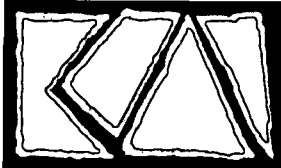


ARMA-AC ✓



**KOOGLER & ASSOCIATES**  
ENVIRONMENTAL SERVICES  
4014 NW THIRTEENTH STREET  
GAINESVILLE, FLORIDA 32609  
904/377-5822 • FAX 377-7158

**K&A 578-95-01**

September 18, 1995

Mr. Eric Peterson  
Air Permitting Engineer  
FDEP-SWD, Air Program  
3804 Coconut Palm Drive  
Tampa, Florida 33619

**RECEIVED**  
SEP 21 1995

BY \_\_\_\_\_  
Environmental Protection  
DISTRICT

**SUBJECT:** Dixie Lime and Stone Company  
Sumterville Mine - Nonmetallic Mineral Processing Plant  
Air Construction/Operation Permit Application  
FDEP File Nos. AC60-275111, AO60-275112  
**Response to Request for Additional Information dated August 25, 1995**

Dear Mr. Peterson:

This letter is in response to your Request for Additional Information dated August 25, 1995. All questions have been reproduced, preserving your numbering. The responses follow each question.

- 1. Please provide a facility plot showing the current location of the processes, offices, site roads, watered portion of the site roads, and property boundaries.**

**Response:**

Please see aerial photograph included with Attachment 1.

- 2. How often is the plant reconfigured?**

**Response:**

Please see Dixie Lime and Stone letter included with Attachment 1.

3. Based on your maximum hourly rate of 1700 tons processed and the requested maximum operating schedule of 8760 hours year, the maximum annual throughput is 14,892,000 tons. The application lists the maximum annual rate as 5,000,000 tons processed and this is used to calculate annual emissions. Propose a limit on hours of operation or monthly tons processed (and a method of verification) to synthetically limit the maximum annual rate to 5,000,000 tons.

RECEIVED  
 Environmental Protection  
 DISTRICT

**Response:**

The 5,000,000 TPY maximum reflects current and expected market demand for crushed stone from this plant. If required, the production rate could be limited to 416,667 tons/month (5,000,000 TPY/12 months). Verification would be provided, upon request, from the plant's shipping tickets.

4. What is the size range (in mesh numbers) of the input and output of each crusher and screen?

**Response:**

A sieve analysis of typical limerock base material is shown in the following table:

| SIEVE         | % Ret.         |
|---------------|----------------|
| #4 (4.75 mm)  | 14.50%         |
| #8 (2.36 mm)  | 5.30%          |
| #10 (2.00 mm) | 2.90%          |
| #16 (1.18 mm) | 8.50%          |
| #30 (600 um)  | 12.30%         |
| #40 (425 um)  | 6.60%          |
| #50 (300 um)  | 5.70%          |
| #80 (180 um)  | 9.50%          |
| #100 (150 um) | 3.20%          |
| #200 (75 um)  | 7.80%          |
| Minus #200    | 23.70%         |
| <b>TOTAL</b>  | <b>100.00%</b> |

5. Show how truck and/or railcar loading is accomplished in the process flow diagram. Are any precautions taken to reduce fugitive emissions during loading, such as shrouds, feed tubes, windbreaks, etc?

**Response:**

Trucks are loaded by front-end loader from stockpiles. Railcars are not loaded at this time; however, they would also be loaded by front-end loaders.

The moisture content of typical limerock base material is 10-15%. This high moisture content limits PM/PM10 emissions generated from material handling activities including loading. No other precautions are in place at this location.

6. [No Question 6]

7. **Please provide a more detailed drawing of both crusher/feeders showing the most likely point of Method 9 observation for each process.**

***Response:***

The appropriate Method 9 observation point must be determined in the field, for the following reasons:

- Movable vehicle dumping into feed hoppers, screening operations, and crushers is exempt from the opacity limitations of Subpart OOO. [40CFR60.672(d)]
- The VE observer must distinguish between “truck dumping” emissions, feeder (screen) emissions, crusher emissions, and transfer point emissions (feeder to conveyor, crusher to conveyor)
- Method 9, as modified in Subpart OOO requires that the VE observer follow these constraints:
  - The minimum distance between the observer and the emission source shall be 15 feet.
  - The observer shall...select a position that minimizes interference from other fugitive emission sources.

8. **Identify in the process flow diagram, by unique designation, each piece of equipment listed.**

***Response:***

Revised process flow diagrams are included as Attachment 2.

9. **Please identify the storage bin in the process flow diagram.**

***Response:***

The storage bin is separate from the portable crushing units. A process flow diagram for the storage bin and associated conveyors is included with Attachment 2.

10. **Calculate emissions using AP-42, 5th Edition, Chapter 11.19.2, “Crushed Stone Processing” or explain why the emission factors used in the application are more appropriate. In the explanation, please provide copies of the cover of EPA-600/2-78-004e and any pertinent pages. Also, provide the basis for the use of “wet suppression” emission factors.**

***Response:***

AP-42, 5th Edition, Chapter 11.19.2, *Crushed Stone Processing*, was initially reviewed for applicability to this project and deemed inappropriate for these reasons:

- Only one emission factor for PM is available (primary crushing-uncontrolled). This factor is not applicable to this plant, as the documentation for this factor indicates that the raw material was dry.
- No (controlled) emission factors are provided for primary or secondary crushing, or blasting.
- The moisture content of materials at the study plants, while operating wet suppression systems, was less than 3% in every test.
- The emission factors for fines crushing and screening and conveyor transfer points (with and without wet suppression) are based on limited testing at granite plants only.

The EPA document, *Source Assessment: Crushed Limestone, State of the Art*, (EPA-600/2-78-004e), provides emission factors for particulate matter (PM) and respirable particulate (PM10). These material-specific emission factors are provided for the following process and non-process operations:

- Drilling
- Blasting
- Loading at the quarry
- Vehicular traffic on unpaved plant roads
- Primary crushing
- Primary screening
- Secondary crushing
- Secondary screening
- Conveying
- Stockpiles (determined to be negligible)
- Unloading at stockpiles (determined to be negligible)

These emission factors are lower than the emission factors in the current AP-42, and are assumed to be more appropriate because the material moisture contents at Florida limestone processing plants are much higher than the material moisture contents at the AP-42 study plants. The use of these emission factors can simplify permitting and compliance activities, as all emissions are related to tons of material processed.

The use of “wet-suppression” emission factors is discussed in Chapter 11.19.2 and in the Background Document for this chapter. According to the chapter, “wet material contains 1.5 to 4 percent water or more”. The Background Document states that moisture contents  $\geq 1.5\%$  indicates controlled emissions. As the material moisture contents expected at this plant will generally be 10-15%, the use of “wet-suppression” emissions factors would be justified, if using AP-42.

**Response: [Question 10 - continued]**

Copies of the cover and pertinent pages of the EPA document, *Source Assessment: Crushed Limestone, State of the Art*, (EPA-600/2-78-004e), are included as Attachment 3.

- 11. The construction permit application fee submitted (\$250) was based on emissions of <5 tons per year, however, the emissions listed for PM are given as 17.5 tons per year (fee = \$1000). After taking into account the responses to the above questions, recalculate the potential annual emissions and submit the proper fee, if appropriate.**

**Response:**

Annual production will remain 5,000,000 TPY, and estimated annual PM emissions will remain 17.5 TPY. However, air construction permit fees have historically been based only on process-related stack emissions.

This approach is supported by the Instructions for the Long Form, which establish a distinction between *Potential Emissions* and *Estimated Emissions*, as follows:

- **Potential Emissions** - This field must be completed for each pollutant required to be reported unless the emissions unit addressed in this application represents fugitive emissions only.
- **Range of Estimated Fugitive/Other Emissions** - If the emissions unit addressed in this section represents fugitive emissions only, or has both stack and fugitive emissions, check the appropriate range (1-3) of its estimated fugitive emissions, as defined below, or enter a numerical estimate of the range of its emissions in tons per year of the pollutant identified in Field 1. A numerical estimate must be entered if the facility-wide fugitive emissions would exceed 100 times the minimum reporting threshold of the pollutant of interest.

Permit fees or permit conditions based on estimated fugitive emissions would not be appropriate, as these limitations would not be enforceable as a practical matter.

If further questions arise, please do not hesitate to contact me.

Sincerely,



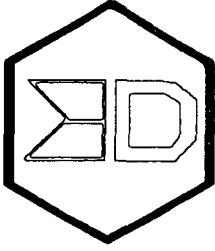
Steven C. Cullen, P.E.  
Koogler & Associates

enclosure

copy to: Chris Hertz (Dixie)

## **ATTACHMENT 1**

### **Facility Plot Plan/Plant Reconfiguration Details**



DIXIE LIME AND STONE COMPANY

September 13, 1995

Koogler and Associates  
4014 NW Thirteenth Street  
Gainesville, FL 32609

Attention: Steve Cullen

RE: Sumterville Mine

Dear Steve:

I am enclosing an aerial of our Sumterville mine showing the locations as requested in your memo dated September 8, 1995. Pits A, B & C will be mined out in that order and we would continue around staying next to the last pit mined. Each twenty acre pit would take approximately two to three years, depending on the market, to mine out.

The Cedar Rapids crusher would be moved approximately once a week, but would only be moved within each twenty acre pit until that pit is finished. At this time, the Hewitt Rapids crusher is inoperable. We would not be able to run it for any kind of testing. The PowerScreen is used only when we need to make the smaller rock and this stays in the vicinity of the Cedar Rapids Crusher at this time. All limerock roads are watered as necessary.

I have shown all the property lines that are within the scope of the aerial. I am enclosing a copy from the Sumter County Plat Book to show the balance of the property.

All other information you have provided appears to be satisfactory. If you need more information, please feel free to contact me.

Sincerely,

DIXIE LIME AND STONE COMPANY

Christine Hertz  
Administrative Assistant

Enclosure



SEE PAGE 34

TWP. 19S.-RNG. 23E.

TWP. 20S.-RNG. 22E.

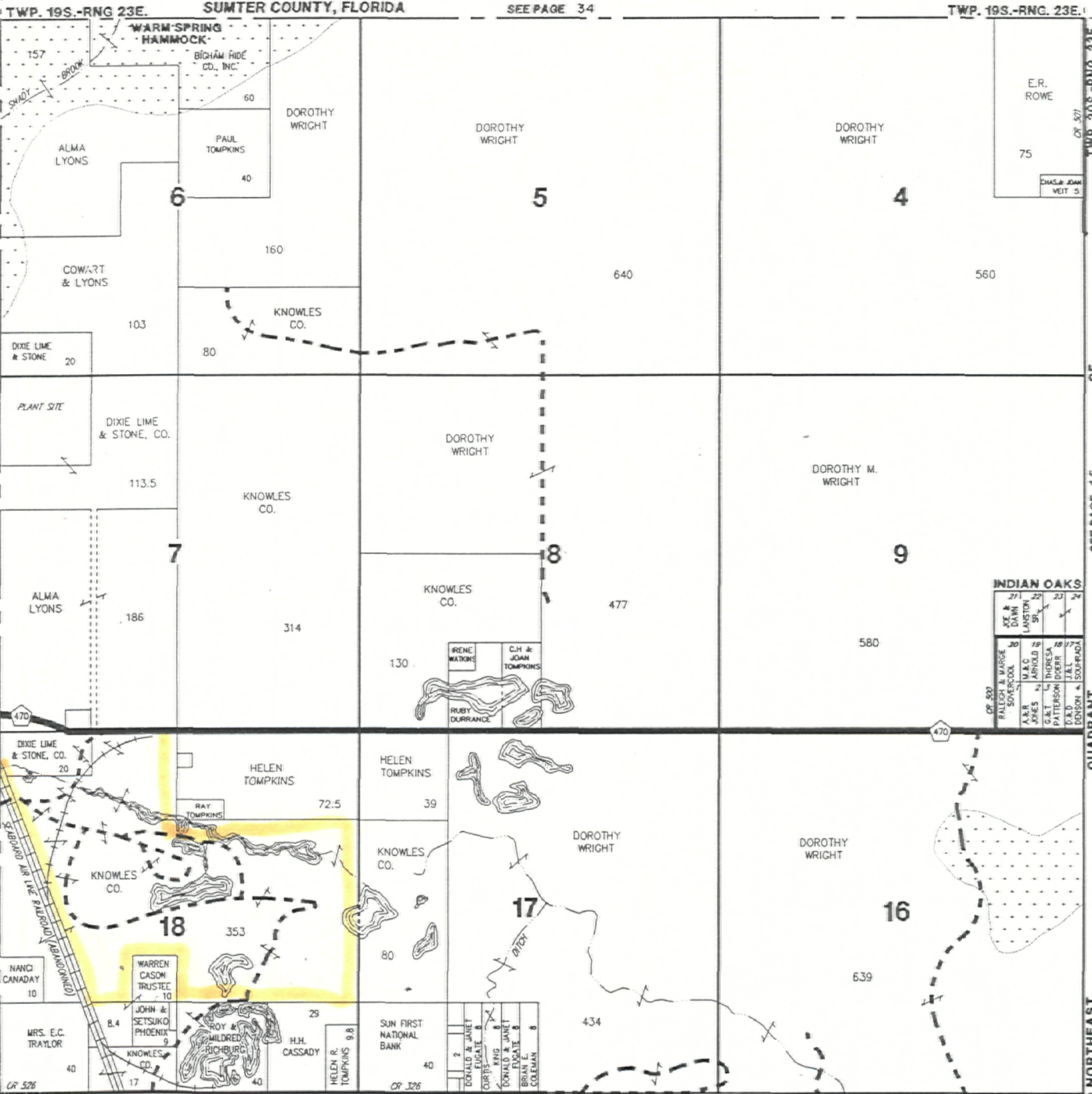
TWP. 20S.-RNG. 23E.

SEE PAGE 41

SEE PAGE 45

TWP. 20S.-RNG. 22E.

TWP. 20S.-RNG. 23E.



INDIAN OAKS

|             |             |             |             |
|-------------|-------------|-------------|-------------|
| 21          | 22          | 23          | 24          |
| JOE DANN    | LAUSTON     |             |             |
| 20          | 19          | 18          | 17          |
| W. W. JONES | W. W. JONES | W. W. JONES | W. W. JONES |
| J. W. JONES | J. W. JONES | J. W. JONES | J. W. JONES |
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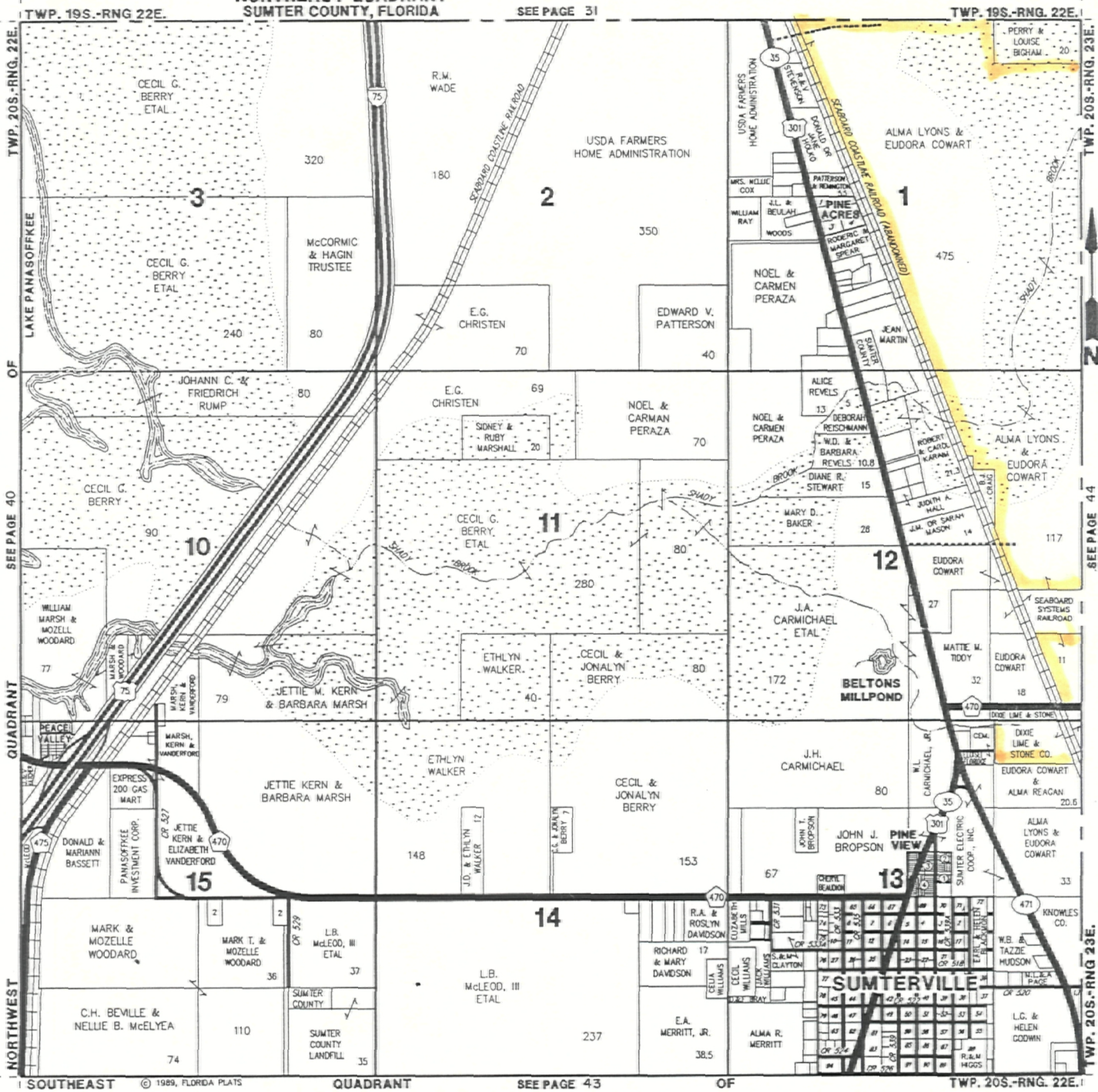
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|---------------|----------------------|
| IRENE WATKINS | C.H. & JOAN TOMPKINS |
| RUBY DURRANCE |                      |

|                   |                         |
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| HELEN R. TOMPKINS | SUN FIRST NATIONAL BANK |
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TWP. 20S. - RING. 22E.

NORTHEAST QUADRANT  
SUMTER COUNTY, FLORIDA



SOUTHEAST OF SEE PAGE 43 QUADRANT OF TWP. 20S. - RING. 22E.

**STEVE COLYER**  
**REALTY**

AND Licensed Real Estate Broker

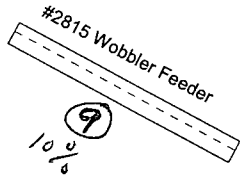
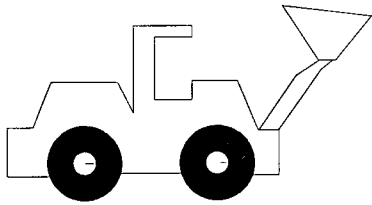
**Colyer & Sons Auctioneering, Inc.**  
**793-6584**

AU. 0149 AB. 051

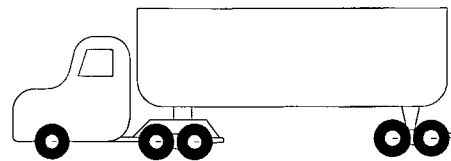
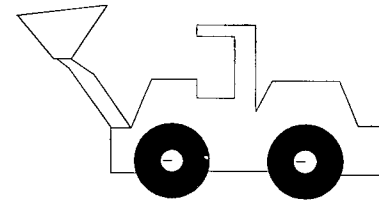
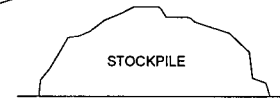
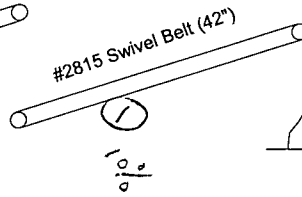
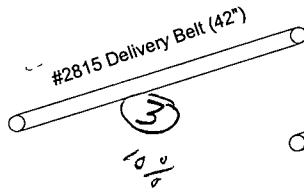
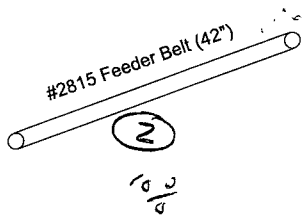
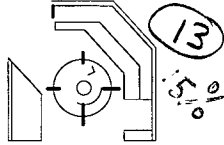
STEVEN L. COLYER, President P. O. Box 765 • West Highway 470  
Fax: 904/ 568-0426 Lake Panasoffkee, Florida 33538

## **ATTACHMENT 2**

### **Revised Process Flow Diagrams**

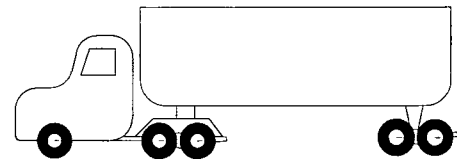
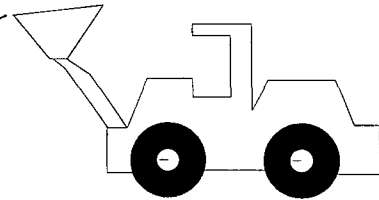
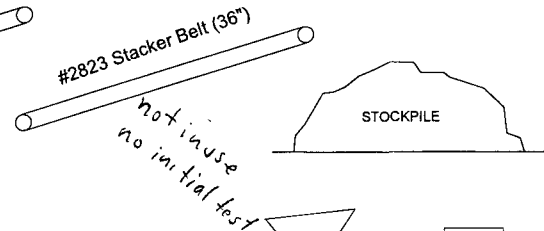
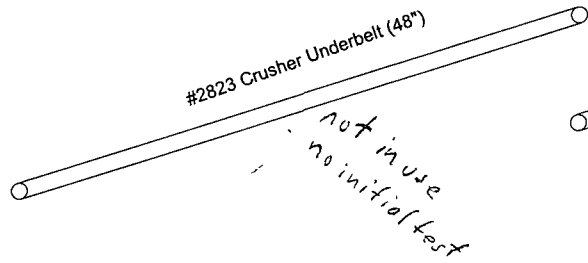
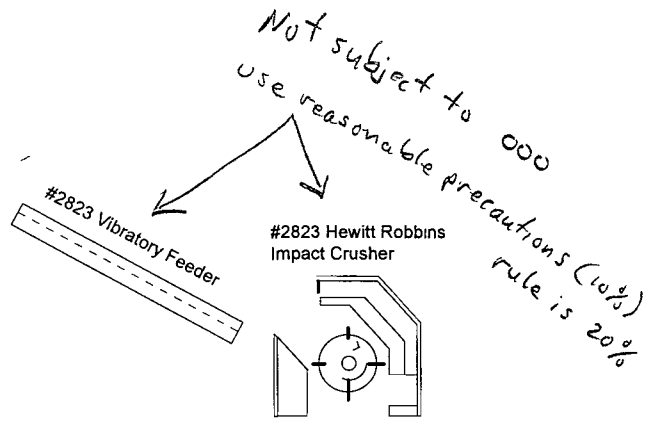
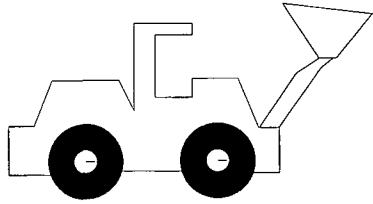


#2815 Cedar Rapids Impact Crusher



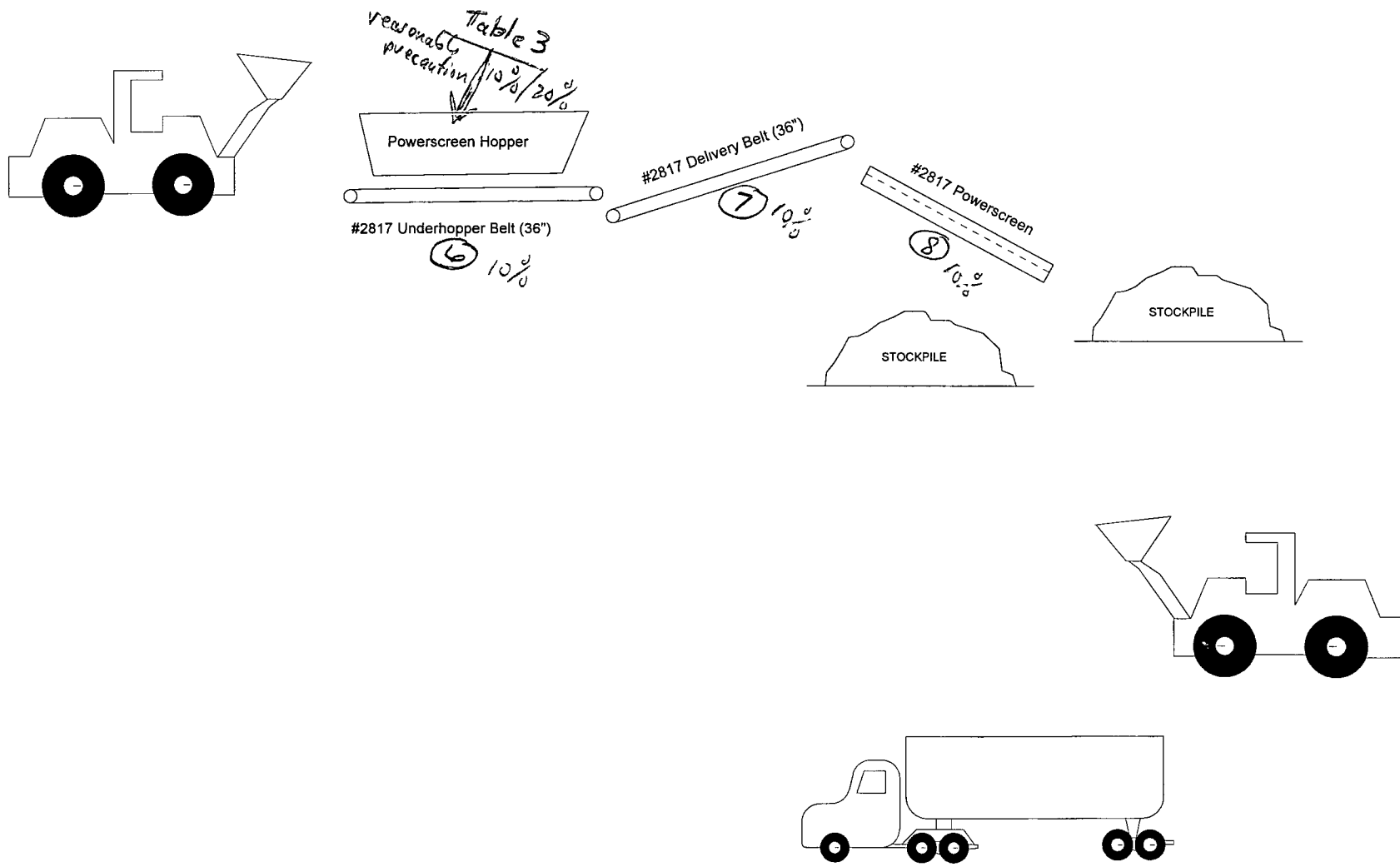
PROCESS FLOW DIAGRAM  
CEDAR RAPIDS CRUSHER

DIXIE LIME & STONE COMPANY  
SUMTERVILLE MINE



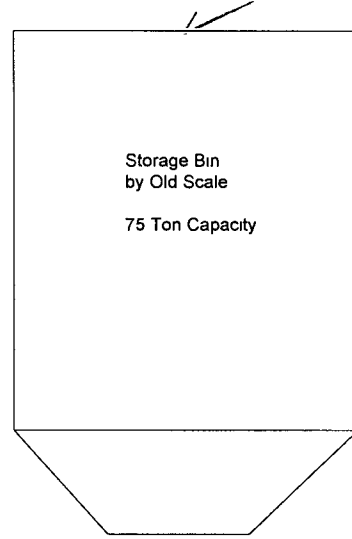
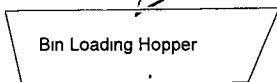
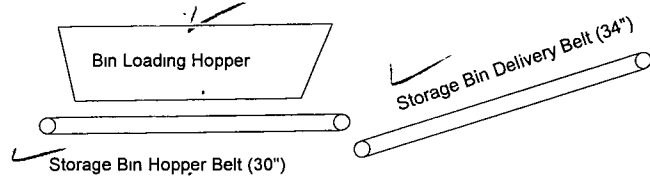
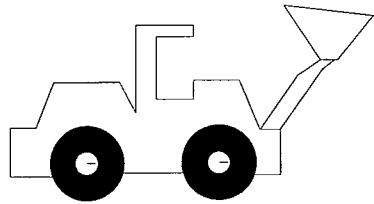
PROCESS FLOW DIAGRAM  
HEWITT ROBBINS CRUSHER

DIXIE LIME & STONE COMPANY  
SUMTERVILLE MINE

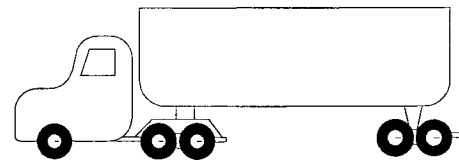


PROCESS FLOW DIAGRAM  
 POWERSCREEN

DIXIE LIME & STONE COMPANY  
 SUMTERVILLE MINE



*reasonable precaution  
15% rule: 20%*



PROCESS FLOW DIAGRAM  
STORAGE BIN

DIXIE LIME & STONE COMPANY  
SUMTERVILLE MINE

## **ATTACHMENT 3**

**Pertinent Pages: Document EPA-600/2-78-004e**

E.P. 1.23/2:600/2

Office of Environmental Protection Agency  
8-004e

Industrial Environmental Research Laboratory Cincinnati OH 45268

EPA-600/2-78-004e  
April 1978

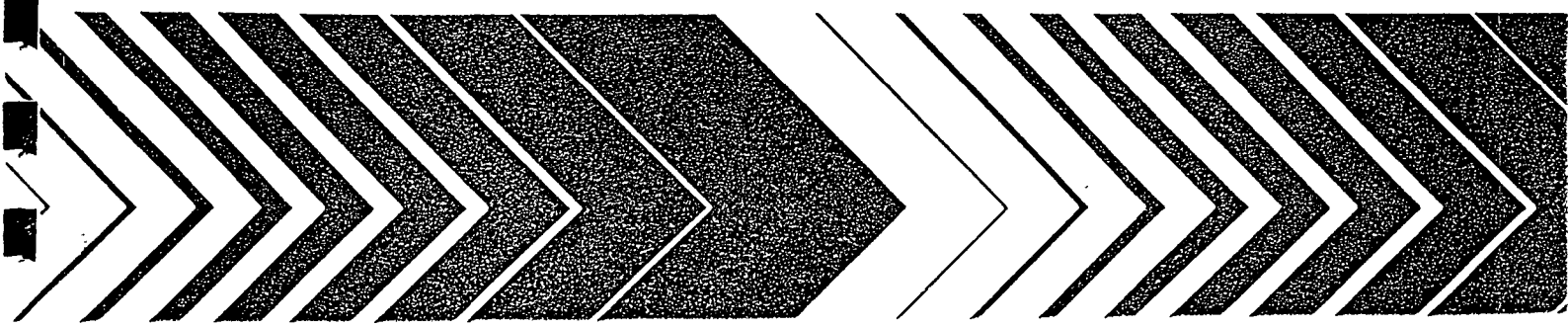


Research and Development



# Source Assessment: Crushed Limestone, State of the Art

## Environmental Protection Technology Series





## ABSTRACT

This report describes a study of air pollutants emitted by the crushed limestone industry. The potential environmental effect of the source was evaluated using source severity (defined as the ratio of the maximum ground level concentration of an emission to a hazard factor).

In 1972, there were 1,374 crushed limestone processing plants operating 2,904 quarries in the United States. The representative crushed limestone plant produces 450 metric tons/hr and emits particulates from several operations, including drilling, blasting, transport on unpaved roads, crushing, screening, conveying, and stockpiling. The emission factor for total particulates emitted from the representative plant is 3.5 g/metric ton, and vehicular movement on unpaved roads contributes 66% of the overall emissions. Approximately 38% of the respirable particulate emissions originate from vehicular movement on unpaved roads, and the respirable particulate emission factor is 0.6 g/metric ton. The hazardous constituent in the dust is free silica (1.2% by weight), prolonged exposure to which may result in the development of a pulmonary fibrosis known as silicosis. Nitrogen oxides and carbon monoxide are emitted by the blasting operation, but the emission factors (and source severities) for these emissions are small in comparison to those of particulate emissions.

The maximum source severity for particulates is calculated as 0.032. The affected population is defined as the population living beyond the plant boundary where the severity is 0.1 or greater. The population affected by a severity of 0.1 due to total particulate emissions is thus zero. Similarly, the source severity due to free silica in the respirable particulate emissions is 0.12, and the population affected by a severity of 0.1 is 11 persons. The emissions from the crushed limestone industry (as well as the output of the industry) are estimated to be the same in 1978 as they were in 1972.

This report was submitted in partial fulfillment of Contract 68-02-1874 by Monsanto Research Corporation under the sponsorship of the U.S. Environmental Protection Agency. The study covers the period August 1975 to February 1976.

TABLE 1. MASS EMISSIONS FROM VARIOUS OPERATIONS IN THE CRUSHED LIMESTONE INDUSTRY

| Unit operation                    | Total particulates                |                      |                     |   | Free silica           |                      |   |
|-----------------------------------|-----------------------------------|----------------------|---------------------|---|-----------------------|----------------------|---|
|                                   | Emission factors,<br>g/metric ton | U.S. total,<br>kg/yr | Percent<br>of total | Severity for<br>representative<br>plant | Percent<br>respirable | U.S. total,<br>kg/yr | Severity for<br>representative<br>plant |
| Drilling                          | 0.11                              | 67,000               | 3                   | _a                                      | 10 .011               | 80                   | _a                                      |
| Blasting                          | 0.075                             | 46,000               | 2                   | _a                                      | 17 .01275             | 100                  | _a                                      |
| Loading at<br>the quarry          | 0.0015                            | 9,000                | _a                  | _a                                      | 0                     | 0                    | 0                                       |
| Vehicular<br>traffic <sup>b</sup> | 2.3                               | 1,403,000            | 66                  | 0.021                                   | 10 .23                | 1,680                | 0.05                                    |
| Primary<br>crushing               | 0.56                              | 341,000              | 16                  | 0.005                                   | 30 .168               | 1,240                | 0.04                                    |
| Primary<br>screening              | 0.0016                            | 9,800                | _a                  | _a                                      | 30 .00048             | _a                   | _a                                      |
| Secondary<br>crushing             | 0.14                              | 85,000               | 4                   | 0.001                                   | 53 .0742              | 560                  | 0.02                                    |
| Screening<br>screening            | 0.0009                            | 5,500                | _a                  | _a                                      | 53 .000477            | _a                   | _a                                      |
| Conveying                         | 0.32                              | 195,000              | 9                   | 0.003                                   | 30 .096               | 700                  | 0.03                                    |
| Stockpiles                        | _a                                | _a                   | _a                  | _a                                      | _a                    | _a                   | _a                                      |
| Unloading at<br>stockpiles        | _a                                | _a                   | _a                  | _a                                      | _a                    | _a                   | _a                                      |
| TOTAL <sup>c</sup>                | 3.5                               | 2,135,000            | 100                 | 0.032                                   | 17                    | 4,360                | 0.14                                    |

<sup>a</sup> Negligible.

<sup>b</sup> On unpaved road between quarry and plant.

<sup>c</sup> Total may not add to figure shown due to rounding.