the two clinkers may be blended and grinded together in the existing finish mill, producing a good quality cement product. Without the ability to grind the remaining weathered clinker, the clinker will be disposed in a landfill rather than consumed to produce a key product. Due to low staffing level issue at the plant, Lehigh expects to consume the full amount of weathered clinker remaining onsite intermittently over the course of 5 years. Also, Lehigh may use the weathered clinker to produce stabilization cement to stabilize areas following equipment and building demolition. Onsite consumption will divert some of the cement product from customer sales, resulting in

fewer trucks leaving the site to deliver product and fewer trucks delivering a stabilization cement to the site during the reclamation phase. Since trucking of imported clinker was allowed with Part 3 of Conditions 779 and 1545 and truck traffic is expected to be less with onsite clinker consumption, no emission increase is expected if Lehigh chooses to consume the weathered clinker remaining onsite. However, if Lehigh decides to import clinker and/or process imported clinker, Lehigh will be required to submit a separate permit application to the Air District to request importing and/or processing imported clinker..

- Condition 2786 will be removed from Lehigh's Permit to Operate. Other sources besides those covered under this banking application (i.e., S-111, S-112, S-113, S-115, S-121, S-122, S-123, S-131, S-132, S-134, S-135, S-143, S-144, S-151, S-153, S-162, S-163, S-164, and S-165) are currently linked to this condition but do not appear to be referenced anywhere in the condition. Therefore, this condition will be de-linked from S-111, S-112, S-113, S-115, S-121, S-122, S-123, S-131, S-132, S-134, S-135, S-143, S-144, S-151, S-153, S-162, S-163, S-164, and S-165.
- Condition 11780 is currently linked to S-154 and A-157 and therefore will be removed from Lehigh's Permit to Operate.
- Conditions 20751 and 20753 will be revised to remove shutdown sources from the first paragraphs.
    - Condition 20751: For Sources: S-17 Clinker Transfer, S-19 Clinker Storage Area, S-21 Roll Press Clinker Surge Bin and Feeder, S-45 West Silo Top Cement Distribution Tower, S-46 Middle Silo Top Cement Distribution Tower, S-47 East Silo Top Cement Distribution Tower, S-48 Bulk Cement Loadout Tank #1, S-49 Bulk Cement Loadout Tank #28, S-50 Bulk Cement Loadout Tank #29, S-54 Cement Packer #1, S-55 Cement Packer #2, S-74 Type II Mechanical Transfer System, S-111 Rail Unloading System, S-112 Additive Hooper Transfer System, S-113 Additive Bin Transfer Facilities, S-115 Additive Storage Tripper, S-123 Rock Conveying System Area 2, S-131 Rock Sampling System Area 3, S-132 Preblend, S-134 Preblend Storage Bin 4-S-1 and 4-S-2, S-135 High grade Storage Bin 4-S-3 and 4-S-4, ~~S-141 Raw Mill 4-GM-1, S-142 Raw Mill 2 4-GM-2,~~ S-143 Raw Mill 1 Separator System 4-SE-3, S-144 Raw Mill 2 Separator System 4-SE-3, S-151 Homogenizer 5-S-1 and 5-S-2, S-153 Kiln Feed System, ~~S-154 Precalciner Kiln, S-161 Clinker Cooler,~~ S-162 Clinker Silo A, S-163 Clinker Silo B, S-164 Free lime Storage Bin, S-165 Clinker Transfer System, ~~S-171 Kiln Fuel Mill System, S-172 Precalciner Fuel Mill System,~~ S-216 Clinker Cake Conveyor, S-217 Clinker Cake Conveyor, S-218 6-GM-1 Air Separator, S-221 Clinker Cake Feeder, S-222 Gypsum Feeder, S-231 Pressed Cake Bin, S-240 Additive Conveyor/Bins, S-242 Clinker Cake Feeder, S-243 Gypsum Feeder, S-244 Pozzolan Feeder, S-245 Clay Feeder, S-301 Rail Loadout System, S-340 Rock Plant Coarse Rock Withdrawal System, S-341 Screens, S-343 Crushed Rock Conveyor, S-390 Conveyors, and S-415 Finish Mill Building Conveyor, S-614 Bulk Cement Loadout Tank #2
    - Condition 20753: For S19 Clinker Storage Area, S111 Rail Unloading System Area 1, S112 Additive Hopper Transfer System Area 1, S113 Additive Bin Transfer Facilities Area 1, S115 Additive Storage Tripper, S121 Tertiary Scalping Screen, S122 Tertiary Crusher, S123 Rock Conveying System Area 2, S131 Rock Sampling System Area 3, S132 Preblend, S134 Preblend Storage Bin, S135 Highgrade Storage Bin, S143 Raw Mill 1 Separator System, S144 Raw Mill 2 Separator Circuit, S151 Homogenizer, S153 Kiln Feed System, ~~S154 Calciner Kiln, S161 Clinker Cooler,~~ S162 Clinker Silo A, S163 Clinker Silo B, S164 Freelime Storage Bin, S165 Clinker Transfer System, ~~S171 Kiln Coal System, S172 Precalciner Coal Mill,~~ S174 Pre Calciner Coke System, S203 Screen, S214 Rock Crusher, S215 Vibrating Screen, S245 6GM1 Clay Feeder, S383 Rock Plant 2, S384 Rock Plant 2 Screens.
- Condition 24781 will be revised to delete Parts 23 through 33 which are applicable to S-141, S-142, S-154, S-161, S-171, and S-172.

RECOMMENDATION

The Air District has reviewed the material contained in the banking application and has made a preliminary determination that the application complies with all applicable requirements of Air District, state, and federal air quality-related regulations. The preliminary recommendation is to issue ERCs to Lehigh in the amounts shown below and to make changes to the permit conditions on Lehigh's Permit to Operate as detailed in the "Conditions" section above. However, since the estimated ERCs from the banking application exceed 40 tons/yr of NOx,

condensable PM_{10}, CO, and SO2 each. Therefore, the application is subject to Publication, Public Comment and Inspection of Regulation 2-4-405. After the comments are received and taken into consideration, the Air District will make a final determination on the permit.

I recommend that the Air District initiate a public notice and consider any comments received prior to taking any final action on issuance of ERCs to Lehigh in the amounts shown below.

Pollutant:	**ERC Amount:**	
Filterable PM_{10} ERCs =	3.234	TPY
Condensable PM_{10} ERCs =	52.283	TPY
NOx ERCs =	270.127	TPY
POC ERCs =	1.257	TPY
CO ERCs =	1,106.190	TPY
SO_2 ERCs =	187.404	TPY

Notes: ERCs for the condensable portion of PM_{10} will be issued separately from the filterable portion. The filterable PM_{10} ERCs shall not be used to offset an increase in condensable PM_{10} emissions and the condensable PM_{10} emissions shall not be used to offset filterable PM_{10} emissions. This limitation will be included in the issued banking certificates.

Banking Certificate owner:

Greg Ronczka
Vice President Environment and Sustainability
Lehigh Southwest Cement Company
300 East John Carpenter Freeway
Irving, TX 75062

By: _____
Kevin Oei, Supervising Air Quality Engineer

Date: _____

Appendix A
Clinker Production Data

Based on the clinker production data reported via monthly CEMs reports, the clinker production amount for the 12-month period ending 12/31/2019 is 1,089,152 tons. However, Lehigh reported 1,076,573 tons of clinker for the same reporting period via annual updates. Because the data for calendar year 2019 in Table A1 are higher than those reported during annual updates, they need to be adjusted downward to be consistent with the annual updates data for the same period. This adjustment is shown in Table A1.

For the 12-month period ending 12/31/2020, a total of 256,174 tons of clinker is observed based on the annual CEMs report submitted by the Air District. This amount is compared with that reported via annual data updates (257,223 tons for the 12-month period ending 12/31/2020). Because the data in Table A1 are either the same as or lower than those reported during annual updates, these data are considered acceptable and do not need to be adjusted downward.

Table A1. Monthly clinker production data, after adjustment to be consistent with annual updates data

Year	Month	Clinker (tons)	RACT-adjusted Clinker (tons)
2019	January	85,517	84,529
2019	February	29,935	29,589
2019	March	113,693	112,379
2019	April	97,950	96,819
2019	May	104,168	102,965
2019	June	80,729	79,797
2019	July	116,671	115,324
2019	August	105,270	104,054
2019	September	100,956	99,790
2019	October	74,728	73,865
2019	November	98,670	97,530
2019	December	80,865	79,931
2020	January	43,460	43,460
2020	February	26,927	26,927
2020	March	104,246	104,246
2020	April	81,541	81,541
Average (7/19 – 6/22), TPY			275,556

Note: To be consistent with the annual updates data, the data for calendar year 2019 have been adjusted downward as follows: (Data in Table A1) * (1,076,573 / 1,089,152). From May 2020 forward, production amount is zero.

Permit Conditions No. 603 and 11780 have a clinker production limit of 1.6 million tons per year. As can be seen in Table A1, Lehigh was in compliance with this limit. Therefore, the clinker production data do not need to be adjusted downward any further.

In order to comply with Air Toxics Hot Spot (AB2588) requirements, Lehigh's 2013 Compliance Agreement limits the clinker production rate to no more than 1.1275 million tons per year. However, since the agreement has a term period from 9/9/2013 through 2/28/2015, it does not apply to this banking application.

Appendix B
Permit Conditions

Condition # 603 ----------

S-154 Calciner Kiln
S-171 Kiln Fuel Mill System S-172 Precalciner Fuel Mill System Amended by A/N 15398, A/N 18535, A/N 21753, A/N 22953, A/N 25447, and A/N 26247 Any condition that is preceded by an asterisk is not federally enforceable.

1. The owner/operator shall not operate the pneumatic system from trucks to storage unless it is vented to a dust collection system. The S-171 Kiln Mill System shall be abated by A-171 Dust Collector, and the S-172 Precalciner Mill shall be abated by the A-172 Dust Collector. (Basis: Regulation 2-2-212 Cumulative Increase)

2. The owner/operator of S-171 and S-172, shall not exceed the following usage limits in the Pre-calciner and Kiln (S-154):
   Operation with 100 % coal at maximum 29 tons/hr; or Operation with 100% Petroleum Coke at maximum 20 tons/hr The owner/operator may use any combination of coal and petroleum coke other than specified above, provided that the owner/operator can demonstrate that the total fuel consumption does not exceed 4,960,000 MMBTU/yr (1,600,000 tons/yr clinker x 3.1 MMBtu/ton).

   For calculation purposes, the coal's heat content is assumed to be 25 MMBTU/ton and coke's heat content is assumed to be 29 MMBTU/ton. The values may change depending on each shipment received. (Basis: Cumulative Increase).

3. Deleted, (inappropriate PSD analysis trigger level for lead per Regulation 2-2-306)

4. Deleted, (inappropriate PSD analysis trigger level for beryllium per Regulation 2-2-306)

5. *The owner/operator of S-154 shall not exceed 2.08 pounds of hexavalent chromium per any consecutive 12-month. (Basis: Toxics)

6. Deleted, (Part 8 replaces quarterly composition analysis of coke)

7. Deleted (flow meters maintenance and service)

8. *The owner/operator of S-154 shall conduct a source test at the exhausts (P-154) of Dust Collectors (A-141, A-142, A-171 and A-172) to demonstrate subsequent compliance with Parts 5, 11, 16, 21 and 22. The test should be conducted with the raw mill on and the raw mill off. The owner/operator shall also test for trace metals contents (Sb, As, Be, Cd, Cr+6, total Cr, Cu, Hg, Mn, Ni, P, Pb, Se, V, Zn), benzene, ammonia (NH3), Hydrochloric Acid (HCl), and total hydrocarbon (THC) at least once per calendar year. The owner/operator shall also test for dioxinsfurans (D/F), and total organic HAP (formaldehyde, benzene, toluene, styrene, m-xylene, p-xylene, o-xylene, acetaldehyde and napthalene) at least once every 30 months. The owner/operator shall submit the source test results to the Air District Source Test Section and Engineering Divisions no later than 60 days after the source test. (Basis: Periodic Monitoring, Regulation 1-502, Toxics)

9. The owner/operator shall obtain approval for all source test procedures from the Air District's Source Test Manager prior to conducting any tests. The owner/operator shall comply with all applicable testing requirements for continuous emissions monitors as approved by the Air District's Source Test Manager. The owner/operator shall notify the Air District's Source Test Manager, in writing, of the source test protocols and projected test dates at least 7 days prior to testing. (Basis: Source test compliance verification and accuracy)

10. The owner/operator shall maintain daily records (calendar day), in a District approved log, for: (1) the amount of coke and coal usage, each separately (2) the coke's heat content and the coal's heat content. The daily throughput of fuel used and daily average volumetric flow rates shall be submitted to the Air District monthly. All records shall be retained for a period of at least five years from the date of entry. This log shall be kept on site and made available to District staff upon request. (Basis: Recordkeeping)

11. The owner / operator of S-154 and A-154 Lime/Carbonate Dry/Slurry Injection System shall not exceed 3 ppmv of HCl, dry at 7 percent oxygen, over 30-operating day rolling average. The owner/operator may use the hydrated lime injection rate as a parametric monitor for demonstrating compliance with the HCl limit. The owner/operator of S-154 and A-154 shall not operate below 9.43 tons of dry/slurry hydrated lime injection per day, calculated as a 30-operating day rolling average.

    A correlation between the dry/slurry hydrated lime injection rate and HCl concentration shall be determined at least once every 30 months where the dry/slurry lime injection rate shall be set for the subsequent compliance period. The tests must be conducted while both raw mills are operating, while both raw mills are not operating, and while one raw mill is operating and one raw mill is not operating to calculate the time-weighted average emissions and to develop a site-specific operating limit.

    This enforceable condition is based on the November 2018 performance test and may be changed as dictated by future testing results. The owner/operator shall submit a permit application and minor revision to the Title V Permit to the Engineering Division within 30 days of derivation of a new correlation and approval of the stack test results. After the application is approved by the Air District, the owner/operator shall operate in accordance with the updated site-specific operating limit established during the most recent performance test.
    (Basis: Cumulative increase, NESHAP Subpart LLL, Regulation 9-13).

12. The owner/operator of the Lime Dry/Slurry Injection system (A-154) shall install, operate and maintain a District-approved continuous hydrochloric acid (HCl) emission monitors at the exhausts of Dust Collectors (P-154) as suggested by the manufacturer's recommendation. (Basis: Regulation 2-6-503, NESHAP Subpart LLL, Regulation 9 -13).)

13. *The owner/operator shall maintain hourly continuous emission monitoring records for the Hg, HCl, THC, PM, Temperature, Opacity, and Volumetric Flow monitoring systems in a form suiTable Eor inspection and approved by the APCO and the EPA administrator. Such records shall include, but are not limited to: a. The continuous emission monitoring measurements for Hg, HCl and THC expressed in ppm (1-hour average); b. The production rates of clinker (tons/hr and tons/month); c. The emission rates of Hg in lb/hr (for each hour of the month, the maximum 1-hour average during month, rolling 3-hr average, and rolling 30- day average) and lb/yr (30-day rolling average and 12-month rolling average); d. The date, time, and duration of any start-up, shutdown or malfunction in the operation of any of the kiln systems or the emission monitoring equipment; and, (v) The results of performance testing, evaluation, calibration, checks, adjustments, and maintenance of the continuous emission monitoring system. (Basis: Recordkeeping)

14. *The owner/operator shall maintain the Hg, HCl, THC, PM, Temperature, Opacity and Volumetric Flow CEMS records at the facility for at least five years. These records shall be made available to the APCO or the EPA Administrator upon request. (Basis: Cumulative Increase)

15. *The Hg, HCl, THC, PM, opacity and Volumetric Flow Continuous Emission Monitor System (CEMs) shall meet the requirements of District Manual of Procedures, Volume V, Continuous Emission Monitoring, Policy and Procedures. All CEMS and parametric monitors such as Bag Leak Detectors, Temperature, etc. shall be operated and maintained as suggested by the manufacturer's recommendations. (Basis: Regulation 1-522, 1-602; Manual of Procedures, Volume V)

16. 16. The owner/operator of S-154, S-171 and S-172 shall not emit more than the followings during normal operation: a.55 pounds of mercury per million tons of clinker produced, over 30-operating day rolling average; b. Maximum 88 pounds of mercury per year (12-month rolling average) (Basis: Regulation 9-13, NESHAP Subpart LLL).

17. 17. The owner/operator of the Activated Carbon Injection System (A-156) shall install, operate and maintain District approved continuous mercury (Hg) emission monitors at the exhausts of Dust Collectors (A-141 and A-142) as suggested by the manufacturer's recommendation. (Basis: Regulation 9-13, NESHAP Subpart LLL

18. Deleted, interim mass balance for mercury before CEM is installed.

19. Deleted, interim mass balance for mercury before CEM is installed

20. The owner/operator of the Hg, NH3, HCl, THC, PM, opacity and Volumetric Flow CEMs must submit a monitoring plan to the Air District for approval. All operating parameters must be specified within 90 days of CEMs startup. (Basis: Regulation 9-13, NESHAP Subpart LLL)

21. The owner/operator of S-154 shall not emit more than 12 ppmv of total organic HAPs, dry at 7 percent oxygen calculated as a 30-operating day rolling average. The owner/operator may use the total hydrocarbon (THC) CEMS as a parametric monitor for the total organic HAP limit as approved by the Air District and established by source tests. The owner/operator of S-154 and A-154 shall not exceed 76.84 ppmvw of THC, calculated as a 30-operating day rolling average. A correlation between total organic HAP and THC concentration shall be determined at least once every 30 months where the THC operating limit shall be set for the subsequent compliance period. This limit shall be based on a three run test average. The tests must be conducted while both raw mills are operating, while both raw mills are not operating, and while one raw mill is operating and one raw mill is not operating to calculate the time-weighted average emissions and to develop a site-specific operating limit.

    This enforceable condition is based on the November 2018 performance test and may be changed as dictated by future testing results. The owner/operator shall submit a permit application and minor revision to the Title V Permit to the Engineering Division within 30 days of derivation of a new correlation and approval of the stack test results. After the application is approved by the Air District, the owner/operator shall operate in accordance with the updated site-specific operating limit established during the most recent performance test. (Basis: Cumulative increase, NESHAP Subpart LLL, Regulation 9-13).

22. The owner/operator of S-154 shall not emit more than 0.2 ng-TEQ/dscm of dioxins and furans (D/F) dry at 7 percent oxygen calculated as a 24-hour rolling average. The owner/operator may use temperature as a parametric monitor for the D/F as approved by the Air District and established by source tests. The kiln exhaust gas at the inlet to the PM control device shall not exceed194°C, calculated over a 180-minute average. A correlation between D/F concentrations and temperature shall be determined at least once every 30 months using a three run test average where an operating temperature shall be set for the subsequent compliance period. The tests must be conducted while both raw mills are operating, while both raw mills are not operating, and while one raw mill is operating and one raw mill is

not operating to calculate the time-weighted average emissions and to develop a site-specific operating limit.

This enforceable condition is based on the July 2017 performance test and may be changed as dictated by future testing results. The owner/operator shall submit a permit application and minor revision to the Title V Permit to the Engineering Division within 30 days of derivation of a new correlation and approval of the stack test results. After the application is approved by the Air District, the owner/operator shall operate in accordance with the updated site-specific operating limit established during the most recent performance test. (Basis: Cumulative increase, NESHAP Subpart LLL, Regulation 9-13)

23. Deleted, there was no air dilution.

24. The owner/operator of S-154 and S-161 shall produce the CEM results in the data format specified with the appropriate calculation method used as suggested by the Air District's Source Test Section. All monthly CEMS data shall be reported using the Air District approved format. (Basis: Cumulative Increase)

25. Deleted, startup condition.

26. Deleted, startup condition.

COND# 2786 ----------

S-111 Rail Unloading System,
abated by A-111 Dust Collector 1-DC-1
S-112 Additive Hopper transfer system,
abated by A-112 Dust Collector 1-DC-2
S-113 additive bin transfer facilities,
abated by A-113 Dust Collector 1-DC-3
S-115 Additive Storage,
abated by A-115 Dust Collector 1-DC-5
S-121 Tertiary scalping screen 2-VS-1-2,
abated by A-121 Dust Collector 2-DC-1
S-122 Tertiary crusher 2-CR-1,
abated by A-122 Dust Collector 2-DC-2
S-123 rock conveying system, S-131 rock sampling system,
abated by A-123 Dust Collector 2-DC-3
S-132 preblend,
abated by A-132 Dust Collector 3-DC-2
S-134 preblend storage bin 4-S-1, 4-S-2,
abated by A-134 Dust Collector 3-DC-4
S-135 high grade storage bin 4-S-3, 4-S-4,
abated by A-135 Dust Collector 3-DC-5
S-141 raw mill 4-GM-1,
abated by A-141 Dust Collector 4-DC-7 through 4-DC-22
S-142 raw mill 2 4-GM-2,
abated by A-142 Dust Collector 3-DC-23 through 4-DC-38
S-143 raw mill 1 separator system 4-SE-3,
abated by A-143 Dust Collector 4-DC-3
S-144 raw mill 2 separator circuit 4-SE-4,
abated by A-144 Dust Collector 4-DC-4
S-151 homogenizer 5-S-1-2,
abated by A-151 Dust Collector 5-DC-1
S-153 kiln feed system,
abated by A-153 Dust Collector 5-DC-3
S-154 Precalciner Kiln,
abated by A-141, A-142, S-171 and A-172 Dust Collectors
S-161 clinker Cooler 5-CC-1,
abated by A-161 Dust Collector 5-DC-11 through 5-DC-20
S-162 Clinker Silo A,
abated by A-162 Dust Collector 5-DC-24
S-163 Clinker silo B, abated by A-163 Dust Collector 5-DC-25

S-164 free lime storage bin,
abated by A-164 Dust Collector 5-DC-23
S-165 clinker transfer system,
abated by A-164 Dust Collector 5-DC-27
S-171 Kiln Fuel Mill System,
abated by A-171 Baghouse 5-DC-5
S-172 Precalciner Fuel Mill System,
abated by A-172 Baghouse 5-DC-6

A. Gaseous Emission Limitations:

1. The owner/operator shall ensure the emission of sulfur dioxide does not exceed 481 lb/hr averaged over the 24 hour calendar day. (Basis: Cumulative Increase)
2. Deleted (Basis: The maximum allowable emission rate for oxides of nitrogen is redundant with condition 11780, part C.1.)
3. The owner/operator shall install at a location approved by the APCO continuous in-stack SO2 and NOx monitoring equipment on the Kiln stack (P-154), and shall provide to the Air District, upon request, information on SO2 and NOx emissions in terms of pounds per hour and concentrations in parts per million. The monitoring equipment required shall be calibrated, maintained, serviced and repaired by the person responsible for the operation so that it will function and adequately sense, indicate and record the parameters it is designed to sense, indicate and record. The owner/operator shall also regularly provide to the Air District information concerning the feed sulfur input. (Basis: Cumulative Increase)
4. Deleted. Stacks are combined.

B. Particulate Emission Limitations:

The owner/operator of S-141, S-142, S-154, S-161, S-171, and S-172 shall perform an annual source test to demonstrate compliance with the limits below in B(1), B(2), B(3), B(4), B(5) and B(6). The owner/operator shall obtain approval for all source test procedures from the Air District Source Test Manager prior to conducting any tests. The owner/operator shall notify the Air District Source Test Manager in writing of the source test protocols and projected test dates at least 7 days prior to testing. The owner/operator shall submit the source test results to the Air District Source Test Manager and Engineering Division no later than 60 days after the source test. (Basis: Regulation 2-2-212 Cumulative Increase, Regulation 1-502).The owner/operator shall ensure particulate emissions or grain loading from these sources does not exceed the following:

1. Raw Mills (S-141, S-142) = 36 lb/hr total and 0.02 gr/SDCF. (Basis: Cumulative Increase)
2. Fuel Drying and Grinding (S-171 and S-172) = 6.6 lb/hr total and 0.02 gr/SDCF.(Basis: Cumulative Increase)
3. Clinker Cooler (S-161) = 0.04 lb/ton of clinker produced, based on three run test average. (Basis: Regulation 9-13)
4. Cement Kiln (S-154) = 0.04 lb/ton of clinker produced, based on three run test average. (Basis: Regulation 9-13)

The owner/operator shall ensure opacities from these sources does not exceed the following:

5. Cement Kiln (S-154) shall not emit for a period or periods aggregating more than three minutes in any hour an emission equal to or greater than Ringelmann 1 or 20% opacity. (Basis: Regulation 9-13, Regulations 6-1-301 and 302)

   Clinker Cooler (S-161) shall not emit for a period or periods aggregating more than three minutes in any hour an emission equal to or greater than Ringelmann 1 or 20% opacity. (Basis: Regulation 9-13, Regulations 6-1-301 and 302)

C. Testing Facilities (Basis: Regulation 1-501)

The owner/operator shall provide test facilities so that representatives sampling and accurate measurements can be made of all emissions from all sources subject to NESHAP Subpart LLL effective September 9, 2015, Portland Cement Plants and for all measurements necessary to prove compliance with the conditions of this permit. (Basis: Regulation 1-501)

D. Deleted. Redundant clinker production rate with
Condition #11780 B.1.

E. Deleted (Basis: The sequence of shutting down the six cement kilns is no longer necessary. The owner/operator has only one cement kiln)

F. Particulate Monitoring
1. Deleted. Superseded by CAM Condition #24781 for bag leak detector.
2. Deleted. Superseded by CAM Condition #24781 for bag leak detector.

COND# 11780 ----------

For Source 154 Cement Kiln, Plant 17 The following federally enforceable conditions limit the emissions of nitrogen oxides (NOx) from the cement manufacturing facility operated by the owner/operator, Lehigh Southwest Cement Company (previously Hanson Permanente Cement, Inc.) located at 24001 Stevens Creek Boulevard, Cupertino, Cal. 95014, for the purpose of complying with Section 182(f) of the Federal Clean Air Act. These conditions represent reasonably available control technology (RACT) for this activity.

1. Definitions: (Basis: CAA Section 182(f) - RACT)

a. Breakdowns shall be handled according to provisions established in BAAQMD, Regulation 1, Section 112 and Section 431 through 434. (Basis: RACT)

b. Cement Kiln is a device for the calcining and clinkering of limestone, clay and other raw materials in the manufacture of cement. (Basis: Applicability)

c. Clinker is a mass of fused material produced in a cement kiln from which the finished cement is manufactured by milling and grinding.(Basis: Applicability)

d. Start-up is that period of time when fuel is first introduced into the kiln to heat it and when the kiln operating temperature reaches normal operating limits and raw material feed begins. A startup period shall not last longer than 36 hours. (Basis: Regulation 9-13)

e. Short ton is equivalent to 2,000 pounds. (Basis: Compliance Verification Component)

f. Shut-down is that period of time when kiln raw material feed and fuel to the kiln begin to be decreased to reduce the kiln operating temperature until both feed and fuel are no longer fed into the kiln and it has ceased operation. A shutdown period shall not last more than 24 hours. (Basis: Regulation 9-13)

2. Production and Throughput Limits: (Basis: Regulation 2-2-212)
a. The owner/operator shall not process more than 1.6 million short tons per year of clinker.(Basis: Regulation 2-2-212 Cumulative Increase)

b. The owner/operator shall ensure the total throughput of aqueous ammonia hydroxide at S-154 does not exceed 2,450,000 gallons in any calendar year. (Basis: Regulation 2-2-212 Cumulative Increase)

1) The owner/operator shall not exceed 410 ammonia hydroxide delivery trucks in any consecutive 12 month period. (Basis: Cumulative Increase)

c. To determine compliance with the above parts, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above parts, including the following information:

1) Total monthly hours of operation.
2) The monthly hours of operation shall be totaled on a yearly basis.
3) The total daily throughput of clinker and monthly throughput of ammonia hydroxide.
4) Total monthly number of truck for ammonia hydroxide delivery and their delivery times.

All records shall be retained on-site for at least five years, from the date of entry, and made available for inspection by District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable District Regulations. (Basis: Cumulative Increase)

3. Emission Limits: (Basis: Regulation 2-2-212)

a. Deleted. Replaced by Part C3.
b. Deleted. Emission points definition.

c. The emission of Nitrogen

Oxides into the atmosphere shall not exceed 2.3 lb/ton of clinker as determined on a 30-operating day rolling average. (Basis: Regulation 9-13)

4. The owner/operator of S-154 shall not exceed the six month, 24-hour rolling average (or 182-day rolling average) of 270 ppmv of ammonia, dry at 7% oxygen. (Basis: Cumulative, Regulation 9-13)

5. The owner/operator of S-154 Cement Kiln shall abate the NOx emissions from S-154 at all times it is in use with properly maintained A-157 Selective Non-Catalytic Reduction (SNCR) System. (Basis: Cumulative Increase, Regulation 9-13)

Compliance Determination: (Basis: RACT) All emission determinations shall be made in the as-found operating condition, except no compliance determination shall be established during or using periods of start-up, shutdown, or under breakdown conditions. (Basis: RACT)

6. For the purposes of mass emission limits, Nitrogen Oxides (NOx) shall be calculated as NO2 on a dry basis. (Basis: RACT)

7. The following expression shall be used to convert uncorrected observed volume in parts per million of NOx to pounds of NOx per hour produced at standard conditions of 70 degrees F. and 29.92 inches of mercury: (Basis: RACT)

[(PPMvNOx)(46lb/lb mole)(Exhaust Flow Rate (sdcfm))(60 min/hr)]/ [386 cf/lb mole * 1E6] = lbs NOx/hr

8. Monitoring and Records: (Basis: RACT)

a. The owner/operator shall maintain in good working order and operate an in-stack continuous emission monitoring system (CEMS) to demonstrate compliance with the emission limit in Part C.3. and C.4 by measuring the emission of nitrogen oxides (NOx) and ammonia (NH3). The in-stack continuous emission monitoring system shall be located on an emission point of the Kiln (P- 154) and shall continuously monitor and record NOx and NH3 emissions in a manner approved by the APCO and the EPA Administrator whenever the kiln is operating as defined in Part 5 above. (Basis: Cumulative Increase)

b. The owner/operator shall maintain daily records of clinker production and heat input including the type of fuel burned and the quantity of fuel burned expressed as millions of BTU per ton of clinker. The amount of clinker produced shall be totaled so that the limit in Part B is not exceeded. (Basis: RACT)

c. The owner/operator shall maintain hourly continuous emission monitoring records for the NOx and NH3 monitoring systems in a form suiTable Eor inspection and approved by the APCO and the EPA administrator. Such records shall include, but are not limited to: (Basis: RACT)

1) The continuous emission monitoring for NOx and ammonia expressed in ppm;
2) The date, time, and duration of any start-up, shutdown or malfunction in the operation of any of the kiln systems or the emission monitoring equipment; and,
3) The results The continuous emission monitoring measurements of performance testing, evaluation, calibration, checks, adjustments, and maintenance of the continuous emission monitoring system.

The CEMS records as well as records of clinker production and heat input shall be maintained at the facility for at least five years and shall be made available to the APCO or the EPA Administrator upon request. (Basis: Cumulative Increase)

9. Manual of Procedures

a. Determination of Nitrogen Oxides: The methods by which samples of exhaust gases are collected and analyzed to determine concentrations of nitrogen oxides are set forth in the Air District Manual of Procedures, Volume IV, ST-13A or 13B. EPA Method 7E may also be used to determine compliance. A source shall be considered in violation if the emissions measured by any of the referenced test methods exceed the standards of this rule. (Basis: Manual of Procedures, Volume IV)

Determination of ammonia: The methods by which samples of exhaust gases are collected and analyzed to determine concentration of ammonia are set forth in the Air District Manual of Procedure, Volume IV, ST-1B and EPA method 350.3 and by the parametric monitors that have been installed pursuant to Section 9-13-501 and meet the requirements of EPA Preliminary Performance Specification PPS-001 for Ammonia CEMs.

b. The CEMS must meet the requirements of District Manual of Procedures, Volume V, Continuous Emission Monitoring, Policy and Procedures. (Basis: Regulation 1-522, 1-602; Manual of Procedures, Volume V)

COND# 20753 ----------

For S19 Clinker Storage Area, S111 Rail Unloading System Area 1, S112 Additive Hopper Transfer System Area 1, S113 Additive Bin Transfer Facilities Area 1, S115 Additive Storage Tripper, S121 Tertiary Scalping Screen, S122 Tertiary Crusher, S123 Rock Conveying System Area 2, S131 Rock Sampling System Area 3, S132 Preblend, S134 Preblend Storage Bin, S135 Highgrade Storage Bin, S143 Raw Mill 1 Separator System, S144 Raw Mill 2 Separator Circuit, S151 Homogenizer, S153 Kiln Feed System, S154 Calciner Kiln, S161 Clinker Cooler, S162 Clinker Silo A, S163 Clinker Silo B, S164 Freelime Storage Bin, S165 Clinker Transfer System, S171 Kiln Coal System, S172 Precalciner Coal Mill, S174 Pre Calciner Coke System, S203 Screen, S214 Rock Crusher, S215 Vibrating Screen, S245 6GM1 Clay Feeder, S383 Rock Plant 2, S384 Rock Plant 2 Screens.

1. The owner/operator shall use EPA Method 22 to conduct visible emission monitoring on a quarterly basis for the following baghouses to ensure compliance with BAAQMD Regulation 6301.
   A10, A111 to A115, A121 to A123, A131 to A135, A143, A144, A151, A152, A153, A162 to A165, A171, A172, A174, A190, A203, A214, A215, A245, A384 (Regulation 2-6-503)

2. The owner/operator shall use EPA Method 22 to conduct visible emission monitoring on a monthly basis for the following baghouses to ensure compliance with BAAQMD Regulation 6301. A141, A161 (Regulation 2-6-503)

3. The owner/operator shall maintain records of the visible emissions monitoring in a District approved log for at least 5 years from the date of each record and make the records available to the Air District upon request.
   (Regulation 2-6-501)

Appendix C
Daily THC and Total HAPs Concentration and SO_2 Emissions

Table C1. Daily THC, total HAPs concentration, and SO_2 emissions

Date	SOx (ppm)	SOx (lb/hr)	THC 30-Day Op Avg (ppm)	HAP 30-Day Op Avg (ppm)
7/1/2019	139	473	55	1.6
7/2/2019	117	391	55	1.61
7/3/2019	75	257	55	1.62
7/4/2019	71	251	56	1.64
7/5/2019	62	224	58	1.68
7/6/2019	97	348	59	1.68
7/7/2019	86	300	58	1.7
7/8/2019	66	231	58	1.69
7/9/2019	41	141	57	1.68
7/10/2019	48	164	57	1.67
7/11/2019	41	133	57	1.66
7/12/2019	42	147	56	1.64
7/13/2019	57	201	56	1.64
7/14/2019	45	160	56	1.65
7/15/2019	40	142	57	1.67
7/16/2019	43	47	57	1.66
7/17/2019	35	84	57	1.66
7/18/2019	64	227	57	1.66
7/19/2019	69	246	58	1.68
7/20/2019	61	221	58	1.71
7/21/2019	54	187	58	1.7
7/22/2019	76	272	58	1.68
7/23/2019	59	204	58	1.7
7/24/2019	74	250	58	1.7
7/25/2019	47	160	58	1.7
7/26/2019	37	119	59	1.73
7/27/2019	23	81	58	1.68
7/28/2019	15	52	58	1.7
7/29/2019	25	89	59	1.73
7/30/2019	40	86	61	1.77
7/31/2019	39	142	61	1.79
8/1/2019	39	146	62	1.8
8/2/2019	55	197	62	1.82
8/3/2019	34	127	63	1.84
8/4/2019	33	124	63	1.85
8/5/2019	38	69	63	1.84
8/6/2019	0	0	63	1.84
8/7/2019	33	43	64	1.88
8/8/2019	27	68	65	1.9
8/9/2019	14	37	67	1.96
8/10/2019	48	177	68	2
8/11/2019	53	192	71	2.06
8/12/2019	88	248	72	2.11

8/13/2019	88	271	73	2.13
8/14/2019	52	99	73	2.12
8/15/2019	87	261	73	2.13
8/16/2019	43	149	73	2.14
8/17/2019	54	195	74	2.16
8/18/2019	62	225	75	2.18
8/19/2019	56	190	75	2.18
8/20/2019	47	168	75	2.18
8/21/2019	46	165	75	2.18
8/22/2019	64	229	75	2.18
8/23/2019	68	251	76	2.22
8/24/2019	77	286	77	2.24
8/25/2019	59	215	76	2.22
8/26/2019	45	167	75	2.19
8/27/2019	42	149	74	2.16
8/28/2019	53	190	73	2.12
8/29/2019	50	188	72	2.09
8/30/2019	47	174	71	2.07
8/31/2019	74	275	71	2.07
9/1/2019	36	133	72	2.11
9/2/2019	52	195	72	2.11
9/3/2019	54	210	72	2.1
9/4/2019	62	237	71	2.07
9/5/2019	49	24	71	2.07
9/6/2019	24	68	71	2.07
9/7/2019	48	171	71	2.07
9/8/2019	76	280	71	2.07
9/9/2019	60	222	71	2.07
9/10/2019	47	178	71	2.06
9/11/2019	48	178	71	2.08
9/12/2019	54	194	72	2.1
9/13/2019	52	181	72	2.09
9/14/2019	28	99	71	2.06
9/15/2019	27	92	69	2.02
9/16/2019	41	50	68	1.99
9/17/2019	42	126	68	1.99
9/18/2019	42	145	68	1.98
9/19/2019	56	213	68	1.99
9/20/2019	71	276	68	1.99
9/21/2019	58	203	68	1.99
9/22/2019	45	147	68	1.99
9/23/2019	73	277	69	2.01
9/24/2019	42	78	70	2.03
9/25/2019	2	2	70	2.03
9/26/2019	66	43	73	2.12
9/27/2019	62	223	73	2.12
9/28/2019	54	206	73	2.12
9/29/2019	54	206	73	2.14

9/30/2019	67	259	74	2.17
10/1/2019	81	2	76	2.21
10/2/2019	0	0	76	2.21
10/3/2019	0	0	76	2.21
10/4/2019	0	0	76	2.21
10/5/2019	0	0	76	2.21
10/6/2019	0	0	76	2.21
10/7/2019	0	0	76	2.21
10/8/2019	65	128	76	2.21
10/9/2019	47	164	76	2.21
10/10/2019	80	289	76	2.21
10/11/2019	94	317	76	2.21
10/12/2019	0	0	76	2.21
10/13/2019	37	100	76	2.21
10/14/2019	71	260	76	2.23
10/15/2019	77	279	77	2.25
10/16/2019	64	220	78	2.29
10/17/2019	48	102	78	2.27
10/18/2019	51	152	79	2.32
10/19/2019	74	249	80	2.34
10/20/2019	66	221	81	2.36
10/21/2019	58	200	82	2.4
10/22/2019	46	158	82	2.38
10/23/2019	64	89	82	2.38
10/24/2019	66	152	82	2.39
10/25/2019	19	14	81	2.37
10/26/2019	42	150	82	2.38
10/27/2019	63	219	82	2.38
10/28/2019	59	214	82	2.38
10/29/2019	61	172	81	2.36
10/30/2019	49	103	80	2.35
10/31/2019	21	36	79	2.32
11/1/2019	25	73	93	2.71
11/2/2019	19	70	61	1.77
11/3/2019	24	47	60	1.74
11/4/2019	31	22	44	1.29
11/5/2019	18	63	53	1.55
11/6/2019	50	182	38	1.12
11/7/2019	26	95	56	1.63
11/8/2019	24	88	63	1.84
11/9/2019	32	119	59	1.73
11/10/2019	59	214	51	1.49
11/11/2019	29	99	69	2.02
11/12/2019	29	100	97	2.83
11/13/2019	67	248	75	2.19
11/14/2019	111	57	76	2.22
11/15/2019	95	151	76	2.22
11/16/2019	65	117	69	2

11/17/2019	79	295	54	1.58
11/18/2019	27	46	58	1.69
11/19/2019	84	304	77	2.26
11/20/2019	66	244	85	2.47
11/21/2019	51	184	115	3.37
11/22/2019	35	128	69	2
11/23/2019	25	95	76	2.22
11/24/2019	26	98	66	1.92
11/25/2019	28	105	74	2.15
11/26/2019	13	33	74	2.16
11/27/2019	24	81	61	1.79
11/28/2019	61	231	66	1.92
11/29/2019	54	203	62	1.8
11/30/2019	27	94	58	1.69
12/1/2019	23	46	70	2.03
12/2/2019	57	82	70	2.05
12/3/2019	43	158	71	2.07
12/4/2019	41	154	72	2.09
12/5/2019	82	240	72	2.11
12/6/2019	87	258	71	2.07
12/7/2019	57	205	71	2.06
12/8/2019	35	48	70	2.05
12/9/2019	0	0	70	2.05
12/10/2019	0	0	70	2.05
12/11/2019	56	160	70	2.04
12/12/2019	39	130	70	2.05
12/13/2019	89	297	72	2.1
12/14/2019	92	302	73	2.13
12/15/2019	73	184	73	2.12
12/16/2019	82	300	73	2.14
12/17/2019	114	340	73	2.13
12/18/2019	133	301	74	2.14
12/19/2019	112	330	74	2.17
12/20/2019	68	134	75	2.19
12/21/2019	76	283	76	2.21
12/22/2019	75	268	76	2.22
12/23/2019	48	161	77	2.24
12/24/2019	36	138	77	2.26
12/25/2019	53	285	78	2.28
12/26/2019	70	250	81	2.35
12/27/2019	94	195	81	2.37
12/28/2019	69	134	83	2.41
12/29/2019	60	139	83	2.43
12/30/2019	56	208	84	2.45
12/31/2019	58	182	85	2.48
1/1/2020	0	0	85	2.48
1/2/2020	0	0	85	2.48
1/3/2020	86	114	86	2.52

1/4/2020	113	418	87	2.54
1/5/2020	100	91	89	2.59
1/6/2020	101	373	90	2.62
1/7/2020	49	153	91	2.65
1/8/2020	0	0	91	2.65
1/9/2020	0	0	91	2.65
1/10/2020	36	73	96	2.81
1/11/2020	34	88	96	2.81
1/12/2020	36	134	96	2.81
1/13/2020	42	28	96	2.81
1/14/2020	0	0	96	2.81
1/15/2020	12	3	95	2.77
1/16/2020	39	136	95	2.78
1/17/2020	31	110	96	2.8
1/18/2020	52	186	96	2.81
1/19/2020	50	182	97	2.82
1/20/2020	51	160	96	2.81
1/21/2020	39	69	96	2.8
1/22/2020	0	0	96	2.8
1/23/2020	33	27	96	2.79
1/24/2020	8	2	95	2.77
1/25/2020	0	0	95	2.77
1/26/2020	47	31	94	2.74
1/27/2020	0	0	91	2.66
1/28/2020	18	4	90	2.62
1/29/2020	0	0	90	2.62
1/30/2020	0	0	90	2.62
1/31/2020	0	0	90	2.62
2/1/2020	0	0	93	2.72
2/2/2020	0	0	93	2.72
2/3/2020	0	0	93	2.72
2/4/2020	0	0	93	2.72
2/5/2020	0	0	93	2.72
2/6/2020	0	0	93	2.72
2/7/2020	0	0	93	2.72
2/8/2020	0	0	93	2.72
2/9/2020	0	0	93	2.72
2/10/2020	0	0	93	2.72
2/11/2020	0	0	93	2.72
2/12/2020	0	0	93	2.72
2/13/2020	0	0	93	2.72
2/14/2020	0	0	93	2.72
2/15/2020	0	0	93	2.72
2/16/2020	0	0	93	2.72
2/17/2020	0	0	93	2.72
2/18/2020	0	0	93	2.72
2/19/2020	0	0	93	2.72
2/20/2020	0	0	93	2.72

2/21/2020	0	0	93	2.72
2/22/2020	98	67	93	2.71
2/23/2020	77	241	92	2.69
2/24/2020	48	157	91	2.66
2/25/2020	61	216	91	2.67
2/26/2020	58	106	91	2.66
2/27/2020	58	205	91	2.66
2/28/2020	60	204	91	2.66
2/29/2020	52	190	90	2.61
3/1/2020	43	162	90	2.61
3/2/2020	48	167	89	2.6
3/3/2020	75	277	88	2.57
3/4/2020	84	301	88	2.57
3/5/2020	80	280	87	2.54
3/6/2020	52	193	87	2.52
3/7/2020	60	220	86	2.5
3/8/2020	33	110	84	2.44
3/9/2020	60	212	82	2.38
3/10/2020	30	111	81	2.35
3/11/2020	37	128	75	2.18
3/12/2020	41	138	76	2.23
3/13/2020	60	210	76	2.23
3/14/2020	78	291	77	2.24
3/15/2020	65	227	76	2.22
3/16/2020	60	205	76	2.22
3/17/2020	54	85	75	2.19
3/18/2020	0	0	75	2.19
3/19/2020	0	0	75	2.19
3/20/2020	64	87	76	2.22
3/21/2020	100	369	78	2.28
3/22/2020	64	226	79	2.29
3/23/2020	69	256	80	2.33
3/24/2020	78	291	81	2.36
3/25/2020	117	446	82	2.39
3/26/2020	99	236	84	2.45
3/27/2020	84	305	85	2.47
3/28/2020	86	151	85	2.49
3/29/2020	76	285	86	2.51
3/30/2020	75	276	86	2.51
3/31/2020	72	264	86	2.52
4/1/2020	86	134	86	2.51
4/2/2020	42	22	85	2.47
4/3/2020	114	295	85	2.47
4/4/2020	113	245	87	2.52
4/5/2020	99	375	88	2.57
4/6/2020	89	334	89	2.6
4/7/2020	95	356	89	2.61
4/8/2020	95	127	90	2.63

4/9/2020	115	412	91	2.64
4/10/2020	113	408	92	2.67
4/11/2020	102	361	92	2.67
4/12/2020	106	385	92	2.69
4/13/2020	69	149	93	2.72
4/14/2020	90	309	93	2.72
4/15/2020	84	287	93	2.72
4/16/2020	70	229	93	2.73
4/17/2020	39	27	93	2.73
4/18/2020	0	0	93	2.73
4/19/2020	54	6	107	3.13
4/20/2020	84	294	107	3.12
4/21/2020	46	164	105	3.08
4/22/2020	61	211	105	3.07
4/23/2020	59	202	104	3.03
4/24/2020	44	153	103	3
4/25/2020	53	184	102	2.96
4/26/2020	62	213	100	2.91
4/27/2020	73	249	100	2.9
4/28/2020	98	238	100	2.92
4/29/2020	125	196	101	2.94
4/30/2020	0	0	101	2.94
Max	**139**	**473**	**115**	**3.37**

The daily average SO_2 emissions from CEMs reports have been reviewed and no data exceeded 481 lb/hr, and therefore emission rates of SO_2 are considered in compliance with Permit Condition No. 2786.

- Regulation 9-13-301.7 and Permit Condition No. 603 allow Lehigh to use compliance with the HAP limit as an alternative to meeting the THC limit. The 30-operating day rolling average of total organic HAPs emissions from CEMs reports have been reviewed and no data exceeded 12 ppmvd. Since the HAPs emissions during the baseline period were in compliance, the THC emissions were considered in compliance with Permit Condition No. 603 and Section 301.7 limits as well. This THC and HAP data was only used to verify that the source test data used for emissions reduction credits was in compliance with the above requirements.

Appendix D
NOx Calculations

Table D1. RACT-adjusted NOx emissions

Date	Clinker (tpd)	RACT-adjusted Clinker (tpd)	NOx / Clinker (lb/ton)	Rolling 30-Op Day lb NOx / ton Clinker	RACT-adjusted NOx / Clinker (lb/ton)	RACT-adjusted NOx (lb/day)
7/1/2019	3,729	3,686	2.2	2.2	2.0	7,372
7/2/2019	3,748	3,705	2.2	2.2	2.0	7,409
7/3/2019	3,598	3,556	2.2	2.2	2.0	7,113
7/4/2019	3,959	3,913	2.2	2.2	2.0	7,827
7/5/2019	4,039	3,992	2.2	2.2	2.0	7,985
7/6/2019	4,190	4,142	2.2	2.2	2.0	8,283
7/7/2019	4,245	4,196	2.2	2.2	2.0	8,392
7/8/2019	4,308	4,258	2.2	2.2	2.0	8,516
7/9/2019	4,165	4,117	2.2	2.2	2.0	8,234
7/10/2019	4,268	4,219	2.2	2.2	2.0	8,437
7/11/2019	3,512	3,471	2.2	2.2	2.0	6,943
7/12/2019	3,562	3,521	2.3	2.3	2.0	7,042
7/13/2019	4,075	4,028	2.3	2.3	2.0	8,056
7/14/2019	4,183	4,135	2.2	2.2	2.0	8,269
7/15/2019	4,155	4,107	2.1	2.1	2.0	8,214
7/16/2019	834	824	2.1	2.1	2.0	1,649
7/17/2019	2,159	2,134	2.1	2.1	2.0	4,268
7/18/2019	4,122	4,074	2.1	2.1	2.0	8,149
7/19/2019	4,095	4,048	2.1	2.1	2.0	8,095
7/20/2019	4,188	4,140	2.1	2.1	2.0	8,279
7/21/2019	3,835	3,791	2.1	2.1	2.0	7,581
7/22/2019	4,187	4,139	2.1	2.1	2.0	8,277
7/23/2019	3,925	3,880	2.1	2.1	2.0	7,759
7/24/2019	3,996	3,950	2.1	2.1	2.0	7,900
7/25/2019	3,960	3,914	2.1	2.1	2.0	7,829
7/26/2019	3,436	3,396	2.1	2.1	2.0	6,793
7/27/2019	4,095	4,048	2.1	2.1	2.0	8,095
7/28/2019	4,005	3,959	2.1	2.1	2.0	7,917
7/29/2019	4,093	4,046	2	2	2.0	8,091
7/30/2019	2,122	2,097	2.1	2.1	2.0	4,195
7/31/2019	3,883	3,838	2	2	2.0	7,676
8/1/2019	4,135	4,087	2.2	2.1	2.1	8,564
8/2/2019	3,899	3,854	2.3	2.1	2.2	8,442
8/3/2019	4,016	3,970	2.2	2.1	2.1	8,317
8/4/2019	3,797	3,753	2.2	2.1	2.1	7,864

8/5/2019	1,301	1,286	2.3	2.1	2.2	2,817
8/6/2019	0	0	0	2.1	0.0	0
8/7/2019	1,052	1,040	4.7	2.1	4.5	4,655
8/8/2019	2,263	2,237	2.7	2.1	2.6	5,752
8/9/2019	1,719	1,699	1.8	2.1	1.7	2,913
8/10/2019	3,696	3,653	2.1	2.1	2.0	7,307
8/11/2019	3,576	3,535	2.2	2	2.2	7,776
8/12/2019	2,438	2,410	2.8	2	2.8	6,748
8/13/2019	2,537	2,508	3	2.1	2.9	7,165
8/14/2019	2,141	2,116	2.5	2.2	2.3	4,810
8/15/2019	2,986	2,952	2.2	2.2	2.0	5,903
8/16/2019	3,520	3,479	1.7	2.2	1.5	5,377
8/17/2019	3,442	3,402	1.4	2.1	1.3	4,536
8/18/2019	3,242	3,205	1.5	2.1	1.4	4,578
8/19/2019	3,584	3,543	1.3	2.1	1.2	4,386
8/20/2019	4,088	4,041	1.2	2.1	1.1	4,618
8/21/2019	4,007	3,961	1.5	2	1.5	5,941
8/22/2019	4,139	4,091	1.7	2	1.7	6,955
8/23/2019	4,231	4,182	2.1	2	2.1	8,782
8/24/2019	4,268	4,219	1.8	2	1.8	7,594
8/25/2019	4,338	4,288	2	2	2.0	8,576
8/26/2019	4,392	4,341	2	2	2.0	8,683
8/27/2019	4,483	4,431	2	2	2.0	8,862
8/28/2019	4,592	4,539	1.8	2	1.8	8,170
8/29/2019	4,491	4,439	2	2	2.0	8,878
8/30/2019	4,484	4,432	2	2	2.0	8,864
8/31/2019	4,413	4,362	2	2	2.0	8,724
9/1/2019	3,966	3,920	2.1	2	2.1	8,232
9/2/2019	4,127	4,079	1.9	2	1.9	7,751
9/3/2019	4,402	4,351	2	2	2.0	8,702
9/4/2019	4,284	4,235	2.1	2	2.1	8,893
9/5/2019	540	534	1.9	2	1.9	1,014
9/6/2019	2,953	2,919	1.7	1.9	1.7	4,962
9/7/2019	3,578	3,537	2.1	1.9	2.1	7,427
9/8/2019	3,737	3,694	2.2	1.9	2.2	8,126
9/9/2019	3,913	3,868	1.7	1.9	1.7	6,575
9/10/2019	3,983	3,937	1.8	1.9	1.8	7,087
9/11/2019	4,124	4,076	1.8	1.9	1.8	7,337
9/12/2019	3,909	3,864	1.5	1.8	1.5	5,796
9/13/2019	3,506	3,466	1.8	1.8	1.8	6,238
9/14/2019	3,958	3,912	2.2	1.8	2.2	8,607

9/15/2019	3,744	3,701	2.2	1.9	2.2	8,142
9/16/2019	1,366	1,350	2	1.9	2.0	2,700
9/17/2019	2,799	2,767	2.1	1.9	2.1	5,810
9/18/2019	3,401	3,362	2.7	1.9	2.7	9,077
9/19/2019	3,966	3,920	1.9	2	1.9	7,448
9/20/2019	4,082	4,035	2	2	2.0	8,070
9/21/2019	3,750	3,707	2.1	2	2.1	7,784
9/22/2019	3,327	3,289	2.2	2	2.2	7,235
9/23/2019	4,059	4,012	2.2	2	2.2	8,827
9/24/2019	1,895	1,873	2	2	2.0	3,746
9/25/2019	329	325	0.2	2	0.2	65
9/26/2019	635	628	1.3	2	1.3	816
9/27/2019	4,015	3,969	1.8	2	1.8	7,144
9/28/2019	4,175	4,127	2	2	2.0	8,254
9/29/2019	4,143	4,095	2.1	2	2.1	8,600
9/30/2019	4,290	4,240	2	2	2.0	8,481
10/1/2019	33	33	1.8	2	1.8	59
10/2/2019	0	0	0	2	0.0	0
10/3/2019	0	0	0	2	0.0	0
10/4/2019	0	0	0	2	0.0	0
10/5/2019	0	0	0	2	0.0	0
10/6/2019	0	0	0	2	0.0	0
10/7/2019	0	0	0	2	0.0	0
10/8/2019	1,964	1,941	2.5	2	2.5	4,853
10/9/2019	3,712	3,669	2	2	2.0	7,338
10/10/2019	4,152	4,104	1.7	2	1.7	6,977
10/11/2019	3,915	3,870	2	2	2.0	7,740
10/12/2019	0	0	0	2	0.0	0
10/13/2019	1,862	1,840	2.5	2	2.5	4,601
10/14/2019	4,145	4,097	1.8	2	1.8	7,375
10/15/2019	4,142	4,094	1.6	2	1.6	6,551
10/16/2019	4,374	4,323	1.5	2	1.5	6,485
10/17/2019	2,551	2,522	1.8	2	1.8	4,539
10/18/2019	3,302	3,264	1.6	2	1.6	5,222
10/19/2019	4,103	4,056	2	2	2.0	8,111
10/20/2019	4,130	4,082	1.9	2	1.9	7,756
10/21/2019	4,025	3,979	1.9	2	1.9	7,559
10/22/2019	4,185	4,137	1.8	2	1.8	7,446
10/23/2019	1,502	1,485	2.1	2	2.1	3,118
10/24/2019	2,448	2,420	1.6	1.9	1.6	3,872
10/25/2019	659	651	1.8	1.9	1.8	1,173

10/26/2019	3,973	3,927	1.7	1.9	1.7	6,676
10/27/2019	4,208	4,159	1.9	1.9	1.9	7,903
10/28/2019	4,271	4,222	1.8	1.9	1.8	7,599
10/29/2019	3,323	3,285	2	1.9	2.0	6,569
10/30/2019	2,349	2,322	2.6	1.9	2.6	6,037
10/31/2019	1,400	1,384	2.1	1.9	2.1	2,906
11/1/2019	2,876	2,843	2.2	1.9	2.2	6,254
11/2/2019	3,515	3,474	2.1	1.9	2.1	7,296
11/3/2019	3,401	3,362	2.1	1.9	2.1	7,060
11/4/2019	705	697	1.8	1.9	1.8	1,254
11/5/2019	3,434	3,394	2	1.9	2.0	6,789
11/6/2019	3,958	3,912	1.9	1.9	1.9	7,433
11/7/2019	3,978	3,932	1.8	1.9	1.8	7,078
11/8/2019	4,160	4,112	1.8	1.9	1.8	7,402
11/9/2019	4,070	4,023	1.9	1.9	1.9	7,644
11/10/2019	3,862	3,817	1.9	1.9	1.9	7,253
11/11/2019	3,736	3,693	1.7	1.9	1.7	6,278
11/12/2019	3,636	3,594	1.9	1.9	1.9	6,829
11/13/2019	3,959	3,913	2	1.9	2.0	7,827
11/14/2019	570	563	2	1.9	2.0	1,127
11/15/2019	1,523	1,505	1.9	1.9	1.9	2,860
11/16/2019	1,696	1,676	1.7	1.9	1.7	2,850
11/17/2019	3,858	3,813	2	1.9	2.0	7,627
11/18/2019	1,427	1,411	1.9	1.9	1.9	2,680
11/19/2019	3,895	3,850	1.9	1.9	1.9	7,315
11/20/2019	3,989	3,943	2	1.9	2.0	7,886
11/21/2019	4,014	3,968	2	1.9	2.0	7,935
11/22/2019	3,896	3,851	1.7	1.9	1.7	6,547
11/23/2019	3,848	3,804	2	1.9	2.0	7,607
11/24/2019	3,961	3,915	2	1.9	2.0	7,831
11/25/2019	4,019	3,973	2.1	2	2.1	8,342
11/26/2019	2,489	2,460	2.1	2	2.1	5,167
11/27/2019	3,292	3,254	2.1	2	2.1	6,833
11/28/2019	3,749	3,706	2.1	2	2.1	7,782
11/29/2019	3,745	3,702	2	2	2.0	7,403
11/30/2019	3,409	3,370	2.2	2	2.2	7,413
12/1/2019	1,990	1,967	2.1	2	2.1	4,131
12/2/2019	1,318	1,303	1.9	2	1.9	2,475
12/3/2019	3,555	3,514	2.2	2	2.2	7,731
12/4/2019	3,811	3,767	2.4	2	2.4	9,041
12/5/2019	3,107	3,071	2.3	2	2.3	7,064

12/6/2019	3,044	3,009	2	2	2.0	6,018
12/7/2019	3,623	3,581	1.9	2	1.9	6,804
12/8/2019	1,293	1,278	1.9	2	1.9	2,428
12/9/2019	0	0	0	2	0.0	0
12/10/2019	0	0	0	2	0.0	0
12/11/2019	2,685	2,654	2.3	2	2.3	6,104
12/12/2019	3,255	3,217	2	2	2.0	6,435
12/13/2019	3,411	3,372	1.8	2.1	1.7	5,780
12/14/2019	3,025	2,990	2	2.1	1.9	5,695
12/15/2019	2,338	2,311	2.3	2.1	2.2	5,062
12/16/2019	3,421	3,381	2	2.1	1.9	6,441
12/17/2019	2,644	2,613	2.2	2.1	2.1	5,476
12/18/2019	1,977	1,954	1.5	2.1	1.4	2,792
12/19/2019	2,948	2,914	2.1	2.1	2.0	5,828
12/20/2019	1,670	1,651	2.7	2.1	2.6	4,245
12/21/2019	3,399	3,360	1.9	2.1	1.8	6,080
12/22/2019	3,349	3,310	2	2.1	1.9	6,305
12/23/2019	2,957	2,923	2.1	2.1	2.0	5,846
12/24/2019	3,401	3,362	2.1	2.1	2.0	6,723
12/25/2019	3,434	3,394	2.1	2.1	2.0	6,789
12/26/2019	3,157	3,121	1.8	2.1	1.7	5,349
12/27/2019	1,916	1,894	1.9	2.1	1.8	3,427
12/28/2019	1,738	1,718	1.9	2.1	1.8	3,109
12/29/2019	2,110	2,086	1.9	2.1	1.8	3,774
12/30/2019	3,400	3,361	2.7	2.1	2.6	8,642
12/31/2019	2,889	2,856	1.9	2.1	1.8	5,167
1/1/2020	0	0	0	2.1	0.0	0
1/2/2020	0	0	0	2.1	0.0	0
1/3/2020	1,063	1,063	1.7	2.1	1.6	1,721
1/4/2020	3,520	3,520	1.6	2.1	1.5	5,364
1/5/2020	813	813	1.4	2.1	1.3	1,084
1/6/2020	3,469	3,469	1.8	2.1	1.7	5,947
1/7/2020	3,170	3,170	2	2	2.0	6,340
1/8/2020	0	0	0	2	0.0	0
1/9/2020	0	0	0	2	0.0	0
1/10/2020	1,860	1,860	1.8	2	1.8	3,348
1/11/2020	2,758	2,758	2	2	2.0	5,516
1/12/2020	3,692	3,692	Calibration	2	Calibration	0
1/13/2020	674	674	Calibration	2	Calibration	0
1/14/2020	0	0	0	2	0.0	0
1/15/2020	183	183	1.3	2	1.3	238

1/16/2020	3,915	3,915	1.9	2	1.9	7,439
1/17/2020	3,934	3,934	1.5	2	1.5	5,901
1/18/2020	4,009	4,009	1.7	2	1.7	6,815
1/19/2020	4,089	4,089	1.4	1.9	1.4	5,725
1/20/2020	3,129	3,129	1.5	1.9	1.5	4,694
1/21/2020	1,517	1,517	2.5	1.9	2.5	3,793
1/22/2020	0	0	0	1.9	0.0	0
1/23/2020	741	741	3	1.9	3.0	2,223
1/24/2020	189	189	2.7	1.9	2.7	510
1/25/2020	0	0	0	1.9	0.0	0
1/26/2020	563	563	1.4	1.9	1.4	788
1/27/2020	26	26	0	1.9	0.0	0
1/28/2020	146	146	1.1	1.9	1.1	161
1/29/2020	0	0	0	1.9	0.0	0
1/30/2020	0	0	0	1.9	0.0	0
1/31/2020	0	0	0	1.9	0.0	0
2/1/2020	0	0	0	1.9	0.0	0
2/2/2020	0	0	0	1.9	0.0	0
2/3/2020	0	0	0	1.9	0.0	0
2/4/2020	0	0	0	1.9	0.0	0
2/5/2020	0	0	0	1.9	0.0	0
2/6/2020	0	0	0	1.9	0.0	0
2/7/2020	0	0	0	1.9	0.0	0
2/8/2020	0	0	0	1.9	0.0	0
2/9/2020	0	0	0	1.9	0.0	0
2/10/2020	0	0	0	1.9	0.0	0
2/11/2020	0	0	0	1.9	0.0	0
2/12/2020	0	0	0	1.9	0.0	0
2/13/2020	0	0	0	1.9	0.0	0
2/14/2020	0	0	0	1.9	0.0	0
2/15/2020	0	0	0	1.9	0.0	0
2/16/2020	0	0	0	1.9	0.0	0
2/17/2020	0	0	0	1.9	0.0	0
2/18/2020	0	0	0	1.9	0.0	0
2/19/2020	0	0	0	1.9	0.0	0
2/20/2020	0	0	0	1.9	0.0	0
2/21/2020	0	0	0	1.9	0.0	0
2/22/2020	776	776	1.5	1.9	1.5	1,164
2/23/2020	4,146	4,146	2.1	1.9	2.1	8,707
2/24/2020	3,352	3,352	2.5	1.9	2.5	8,380
2/25/2020	4,118	4,118	2.6	1.9	2.6	10,707

2/26/2020	1,967	1,967	2.3	1.9	2.3	4,524
2/27/2020	4,150	4,150	2	1.9	2.0	8,300
2/28/2020	4,280	4,280	2	1.9	2.0	8,560
2/29/2020	4,139	4,139	2.2	1.9	2.2	9,106
3/1/2020	4,308	4,308	2	2	2.0	8,616
3/2/2020	3,668	3,668	2.1	2	2.1	7,703
3/3/2020	4,431	4,431	2.3	1.9	2.3	10,191
3/4/2020	4,133	4,133	2.3	2	2.3	9,506
3/5/2020	4,108	4,108	2.1	2	2.1	8,627
3/6/2020	4,154	4,154	2.2	2	2.2	9,139
3/7/2020	3,964	3,964	2	2	2.0	7,928
3/8/2020	3,683	3,683	1.5	2	1.5	5,525
3/9/2020	4,126	4,126	2.1	2	2.1	8,665
3/10/2020	3,680	3,680	2.1	2	2.1	7,728
3/11/2020	3,490	3,490	2.3	2	2.3	8,027
3/12/2020	3,418	3,418	1.9	2	1.9	6,494
3/13/2020	3,810	3,810	1.9	2	1.9	7,239
3/14/2020	4,090	4,090	2.1	2	2.1	8,589
3/15/2020	3,942	3,942	2.1	2.1	2.0	7,884
3/16/2020	3,509	3,509	2	2.1	1.9	6,684
3/17/2020	1,677	1,677	1.5	2.1	1.4	2,396
3/18/2020	0	0	0	2.1	0.0	0
3/19/2020	0	0	0	2.1	0.0	0
3/20/2020	1,361	1,361	2.6	2.1	2.5	3,370
3/21/2020	3,696	3,696	1.8	2.1	1.7	6,336
3/22/2020	3,370	3,370	2.1	2.1	2.0	6,740
3/23/2020	3,646	3,646	1.6	2.1	1.5	5,556
3/24/2020	3,590	3,590	2.1	2.1	2.0	7,180
3/25/2020	3,966	3,966	1.6	2.1	1.5	6,043
3/26/2020	2,950	2,950	1.8	2	1.8	5,310
3/27/2020	3,728	3,728	2.4	2	2.4	8,947
3/28/2020	1,723	1,723	2.1	2	2.1	3,618
3/29/2020	3,931	3,931	2	2	2.0	7,862
3/30/2020	4,052	4,052	2	2	2.0	8,104
3/31/2020	4,041	4,041	1.9	2	1.9	7,678
4/1/2020	1,582	1,582	2	2	2.0	3,164
4/2/2020	349	349	2.3	2	2.3	803
4/3/2020	2,546	2,546	2.2	2	2.2	5,601
4/4/2020	2,053	2,053	1.5	2	1.5	3,080
4/5/2020	3,803	3,803	1.7	2	1.7	6,465
4/6/2020	3,741	3,741	1.7	2	1.7	6,360

4/7/2020	3,666	3,666	2.1	2	2.1	7,699
4/8/2020	1,150	1,150	2.2	2	2.2	2,530
4/9/2020	3,700	3,700	1.6	1.9	1.6	5,920
4/10/2020	3,871	3,871	1.7	1.9	1.7	6,581
4/11/2020	3,775	3,775	2	1.9	2.0	7,550
4/12/2020	3,958	3,958	1.8	1.9	1.8	7,124
4/13/2020	2,135	2,135	1.6	1.9	1.6	3,416
4/14/2020	3,578	3,578	2.7	1.9	2.7	9,661
4/15/2020	3,651	3,651	2.6	2	2.6	9,493
4/16/2020	3,389	3,389	2.6	2	2.6	8,811
4/17/2020	575	575	2.1	2	2.1	1,208
4/18/2020	0	0	0	2	0.0	0
4/19/2020	113	113	1.7	2	1.7	192
4/20/2020	3,665	3,665	2.1	2	2.1	7,697
4/21/2020	3,754	3,754	2.3	2	2.3	8,634
4/22/2020	3,777	3,777	2.2	2	2.2	8,309
4/23/2020	3,744	3,744	2.4	2	2.4	8,986
4/24/2020	3,748	3,748	2.1	2	2.1	7,871
4/25/2020	3,745	3,745	2.2	2.1	2.1	7,847
4/26/2020	3,748	3,748	2.1	2.1	2.0	7,496
4/27/2020	3,669	3,669	1.8	2	1.8	6,604
4/28/2020	2,363	2,363	1.1	2	1.1	2,599
4/29/2020	1,693	1,693	0.8	2	0.8	1,354
4/30/2020	0	0	0	2	0.0	0
Annual Average (TPY)						**270.127**

Notes:

1. Unadjusted data are from monthly CEMs reports submitted by Lehigh. From May 2020 forward, clinker production amount is zero.
2. To be consistent with annual updates data, the clinker data for calendar year 2019 have been adjusted downward as follows: (Daily clinker data) * (1,076,573 / 1,089,152). For more details, see Appendix A.
3. For any day where the rolling 30-op NOx emissions exceed the limit in 2020 Consent Decrees for Lehigh Cement Company LLC and Lehigh White Cement Company, LLC (i.e., 2.0 lbs/ton of clinker), (RACT-adjusted NOx / Clinker) = (NOx / Clinker) * 2.0 / (rolling 30-op NOx).

Appendix E
SO_2 Calculations

Table E1. SO_2 data and emissions

Date	SOx (ppm)	SOx (lb/hr)	SOx (lb/day)	SOx lb / ton Clinker	Rolling 30-Op Day lb SO2 / ton Clinker
7/1/2019	139	473	11352	3.1	
7/2/2019	117	391	9384	2.5	
7/3/2019	75	257	6168	1.7	
7/4/2019	71	251	6024	1.5	
7/5/2019	62	224	5376	1.3	
7/6/2019	97	348	8352	2.0	
7/7/2019	86	300	7200	1.7	
7/8/2019	66	231	5544	1.3	
7/9/2019	41	141	3384	0.8	
7/10/2019	48	164	3936	0.9	
7/11/2019	41	133	3192	0.9	
7/12/2019	42	147	3528	1.0	
7/13/2019	57	201	4824	1.2	
7/14/2019	45	160	3840	0.9	
7/15/2019	40	142	3408	0.8	
7/16/2019	43	47	1128	1.4	
7/17/2019	35	84	2016	0.9	
7/18/2019	64	227	5448	1.3	
7/19/2019	69	246	5904	1.5	
7/20/2019	61	221	5304	1.3	
7/21/2019	54	187	4488	1.2	
7/22/2019	76	272	6528	1.6	
7/23/2019	59	204	4896	1.3	
7/24/2019	74	250	6000	1.5	
7/25/2019	47	160	3840	1.0	
7/26/2019	37	119	2856	0.8	
7/27/2019	23	81	1944	0.5	
7/28/2019	15	52	1248	0.3	
7/29/2019	25	89	2136	0.5	
7/30/2019	40	86	2064	1.0	1.3
7/31/2019	39	142	3408	0.9	1.2
8/1/2019	39	146	3504	0.9	1.1
8/2/2019	55	197	4728	1.2	1.1
8/3/2019	34	127	3048	0.8	1.1

8/4/2019	33	124	2976	0.8	1.1
8/5/2019	38	69	1656	1.3	1.1
8/6/2019	0	0	0	0.0	1.0
8/7/2019	33	43	1032	1.0	1.0
8/8/2019	27	68	1632	0.7	1.0
8/9/2019	14	37	888	0.5	1.0
8/10/2019	48	177	4248	1.2	1.0
8/11/2019	53	192	4608	1.3	1.0
8/12/2019	88	248	5952	2.5	1.0
8/13/2019	88	271	6504	2.6	1.1
8/14/2019	52	99	2376	1.1	1.1
8/15/2019	87	261	6264	2.1	1.1
8/16/2019	43	149	3576	1.0	1.1
8/17/2019	54	195	4680	1.4	1.1
8/18/2019	62	225	5400	1.7	1.1
8/19/2019	56	190	4560	1.3	1.1
8/20/2019	47	168	4032	1.0	1.1
8/21/2019	46	165	3960	1.0	1.1
8/22/2019	64	229	5496	1.3	1.1
8/23/2019	68	251	6024	1.4	1.1
8/24/2019	77	286	6864	1.6	1.1
8/25/2019	59	215	5160	1.2	1.1
8/26/2019	45	167	4008	0.9	1.2
8/27/2019	42	149	3576	0.8	1.2
8/28/2019	53	190	4560	1.0	1.2
8/29/2019	50	188	4512	1.0	1.2
8/30/2019	47	174	4176	0.9	1.2
8/31/2019	74	275	6600	1.5	1.2
9/1/2019	36	133	3192	0.8	1.2
9/2/2019	52	195	4680	1.1	1.2
9/3/2019	54	210	5040	1.2	1.2
9/4/2019	62	237	5688	1.3	1.2
9/5/2019	49	24	576	1.1	1.3
9/6/2019	24	68	1632	0.6	1.2
9/7/2019	48	171	4104	1.2	1.3
9/8/2019	76	280	6720	1.8	1.3
9/9/2019	60	222	5328	1.4	1.3
9/10/2019	47	178	4272	1.1	1.3
9/11/2019	48	178	4272	1.0	1.3
9/12/2019	54	194	4656	1.2	1.2
9/13/2019	52	181	4344	1.3	1.2

9/14/2019	28	99	2376	0.6	1.2
9/15/2019	27	92	2208	0.6	1.1
9/16/2019	41	50	1200	0.9	1.1
9/17/2019	42	126	3024	1.1	1.1
9/18/2019	42	145	3480	1.0	1.1
9/19/2019	56	213	5112	1.3	1.1
9/20/2019	71	276	6624	1.6	1.1
9/21/2019	58	203	4872	1.3	1.1
9/22/2019	45	147	3528	1.1	1.1
9/23/2019	73	277	6648	1.7	1.1
9/24/2019	42	78	1872	1.0	1.1
9/25/2019	2	2	48	0.1	1.1
9/26/2019	66	43	1032	1.6	1.1
9/27/2019	62	223	5352	1.3	1.1
9/28/2019	54	206	4944	1.2	1.1
9/29/2019	54	206	4944	1.2	1.1
9/30/2019	67	259	6216	1.5	1.1
10/1/2019	81	2	48	1.5	1.2
10/2/2019	0	0	0	0.0	1.1
10/3/2019	0	0	0	0.0	1.1
10/4/2019	0	0	0	0.0	1.0
10/5/2019	0	0	0	0.0	1.0
10/6/2019	0	0	0	0.0	1.0
10/7/2019	0	0	0	0.0	0.9
10/8/2019	65	128	3072	1.6	0.9
10/9/2019	47	164	3936	1.1	0.9
10/10/2019	80	289	6936	1.7	1.0
10/11/2019	94	317	7608	2.0	1.0
10/12/2019	0	0	0	0.0	0.9
10/13/2019	37	100	2400	1.3	0.9
10/14/2019	71	260	6240	1.5	1.0
10/15/2019	77	279	6696	1.6	1.0
10/16/2019	64	220	5280	1.2	1.0
10/17/2019	48	102	2448	1.0	1.0
10/18/2019	51	152	3648	1.1	1.0
10/19/2019	74	249	5976	1.5	1.0
10/20/2019	66	221	5304	1.3	1.0
10/21/2019	58	200	4800	1.2	1.0
10/22/2019	46	158	3792	0.9	1.0
10/23/2019	64	89	2136	1.4	1.0
10/24/2019	66	152	3648	1.5	1.0

10/25/2019	19	14	336	0.5	1.0
10/26/2019	42	150	3600	0.9	1.0
10/27/2019	63	219	5256	1.3	1.0
10/28/2019	59	214	5136	1.2	1.0
10/29/2019	61	172	4128	1.3	1.0
10/30/2019	49	103	2472	1.1	1.0
10/31/2019	21	36	864	0.6	1.0
11/1/2019	25	73	1752	0.6	1.0
11/2/2019	19	70	1680	0.5	1.0
11/3/2019	24	47	1128	0.3	1.0
11/4/2019	31	22	528	0.8	1.0
11/5/2019	18	63	1512	0.4	1.0
11/6/2019	50	182	4368	1.1	1.1
11/7/2019	26	95	2280	0.6	1.1
11/8/2019	24	88	2112	0.5	1.0
11/9/2019	32	119	2856	0.7	1.0
11/10/2019	59	214	5136	1.3	1.0
11/11/2019	29	99	2376	0.6	1.0
11/12/2019	29	100	2400	0.7	1.0
11/13/2019	67	248	5952	1.5	1.0
11/14/2019	111	57	1368	2.4	1.0
11/15/2019	95	151	3624	2.4	1.0
11/16/2019	65	117	2808	1.7	1.1
11/17/2019	79	295	7080	1.9	1.1
11/18/2019	27	46	1104	0.8	1.1
11/19/2019	84	304	7296	1.9	1.1
11/20/2019	66	244	5856	1.5	1.1
11/21/2019	51	184	4416	1.1	1.1
11/22/2019	35	128	3072	0.8	1.1
11/23/2019	25	95	2280	0.6	1.1
11/24/2019	26	98	2352	0.6	1.1
11/25/2019	28	105	2520	0.6	1.0
11/26/2019	13	33	792	0.3	1.0
11/27/2019	24	81	1944	0.6	1.0
11/28/2019	61	231	5544	1.5	1.0
11/29/2019	54	203	4872	1.3	1.0
11/30/2019	27	94	2256	0.7	1.0
12/1/2019	23	46	1104	0.6	1.0
12/2/2019	57	82	1968	1.5	1.0
12/3/2019	43	158	3792	1.1	1.1
12/4/2019	41	154	3696	1.0	1.1

12/5/2019	82	240	5760	1.9	1.1
12/6/2019	87	258	6192	2.1	1.2
12/7/2019	57	205	4920	1.4	1.2
12/8/2019	35	48	1152	0.9	1.2
12/9/2019	0	0	0	0.0	1.2
12/10/2019	0	0	0	0.0	1.1
12/11/2019	56	160	3840	1.4	1.2
12/12/2019	39	130	3120	1.0	1.2
12/13/2019	89	297	7128	2.1	1.2
12/14/2019	92	302	7248	2.4	1.2
12/15/2019	73	184	4416	1.9	1.2
12/16/2019	82	300	7200	2.1	1.2
12/17/2019	114	340	8160	3.1	1.2
12/18/2019	133	301	7224	3.7	1.3
12/19/2019	112	330	7920	2.7	1.4
12/20/2019	68	134	3216	1.9	1.4
12/21/2019	76	283	6792	2.0	1.4
12/22/2019	75	268	6432	1.9	1.4
12/23/2019	48	161	3864	1.3	1.5
12/24/2019	36	138	3312	1.0	1.5
12/25/2019	53	285	6840	2.0	1.5
12/26/2019	70	250	6000	1.9	1.6
12/27/2019	94	195	4680	2.5	1.6
12/28/2019	69	134	3216	1.9	1.6
12/29/2019	60	139	3336	1.6	1.7
12/30/2019	56	208	4992	1.5	1.7
12/31/2019	58	182	4368	1.5	1.7
1/1/2020	0	0	0	0.0	1.7
1/2/2020	0	0	0	0.0	1.6
1/3/2020	86	114	2736	2.6	1.7
1/4/2020	113	418	10032	2.9	1.7
1/5/2020	100	91	2184	2.7	1.7
1/6/2020	101	373	8952	2.6	1.8
1/7/2020	49	153	3672	1.2	1.8
1/8/2020	0	0	0	0.0	1.8
1/9/2020	0	0	0	0.0	1.8
1/10/2020	36	73	1752	0.9	1.8
1/11/2020	34	88	2112	0.8	1.8
1/12/2020	36	134	3216	0.9	1.7
1/13/2020	42	28	672	1.0	1.7
1/14/2020	0	0	0	0.0	1.6

1/15/2020	12	3	72	0.4	1.5
1/16/2020	39	136	3264	0.8	1.5
1/17/2020	31	110	2640	0.7	1.4
1/18/2020	52	186	4464	1.1	1.3
1/19/2020	50	182	4368	1.1	1.3
1/20/2020	51	160	3840	1.2	1.3
1/21/2020	39	69	1656	1.1	1.2
1/22/2020	0	0	0	0.0	1.2
1/23/2020	33	27	648	0.9	1.2
1/24/2020	8	2	48	0.3	1.1
1/25/2020	0	0	0	0.0	1.1
1/26/2020	47	31	744	1.3	1.0
1/27/2020	0	0	0	0.0	1.0
1/28/2020	18	4	96	0.7	0.9
1/29/2020	0	0	0	0.0	0.9
1/30/2020	0	0	0	0.0	0.8
1/31/2020	0	0	0	0.0	0.8
2/1/2020	0	0	0	0.0	0.8
2/2/2020	0	0	0	0.0	0.7
2/3/2020	0	0	0	0.0	0.7
2/4/2020	0	0	0	0.0	0.6
2/5/2020	0	0	0	0.0	0.5
2/6/2020	0	0	0	0.0	0.4
2/7/2020	0	0	0	0.0	0.4
2/8/2020	0	0	0	0.0	0.4
2/9/2020	0	0	0	0.0	0.4
2/10/2020	0	0	0	0.0	0.4
2/11/2020	0	0	0	0.0	0.4
2/12/2020	0	0	0	0.0	0.3
2/13/2020	0	0	0	0.0	0.3
2/14/2020	0	0	0	0.0	0.3
2/15/2020	0	0	0	0.0	0.3
2/16/2020	0	0	0	0.0	0.3
2/17/2020	0	0	0	0.0	0.2
2/18/2020	0	0	0	0.0	0.2
2/19/2020	0	0	0	0.0	0.1
2/20/2020	0	0	0	0.0	0.1
2/21/2020	0	0	0	0.0	0.1
2/22/2020	98	67	1608	2.1	0.1
2/23/2020	77	241	5784	1.4	0.2
2/24/2020	48	157	3768	1.1	0.2

2/25/2020	61	216	5184	1.3	0.2
2/26/2020	58	106	2544	1.3	0.3
2/27/2020	58	205	4920	1.2	0.3
2/28/2020	60	204	4896	1.1	0.3
2/29/2020	52	190	4560	1.1	0.4
3/1/2020	43	162	3888	0.9	0.4
3/2/2020	48	167	4008	1.1	0.4
3/3/2020	75	277	6648	1.5	0.5
3/4/2020	84	301	7224	1.7	0.5
3/5/2020	80	280	6720	1.6	0.6
3/6/2020	52	193	4632	1.1	0.6
3/7/2020	60	220	5280	1.3	0.7
3/8/2020	33	110	2640	0.7	0.7
3/9/2020	60	212	5088	1.2	0.7
3/10/2020	30	111	2664	0.7	0.8
3/11/2020	37	128	3072	0.9	0.8
3/12/2020	41	138	3312	1.0	0.8
3/13/2020	60	210	5040	1.3	0.9
3/14/2020	78	291	6984	1.7	0.9
3/15/2020	65	227	5448	1.4	1.0
3/16/2020	60	205	4920	1.4	1.0
3/17/2020	54	85	2040	1.2	1.0
3/18/2020	0	0	0	0.0	1.0
3/19/2020	0	0	0	0.0	1.0
3/20/2020	64	87	2088	1.5	1.1
3/21/2020	100	369	8856	2.4	1.2
3/22/2020	64	226	5424	1.6	1.2
3/23/2020	69	256	6144	1.7	1.2
3/24/2020	78	291	6984	1.9	1.2
3/25/2020	117	446	10704	2.7	1.3
3/26/2020	99	236	5664	1.9	1.3
3/27/2020	84	305	7320	2.0	1.3
3/28/2020	86	151	3624	2.1	1.4
3/29/2020	76	285	6840	1.7	1.4
3/30/2020	75	276	6624	1.6	1.4
3/31/2020	72	264	6336	1.6	1.4
4/1/2020	86	134	3216	2.0	1.5
4/2/2020	42	22	528	1.5	1.5
4/3/2020	114	295	7080	2.8	1.5
4/4/2020	113	245	5880	2.9	1.5
4/5/2020	99	375	9000	2.4	1.6

4/6/2020	89	334	8016	2.1	1.6
4/7/2020	95	356	8544	2.3	1.7
4/8/2020	95	127	3048	2.7	1.7
4/9/2020	115	412	9888	2.7	1.8
4/10/2020	113	408	9792	2.5	1.8
4/11/2020	102	361	8664	2.3	1.9
4/12/2020	106	385	9240	2.3	1.9
4/13/2020	69	149	3576	1.7	1.9
4/14/2020	90	309	7416	2.1	1.9
4/15/2020	84	287	6888	1.9	1.9
4/16/2020	70	229	5496	1.6	2.0
4/17/2020	39	27	648	1.1	2.0
4/18/2020	0	0	0	0.0	2.0
4/19/2020	54	6	144	1.3	2.0
4/20/2020	84	294	7056	1.9	2.0
4/21/2020	46	164	3936	1.0	1.9
4/22/2020	61	211	5064	1.3	1.9
4/23/2020	59	202	4848	1.3	1.9
4/24/2020	44	153	3672	1.0	1.9
4/25/2020	53	184	4416	1.2	1.8
4/26/2020	62	213	5112	1.4	1.8
4/27/2020	73	249	5976	1.6	1.8
4/28/2020	98	238	5712	2.4	1.8
4/29/2020	125	196	4704	2.8	1.9
4/30/2020	0	0	0	0.0	1.8
Annual Average (TPY)			187.404		

As can be seen in the above table, the rolling 30-operation day SO_2 data did not exceed 2.1 lbs/ton of clinker (30-day rolling average emission limit), as set forth in 2020 Consent Decrees for Lehigh Cement Company LLC and Lehigh White Cement Company, LLC.

Appendix F
THC and CO Calculations

Table F1. THC and CO data and emissions

Year	Month	THC (lb)	CO (ST)
2019	January	35,233	807.685
2019	February	17,379	212.437
2019	March	67,182	575.406
2019	April	60,779	533.342
2019	May	56,268	385.985
2019	June	40,306	163.495
2019	July	61,899	466.409
2019	August	70,166	607.681
2019	September	60,319	633.872
2019	October	40,673	454.504
2019	November	62,019	600.803
2019	December	65,329	555.300
2020	January	0	0
2020	February	0	0
2020	March	0	0
2020	April	0	0
Average (7/2019 – 6/2022), TPY		60.067	1,106.190

Notes:

1. Monthly CEMs reports did not include any mass emission data for THC or CO (THC concentration data were available, but mass emissions could not be derived without molar mass information for THC). However, the daily THC data were available and are tabulated in Appendix C and have been reviewed. As stated in Appendix C, Lehigh was allowed to use compliance with the HAP limit as an alternative to meeting the THC limit; and since the HAPs emissions during the baseline period were in compliance, the THC emissions were considered to be in compliance as well. This THC and HAP data was only used to verify that the source test data used for emissions reduction credits was in compliance with the above requirements. Therefore, emission data are taken instead from the annual CEMs reports submitted by Lehigh for calendar year 2019. Annual CEMs report for calendar year 2020 was never submitted by Lehigh to the Air District. Thus, for conservative estimate, the Air District will assume no THC or CO emissions for the entire 2020.
2. From May 2020 forward, clinker production amount is zero.

Appendix G
POC Source Tests

Table G1. POC source tests results

Emission Point/End of Train	Outside Test	Test Date	Notes	Sources	Pollutant	lb/short ton of clinker
P-154	NST-5448	5 or 6/2019	both raw mills "on"	S-141, S-142, S-154	Vinylchloride	1.8E-04
			one raw mill "on" and another "off"	S-141/142, S-154		1.5E-04
			both raw mills "off"	S-154		1.7E-04
			both raw mills "on"	S-141, S-142, S-154	1,3-Butadiene	5.2E-05
			one raw mill "on" and another "off"	S-141/142, S-154		4.2E-05
			both raw mills "off"	S-154		5.5E-05
			both raw mills "on"	S-141, S-142, S-154	Bromomethane	5.4E-03
			one raw mill "on" and another "off"	S-141/142, S-154		7.9E-03
			both raw mills "off"	S-154		6.7E-03
			both raw mills "on"	S-141, S-142, S-154	Chloroethane	4.6E-05
			one raw mill "on" and another "off"	S-141/142, S-154		5.0E-05
			both raw mills "off"	S-154		4.4E-05
			both raw mills "on"	S-141, S-142, S-154	1, 1-Dichloroethylene	6.9E-05
			one raw mill "on" and another "off"	S-141/142, S-154		7.4E-05
			both raw mills "off"	S-154		6.7E-05
			both raw mills "on"	S-141, S-142, S-154	1, 2-Dichloroethylene	6.9E-05
			one raw mill "on" and another "off"	S-141/142, S-154		7.4E-05
			both raw mills "off"	S-154		6.7E-05
			both raw mills "on"	S-141, S-142, S-154	1, 1-Dichloroethane	7.0E-05
			one raw mill "on" and another "off"	S-141/142, S-154		7.6E-05
			both raw mills "off"	S-154		6.8E-05
			both raw mills "on"	S-141, S-142, S-154	Chloroform	8.5E-05
			one raw mill "on" and another "off"	S-141/142, S-154		9.2E-05
			both raw mills "off"	S-154		8.2E-05
			both raw mills "on"	S-141, S-142, S-154	1,2-Dichloroethane	7.0E-05
			one raw mill "on" and another "off"	S-141/142, S-154		7.6E-05
			both raw mills "off"	S-154		6.8E-05
			both raw mills "on"	S-141, S-142, S-154	1, 1-Trichloroethane	9.5E-05
			one raw mill "on" and another "off"	S-141/142, S-154		1.0E-04
			both raw mills "off"	S-154		9.2E-05
			both raw mills "on"	S-141, S-142, S-154	Carbon Tetrachloride	1.1E-04

			one raw mill "on" and another "off"	S-141/142, S-154		1.2E-04
			both raw mills "off"	S-154		1.1E-04
			both raw mills "on"	S-141, S-142, S-154	Trichloroethene	9.3E-05
			one raw mill "on" and another "off"	S-141/142, S-154		1.0E-04
			both raw mills "off"	S-154		9.1E-05
			both raw mills "on"	S-141, S-142, S-154	1,1,2-Trichloroethane	9.5E-05
			one raw mill "on" and another "off"	S-141/142, S-154		1.0E-04
			both raw mills "off"	S-154		9.2E-05
			both raw mills "on"	S-141, S-142, S-154	Dibromochloromethane	1.5E-04
			one raw mill "on" and another "off"	S-141/142, S-154		1.6E-04
			both raw mills "off"	S-154		1.4E-04
			both raw mills "on"	S-141, S-142, S-154	1,2-Dibromoethane	1.3E-04
			one raw mill "on" and another "off"	S-141/142, S-154		1.4E-04
			both raw mills "off"	S-154		1.3E-04
			both raw mills "on"	S-141, S-142, S-154	Tetrachloroethene	1.2E-04
			one raw mill "on" and another "off"	S-141/142, S-154		1.3E-04
			both raw mills "off"	S-154		1.1E-04
			both raw mills "on"	S-141, S-142, S-154	Chlorobenzene	2.8E-04
			one raw mill "on" and another "off"	S-141/142, S-154		3.0E-04
			both raw mills "off"	S-154		1.6E-04
			both raw mills "on"	S-141, S-142, S-154	Ethylbenzene	6.0E-04
			one raw mill "on" and another "off"	S-141/142, S-154		6.1E-04
			both raw mills "off"	S-154		5.0E-04
			both raw mills "on"	S-141, S-142, S-154	1,1,2,2-Tetrachloroethane	1.2E-04
			one raw mill "on" and another "off"	S-141/142, S-154		1.3E-04
			both raw mills "off"	S-154		1.2E-04
			both raw mills "on"	S-141, S-142, S-154	Benzylchloride	9.0E-05
			one raw mill "on" and another "off"	S-141/142, S-154		9.7E-05
			both raw mills "off"	S-154		8.7E-05
			both raw mills "on"	S-141, S-142, S-154	1,4-dichlorobenzene	1.0E-04
			one raw mill "on" and another "off"	S-141/142, S-154		1.1E-04
			both raw mills "off"	S-154		1.0E-04
			both raw mills "on"	S-141, S-142, S-154	Acrolein	1.1E-03
			one raw mill "on" and another "off"	S-141/142, S-154		9.9E-04
			both raw mills "off"	S-154		4.2E-04
			both raw mills "on"	S-141, S-142, S-154	PCDD / PCDF	6.6E-11

			one raw mill "on" and another "off"	S-141/142, S-154		4.3E-11
			both raw mills "off"	S-154		1.4E-10
			both raw mills "on"	S-141, S-142, S-154	Benz[a]anthracene	3.7E-08
			one raw mill "on" and another "off"	S-141/142, S-154		4.2E-08
			both raw mills "off"	S-154		3.5E-08
			both raw mills "on"	S-141, S-142, S-154	Chrysene	6.0E-08
			one raw mill "on" and another "off"	S-141/142, S-154		6.7E-08
			both raw mills "off"	S-154		5.3E-08
			both raw mills "on"	S-141, S-142, S-154	Benzo[b]fluoranthene	3.7E-08
			one raw mill "on" and another "off"	S-141/142, S-154		3.9E-08
			both raw mills "off"	S-154		3.1E-08
			both raw mills "on"	S-141, S-142, S-154	Benzo(k)fluoranthene	1.4E-08
			one raw mill "on" and another "off"	S-141/142, S-154		1.4E-08
			both raw mills "off"	S-154		8.6E-09
			both raw mills "on"	S-141, S-142, S-154	Benzo[a]pyrene	6.2E-08
			one raw mill "on" and another "off"	S-141/142, S-154		6.0E-08
			both raw mills "off"	S-154		5.2E-08
			both raw mills "on"	S-141, S-142, S-154	Indeno[1,2,3-c,d]pyrene	1.5E-08
			one raw mill "on" and another "off"	S-141/142, S-154		2.0E-08
			both raw mills "off"	S-154		8.3E-09
			both raw mills "on"	S-141, S-142, S-154	Dibenz[a,h]anthracene	1.1E-08
			one raw mill "on" and another "off"	S-141/142, S-154		1.3E-08
			both raw mills "off"	S-154		7.3E-09
			both raw mills "on"	S-141, S-142, S-154	**TOTAL**	**9.1E-03**
			one raw mill "on" and another "off"	S-141/142, S-154		**1.2E-02**
			both raw mills "off"	S-154		**9.5E-03**