

**TECHNICAL REVIEW AND EVALUATION
OF APPLICATION FOR
AIR QUALITY PERMIT NUMBER 42804
CHEMICAL LIME COMPANY - DOUGLAS LIME PLANT**

I. INTRODUCTION

This permit is the Title V permit renewal for the operation of a Lime Plant near Douglas, Arizona. This is a renewal of Air Quality Permit 1000044.

A. Company Information

Mailing Address: 4753 W. Paul Spur Road, Douglas, Arizona 85607

Facility Address: 4753 W. Paul Spur Road, Douglas, Arizona (at Paul Spur, approximately 10 miles west of Douglas)

B. Attainment Classification

The Paul Spur area is designated as Non-Attainment for Sulfur Dioxide (SO₂) and Particulate Matter with an aerodynamic diameter of less than 10 microns (PM₁₀). The Area is designated as unclassified for all other pollutants.

II. PROCESS DESCRIPTION

This facility manufactures lime from limestone. The limestone processing plant consists of a quarry and a crushing and screening plant. This part of the process produces crushed and sized limestone for the lime manufacturing operation and for other local uses. The lime manufacturing operation consists of three kilns and a number of other pieces of equipment for handling limestone, solid fuel and kiln lime product. A detailed description of the various processes and activities at the facility has been provided in the Class I permit application for this facility, dated December 15, 2006. A copy of this application can be obtained by contacting the Records Center of the Arizona Department of Environmental Quality (ADEQ) at (602) 771- 4380. In addition, Section XI of this document contains schematics that chart out the flow of materials through various processes starting from quarrying the limestone and ending with shipping out the lime kiln product.

III. EMISSIONS

The potential emission rates of the following pollutants are greater than 100 tons per year (tpy): (i) (PM), (ii) PM₁₀, (iii) SO₂, (iv) Nitrogen Dioxide (NO₂), and (v) Carbon Monoxide (CO). The Potential to Emit (PTE) of this facility is shown in Table 1 on the following page. Emission rates are based on manufacturer's data as well as EPA's Compilation of Emission Factors, known as AP-42, using maximum hourly material process rates.

Table 1: Total Facility Wide Emissions

Pollutant	Maximum Emissions (lb/hr)	Maximum Emissions (tpy)
PM	654.79	1720.97
PM ₁₀	273.8	690.74
NO _x	152.83	481.64
SO ₂	1043.69	4423.99
CO	220.95	289.92
VOC	2.18	9.4
Total HAPs	--	10.76

IV. AREA SOURCE STATUS

On January 5, 2004, EPA promulgated the National Emissions Standard for Hazardous Air Pollutants (NESHAP) 40 Code of Federal Regulations (CFR) 63 Subpart AAAAA for the lime manufacturing source category. The Final NESHAP regulates hazardous air pollutant (HAP) emissions from all new and existing lime manufacturing plants that are major sources for HAPs.

Chemical Lime Company conducted hydrogen chloride (HCl) emission testing for Kiln #2 at the Douglas Lime Plant. Based on this test the HCl emission from Kiln #2 was 7.02 tpy. Based on this result and HCl testing at CLC-owned kilns similar to Kiln #1 and Kiln #3 in other states, it is expected that the Douglas Lime Plant is an area source for HAPs.

In order to confirm that the Douglas Lime Plant is an area source of HAPs, it is necessary to test the two temporarily idled kilns for HCl emissions. Reactivating the kilns to solely test for HCl emissions would require significant expenditures. Consequently, EPA addressed this issue by providing state agencies with the discretion to determine whether testing of all kilns at a lime plant is necessary in order to demonstrate that a plant is an area source (40 CFR §63.7142(c)).

Based upon this EPA guidance, ADEQ is allowing CLC to postpone testing of the idled kilns for HCl until the kilns are reactivated.

V. APPLICABLE REGULATIONS

The Permittee has identified the applicable regulations that apply to each unit in its permit application. The following table summarizes the findings of the Department with respect to the regulations that are applicable to each emissions unit.

Table 2: Listing of Applicable Requirements

Emission Units	Applicable Requirements	Comments
<p>Limestone Processing Plant : Primary Crusher 102/DC 120 Secondary Crusher 106/DC121</p>	<p>Arizona Administrative Code (A.A.C.) R18-2-702(B), A.A.C. R18-2-720(B)</p>	<p>This equipment processes limestone, and was manufactured prior to August 31, 1983, and therefore is subject to Article 7 standards.</p>
<p>Secondary Screen 110 /DC 122 Primary Screen 104</p>	<p>Arizona Administrative Code (A.A.C.) R18-2-702(B), A.A.C. R18-2-720(B) Paul Spur State Implementation Plan (PSSIP) 6.4</p>	<p>These screens were installed after August 31, 1983 (trigger date for New Source Performance Standards (NSPS) Subpart OOO). However, since these screens have been a like-like exchange in accordance with 40 CFR §60.670(d)(1) they are exempt from the requirements of Subpart OOO. PSSIP 6.4 is applicable to all screens. Condition II.B.2 of Attachment "B" cites language similar to the NSPS language of 40 CFR §60.11(d), however the emissions units listed in Condition II.A of Attachment "B" are not subject to the NSPS.</p>
<p>#1 Secondary Screen / Enclosed #2 Secondary Screen / Enclosed #3 Secondary Screen / Enclosed</p>	<p>A.A.C. R18-2-702(B), PSSIP 6.4</p>	<p>This equipment processes limestone. These screens were all manufactured prior to August 31, 1983. Therefore, they are subject to A.A.C. R 18-2-702(B). PSSIP 6.4 requires all screens to be enclosed.</p>
<p>Solid Fuel Handling System: #4 Fuel Bin, #4 Solid Fuel Mill</p>	<p>A.A.C. R18-2-702(B), A.A.C. R18-2-716(B) PSSIP 6.1</p>	<p>These units were built after October 24, 1974. However, they cannot process more than 200 tons per day of solid fuel. Therefore, they are not subject to NSPS Subpart Y. PSSIP 6.1 is applicable to conveyor belt transfer points. Condition III.B.2.a of Attachment "B" cites language similar to the</p>

Emission Units	Applicable Requirements	Comments
		NSPS language of 40 CFR §60.11(d), however the emissions units listed in Condition III.A of Attachment "B" are not subject to the NSPS.
Coal Hopper 503-1, Coal Hopper 503-2, Weigh Feeder 504, Weigh Feeder 505, Crusher 506, Solid Fuel Belt 507, Solid Fuel Bin 508, Solid Fuel Bin 515, Weigh Belt 516, Solid Fuel Mill 517	40 CFR §60.252, §60.254 PSSIP 6.1	These emission units were built after October 24, 1974, and can process more than 200 tons per day of solid fuel. Therefore, they are subject to NSPS Subpart Y. PSSIP 6.1 is applicable to conveyor belt transfer points.
Kiln 1 System : Kiln 1 Preheater Screen 211 Screen/Enclosure/Spray Bars	Arizona Administrative Code (A.A.C.) R18-2-702(B), A.A.C. R18-2-720(B) PSSIP 6.4	The Preheater Screen was installed after August 31, 1983 (trigger date for NSPS Subpart OOO). However, since these screens have been a like-like exchange in accordance with 40 CFR §60.670(d)(1) they are exempt from the requirements of Subpart OOO. PSSIP 6.4 is applicable to all screens. Condition V.C.2.e of Attachment "B" cites language similar to the NSPS language of 40 CFR §60.11(d), however the emissions units listed in Condition V.A of Attachment "B" are not subject to the NSPS.
Kiln 1 / Controlled by Cyclone and Gravel Bed Filter DC 309	A.A.C. R18-2-720(B), A.A.C. R18-2-720(F), A.A.C. R18-2-702(B), PSSIP 6.5, Permit 0368-93/Attachment A Condition X(A)(1) Kiln 1 is also subject to Compliance Assurance Monitoring (CAM) 40 CFR §64	Kiln 1 was installed in 1967, which is before the NSPS Subpart HH trigger date of May 3, 1977. Therefore, the kiln is an existing facility. PSSIP 6.5 requires the installation of a dust transfer and storage system for the existing Kiln 1 Dust Collector. The condition from Permit 0368-93 prescribes a five percent opacity limit on damper seal operations.
Kiln 1 Pug Mill	A.A.C. R18-2-702(B), A.A.C.	This equipment is applicable to

Emission Units	Applicable Requirements	Comments
	R18-2-730(A)	unclassified existing sources.
BC 403/DC 403	A.A.C. R18-2-702(B), A.A.C. R18-2-730(A)	This equipment is applicable to unclassified existing sources.
Dust Bin BN-320 / DC 321 Drop Point into Truck	Installation Permit 1233 Att B (II)(B)(2)	-
Kiln 2 System : Kiln 2 Scalping Screen 224/Enclosure	40 CFR §60.672, §60.675 PSSIP 6.4	The Scalping Screen was installed in 1995. The screen is an affected facility as defined by 40 CFR §60.670. PSSIP 6.4 is applicable to all screens.
Kiln 2 / Controlled by Baghouse DC 356	A.A.C. R18-2-720(B), A.A.C. R18-2-720(F), A.A.C. R18-2-702(B) Permit 0368-93/Att A IX(B), X(A)(1), X(A)(2) Installation Permit 1233 Att B IV(1) PSSIP 6.4 PSSIP 6.5 Kiln 2 is also subject to Compliance Assurance Monitoring (CAM) 40 CFR §64	Kiln 2 was installed in 1970, which is before the NSPS Subpart HH trigger date of May 3, 1977. Therefore, the kiln is an existing facility. Kiln 2 damper seals < 5% opacity PSSIP 6.5 is applicable to the dust transfer and storage system for Kiln 2 Baghouse.
Kiln 2 Product Cooler, Reject Belt 227/DC 228, BC 404/DC 404, Kiln 2 Dust Bin/ DC 524, and T-410 Bin/DC 508	A.A.C. R18-2-702(B), A.A.C. R18-2-730(A) Permit 1001154	These are unclassified existing sources.
Kiln 2 Pug Mill	A.A.C. R18-2-702(B), A.A.C. R18-2-730(A) Installation Permit 1233 Att "A", III; Att B III(A)	These are unclassified existing sources.
Kilns 1 and 2 Lime Handling System : Rotary Lime Crusher R-405/DC	A.A.C. R18-2-702(B), A.A.C. R18-2-730(A), Installation Permit 031208, Permit 1000376, Installation Permit 1222	The crusher processes lime. NSPS Subpart OOO A.A.C. R18-2-720, and A.A.C. R18-2-722 are applicable only to units that process

Emission Units	Applicable Requirements	Comments
402, Bin 401/DC401, Bin 402 & Screw 434/DC402, Bin 403&Bin 405/DC406, BC 483/DC482, Spout 483/DC483, BC 486/DC486, Spout 486/DC487, BC 433/DC 431, BC 485/DC 485, BC 481/DC 481		limestone. Condition VII.B.2.A of Attachment "B" cites language similar to the NSPS language of 40 CFR §60.11(d), however the emissions units listed in Condition VII.A of Attachment "B" are not subject to the NSPS.
Roll Crusher R-451/Sealed Control, Hammermill R-452/Sealed Control, Bin 406/Enclosures & Seals, Spout 403 and Drop Points into Trucks from Bins 401, 402, 403, 404, 405, 406, 407 - Use Loading Sleeves/Enclosures	A.A.C. R18-2-702(B)	The crusher and hammermill process lime. NSPS Subpart OOO A.A.C. R18-2-720, and A.A.C. R18-2-722 are applicable only to units that process limestone.
<p>Kiln 3 System :</p> <p>Kiln 3 Stone Screen and Stone Bin/ Enclosures/DC 241</p>	<p>A.A.C. R18-2-702(B), A.A.C. R18-2-722(B)</p> <p>PSSIP 6.4</p>	<p>The Stone Screen was installed in 1980. This is prior to the NSPS Subpart OOO trigger date of August 31, 1983. Therefore, it is an existing facility subject to A.A.C. R18-2-722.</p> <p>PSSIP 6.4 is applicable to screens.</p> <p>Condition VIII.C.2.A and VIII.C.2.b of Attachment "B" cites language similar to the NSPS language of 40 CFR §60.11(d), however the emissions units listed in Condition VIII.A of Attachment "B" are not subject to the NSPS</p>
Kiln 3 / Controlled by Wet Scrubber DC 600	<p>A.A.C. R18-2-720(B), A.A.C. R18-2-720(F), A.A.C. R18-2-702(B)</p> <p>EPA Installation Permit issued on August 31, 1978, Condition VIII(B)</p> <p>Installation Permit 1208</p> <p>Permit 0368-93 Att A IX(B), X(A)(1)</p>	Kiln 3 is a vertical kiln - therefore, it is not subject to NSPS Subpart HH which is applicable only to rotary kilns. A.A.C. R18-2-720 is applicable to vertical kilns.

Emission Units	Applicable Requirements	Comments
	PSSIP 6.4 Kiln 3 is also subject to Compliance Assurance Monitoring (CAM) 40 CFR §64	
Kiln 3 Lime Crusher / DC 776	A.A.C. R18-2-702(B), A.A.C. R18-2-730(A)	The crusher process lime. NSPS Subpart OOO A.A.C. R18-2-720, and A.A.C. R18-2-722 are applicable only to units that process limestone.
Kiln Discharge, Reject Conveyor & Product Conveyor/DC775&DC776, Large Bin&Kiln 3 Lime Screen/DC852, Truck Loadout/DC853, Dust Blend System Rail Loadout/DC779, Dust Blend System Truck Loadout/DC 854, Dust Blend Bin/DC 730	A.A.C. R18-2-702(B), A.A.C. R18-2-730(A), PSSIP 6.4 Permit 1001154	These are unclassified existing sources. PSSIP 6.4 requires all screens to be enclosed.
Open Areas, Roadways/Streets, Material Handling, Storage Piles, Open Burning	A.A.C. R18-2-602, A.A.C. R18-2-604, A.A.C. R18-2-605, A.A.C. R18-2-606, A.A.C. R18-2-607, A.A.C. R18-2-614 PSSIP 6.1/Permit 0368-93 Attachment A Condition X(C)(1) PSSIP 6.3/Permit 0368-93 Attachment A Condition X(C)(2) PSSIP 6.6, 6.7, 6.8/Permit 0368-93 Attachment A Condition X(G), X(H) Installation Permit 1233, Attachment B Condition II(B)(2)	All of these operations are non-point sources, and are subject to the requirements of Article 6. PSSIP 6.1 is applicable to conveyor belt transfer points. PSSIP 6.3 is applicable to stackers/reclaimers at storage piles. PSSIP 6.6, 6.7, 6.8 are applicable to Cleared Areas, and Travel on Unpaved Roads. The installation permit condition is an opacity standard of 10% applicable to belt conveyors, bucket elevators, and storage silos.
Mobile Source Requirements:	A.A.C. R18-2-801, A.A.C. R18-2-802, and A.A.C. R18-2-804	Roadway and site cleaning machinery are subject to Article 8.

Emission Units	Applicable Requirements	Comments
Periodic Activities:	A.A.C. R18-2-726, A.A.C. R18-2-727, and A.A.C. R18-2-1101.A.8	Abrasive blasting, spray painting and asbestos related demolition or renovation are subject to these rules.

VI. COMPLIANCE HISTORY

Compliance history of the source has been reviewed, and there are no open enforcement actions against this facility.

VII. LEARNING SITES POLICY

In accordance with ADEQ’s Environmental Permits and Approvals Near Learning Sites Policy, the Department conducted an evaluation to determine if any nearby learning sites would be adversely impacted by the waste water treatment plant. Learning sites consist of all existing public schools, charter schools and private schools at the K-12 level, and all planned sites for schools approved by the Arizona School Facilities Board. The learning sites policy was established to ensure that the protection of children at learning sites is considered before a permit approval is issued by ADEQ.

The Department did not identify any learning sites within two miles of the facility.

VIII. PREVIOUS PERMITS AND CONDITIONS

Table 3: Listing of Previous Permits

Date Permit Issued	Permit #
June 6, 2002	1000044 (Title V Operating Permit)
April 8, 2005	34074 (<i>Minor Revision</i>)
August 23, 2007	43147 (<i>Minor Revision</i>)

Table 4: Previous Permit conditions

Permit condition Number	Determination				Comments
	Delete	Kept	Revise	Streamline	
Att A			X		Revised to reflect the most recent permitting language.
Att B:			X		Revised to reflect the most recent

Permit condition Number	Determination				Comments
	Delete	Kept	Revise	Streamline	
Section I					permitting language.
Att B: Section II			X	X	Limestone Processing Plant Section has been revised to more accurately cover all emission sources. This section has been re-labeled Crushing and Screening Plant.
Att B: Section III			X		Open Areas, Roadways/Streets, Material Handling, Storage Piles Requirements have been revised to reflect the most recent permitting language. This Section has been re-labeled Fugitive Dust Requirements and moved to Section XII in the new permit.
Att B: Section IV			X	X	Solid Fuel Handling Section has been revised to more accurately cover all emission sources. This Section has been moved to Section III in the new permit.
Att B: Section V			X	X	Kiln 4 Section has been revised to more accurately cover all emission sources. This Section has been re-labeled Kiln 1 and Kiln 2 System in the new permit. Kiln 4 has been re-named Kiln 1 in the new permit. NSPS portions of this Section have been moved to Section VI in the new permit.
Att B: Section VI			X	X	Kiln 5 Section has been revised to more accurately cover all emission sources. Kiln 5 has been re-labeled Kiln 2 in the new permit. This Section has been incorporated into Section V of the new permit. NSPS portions of this Section have been moved to Section VI in the new permit.
Att B: Section VII			X	X	Kiln 4 and 5 Lime Handling Section has been revised to more accurately cover all emission sources. This Section has been re-labeled Kiln 1 and Kiln 2 Lime Storage and Truck Rollout.

Permit condition Number	Determination				Comments
	Delete	Kept	Revise	Streamline	
Att B: Section VIII			X	X	Kiln 6 Section has been revised to more accurately cover all emission sources. Kiln 6 has been re-labeled Kiln 3 in the new permit.
Att B: Section IX			X		Alternative Operating Scenarios have been revised to match current operating conditions.
Att B: Section X			X		Miscellaneous Drop Points have been revised to match current operating conditions.

IX. MONITORING, RECORDKEEPING, AND TESTING REQUIREMENTS

The following monitoring approaches have been required in the permit:

A. Fugitive Dust Sources

Periodic monitoring for opacity standard entails a visible emissions survey in accordance with an ADEQ approved observation plan, by a certified EPA Method 9 observer. If the visible emissions survey indicates that a Method 9 reading may be required, the observer shall do so, and maintain records of the results. Any observed exceedance of the opacity standard is to be reported appropriately. This approach, termed the Visible Emission Observation Procedure, is defined in Condition I.D of Attachment "B".

B. Kilns 1, 2 and 3

Opacity is monitored by a Continuous Opacity Monitor (COM). One monitor is maintained on each stack.

Kiln 1 and Kiln 2 are required to comply with a particulate emission standard. This permit requires Permittee to perform a stack test every year combined with monitoring stack gas opacity to fulfill the periodic monitoring requirements for particulate matter emissions. If corrective actions are taken to rectify the problems associated with the pollution control device, then compliance can be inferred on the basis that the source operates its pollution control equipment in a manner consistent with good air pollution control practices.

Kiln 3 is required to comply with opacity and particulate matter limits. Kiln 3 is controlled by a wet scrubber, and as such, an opacity monitor is not required pursuant to A.A.C. R18-2-720(G). The monitoring approach relies on the use of scrubber pressure drop and water flowrate as indicators of scrubber performance. Devices to continuously record these parameters have been installed. The Permittee is required to calibrate the devices on an annual basis. The water flow rate is required to be maintained above 90 gallons per minute. This volume is based on performance tests.

C. Point Sources other than Kilns 1, 2, and 3

The Control Device Monitoring and Maintenance Procedure defined in Condition I.C of Attachment “B” is used as periodic monitoring for dust collectors. Proper maintenance of dust collectors is critical to ensure compliance with the particulate and opacity standards applicable to these point sources. The Permittee is required to implement the maintenance program on a monthly basis. The Permittee is also required to implement the Visible Emissions Observation Procedure defined in Condition I.C of Attachment “B”, once every two weeks.

D. Fugitive Emissions other than Open Areas, Roadways/Streets, Material Handling, Storage Piles

Monitoring for these emissions is via the Visible Emissions Procedure defined in Condition I.D of Attachment “B”, once every two weeks.

E. Housekeeping Plan

As required by the Paul Spur State Implementation Plan (PSSIP), the Permittee is required to implement a Housekeeping Plan to prevent accumulation of loose dust in the plant area. This Housekeeping Plan has been used by the Permittee for the past few years, and has been included in the permit in Attachment “D”.

F. Compliance Assurance Monitoring Plan

This facility is subject to the requirements of 40 CFR 64 referred to as Compliance Assurance Monitoring (CAM). CAM requires the source to provide reasonable assurance of compliance with emission limits or standards for the anticipated range of operations at a pollutant specific emissions unit.

1. Kiln 1 CAM Approach

The Kiln 1 CAM Plan for particulate matter which is controlled by a gravel bed filter is based on the following monitoring approach:

Primary Indicators

- i. Opacity
- ii. Gravel bed filter inspection and maintenance program

2. Kiln 2 CAM Approach

The Kiln 2 CAM Plan for particulate matter which is controlled by a baghouse is based on the following monitoring approach:

Primary Indicators

- i. Opacity
- ii. Baghouse inspection and maintenance program

3. Kiln 3 CAM Approach

The Kiln 3 CAM Plan for particulate matter which is controlled by a wet scrubber is based on the following monitoring approach:

Primary Indicators

- i. Wet scrubber differential pressure
- ii. Wet scrubber inspection and maintenance program
- iii. Wet scrubber water flow rate

X. LIST OF ABBREVIATIONS

A.A.C.	Arizona Administrative Code
ADEQ	Arizona Department of Environmental Quality
CAM	Compliance Assurance Monitoring
CFR	Code of Federal Regulations
CLC	Chemical Lime Company
CO	Carbon Monoxide
COM	Continuous Opacity Monitor
EPA	Environmental Protection Agency
HAPs	Hazardous Air Pollutants
HCL	Hydrochloric Acid
IP	Installation Permit
NAA	Non Attainment Area
NO ₂	Nitrogen Oxide
NSR	Non Source Review
NSPS	New Source Performance Standards
OP	Operating Permit
PM	Particulate Matter
PM ₁₀	Particulate Matter Less Than 10 Microns
PTE	Potential to Emit
PSSIP	Paul Spur PM ₁₀ State Implementation Plan
SO ₂	Sulfur Dioxide
tph	Tons per Hour
VOC	Volatile Organic Compound

XI. Plant Schematics

Figure 1: Process Flow Diagram for the Crushing and Screening Plant

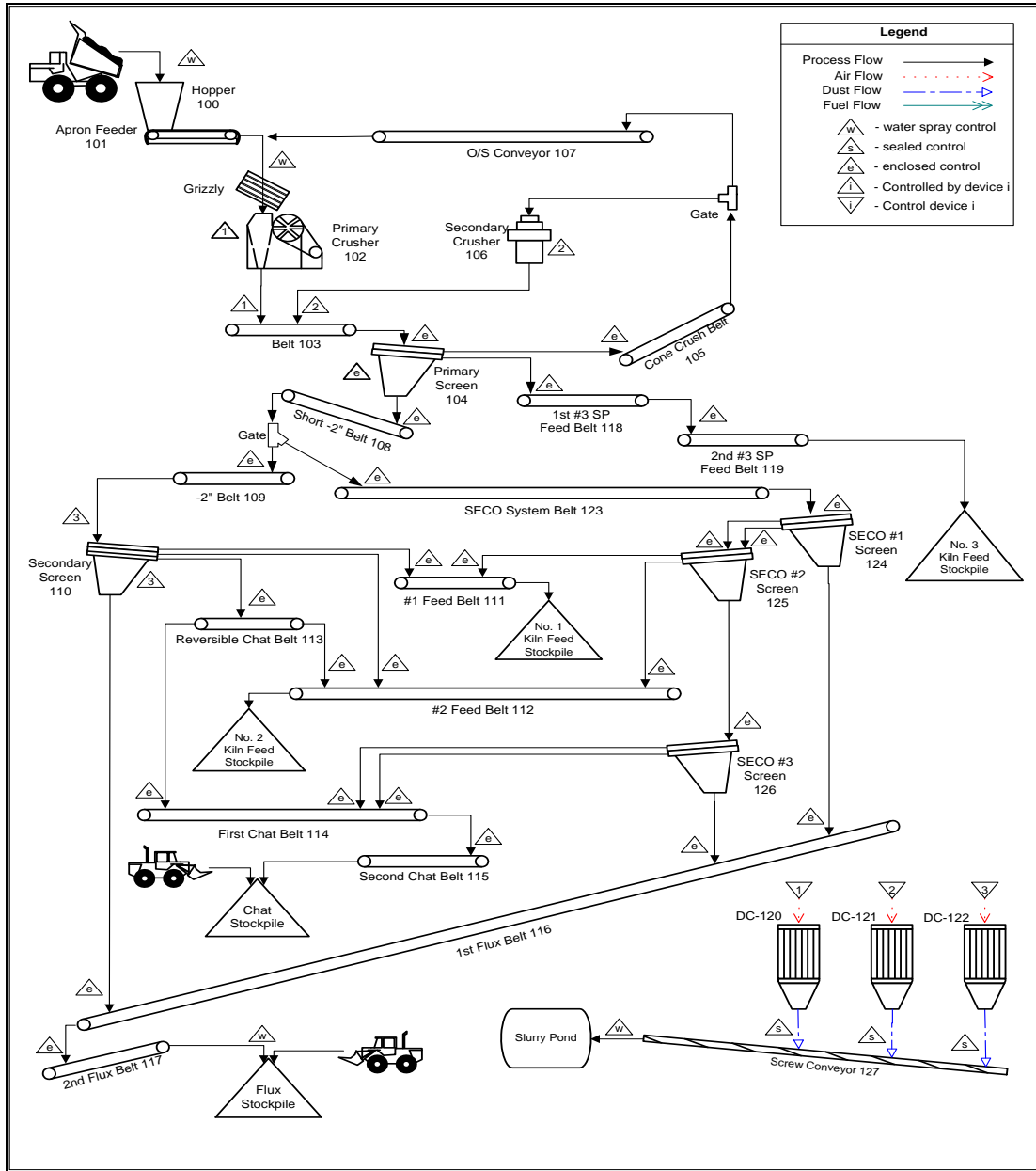


Figure 2: Process Flow Diagram for the Solid Fuel Handling System

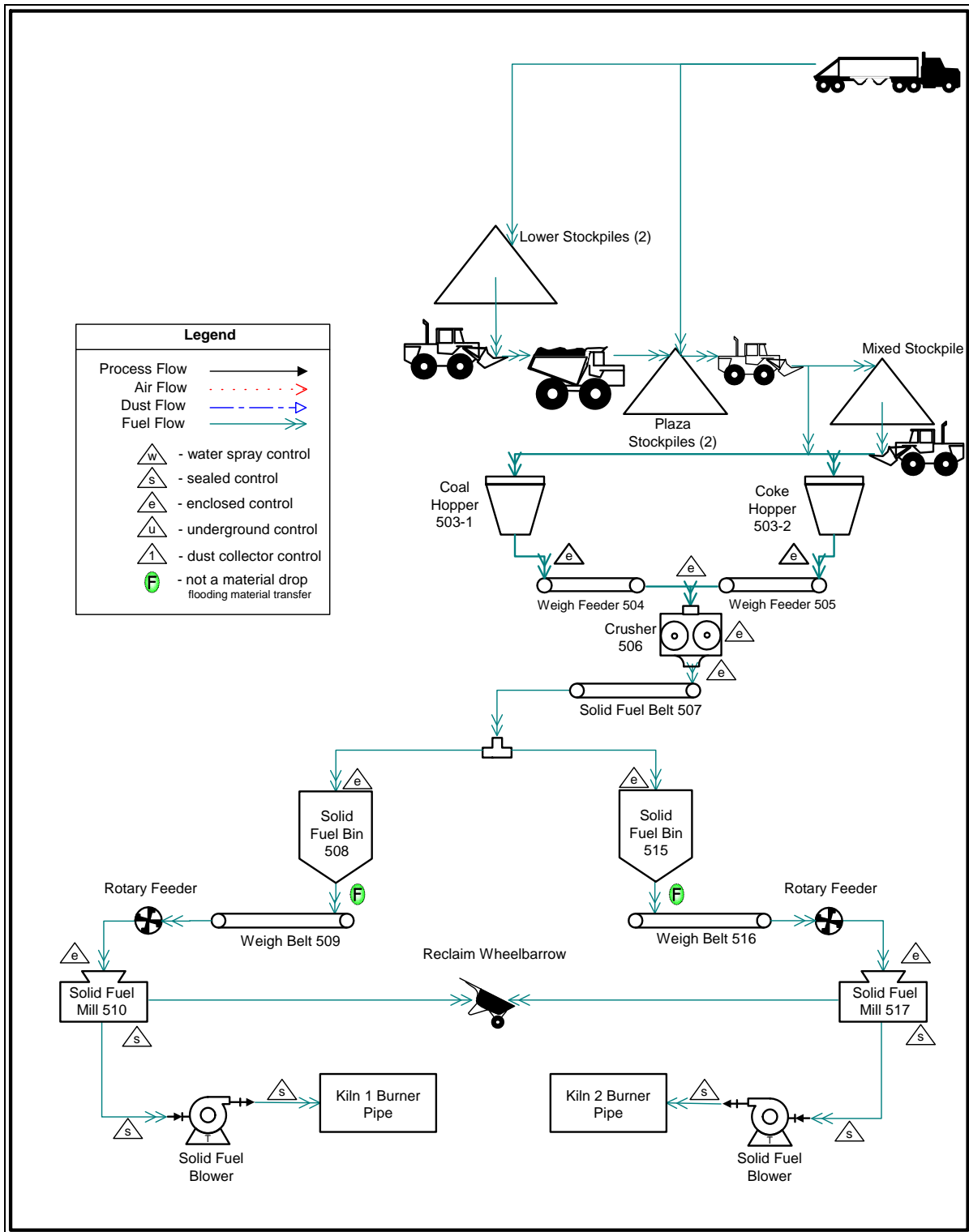


Figure 3: Process Flow Diagram for the Kiln 1 System

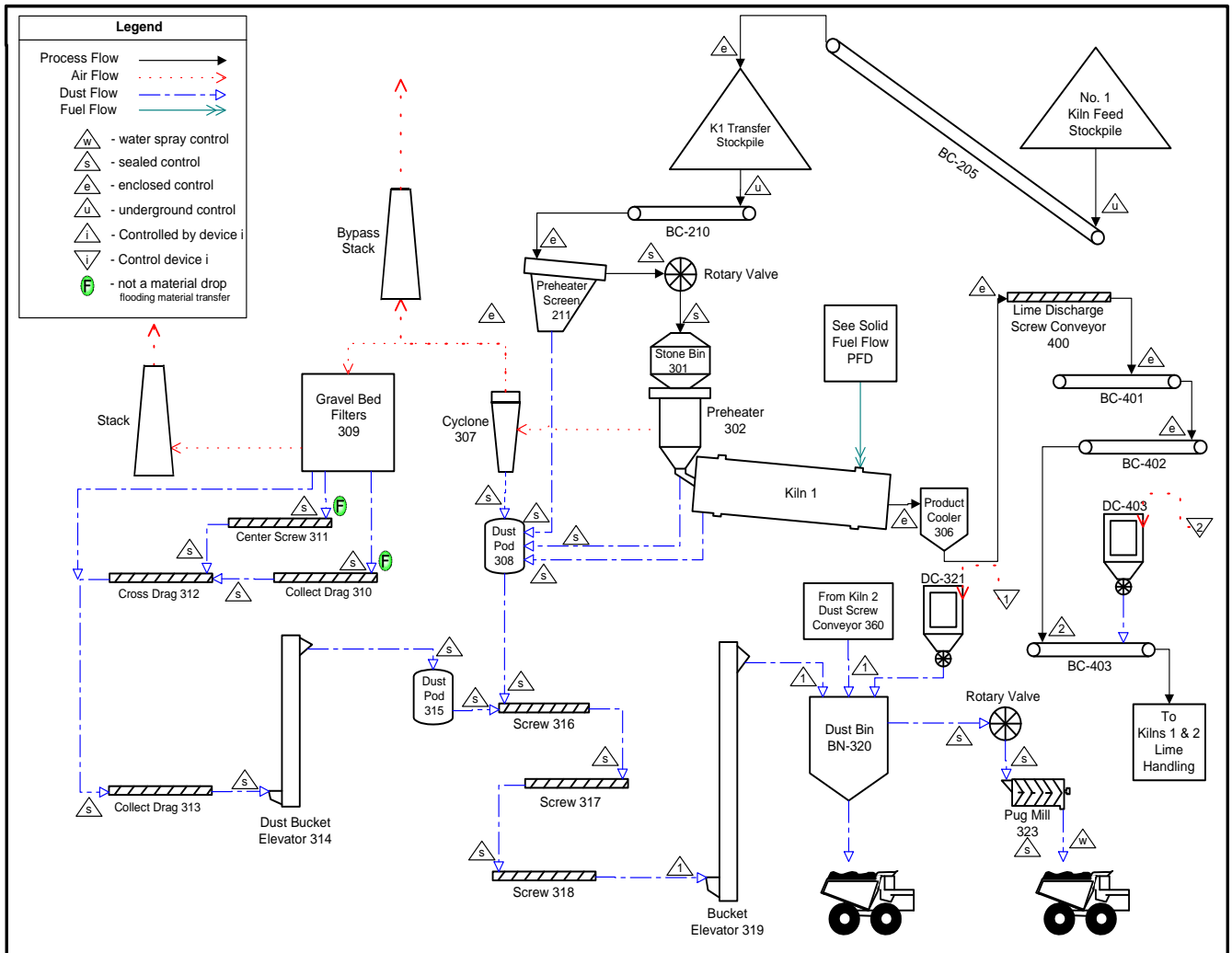


Figure 4: Process Flow Diagram for the Kiln 2 System

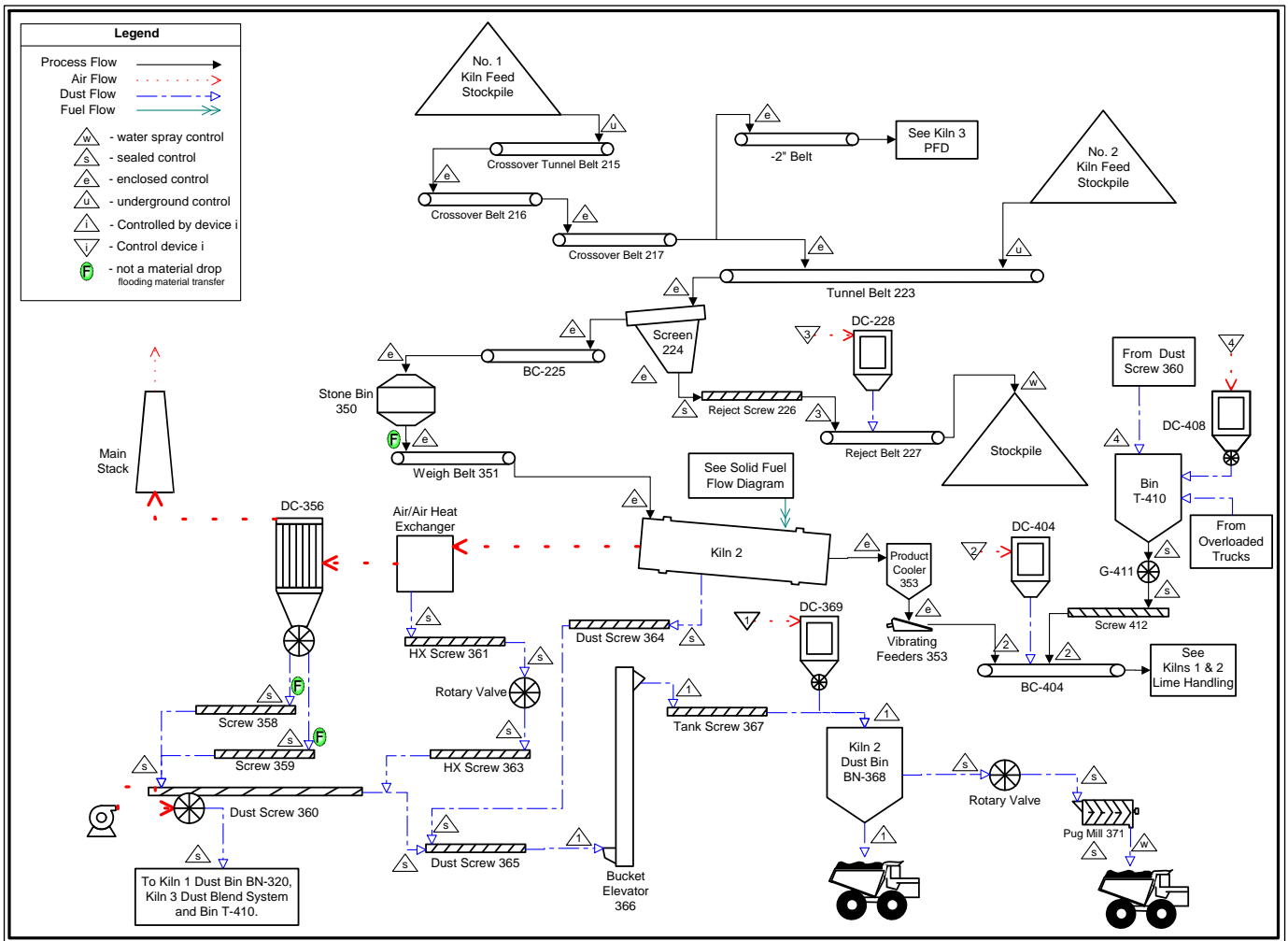


Figure 5: Process Flow Diagram for the Kiln 1 and Kiln 2 Lime Handling System

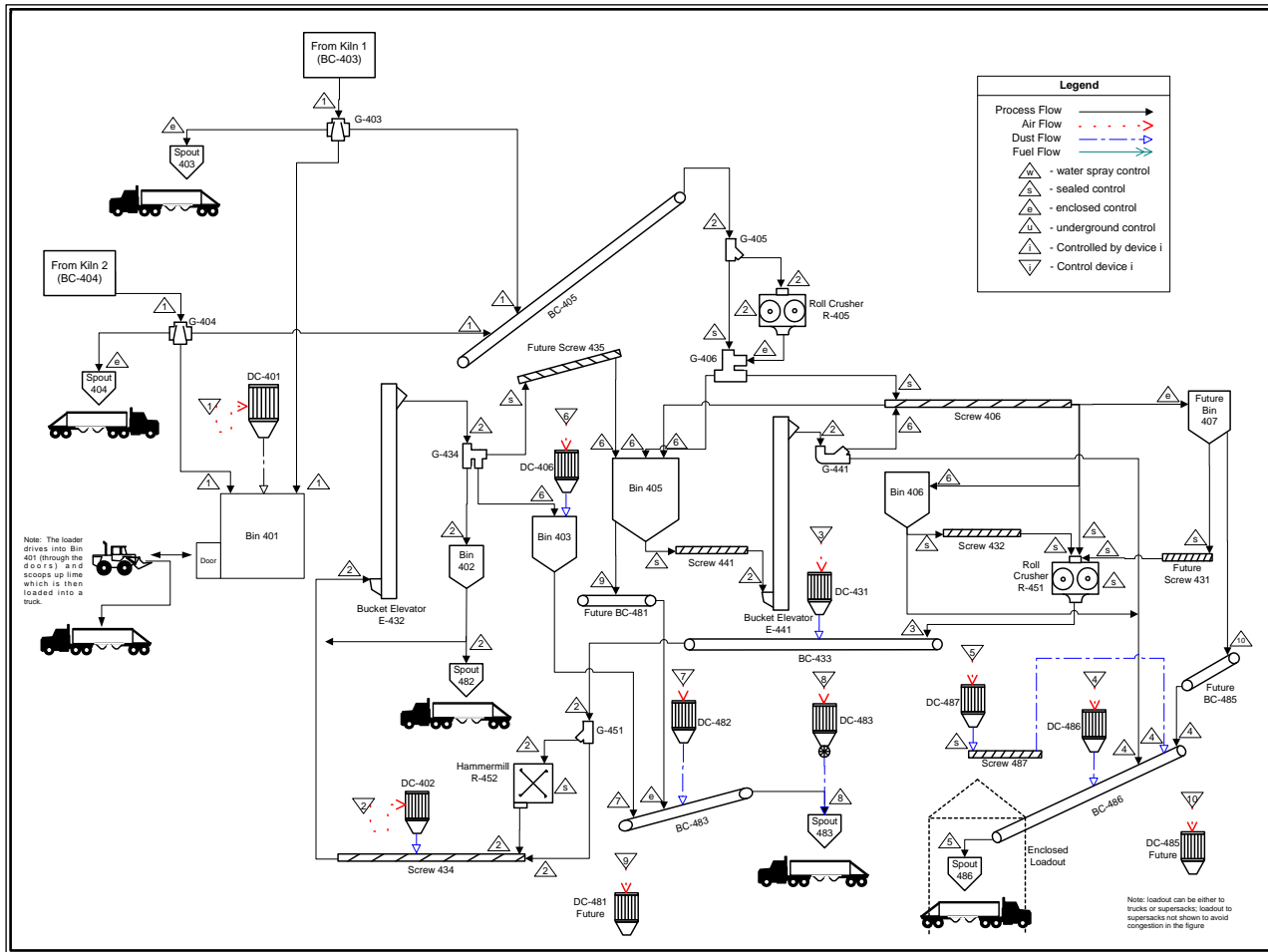


Figure 6: Process Flow Diagram for The Kiln 3 System

