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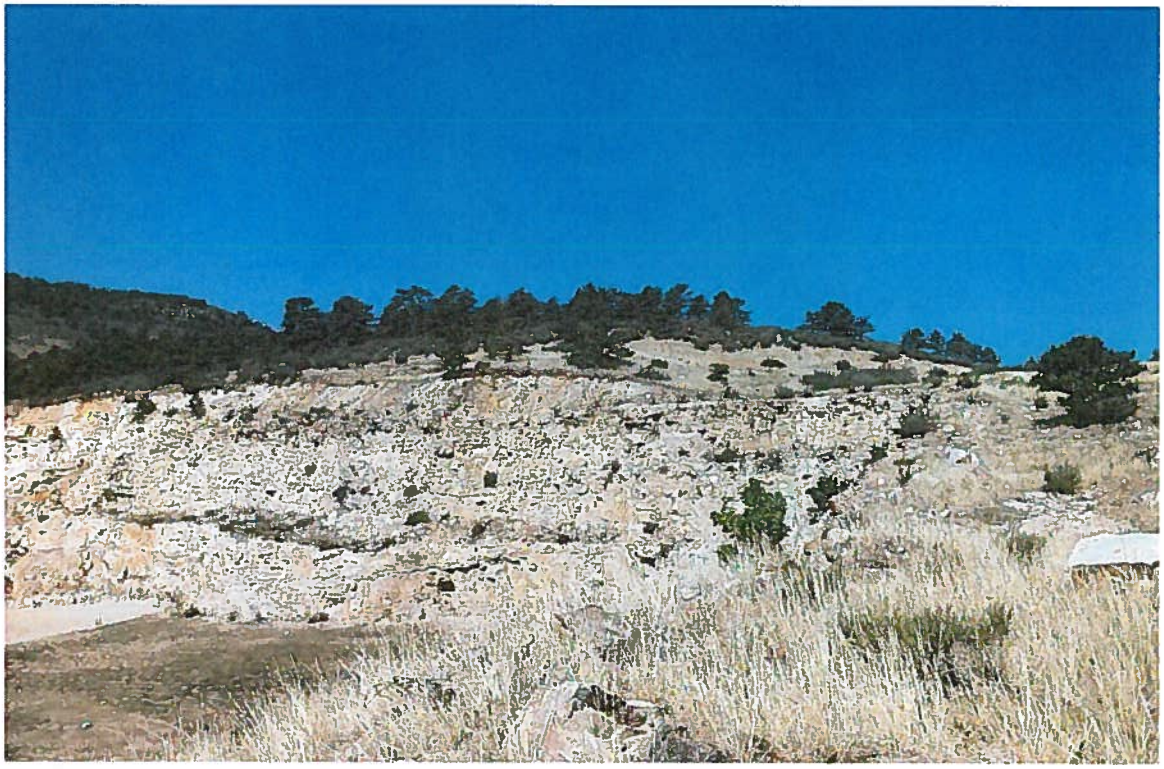
DIVISION OF RECLAMATION
MINING AND SAFETY

CEMEX SANDSTONE QUARRY
RECLAMATION PERMIT M-1977-361

REGULAR (112) PERMIT CONVERSION

CEMEX CONSTRUCTION MATERIALS SOUTH LLC

Submitted to:
The Colorado Division of Reclamation, Mining and Safety



August 30, 2013

STATE OF COLORADO

DIVISION OF RECLAMATION, MINING AND SAFETY
Department of Natural Resources

1313 Sherman St., Room 215
Denver, Colorado 80203
Phone: (303) 866-3567
FAX: (303) 832-8106

COLORADO DIVISION OF RECLAMATION MINING & SAFETY

CONSTRUCTION MATERIALS
REGULAR (112) OPERATION
RECLAMATION PERMIT APPLICATION FORM

CHECK ONE: ☑ **There is a File Number Already Assigned to this Operation**

Permit # M -____-____-___ (Please reference the file number currently assigned to this operation)

☐ New Application (Rule 1.4.5) ☐ Amendment Application (Rule 1.10)
☑ Conversion Application (Rule 1.11)

Permit # M -1977-361-____ (provide for Amendments and Conversions of existing permits)

The application for a Construction Materials Regular 112 Operation Reclamation Permit contains three major parts: (1) the application form; (2) Exhibits A-S, Addendum 1, any sections of Exhibit 6.5 (Geotechnical Stability Exhibit; and (3) the application fee. When you submit your application, be sure to include one (1) complete signed and notarized **ORIGINAL** and one (1) copy of the completed application form, two (2) copies of Exhibits A-S, Addendum 1, appropriate sections of 6.5 (Geotechnical Stability Exhibit, and a check for the application fee described under Section (4) below. Exhibits should **NOT** be bound or in a 3-ring binder; maps should be folded to 8 1/2" X 11" or 8 1/2" X 14" size. To expedite processing, please provide the information in the format and order described in this form.

GENERAL OPERATION INFORMATION

Type or print clearly, in the space provided, ALL information requested below.

1. **Applicant/operator or company name (name to be used on permit):** Cemex Construction Materials South LLC
   - 1.1 Type of organization (corporation, partnership, etc.): LLC

2. **Operation name (pit, mine or site name):** Cemex Sandstone Quarry

3. **Permitted acreage (new or existing site):** <10 permitted acres
   - 3.1 Change in acreage (+) 6 acres
   - 3.2 Total acreage in Permit area 16 acres

4. **Fees:**
   - 4.1 New Application $2,696.00 application fee
   - 4.2 New Quarry Application $3,342.00 quarry application
   - 4.4 Amendment Fee $2,229.00 amendment fee
   - 4.5 Conversion to 112 operation (set by statute) $2,696.00 conversion fee

5. **Primary commoditie(s) to be mined:** Sandstone
   - 5.1 Incidental commoditie(s) to be mined: 1. ____ - ____ lbs/Tons/yr 2. ____ / ____ lbs/Tons/yr
     3. ____ / ____ lbs/Tons/yr 4. ____ / ____ lbs/Tons/yr 5. ____ / ____ lbs/Tons/yr
   - 5.2 Anticipated end use of primary commoditie(s) to be mined: Cement
   - 5.3 Anticipated end use of incidental commoditie(s) to be mined: n/a

6. **Name of owner of subsurface rights of affected land:** Cemex Construction Materials South LLC
   If 2 or more owners, "refer to Exhibit O".

7. **Name of owner of surface of affected land:** Cemex Construction Materials South LLC

8. **Type of mining operation:** ☑ Surface ☐ Underground

9. **Location Information:** The center of the area where the majority of mining will occur:

   COUNTY: Boulder

   PRINCIPAL MERIDIAN (check one): ☑ 6th (Colorado) ☐ 10th (New Mexico) ☐ Ute

   SECTION (write number): S 20

   TOWNSHIP (write number and check direction): T 3 ☑ North ☐ South

   RANGE (write number and check direction): R 70 ☐ East ☑ West

   QUARTER SECTION (check one): ☐ NE ☐ NW ☐ SE ☑ SW

   QUARTER/QUARTER SECTION (check one): ☑ NE ☐ NW ☐ SE ☐ SW

   GENERAL DESCRIPTION: (the number of miles and direction from the nearest town and the approximate elevation):
   1/2 mile southeast of Lyons, CO at an elevation of 5,300 - 5,500 ft

10. **Primary Mine Entrance Location** (report in either Latitude/Longitude **OR** UTM):

    Latitude/Longitude:

    Example: (N) 39° 44' 12.98"
    (W) 104° 59' 3.87"

    Latitude (N): deg _____ min _____ sec ____._____ (2 decimal places)

    Longitude (W): deg _____ min _____ sec ____._____ (2 decimal places)

    OR

    Example: (N) 39.73691°
    (W) -104.98449°

    Latitude (N) _____._____ (5 decimal places)

    Longitude(W) _____._____ (5 decimal places)

    OR

    Universal Tranverse Mercator (UTM)

    Example: 201336.3 E NAD27 Zone 13
    4398351.2 N

    UTM Datum (specify NAD27, NAD83 or WGS 84) Nad 83 Zone 13

    Easting 478354.896

    Northing 4451061.829

11. **Correspondence Information**:

APPLICANT/OPERATOR (name, address, and phone of name to be used on permit)

Contact's Name: **Bradley S. Wilson** Title: Plant Manager

Company Name: Cemex Construction Materials South LLC

Street/P.O. Box: 5134 Ute Highway P.O. Box: _____

City: Lyons

State: Colorado Zip Code: 80540

Telephone Number: (303) - 823-2100

Fax Number: (303) - 823-2199

PERMITTING CONTACT (if different from applicant/operator above)

Contact's Name: Patrick Fischer Title: Quarry Manager

Company Name: Cemex Construction Materials South LLC

Street/P.O. Box: 5134 Ute Highway P.O. Box: _____

City: Lyons

State: Colorado Zip Code: 80540

Telephone Number: (303) - 823-2100

Fax Number: (303) - 823-2199

INSPECTION CONTACT

Contact's Name: Patrick R. Fischer Title: Quarry Manager

Company Name: See above

Street/P.O. Box: _____ P.O. Box: _____

City: _____

State: _____ Zip Code: _____

Telephone Number: (_____) - _____

Fax Number: (_____) - _____

CC: STATE OR FEDERAL LANDOWNER (if any)

Agency: _____

Street: _____

City: _____

State: _____ Zip Code: _____

Telephone Number: (_____) - _____

CC: STATE OR FEDERAL LANDOWNER (if any)

Agency: _____

Street: _____

City: _____

State: _____ Zip Code: _____

Telephone Number: (_____) - _____

12. **Primary future (Post-mining) land use (check one):**

☐ Cropland(CR)	☐ Pastureland(PL)	☐ General Agriculture(GA)
☐ Rangeland(RL)	☐ Forestry(FR)	☑ Wildlife Habitat(WL)
☐ Residential(RS)	☐ Recreation(RC)	☐ Industrial/Commercial(IC)
☐ Developed Water Resources(WR)		☐ Solid Waste Disposal(WD)

13. **Primary present land use (check one):**

☐ Cropland(CR)	☐ Pastureland(PL)	☐ General Agriculture(GA)
☐ Rangeland(RL)	☐ Forestry(FR)	☑ Wildlife Habitat(WL)
☐ Residential(RS)	☐ Recreation(RC)	☑ Industrial/Commercial(IC)
☐ Developed Water Resources(WR)		

14. **Method of Mining**: Briefly explain mining method (e.g. truck/shovel): Drill/Blast

15. **On Site Processing**: ☐ Crushing/Screening

13.1 Briefly explain mining method (e.g. truck/shovel): OFF SITE PROCESSING

List any designated chemicals or acid-producing materials to be used or stored within permit area: n/a

16. **Description of Amendment or Conversion**:

If you are amending or converting an existing operation, provide a brief narrative describing the proposed change(s).

Conversion of Limited Impact (110) permit to Regular (112) permit to expand the current affected area to achieve reclamation goals.

Maps and Exhibits:

Two (2) complete, unbound application packages must be submitted. One complete application package consists of a signed application form and the set of maps and exhibits referenced below as Exhibits A-S, Addendum 1, and the Geotechnical Stability Exhibit. Each exhibit within the application must be presented as a separate section. Begin each exhibit on a new page. Pages should be numbered consecutively for ease of reference. If separate documents are used as appendices, please reference these by name in the exhibit.

With each of the two (2) signed application forms, you must submit a corresponding set of the maps and exhibits as described in the following references to Rule 6.4, 6.5, and 1.6.2(1)(b):

EXHIBIT A	Legal Description
EXHIBIT B	Index Map
EXHIBIT C	Pre-Mining and Mining Plan Map(s) of Affected Lands
EXHIBIT D	Mining Plan
EXHIBIT E	Reclamation Plan
EXHIBIT F	Reclamation Plan Map
EXHIBIT G	Water Information
EXHIBIT H	Wildlife Information
EXHIBIT I	Soils Information
EXHIBIT J	Vegetation Information
EXHIBIT K	Climate Information
EXHIBIT L	Reclamation Costs
EXHIBIT M	Other Permits and Licenses
EXHIBIT N	Source of Legal Right-To-Enter
EXHIBIT O	Owners of Record of Affected Land (Surface Area) and Owners of Substance to be Mined
EXHIBIT P	Municipalities Within Two Miles
EXHIBIT Q	Proof of Mailing of Notices to County Commissioners and Conservation District
EXHIBIT R	Proof of Filing with County Clerk or Recorder
EXHIBIT S	Permanent Man-Made Structures
Rule 1.6.2(1)(b)	ADDENDUM 1 - Notice Requirements (sample enclosed)
Rule 6.5	Geotechnical Stability Exhibit (any required sections)

The instructions for preparing Exhibits A-S, Addendum 1, and Geotechnical Stability Exhibit are specified under Rule 6.4 and 6.5 and Rule 1.6.2(1)(b) of the Rules and Regulations. If you have any questions on preparing the Exhibits or content of the information required, or would like to schedule a pre-application meeting you may contact the Office at 303-866-3567.

Responsibilities as a Permittee:

Upon application approval and permit issuance, this application becomes a legally binding document. Therefore, there are a number of important requirements which you, as a permittee, should fully understand. These requirements are listed below. Please read and initial each requirement, in the space provided, to acknowledge that you understand your obligations. If you do not understand these obligations then please contact this Office for a full explanation.

BW 1. Your obligation to reclaim the site is not limited to the amount of the financial warranty. You assume legal liability for all reasonable expenses which the Board or the Office may incur to reclaim the affected lands associated with your mining operation in the event your permit is revoked and financial warranty is forfeited;

BW 2. The Board may suspend or revoke this permit, or assess a civil penalty, upon a finding that the permittee violated the terms or conditions of this permit, the Act, the Mineral Rules and Regulations, or that information contained in the application or your permit misrepresent important material facts;

BW 3. If your mining and reclamation operations affect areas beyond the boundaries of an approved permit boundary, substantial civil penalties, to you as permittee can result;

BW 4. Any modification to the approved mining and reclamation plan from those described in your approved application requires you to submit a permit modification and obtain approval from the Board or Office;

BW 5. It is your responsibility to notify the Office of any changes in your address or phone number;

BW 6. Upon permit issuance and prior to beginning on-site mining activity, you must post a sign at the entrance of the mine site, which shall be clearly visible from the access road, with the following information (Rule 3.1.12):

a. the name of the operator;

b. a statement that a reclamation permit for the operation has been issued by the Colorado Mined Land Reclamation Board; and,

c. the permit number.

BW 7. The boundaries of the permit boundary area must be marked by monuments or other markers that are clearly visible and adequate to delineate such boundaries prior to site disturbance.

BW 8. It is a provision of this permit that the operations will be conducted in accordance with the terms and conditions listed in your application, as well as with the provisions of the Act and the Construction Material Rules and Regulations in effect at the time the permit is issued.

BW 9. Annually, on the anniversary date of permit issuance, you must submit an annual fee as specified by Statute, and an annual report which includes a map describing the acreage affected and the acreage reclaimed to date (if there are changes from the previous year), any monitoring required by the Reclamation Plan to be submitted annually on the anniversary date of the permit approval. Annual fees are for the previous year a permit is held. For example, a permit with the anniversary date of July 1, 1995, the annual fee is for the period of July 1, 1994 through June 30, 1995. Failure to submit your annual fee and report by the permit anniversary date may result in a civil penalty, revocation of your permit, and forfeiture of your financial warranty. It is your responsibility, as the permittee, to continue to pay your annual fee to the Office until the Board releases you from your total reclamation responsibility.

BW 10. For joint venture/partnership operators: the signing representative is authorized to sign this document and a power of attorney (provided by the partner(s)) authorizing the signature of the representative is attached to this application.

NOTE TO COMMENTORS/OBJECTORS:

It is likely there will be additions, changes, and deletions to this document prior to final decision by the Office. Therefore, if you have any comments or concerns you must contact the applicant or the Office prior to the decision date so that you will know what changes may have been made to the application document.

The Office is not allowed to consider comments, unless they are written, and received prior to the end of the public comment period. You should contact the applicant for the final date of the public comment period.

If you have questions about the Mined Land Reclamation Board and Office's review and decision or appeals process, you may contact the Office at (303) 866-3567.

Certification:

As an authorized representative of the applicant, I hereby certify that the operation described has met the minimum requirements of the following terms and conditions:

1. To the best of my knowledge, all significant, valuable and permanent man-made structure(s) in existence at the time this application is filed, and located within 200 feet of the proposed affected area have been identified in this application (Section 34-32.5-115(4)(e), C.R.S.).

2. No mining operation will be located on lands where such operations are prohibited by law (Section 34-32.5-115(4)(f), C.R.S.;

3. As the applicant/operator, I do not have any extraction/exploration operations in the State of Colorado currently in violation of the provisions of the Colorado Land Reclamation Act for the Extraction of Construction Materials (Section 34-32.5-120, C.R.S.) as determined through a Board finding.

4. I understand that statements in the application are being made under penalty of perjury and that false statements made herein are punishable as a Class 1 misdemeanor pursuant to Section 18-8-503, C.R.S.

This form has been approved by the Mined Land Reclamation Board pursuant to section 34-32.5-112,C.R.S., of the Colorado Land Reclamation Act for the Extraction of Construction Materials. Any alteration or modification of this form shall result in voiding any permit issued on the altered or modified form and subject the operator to cease and desist orders and civil penalties for operating without a permit pursuant to section 34-32.5-123, C.R.S.

Signed and dated this 29TH day of August, 2013.

CEMEX CONSTRUCTION MATERIALS SOUTH, LLC If Corporation Attest (Seal)
Applicant/Operator or Company Name

Signed: Bradley S Wilson

Title: PLANT MANAGER

Signed: _____
Corporate Secretary or Equivalent
Town/City/County Clerk

State of Colorado)
) ss.
County of Boulder)

The foregoing instrument was acknowledged before me this 29th day of August, 2013, by Bradley S Wilson as Plant Manager of Cemex Construction Materials South LLC

Marjorie Littlejohn Jackson
Notary Public

My Commission expires: 8/31/2017

SIGNATURES MUST BE IN BLUE INK

You must post sufficient Notices at the location of the proposed mine site to clearly identify the site as the location of a

NOTICE

This site is the location of construction materials mining operation. Cemex Construction Materials South LLC (Cemex) (5134 Ute Highway, Lyons, Colorado 80540, 303-823-2100), has filed an application to convert its Limited Impact (110) Mining Operation Reclamation Permit (M-1977-361) to a Regular Mining Operation Reclamation Permit with the Colorado Mined Land Reclamation Board. Anyone wishing to comment on the application may view the application at the Boulder County Clerk and Recorder's office (1750 33rd St, Boulder, CO 80301) and should send comments prior to the end of the public comment period to the Division of Reclamation, Mining and Safety, 1313 Sherman St, Rm 215 Denver, CO 80203.

Certification:

I, Bradley S. Wilson, hereby certify that I posted a sign containing the above notice for the proposed permit area known as the Cemex Sandstone Quarry, on August 29, 2013.

Signature Bradley S. Wilson

Date August 29, 2013

Division of Reclamation, Mining, and Safety

Fee Receipt for M1977361

CEMEX, Inc.

000000000

Receipt #: 15898
Date: 09/04/2013
Permit: M1977361

Payment Method	Revenue Code	Fee Description/Notes	Amount
22657533	4300-04	Minerals Conversions M-1977-361, cmb	$2,696.00
		Receipt Total:	**$2,696.00**

Cemex Sandstone Quarry
Permit M-1977-361
Section 1 – Introduction

1.0 Introduction & Background

The Cemex Sandstone Quarry has been previously permitted under the name Cemex Silica Quarry, but will be hereafter referred to as the Cemex Sandstone Quarry (Sandstone Quarry). The Sandstone Quarry is an active silica sandstone mining operation wholly owned and operated by Cemex Construction Materials South LLC (Cemex). The Sandstone Quarry is located ½ mile southeast of Lyons, Colorado in Boulder County.

The existing permit, Mining and Reclamation Permit (M-1977-361), is a Limited Impact (110) Mining and Reclamation Permit that was initially approved by the Colorado Mined Land Reclamation Board (Board) in 1977 after passage of the Colorado Mined Land Reclamation Act (CMLRA). With this application, Cemex seeks to convert this Limited Impact (110) Mining and Reclamation Permit to a Regular (112) Mining and Reclamation Permit. While the planned mining disturbance will not exceed the 10 acre maximum permitted under a Limited Impact operation, it will be necessary to disturb additional acreage in order to achieve Cemex's reclamation goals.

The sandstone that is mined from the Sandstone Quarry is a small, but critical, component of the cement products that Cemex produces at the nearby Lyons Cement Plant. Over the next 10 years, approximately 200,000 tons of sandstone will be mined from the Sandstone Quarry to complement the anticipated production of the Cemex Dowe Flats Quarry where the Lyons Cement Plant's limestone is mined. At the end of this period, the Sandstone Quarry will be reclaimed per the Reclamation Plan included in this permit conversion application (Exhibit E). To achieve the desired topography, drainage, and habitat for the post-mining land use it will be necessary to disturb an additional six acres. The existing permit designates rangeland as the post-mining land use; however, this designation will be changed to wildlife habitat to better align with the land use on adjacent properties.

1.1 Purpose of Permit Conversion

The purpose of this permit conversion is to increase the affected land boundary beyond the 10 acres allowed under a Limited Impact (110) Mining and Reclamation Permit. This will to allow sufficient area for reclamation based on current reclamation plans. Additionally, the permit conversion will provide updated information based on the current status of planning and engineering activities. The existing permit was initially approved by the Board in 1977 and has been modified by one technical revision in 1998.

This conversion represents a 6 acre increase in the acreage of affected land from the current 9.99 acres to 16 acres. This augmented affected land boundary will encompass sufficient land to meet Cemex's reclamation goals. However, it should be recognized that a small operational buffer has been included within this boundary and not all lands included in the proposed affected area boundary will necessarily be targeted for disturbance.

All Exhibits included in the existing permit have been reviewed and updated as necessary as specified in Rule 6.4 to meet the requirements of a Regular (112) Mining and Reclamation Permit and reflect current conditions and planned mining and reclamation activities. These updates include new Mining (Exhibit D) and Reclamation Plans (Exhibit E) and a Geotechnical Stability Assessment (Exhibit 6.5) based on the current plans for the mine.

1.2 Proposed Affected Land Boundary

The requested permit conversion would adjust the affected land boundary to encompass 16 acres, as described in Exhibit A and illustrated on the Index Maps included in Exhibit B. Figure B-1 (Exhibit B) presents the Index Map with site topography and Figure B-2 (Exhibit B) is provided with a 2012 aerial photograph background. Cemex developed the proposed affected land boundary based on the area required to achieve reclamation goals and the current property boundary of the Sandstone Quarry. The

affected land boundary can be identified in the field by Cemex personnel and the Division of Reclamation, Mining and Safety (DRMS) on the north, east, and south sides by the property fence and /or the South Ledge Irrigation Ditch. It will be marked on the west side to facilitate field identification prior to expanding ground-disturbing activities toward the west.

The proposed adjustment to the affected land boundary is an administrative change to the existing permit, which will facilitate implementation of previously approved reclamation activities. This adjustment does not represent an expansion of planned mining operations or facilities.

1.3 Organization of Permit Conversion Application

This permit conversion application is organized according to the application requirements of the Construction Materials Mineral Rules and Regulations (CMMRR) §§1.11, 6.4, and 6.5. As provided by §1.11(3), this application is not required to duplicate information presented in previous submittals; however, most exhibits, including the Mining Plan (Exhibits C and D), the Reclamation Plan (Exhibits E and F) have been updated to incorporate information presented in previous submittals as well as addressing current practices and future plans. The Exhibits submitted with this conversion application supersede prior Cemex submittals and are intended to present the most current information and plans. Technical information presented in previous submittals and not duplicated herein, is incorporated by reference and remains part of the permit record.

New or updated information is included with the following permit conversion exhibits:

- **Exhibit A** presents a legal description of the proposed affected land, and a map of the affected land boundary in accordance with requirements of CMMRR §6.4.1;
- **Exhibit B** presents an updated Index Map;
- **Exhibit C** presents a series of updated Pre-Mining and Mining Plan Maps of the Affected Lands;
- **Exhibit D** presents an updated Mining Plan consistent with the current conditions and plans for future development;
- **Exhibit E** presents the revised reclamation plan consistent with current mine plans;
- **Exhibit F** provides reclamation plan maps;
- **Exhibit G** provides updated surface and ground water information;
- **Exhibit H** provides updated wildlife information;
- **Exhibit I** provides updated soil mapping and salvage depth information;
- **Exhibit J** provides updated vegetation mapping information;
- **Exhibit K** provides updated climate information;
- **Exhibit L** presents the updated reclamation cost estimate;
- **Exhibit M** provides a list of other permits or licenses that Cemex holds that are necessary for continued production at the Sandstone Quarry;
- **Exhibit N** presents the source of Cemex' legal right to enter areas within the affected land boundary;
- **Exhibit O** presents the surface and subsurface owners of record within the affected land boundary;
- **Exhibit P** provides contact information for all municipalities within two mines of the affected land boundary;
- **Exhibit Q** presents proof of mailing of notices to county commissioners and the soil conservation district;
- **Exhibit R** provides proof of filing with County Clerks and Recorders;
- **Exhibit S** identifies permanent man-made structures within 200 ft of the affected land boundary; and
- The **Geotechnical Stability Exhibit** presents information regarding geotechnical stability of the Sandstone Quarry Open Pit and surrounding area.

1.4 Acknowledgements

Cemex would like to acknowledge the Cemex Lyons Plant personnel who have provided information incorporated into this Permit Conversion, as well as Habitat Management, Inc. and Engineering Analytics, Inc. for preparing the conversion application and associated exhibits, plans, and maps.

Cemex Sandstone Quarry
Permit M-1977-361
Acronym List

BMP	Best Management Practice
CDPHE	Colorado Department of Public Health and Environment
CDPS	Colorado Discharge Permit System
CMLRA	Colorado Mined Land Reclamation Act
CMMRR	Consturction Materials Mineral Rules & Regulations
CO	Colorado
DRMS	Division of Reclamation Mining and Safety
ft	Feet
H	Horizontal
LLC	Limited Liability Corporation
NAD	North American Datum
NRCS	Natural Resource Conservation Service
PLS	Pure Live Seeds
RL	Rangeland
SF	Square Feet
SWMP	Storm Water Management Plan
USDA	United States Department of Agriculture
UTM	Universal Transverse Mercator
V	Vertical
WL	Wildlife Habitat
WQCD	Water Quality Control Division

Cemex Sandstone Quarry
Permit M-1977-361
Exhibit A – Legal Description

A-1 Legal Description

The Cemex Sandstone Quarry is located 0.5 miles southeast of Lyons, Colorado in Boulder County. The site address is 12993 North Foothills Hwy, Longmont, CO 80503. The property is located in the SW ¼ of Section 20 in Township 3 North Range 70 West and includes a total of 35.78 acres according to the Boulder County Assessor's Office. A 2011 survey of the property boundary completed by Flagstaff Surveying Inc. is included as Figure A-1 and shows specific coordinates for property corners. Since the original permit was submitted in 1977, 115 acres of the originally permitted property boundary were transferred to Boulder County.

A-2 Affected Area Description

The proposed affected area encompasses a total of 16 acres. The proposed affected area is shown in Figure B-1 (Exhibit B) with the original Limited Impact (110) affected land boundary for reference. The proposed affected area boundary was selected to encompass all areas that have the potential to be disturbed during future mining and reclamation activities.

The proposed affected area boundary can be described as:

- coinciding with the property boundary from the northeast corner of the property along the east edge of the property to its intersection with the South Ledge Ditch;
- following the west edge of the South Ledge Ditch until its intersection with the southern property boundary;
- following the southern property boundary towards the west for approximately 583 ft;
- turning northnortheast to parallel the edge of the anticipated disturbance boundary with a buffer of approximately 50 ft until it meets the northern property boundary; and
- coinciding with the northern property boundary towards the east to return to the northeast property corner.

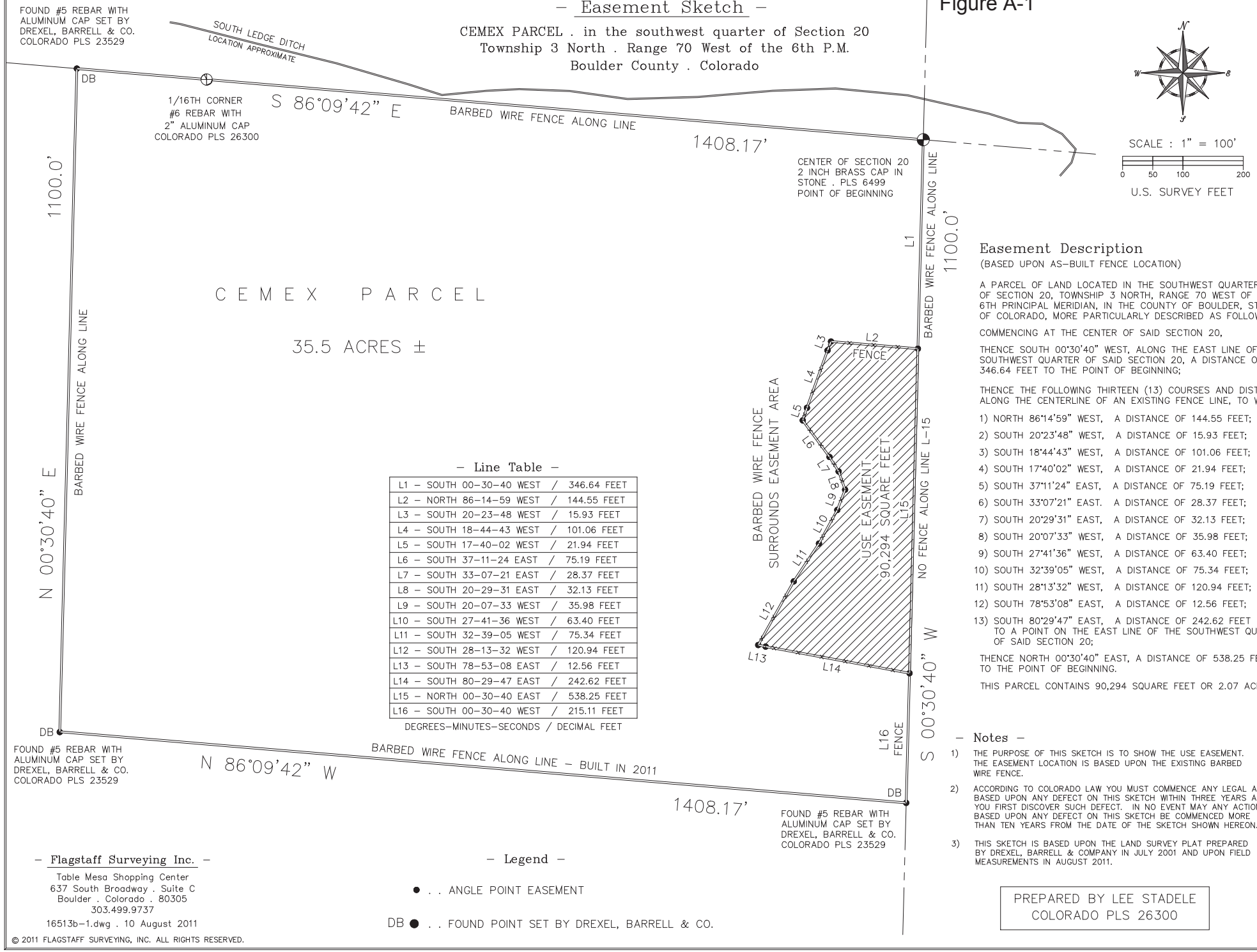
A-3 Main Entrance Location

The main entrance to the Cemex Sandstone Quarry is located at Northing 4451061.829, Easting 478354.896; North American Datum (NAD) 1983, Universal Transverse Mercator (UTM) Zone 13N, measured in meters. Figure B-1 (Exhibit B) shows the location of the main entrance on a topographic map in accordance with CMMRR §6.4.1(2).

Figure A-1

– Easement Sketch –

CEMEX PARCEL . in the southwest quarter of Section 20
Township 3 North . Range 70 West of the 6th P.M.
Boulder County . Colorado



– Line Table –

L1	SOUTH 00-30-40 WEST	/	346.64 FEET
L2	NORTH 86-14-59 WEST	/	144.55 FEET
L3	SOUTH 20-23-48 WEST	/	15.93 FEET
L4	SOUTH 18-44-43 WEST	/	101.06 FEET
L5	SOUTH 17-40-02 WEST	/	21.94 FEET
L6	SOUTH 37-11-24 EAST	/	75.19 FEET
L7	SOUTH 33-07-21 EAST	/	28.37 FEET
L8	SOUTH 20-29-31 EAST	/	32.13 FEET
L9	SOUTH 20-07-33 WEST	/	35.98 FEET
L10	SOUTH 27-41-36 WEST	/	63.40 FEET
L11	SOUTH 32-39-05 WEST	/	75.34 FEET
L12	SOUTH 28-13-32 WEST	/	120.94 FEET
L13	SOUTH 78-53-08 EAST	/	12.56 FEET
L14	SOUTH 80-29-47 EAST	/	242.62 FEET
L15	NORTH 00-30-40 EAST	/	538.25 FEET
L16	SOUTH 00-30-40 WEST	/	215.11 FEET

DEGREES-MINUTES-SECONDS / DECIMAL FEET

SCALE : 1" = 100'
0 50 100 200
U.S. SURVEY FEET

Easement Description

(BASED UPON AS-BUILT FENCE LOCATION)

A PARCEL OF LAND LOCATED IN THE SOUTHWEST QUARTER OF OF SECTION 20, TOWNSHIP 3 NORTH, RANGE 70 WEST OF THE 6TH PRINCIPAL MERIDIAN, IN THE COUNTY OF BOULDER, STATE OF COLORADO, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE CENTER OF SAID SECTION 20,

THENCE SOUTH 00°30'40" WEST, ALONG THE EAST LINE OF THE SOUTHWEST QUARTER OF SAID SECTION 20, A DISTANCE OF 346.64 FEET TO THE POINT OF BEGINNING;

THENCE THE FOLLOWING THIRTEEN (13) COURSES AND DISTANCES ALONG THE CENTERLINE OF AN EXISTING FENCE LINE, TO WIT:

1) NORTH 86°14'59" WEST, A DISTANCE OF 144.55 FEET;
2) SOUTH 20°23'48" WEST, A DISTANCE OF 15.93 FEET;
3) SOUTH 18°44'43" WEST, A DISTANCE OF 101.06 FEET;
4) SOUTH 17°40'02" WEST, A DISTANCE OF 21.94 FEET;
5) SOUTH 37°11'24" EAST, A DISTANCE OF 75.19 FEET;
6) SOUTH 33°07'21" EAST. A DISTANCE OF 28.37 FEET;
7) SOUTH 20°29'31" EAST, A DISTANCE OF 32.13 FEET;
8) SOUTH 20°07'33" WEST, A DISTANCE OF 35.98 FEET;
9) SOUTH 27°41'36" WEST, A DISTANCE OF 63.40 FEET;
10) SOUTH 32°39'05" WEST, A DISTANCE OF 75.34 FEET;
11) SOUTH 28°13'32" WEST, A DISTANCE OF 120.94 FEET;
12) SOUTH 78°53'08" EAST, A DISTANCE OF 12.56 FEET;
13) SOUTH 80°29'47" EAST, A DISTANCE OF 242.62 FEET TO A POINT ON THE EAST LINE OF THE SOUTHWEST QUARTER OF SAID SECTION 20;

THENCE NORTH 00°30'40" EAST, A DISTANCE OF 538.25 FEET TO THE POINT OF BEGINNING.

THIS PARCEL CONTAINS 90,294 SQUARE FEET OR 2.07 ACRES.

– Notes –

1) THE PURPOSE OF THIS SKETCH IS TO SHOW THE USE EASEMENT. THE EASEMENT LOCATION IS BASED UPON THE EXISTING BARBED WIRE FENCE.
2) ACCORDING TO COLORADO LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT ON THIS SKETCH WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT ON THIS SKETCH BE COMMENCED MORE THAN TEN YEARS FROM THE DATE OF THE SKETCH SHOWN HEREON.
3) THIS SKETCH IS BASED UPON THE LAND SURVEY PLAT PREPARED BY DREXEL, BARRELL & COMPANY IN JULY 2001 AND UPON FIELD MEASUREMENTS IN AUGUST 2011.

PREPARED BY LEE STADELE
COLORADO PLS 26300

– Legend –

● . . ANGLE POINT EASEMENT

DB ● . . FOUND POINT SET BY DREXEL, BARRELL & CO.

– Flagstaff Surveying Inc. –
Table Mesa Shopping Center
637 South Broadway . Suite C
Boulder . Colorado . 80305
303.499.9737

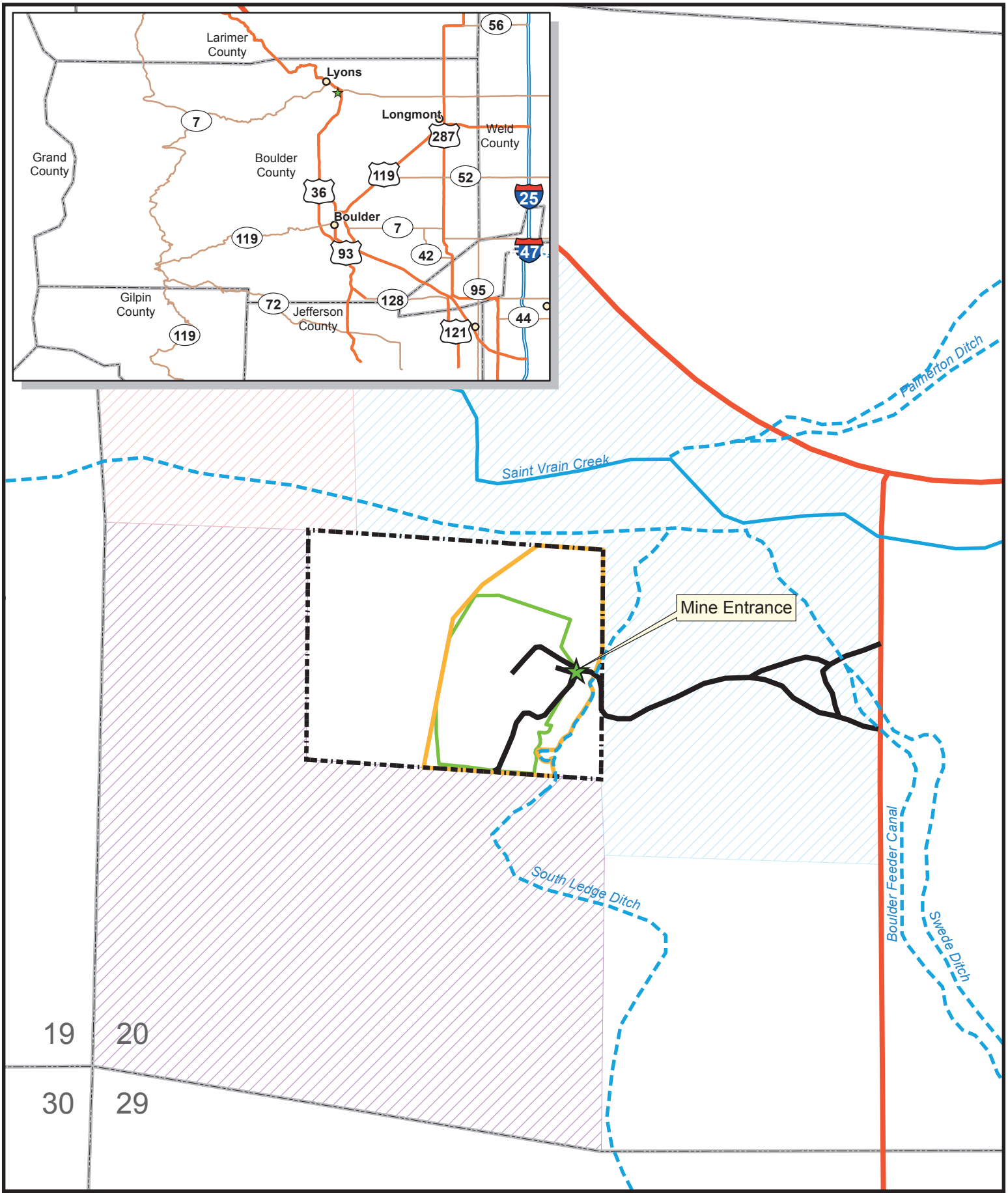
16513b-1.dwg . 10 August 2011

Cemex Sandstone Quarry
Permit M-1977-361
Exhibit B – Index Maps

Includes:

Figure B-1: Index Map with adjacent land owners

Figure B-2: Index Map on 2012 Aerial Photo



Property Boundary
Affected Area
1977 Affected Area
20 Section Line
Highway
Private Access Road

Adjacent Property Owners
Boulder County
Loukonen Family, LLC
Town of Lyons

Stream/River
Canal/Ditch

N

1 inch = 600 feet
0 250 500 1,000 Feet

Habitat Management
Environmental & Natural Resource Services

CEMEX

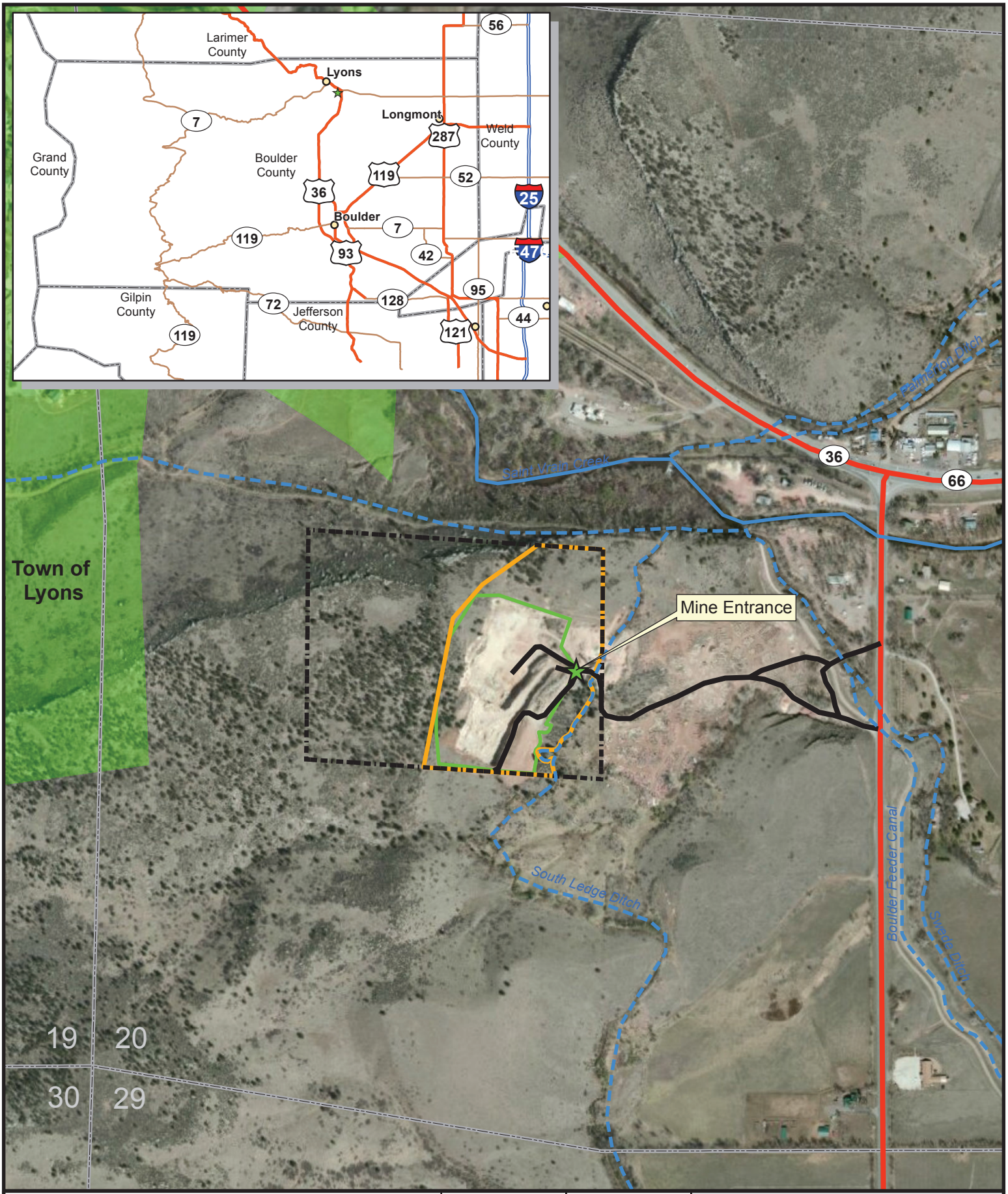
Drawn By:	RFB
Checked By:	KEC
Approved By:	DTA
Date:	8-28-2013

REVISIONS		
	DATE	BY

CEMEX SANDSTONE QUARRY

FIGURE B-1

INDEX MAP



Property Boundary
Affected Area
1977 Affected Area
20 Section Line
Town of Lyons
Highway
Private Access Road
Stream/River
Canal/Ditch

1 inch = 600 feet

0 250 500 1,000 Feet

N

Habitat Management

CEMEX

CEMEX SANDSTONE QUARRY

Drawn By: RFB
Checked By: KEC
Approved By: DTA
Date: 8-28-2013

REVISIONS

DATE	BY

FIGURE B-2

INDEX MAP

Imagery Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

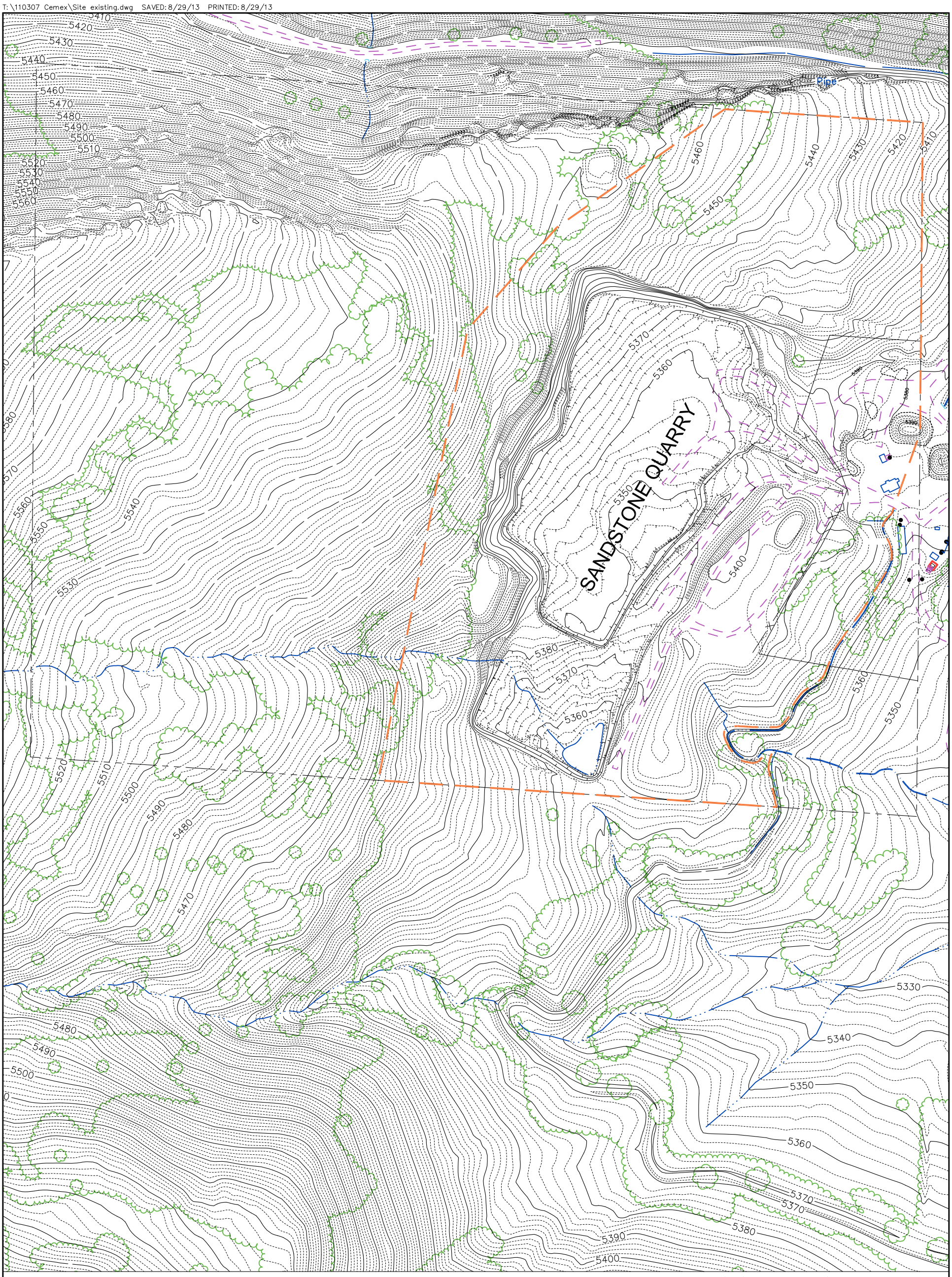
Cemex Sandstone Quarry
Permit M-1977-361
Exhibit C – Pre-Mining & Mining Plan Maps

Includes:

Figure C-1: Existing Quarry Topography

Figure C-2: Life of Mine – Full Extraction Topography

T: \110307 Cemex\Site existing.dwg SAVED: 8/29/13 PRINTED: 8/29/13



SURFACE CONTOURS
UNIMPROVED ROAD
IRRIGATION CANAL
EPHEMERAL STREAM
APPROXIMATE PROPERTY BOUNDARY
AFFECTED AREA BOUNDARY

EXISTING SURFACE TOPOGRAPHY PROVIDED BY CEMEX.

NORTH

SCALE IN FEET
0 150'

Project No. 110307

August 2013

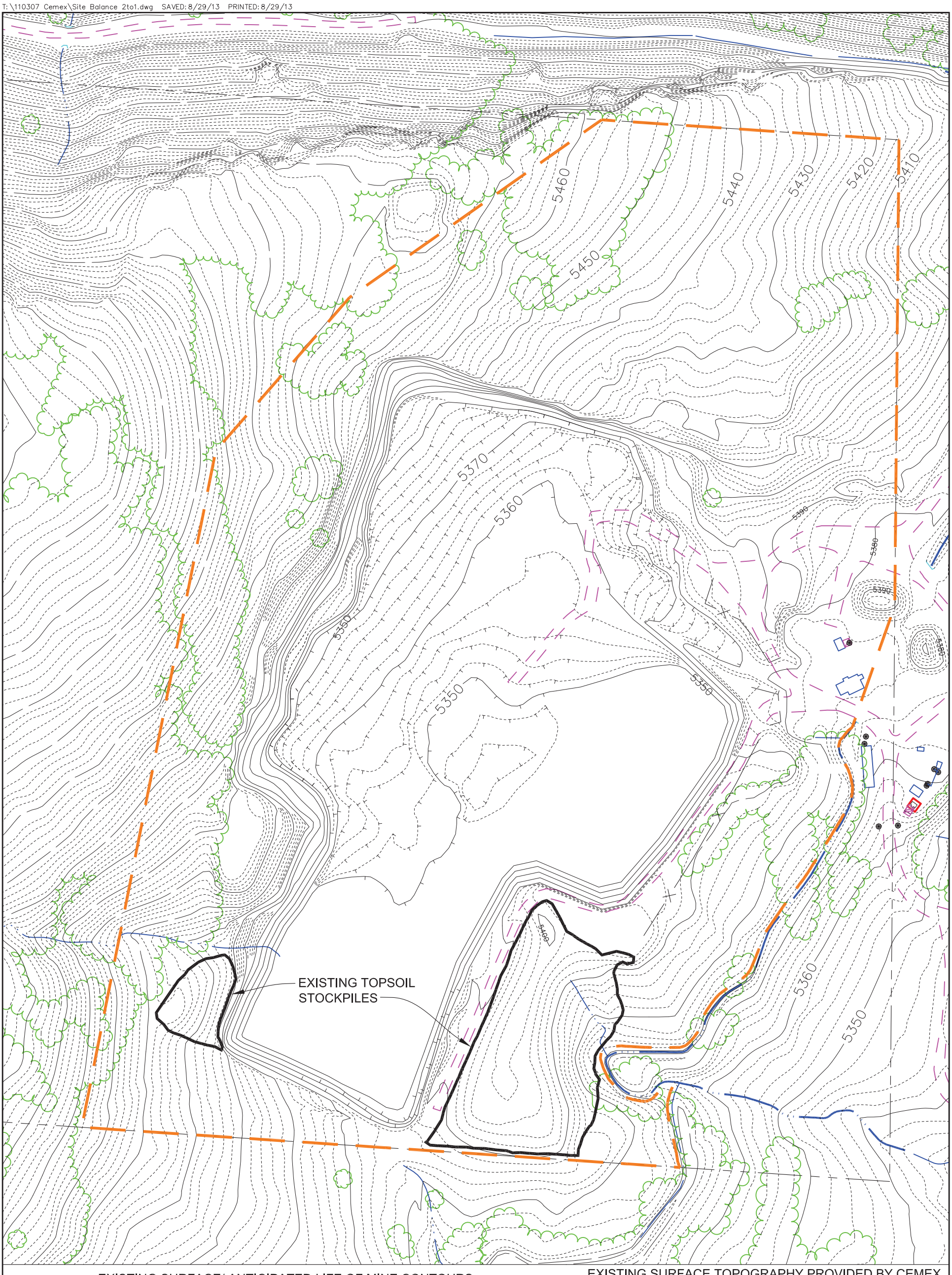
FOR PERMITTING
NOT FOR CONSTRUCTION

Engineering Analytics, Inc.

CEMEX

FIGURE C-1
EXISTING QUARRY TOPOGRAPHY
CEMEX LYONS

T: \110307 Cemex\Site Balance 2to1.dwg SAVED: 8/29/13 PRINTED: 8/29/13



EXISTING SURFACE/ ANTICIPATED LIFE OF MINE CONTOURS
EXISTING UNIMPROVED ROAD
EXISTING IRRIGATION CANAL
EXISTING EPHEMERAL STREAM
EXISTING TOPSOIL STOCKPILES
APPROXIMATE PROPERTY BOUNDARY
AFFECTED AREA BOUNDARY

EXISTING SURFACE TOPOGRAPHY PROVIDED BY CEMEX.

NORTH

SCALE IN FEET
0 100'

Project No. 110307

August 2013

FOR PERMITTING
NOT FOR CONSTRUCTION

Engineering Analytics, Inc.

CEMEX

FIGURE C-2
LIFE OF MINE - FULL EXTRACTION
CEMEX LYONS

Cemex Sandstone Quarry
Permit M-1977-361
Exhibit D - Mining Plan

D-1 Introduction

The Mining Plan as submitted in the current Cemex Sandstone Quarry Mining and Reclamation Permit (M-1977-361) will remain substantially unchanged in this permit conversion. The existing permit was initially approved by the Colorado Mined Land Reclamation Board (Board) in 1977 after passage of the Colorado Mined Land Reclamation Act (CMLRA). The Sandstone Quarry has been mined since 1969 and has been under Cemex ownership since 2001.

The objective of this exhibit is to update the Mining Plan to reflect current conditions and plans for future development. The maps in Exhibit C illustrate the current condition and topography of the property (Figure C-1), the anticipated end-of-mine topography (Figure C-2). The anticipated post-reclamation topography is included in Exhibit F: Reclamation Plan Maps (Figure F-1). Figure F-2 (Exhibit F) shows an isomap of the cut and fill areas in the final grading plan.

D-2 Site Geology

The sandstone in the Cemex Sandstone Quarry is a quartzitic sandstone that was formed as part of the Dakota Group during the Cretaceous period of geologic history. The Dakota Group consists of non-marine fluvial deposits generally topped with marginal marine deposits.

D-3 Mineral Reserves

The site was originally a southeast facing hillside with a 3H:1V slope. The mining operations of the past several decades have created a pit with a floor elevation of 5,350 feet at the lowest point and an aerial extent of approximately 6 acres (Figure C-1). Over the next 10 years, the current pit boundary will be expanded to the southeast to encompass one more acre and the entire pit will be mined to a depth of 5,350 ft. This additional mining will produce approximately 200,000 tons of additional sandstone over the next decade. The 10 acre pit limited outlined in the original 1977 permit will be not exceeded by these mining operations.

D-4 Mining Operations

Mining has progressed in horizontal benches proceeding to the west into the hillside at a rate of 20,000 – 60,000 tons per year. This process will continue over the next 10 years until the resource is exhausted or the resource is no longer needed for cement production at the Cemex Lyons Cement Plant.

The sandstone is blasted out of the hillside using suitable explosive agents drilled into the rock in a pattern appropriate for the quantity of rock needed. The blasted rock is loaded into over-the-road trucks and hauled approximately 2 miles northeast to the crusher at the Dowe Flats Quarry. From there the sandstone is transported another two miles via conveyor to the Cemex Lyons Cement Plant where it is used in the production of various cement products.

D-5 Mining Schedule

Mining at the Sandstone Quarry is on-going on a limited basis with annual production of 20,000 – 60,000 tons per year. Current mining plans for the Sandstone Quarry and the nearby Dowe Flats Quarry anticipate an end to mining within the next 10 years. Mining will continue at the Sandstone Quarry until the resource is exhausted, the Dowe Flats Quarry no longer needs the resource, or the 10-year permit period has ended.

The red-tailed hawk nest that is currently located adjacent to the pit will be monitored prior to blasting and no blasting will be performed when the nest is active. The general guidelines for nest avoidance are February 15 through July 15, but this will be verified by a wildlife biologist in the field prior to blasting.

D-6 Concurrent Reclamation

Reclamation activities are described in more detail in Exhibit E. While reclamation will primarily be completed in the five years after mining operations are complete, some concurrent reclamation activities may occur. Concurrent reclamation activities will most likely include import and stockpiling of growth media. The current salvage estimates for growth media at the Sandstone Quarry will not be sufficient for reclamation of the entire site and additional material will have to be imported from Dowe Flats. Cemex may backhaul some of this growth media material when hauling the blasted sandstone out to Dowe Flats to minimize reclamation costs. Cemex may also conduct some of the blasting to create final pit slopes concurrently with blasting for production if this can be accomplished in such a way to maximize resources.

D-7 References

Waage, K.M. 1955. Dakota Group in Northern Front Range Foothills, Colorado. Geological Survey Professional Paper 274-B.

Cemex Sandstone Quarry
Permit M-1977-361
Exhibit E - Reclamation Plan

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E-1 Summary of Existing Reclamation Plans

The existing Cemex Sandstone Quarry Mining and Reclamation Permit (110) includes plans for reclaiming areas affected by mining. Some of the reclamation strategies in the approved permit will be unaffected by this permit conversion. However, the reclamation strategies have been re-evaluated in this conversion application with the goal of minimizing post-reclamation maintenance of the site and implementing lessons learned from previous reclamation activities conducted at nearby sites. This reclamation plan supersedes prior Sandstone Quarry reclamation plan submittals for all future reclamation activities.

Reclamation practices that have been previously approved by the Colorado Division of Reclamation, Mining, and Safety (DRMS) for use at the nearby Cemex Lyons and Dowe Flats Quarry properties include the following:

- Regrading to enhance long-term stability, promote reclamation success, and reduce erosion potential;
- Installing and maintaining surface water drainage channels to remove water from the affected area in a non-erosive manner;
- Striping and stockpiling available topsoil prior to disturbance;
- Distributing and spreading topsoil to areas prepared for final reclamation at depths that adequately support the reclamation process;
- Incorporating amendments into final cover materials as needed to improve revegetation establishment and growth; and
- Revegetating with an ecologically appropriate plant species seed mixture.

E-2 Reclamation Goals

The reclamation goals for the Cemex Sandstone Quarry have not changed from previous permit documents. The long-term reclamation goal remains to stabilize disturbed areas and create a long-term self-sustaining vegetative cover which promotes ecological succession and stability. Stabilization and revegetation objectives have been, and will continue to be, pursued with the best practical technology for reclamation. Permanent vegetation established on reclaimed lands will support the post-mining land use of wildlife habitat.

E-2.1 Target & Surrounding Land Use

Primary final land use for the Cemex Sandstone Quarry site will be Wildlife Habitat (WL) defined as grassland and open forest with a mosaic of vegetation communities and wildlife habitats. This land use designation has changed from the previous permit documents which listed Rangeland (RL) as the primary post-mining land use. However, the WL designation is consistent with the current use of the land within the property boundary not current used for mining and master plans of surrounding areas.

The land adjacent to the Cemex Sandstone Quarry property on the north, west, and south is primarily open space land owned by either Boulder County Open Space or the City of Lyons. These lands are primarily used for wildlife habitat with limited recreation and grazing activities. The east side of the quarry is bordered by a commercial landscape stone yard.

E-3 Reclamation Success

Cemex has been performing reclamation and testing various approaches, products, and species for over 15 years on the nearby Lyons and Dowe Flats Quarries (Habitat Management, Inc. 2010). The methods and strategies included in this reclamation plan are based on lessons learned from these past reclamation projects and years of experience. To date, Cemex has completed over 335 acres of final reclamation and 185 acres of interim reclamation.

E-3.1 Dowe Flats Quarry

Cemex's Dowe Flats Quarry is located two miles northeast of the Sandstone Quarry. Cemex is actively mining this quarry, but concurrent reclamation has been on-going since 1997. To date, 185 acres have

been backfilled and reclaimed. Vegetation on the Dowe Flats Quarry reclaimed area is informally monitored every year to assess reclamation success and identify maintenance needs. Results of 2012 vegetation monitoring documents that the vegetation cover averages 33% on all reclamation areas and they are similar in vegetation cover and species composition to an ecologically equivalent reference area.

E-3.2 Lyons Quarry

Cemex's Lyons Quarry is located 1.5 miles southeast of the Sandstone Quarry and two miles south of the Dowe Flats Quarry. This quarry is no longer mined and Cemex has been actively reclaiming it since 1997. To date, 335 acres have been backfilled and permanently reclaimed. Vegetation on the Lyons Quarry reclaimed area is not regularly monitored, but one area was informally monitored in 2012. At that time, this area had an average of 32% vegetation cover and had similar vegetation cover to an ecologically equivalent reference area.

E-4 Blasting of Highwalls

At the end of mining, the highwalls will be taken down using suitable blasting agents and a similar method to that used for mining. All highwalls will be blasted to ensure slopes no steeper than 1.5H:1V except in areas designed for raptor habitat. Most blasted highwalls will be taken down to a slope of 2H:1V. The blasted material will be used to backfill portions of the pit and will be graded against the cut slope to achieve desired final topography.

The red-tailed hawk nest that is currently located adjacent to the pit will be monitored prior to blasting and no blasting will be performed when the nest is active. The general guidelines for nest avoidance are February 15 through July 15, but this can be verified by a wildlife biologist in the field prior to blasting.

E-5 Final Topography & Grading

The final topography of the Sandstone Quarry pit will include approximately 0.5 acres of cut slopes at 1.5H:1V (horizontal: vertical) and approximately 2 acres of 2H:1V cut slopes. The 1.5H:1V cut slopes will also be interspersed with sections of vertical highwall designed to promote raptor habitat (Section E-8). These cut slopes will be no longer than 60 feet from top to bottom. Fill slopes will be graded no steeper than 2H:1V, with the majority of the reclaimed area (approximately 9 acres) graded to 2% to promote long-term stability and revegetation (Exhibit F, Figure F-1). The grading plans included in this permit conversion suggests an approximately 1.5-acre area that will be graded to a 2H:1V slope. This area along with any other area graded steeper than 3H:1V will be further stabilized with benches, terraces, and/or riprap channels to slow water flow, mitigate erosion, and promote vegetation establishment. The design of the final topography will incorporate stability evaluations based on this maximum overall fill slope of 2H:1V and an overall maximum cut slope of 1.5H:1V (Geotechnical Stability Exhibit). All grading will be implemented to maintain drainage control and provide area stability.

E-6 Water Management

There will be no water impounded in the final reclaimed area. Control of erosion and sediment run-off is also of importance to reclamation success. Cemex has a current Storm Water Management Plan (Cemex Construction Materials 2012) and conducts regular inspections as directed by this plan. Best management practices (BMPs) to control erosion and sediment (e.g. silt fence and straw wattles) are regularly installed, inspected, and maintained as needed throughout the quarry site. BMPs will continue to be used routinely during mining and reclamation activities as needed to achieve compliance.

The South Ledge Irrigation Ditch traverses near the eastern property boundary. Final topography will be designed to allow sheet flow toward this ditch at a 2% or less grade for several hundred feet from the base of the 2:1 slopes on the west side of the pit. During reclamation activities, BMPs will be installed to protect the ditch from sedimentation. These BMPs will be maintained until reclamation is complete and sufficient cover is established to warrant their removal.

E-7 Growth Media

Past reclamation experience at nearby Cemex properties has shown that revegetation is most successful if on-site fill material is amended to provide nutrients and organic matter, which enhances vegetation establishment and increases water-holding capacity. There are no acid-forming or toxic-producing materials present in the rock that is handled by mining operations at this site.

E-7.1 Growth Media Salvage

As discussed in Exhibit I, Section I-4, A and B-horizon soil materials will be salvaged separately when possible. Mobile equipment will be used to remove topsoil and subsoil materials and place it in designated storage areas. Due to equipment limitations, if the native topsoil is less than 6-inches thick, the top 6 inches of soil (topsoil and the B-horizon material immediately below) will be removed together and the mixture will be treated as topsoil. The soil removal crew will be provided with the projected stripping guidelines, and a qualified individual will ensure that soil is removed consistent with this plan.

Stockpile locations will be selected to promote easy re-application to the disturbed area. Whenever practicable, soil stockpiles will be located to reduce haul distances and avoid excessive handling. As necessary, BMPs will be implemented to reduce erosion from the new stockpiles.

Exhibit I: Soil Information contains the baseline soil salvage depth and volume tables for the disturbance area. The baseline soil volume summary contained in Table I-1 (Exhibit I), contains a listing of soil removal areas and total salvage volumes compared to topsoil and subsoil replacement volumes. The salvage depths are based on a review of NRCS soil survey soil map unit descriptions. While these topsoil and subsoil salvage depths range from 4 to 10 inches, soil salvage depths will be determined by in-place soil monitoring to be conducted ahead of soil removal operations. Deeper topsoil is usually located in draws and valley floors while ridge tops have generally very shallow topsoil with high coarse fragment contents. The majority of this site has the shallow ridge topsoil which usually covers rocky parent material that may not be favorable for final reclamation. This soil is typically difficult to remove mechanically due to steep slopes and the high coarse fragment content and hence may be only selectively salvaged.

E-7.2 Growth Media Stockpiling and Erosion Control

Topsoil will be stockpiled in such a manner to minimize compaction and configured to reduce wind and water erosion. The primary methods of erosion control for soil stockpiles are timely revegetation and/or the use of temporary erosion control measures such as surface roughening, surface mulches, berms, ditches, or small sediment traps. Soil stockpiles will generally be constructed with 2.5H:1V or flatter slopes. A-horizon topsoil stockpiles will be identified by a "Topsoil" sign and B-horizon subsoil stockpiles will be identified by a "Subsoil" sign. Stockpiled soil will be seeded with revegetation seed mixture (Section E-8) to prevent erosion. The estimated quantity of soil that will be generated during future mining activities is discussed in Exhibit I: Soil Information.

E-7.3 Growth Media Placement

There will be a nominal depth of 12 to 18 inches of cover material placed on all fill slopes and any cut slopes that are not steeper than 2H:1V. Reclamation cost calculations assume a sufficient quantity for 18-inch cover depth to account for losses into the fill pore spaces. These cover materials can be a combination of subsoil and topsoil. Placed cover material will be ripped on the contour to reduce compaction immediately prior to revegetation. Seeding will follow the application of soil as soon as practicable during the planting season.

E-7.3.1 Importing Growth Media

It is anticipated that the disturbance area will have insufficient growth media available for salvage to meet soil placement depth requirements. Some soil will likely be imported from the Cemex Dowe Flats Quarry two miles northeast of the Sandstone Quarry. Growth media imported from Dowe Flats Quarry will be directly hauled from salvage locations whenever possible. Growth media may also be hauled from reclaimed stockpiles that have been established at the Dowe Flats Quarry. Direct-haulage of topsoil and subsoil will improve the transfer of nutrients, organic matter, microbial populations, and the residual native

seed bank. Imported topsoil and subsoil will be handled similarly to locally stripped material. All imported topsoil will be free of toxic or acid-producing materials.

E-7.4 Soil Amendments

Soil amendments are sometimes needed to meet minimum soil fertility requirements for establishment of successful reclamation. The need for amendments will be determined on a site by site basis.

E-7.4.1 Fertilizer

Some reclamation areas may require an application of various fertilizer blends to promote revegetation establishment and growth. Chemical fertilizers or products that contain organic matter as well as nutrients may be used. In addition, depending upon the time of year that the area will be reclaimed, a slow release nitrogen product may be used. Seeding will follow closely after the application and incorporation of fertilizer.

E-8 Revegetation

The entire disturbance area, with the exception of cut rock faces, will be seeded with an upland native seed mixture (Table E-1). This seed mixture will be broadcast at a target rate of 75 pure live seeds (PLS)/square foot (SF).

A concerted effort will be made to acquire the recommended seed mixture; however, species availability can vary from year to year. When substituting species is necessary, they will be selected from the list of alternative species included herein (Table E-2). The percentages and diversity of each life form (e.g. perennial grasses, perennial forbs, and woody plants) will be maintained in the revised seed mixture to the extent possible.

Table E-1: Reclamation Seed Mixture

Species	Common Name	Desired Species Composition	Avg. Seeds/ Lb	Lbs PLS/ Acre	PLS/SF
Graminoids					
Achnatherum hymenoides	Indian ricegrass	7%	141,000	1.62	5.3
Bouteloua curtipendula	sideoats grama	5%	191,000	0.86	3.8
Bouteloua gracilis	blue grama	15%	825,000	0.59	11.3
Elymus trachycaulus	slender wheatgrass	10%	135,000	2.42	7.5
Festuca idahoensis	Arizona fescue	15%	450,000	1.09	11.3
Nassella viridula	green needlegrass	10%	181,000	1.80	7.5
Pascopyrum smithii	Western wheatgrass	8%	110,000	2.38	6.0
Pseudoroegneria spicata	bluebunch wheatgrass	5%	140,000	1.17	3.8
Sporobolus cryptandrus	sand dropseed	15%	5,600,000	0.09	11.3
Graminoid Subtotal		***90%***		***12.015***	***67.5***
Forbs					
Dalea purpurea	purple prairie clover	2%	210,000	0.31	1.5
Linum lewisii	blue flax	2%	295,000	0.22	1.5
Ratibida columnifera	prairie coneflower	2%	1,230,000	0.05	1.5
Forb Subtotal		***6%***		***0.586***	***4.5***
Shrubs					
Atriplex canescens	fourwing saltbush	2%	52,000	1.26	1.5
Ericameria nauseosus	rubber rabbitbrush	2%	400,000	0.16	1.5
Shrub Subtotal		***4%***		***1.420***	***3.0***
Combined Totals		**100%**		**13.08**	**75.0**

Table E-2: Alternate Reclamation Seed Mixture Species

Graminoids	
Bromus marginatus	mountain brome
Elymus elymoides	squirreltail
Festuca arizonica	Arizona fescue
Heterostipa comata	needle and thread
Koeleria macrantha	junegrass
Muhlenbergia wrightii	spike muhly
Poa palustris	fowl bluegrass
Poa secunda	Sandberg bluegrass
Forbs	
Achillea lanulosa	common yarrow
Artemisia ludoviciana	Louisiana sagewort
Artemisia frigida	fringed sage
Sphaeralcea coccinea	orange globemallow
Shrubs	
Cercocarpus montanus	mountain mahogany
Rhus trilobata	three-leaf sumac

E-9 Mulching & Soil Stabilization

Mulches, flexible growth media, or erosion control blanket will be applied to all reclamation areas where growth media is applied to stabilize surface soils and enhance revegetation success. Products used may include weed-free native hay or straw, commercial hydraulically applied flexible growth media, wood straw, or a biodegradable erosion control blanket such as those made from jute, coconut, or aspen fibers. The soil stabilization method(s) used will depend on specific conditions after grading is complete. For bond calculations, it was assumed that native hay would be applied to the 2% slopes and hydromulch would be applied to the 50% slopes.

E-10 Rock Face Reclamation

Most cut rock faces of the quarry wall will be blasted to 2H:1V or 1.5H:1V slopes, but some areas will be left vertical to promote raptor habitat. The primary raptor species that may use these vertical walls include peregrine falcons and prairie falcons both of which have historical range in this region. Both of these species use rock outcrops and highwall ledges for nesting, but neither has specific needs in terms of ledge size, height, vegetation community, etc. They prefer vertical walls and may be more likely to use sheltered ledges with a small overhang than fully exposed ledges. Ledges need to be at least a few feet wide for adequate nest space toward the top of the cut face. Both falcons as well as several hawk species may use rock outcrops for hunting perches as well.

In addition to the blasting for raptor habitat, particularly large boulders left from blasting may be placed at the toe of the 1.5H:1V cut slope at the transition to the less steep reclaimed slopes. These boulders when properly placed and can create natural-looking rock escarpments that will produce nesting and refuge cavities and habitat for small mammals.

E-11 Reclamation Schedule

Cemex anticipates continued mining of the Sandstone Quarry for the next 10 years. However, these mining operations will not impact any new areas beyond the current disturbance footprint. Reclamation activities including topsoil stripping, blasting to achieve final slopes, final grading, and revegetation will not begin until mining is complete. Reclamation will occur over a period of approximately 5 years after production operations have permanently ceased.

The schedule of production activities is discussed in Exhibit D: Mining Plan. Figures D-3 and D-4 (Exhibit D) illustrate the final topography design. Figures F-1 through F-3 illustrate the final reclamation design with respect to revegetation.

E-12 Weed Control

Cemex will comply with DRMS, Boulder County, and the State Land Board weed control regulations, guidelines and permit stipulations. Common weeds observed and targeted for control at other nearby Cemex properties include: cheatgrass (*Bromus arvensis*), Dalmatian toadflax (*Linaria dalmatica*), musk thistle (*Carduus nutans*), bindweed (*Convulvulus arvense*), and leafy spurge (*Euphorbia esula*). Cemex uses a variety of methods and practices for weed control, including but not limited to, contracting Certified Commercial Pesticide Applicators and using goats for targeted grazing to control weeds.

E-13 Roads

Most of the roads on the property will be reclaimed after they are no longer needed for mining and reclamation purposes. Roads that will be an advantage for access to the unmined portion of the property will be left in place. Reclaimed roads will be graded and filled as necessary to blend with the adjacent terrain and to create natural drainage patterns. Following rough grading, growth media will be applied, and revegetation will take place as soon as practicable. The entrances to reclaimed roads will be blocked by barriers of native rock or earthen berms to prevent vehicular access, while continuing to allow wildlife access.

E-14 Reclamation Monitoring & Success Standards

Bond release standards have not been detailed in previous permitting documents and to our knowledge no specific bond release guidelines have been set for the Cemex Sandstone Quarry. The vegetation monitoring methods and success standards proposed here are based on industry-accepted techniques and standards as well as 15 years of reclamation success monitoring conducted by Cemex personnel and consultants.

E-14.1 Monitoring Methods

Reclamation success will be based on quantitative and qualitative evaluations in the field. The reclamation area will be compared to an ecologically equivalent reference area established on Cemex property. The reference area will represent the anticipated post-reclamation vegetation community, and consider elevation, aspect, and/or slope to the extent this is physically possible.

E-14.1.1 Quantitative Monitoring

Vegetative cover (by species) and ground cover (including litter and rock) will be evaluated using point-intercept methods along a line transect. First hit cover data will be collected along 5 randomly located 50-meter transects in each reclamation and reference area. Two data points will be collected 0.5 meters to either side of the transect at each meter for a total of 100 points per transect. All species occurring within 1 meter on either side of each cover transect (100 m^2 area) will be recorded as a measure of species frequency and to evaluate diversity.

E-14.1.2 Qualitative Monitoring

The reclamation area and reference area will also be qualitatively evaluated. Qualitative vegetation monitoring will include:

- Compilation of a list of plant species for each area that will serve as an indicator of floral diversity.
- Site photographs representative of the reclaimed vegetation communities establishing will be taken from established reference points.

E-14.2 Success Standards

Revegetation will be considered successful for bond release if the vegetation cover (excluding noxious weeds) on the reclamation area is greater than or equal to 70% of the vegetation cover on its ecologically

equivalent reference area. Species frequency data will also be used to illustrate that a diverse community has been created on the reclamation.

E-14.3 Monitoring Schedule & Deliverables

Bond release monitoring may occur one full growing season after revegetation is completed or anytime thereafter when the revegetation effort has established a diverse, effective, and self-sustaining vegetative cover. Cemex may also perform interim vegetation monitoring to assist in refining reclamation techniques and maintenance needs.

Bond release monitoring results will be compiled into a report and submitted to DRMS. This report will contain:

- a map of the reclamation and references areas monitored,
- justification for the selected reference area,
- a complete species list for the reclamation and reference areas,
- data summarized in tables and/or graphs,
- results and discussion of statistical analyses, and
- site photographs.

E-15 Reclamation Costs

The estimated costs for the closure reclamation activities discussed in this Exhibit are detailed in Exhibit L: Reclamation Costs.

E-16 References

Cemex Construction Materials. 2012. Storm Water Management Plan. Colorado Department of Public Health and Environment Permit # COR34-0561. Extended 10/09/2012.

Colorado Parks & Wildlife. 2008 Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors. URL:http://wildlife.state.co.us/SiteCollectionDocuments/DOW/WildlifeSpecies/LivingWithWildlife/RaptorBufferGuidelines2008.pdf [accessed August 2013].

Habitat Management, Inc. 2010. Dowe Flats Special Land Use Permit (SU-93-14) Fifteen Year Interim Review. Cemex Lyons Plant Internal Document.

Cemex Sandstone Quarry
Permit M-1977-361
Exhibit F – Reclamation Plan Maps

Includes:

Figure F-1: Reclamation Grading Plan Topography

Figure F-2: Reclamation Grading Plan Isopach

Figure F-3: Final Reclamation & Revegetation

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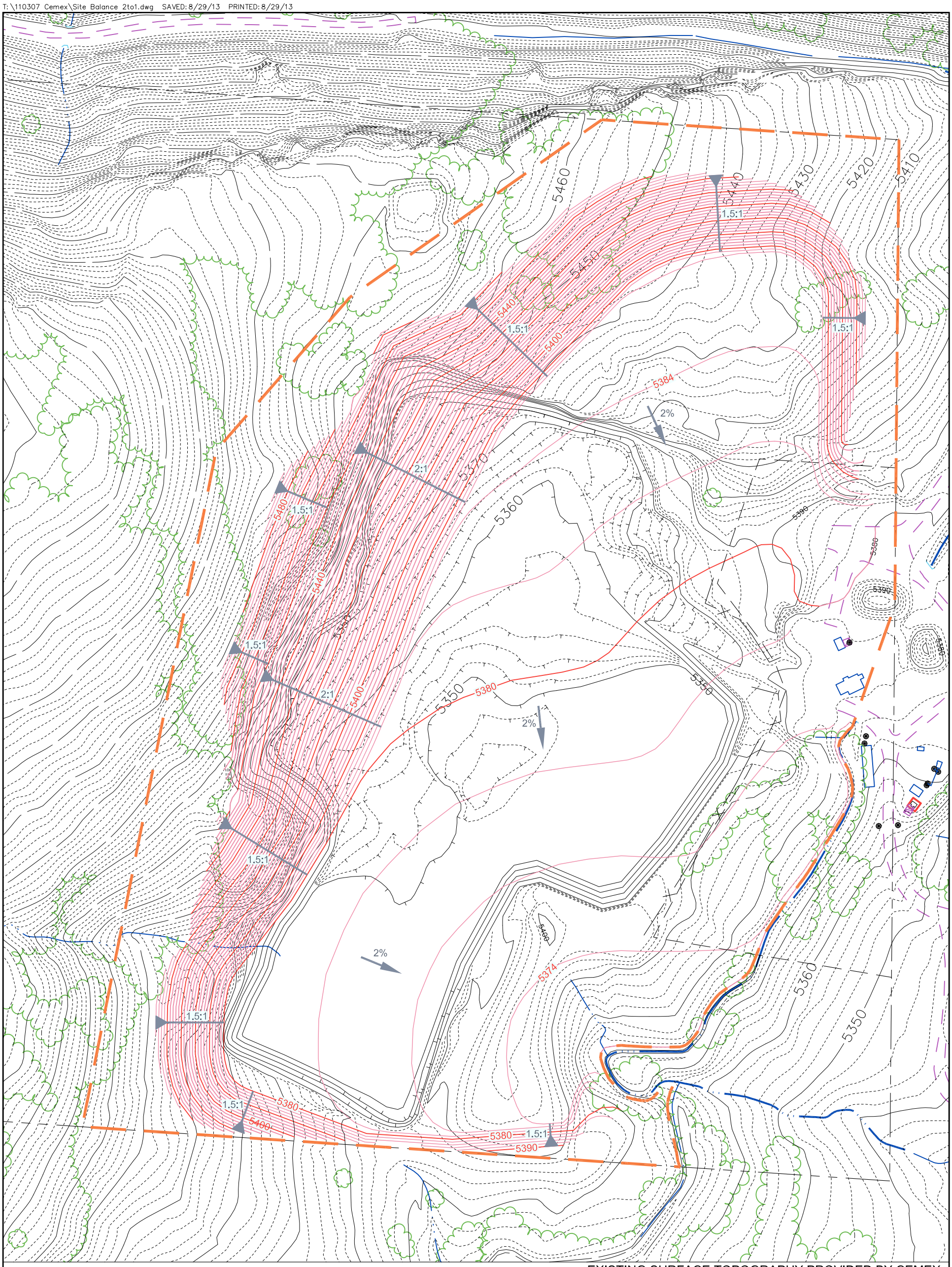

EXISTING SURFACE TOPOGRAPHY PROVIDED BY CEMEX.

EXISTING SURFACE CONTOURS
PROPOSED SURFACE CONTOURS
EXISTING UNIMPROVED ROAD
EXISTING IRRIGATION CANAL
EXISTING EPHEMERAL STREAM
APPROXIMATE PROPERTY BOUNDARY
AFFECTED AREA BOUNDARY

	211,840 cy	CUT
-	6,572 cy	TOPSOIL STOCKPILES
	205,268 cy	CUT LESS TOPSOIL STOCKPILES
+	41,054 cy	BULKING FACTOR (20%)
	246,322 cy	NET CUT INCLUDING BULKING FACTOR (20%)
-	246,322 cy	FILL
	0 cy	NET

NORTH

SCALE IN FEET
0 100'

Project No. 110307

August 2013

FOR PERMITTING
NOT FOR CONSTRUCTION

Engineering Analytics, Inc.

CEMEX

FIGURE F-1
RECLAMATION GRADING PLAN - 2H:1V FILL SLOPES
CEMEX LYONS

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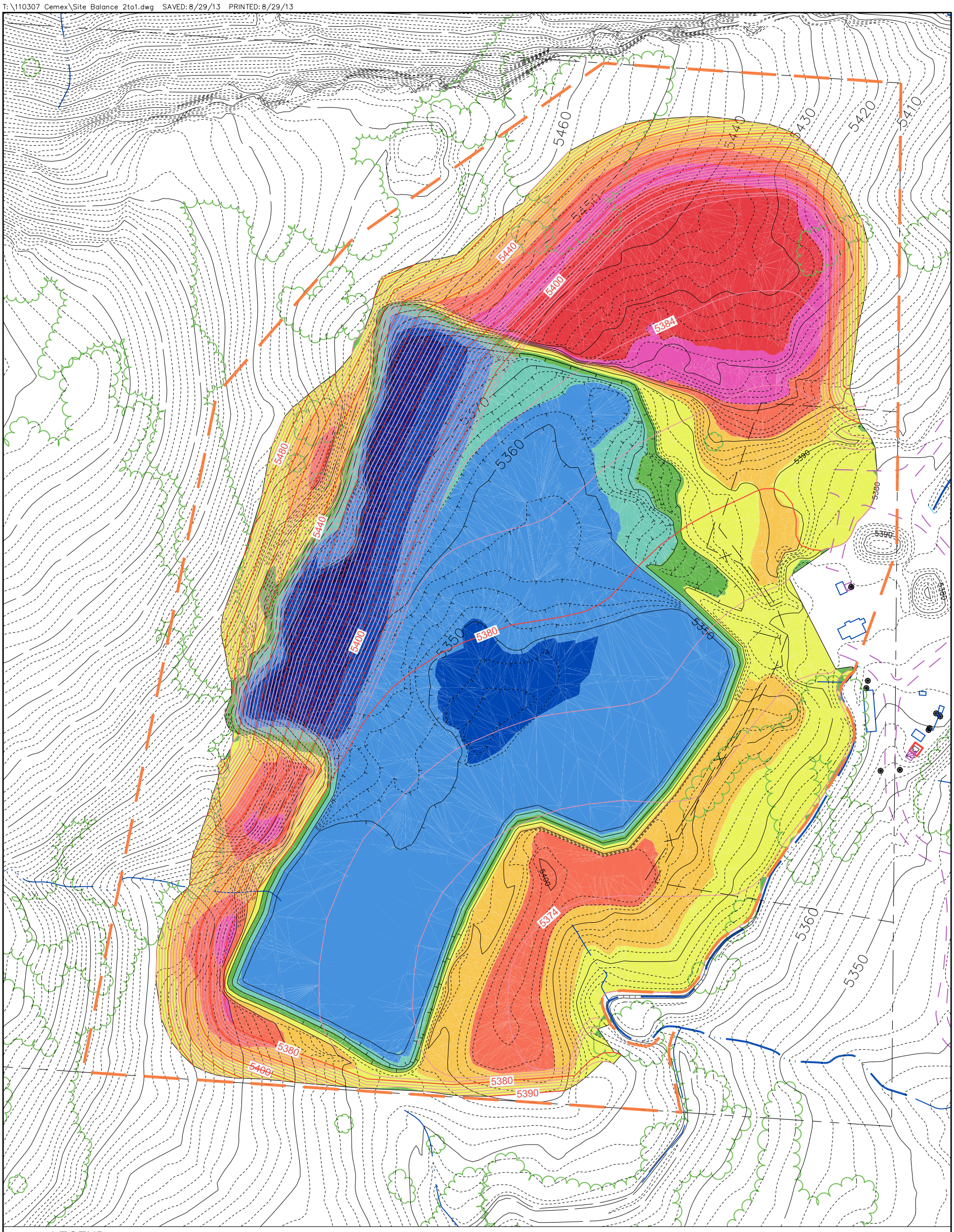


LEGEND:

-58' to -40' (cut)	0' to 10' (fill)
-40' to -30' (cut)	10' to 20' (fill)
-30' to -20' (cut)	20' to 30' (fill)
-20' to -10' (cut)	30' to 40' (fill)
-10' to 0' (cut)	40' to 64' (fill)

EXISTING SURFACE TOPOGRAPHY PROVIDED BY CEMEX.

- EXISTING SURFACE CONTOURS
- PROPOSED SURFACE CONTOURS
- EXISTING UNIMPROVED ROAD
- EXISTING IRRIGATION CANAL
- EXISTING EPHEMERAL STREAM
- APPROXIMATE PROPERTY BOUNDARY
- AFFECTED AREA BOUNDARY

NORTH

SCALE IN FEET
0 100'

Project No. 110307

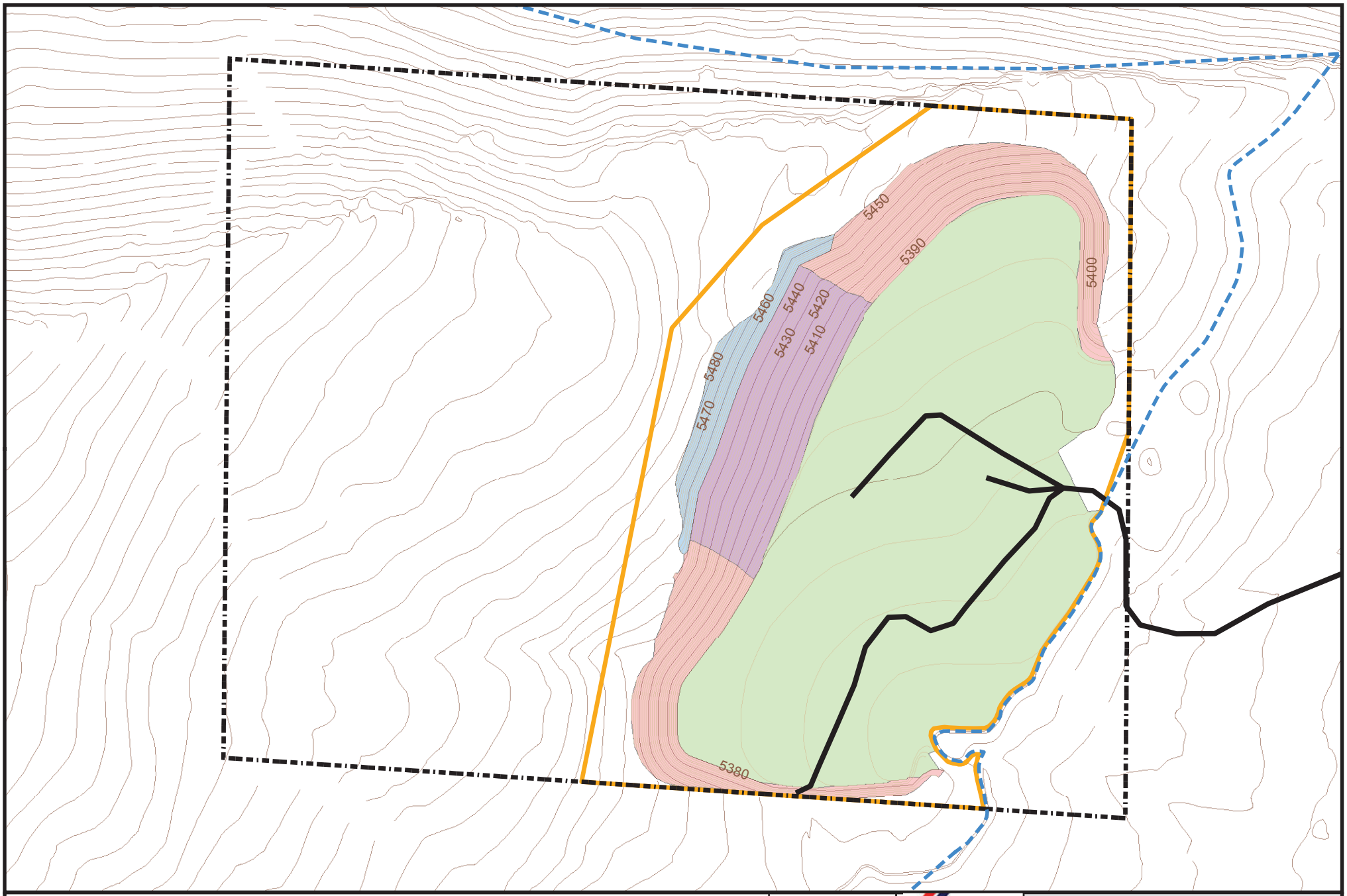
August 2013

FOR PERMITTING
NOT FOR CONSTRUCTION

Engineering Analytics, Inc.

CEMEX

FIGURE F-2
RECLAMATION GRADING PLAN ISOPACH - 2H:1V FILL SLOPES
CEMEX LYONS



2% slope - Native Revegetation
50% slope - Native Revegetation + Erosion Control
50% slope - Rock face
67% slope - Rock Outcrop w/ raptor habitat

Property Boundary
Affected Area
Private Access Road
Canal/Ditch

Final Topography (10 ft)
Final Topography (2 ft)

N

1 inch = 200 feet

0 100 200 400 Feet

Habitat Management

CEMEX Building the future

Drawn By: RFB	REVISIONS
Checked By: KEC	DATE / BY
Approved By: DTA	
Date: 8-28-2013	

CEMEX SANDSTONE QUARRY

FIGURE F-3
FINAL RECLAMATION & REVEGETATION MAP

Cemex Sandstone Quarry
Permit M-1977-361
Exhibit G - Water Information

The South Ledge Irrigation Ditch traverses the east boundary of the property. This is the only water resource located on this property. There are no known aquifers on this property.

The proposed mining operation is not expected to directly affect the South Ledge Irrigation Ditch.

Cemex Sandstone Quarry
Permit M-1977-361
Exhibit H – Wildlife Information

The wildlife information included in the original Limited Impact (110) permit is incorporated herein by reference. The Cemex Sandstone Quarry is within the known winter range of elk, mule deer, and white-tail deer populations in the area as well as many bird species.

A known red-tailed hawk nest within the property boundary will be monitored and blasting will be scheduled to avoid disturbing this nest. Scheduling details are included in Exhibit D – Mining Plan and Exhibit E – Reclamation Plan.

Cemex Sandstone Quarry
Permit M-1977-361
Exhibit I - Soil Information

I-1 Introduction

The soil information included in this permit conversion is from soil surveys performed by the Natural Resource Conservation Service (NRCS) and obtained through their website. An overlay of the NRCS soil mapping for the Boulder County Area has been overlain on the Sandstone Quarry base map (Figure I-1). Mapping and soil map unit descriptions for the permit area from NRCS soil series descriptions are contained in Appendix I-A and were used to determine soil horizon depths, estimates for topsoil and subsoil salvage depths, and stockpile volumes.

This existing NRCS information is considered sufficient to address all the requirements listed in DRMS Rule 6, Section 6.4.9. Therefore, no site specific soil surveys were conducted.

I-2 Soil Classification and Descriptions

The affected area is almost entirely within the Baller Stony Sandy Loam soil series. These soils are formed from weathered sandstone and are very stony, shallow and well-drained. This soil series primarily supports upland dry grass and shrub vegetation communities. The Baller series is in the loamy-skeletal, mixed, superactive, mesic Lithic Haplustolls taxonomic class. Lithic Haplustolls have a shallow mollic epipedon that extends down to the lithic contact which occurs within 50 cm of the mineral soil surface. Thus, the topsoil or suitable growth media is general very shallow. A small area that encompasses on 0.5% of the anticipated disturbance area is in the Six Mile Stone Loam soil series.

I-3 Soil Fertility

While no laboratory analyses from the permit area have been conducted, an analysis for Cemex's Dowe Flats Quarry two miles to the northeast suggests a slightly alkaline topsoil material with low organic matter and deficiencies in phosphorus and nitrogen. This is the likely location for imported growth media at the time of reclamation. Soil pH, nutrient and organic matter deficiencies will be ameliorated by amending growth media materials with organic matter and fertilizer as necessary.

I-4 Soil Handling

Newly affected areas will be stripped of suitable growth media prior to mining and the growth media will be stockpiled and stabilized for use in reclamation as discussed in Exhibit E, Section E-7. The estimated salvage depth is only 0-12 inches based on the NRCS survey and field reconnaissance. Soil salvage, placement, and storage activities will be conducted using a variety of mobile equipment. Soil salvage depths will be determined by horizon, organic matter content, coarse fragment content, and equipment accessibility. Due to the shallow depth of suitable A-horizon topsoil materials, some B-horizon and/or C-horizon materials may be salvaged and mixed with the topsoil to provide sufficient growth medium volumes.

Estimated volumes for the potential soil salvage areas are provided in Table I-1. These salvage quantities will likely be insufficient for reclamation needs and additional growth media will need to be imported (see Exhibit E for details). The quantities shown in Table I-1 were used to calculate estimated reclamation costs as provided in Exhibit L: Reclamation Costs.

I-5 References

U.S. Department of Agriculture, Natural Resource Conservation Service Soil Survey Division. 2003. Official Series Description - Baller Series.
URL: https://soilseries.sc.egov.usda.gov/OSD_Docs/B/BALLER.html [accessed July 2013].

U.S. Department of Agriculture, Natural Resource Conservation Service. 2013. Web Soil Survey of Boulder County Area, Colorado. Survey Data from May 1, 2009. URL: http://websoilsurvey.nrcs.usda.gov [accessed March 2013].

Table I-1: Estimated Soil Salvage Quantities

Soil Stripping Area	Soil Code	Soil Type	Acres	Slope	Adjusted Acres	Soil Depth (in)		Soil Removal (cy)	
						A-Horizon	C-Horizon	A-Horizon	C-Horizon
West Side - Forested	Ba	Baller	0.570	3.5:1	0.593	2	2	159	159
West Side - Drainage	Ba	Baller	0.065	4:1	0.067	6	6	54	54
North Slope	Ba	Baller	2.415	6:1	2.448	4	6	1317	1975
South Side	Ba	Baller	0.365	7.5:1	0.369	4	4	198	198
East Side	Ba	Baller	0.956	3:1	1.008	4	6	542	813
Stockpile 1	Ba	Baller	0.768	n/a	0.768	36	6	3717	619
Stockpile 2	Ba	Baller	0.116	n/a	0.116	60	6	938	94
Pit Floor - Temporary Reclamation	Ba	Baller	1.367	n/a	1.367	12	0	2206	0
Surface Disturbance - Subsoil Only	Ba	Baller	2.098	n/a	2.098	0	6	0	1693
Total			**8.721**		**8.834**			**9,130**	**5,605**

Appendix I-A: Map Unit Descriptions

BALLER SERIES

The Baller series consists of shallow, well drained soils that formed in material weathered from sandstone. Baller soils are on upland hills and ridges and have slopes of 2 to 30 percent. The mean annual precipitation is about 18 inches and the mean annual air temperature is about 48 degrees F.

TAXONOMIC CLASS: Loamy-skeletal, mixed, superactive, mesic Lithic Haplustolls

TYPICAL PEDON: Baller very stony fine sandy loam, grassland. (Colors are for dry soil unless otherwise noted.)

A1--0 to 10 inches; grayish brown (10YR 5/2) very stony fine sandy loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, very friable; 50 percent stones and cobbles, mostly sandstone; neutral (pH 7.0); clear smooth boundary. (6 to 20 inches thick)

C--10 to 15 inches; light brownish gray (10YR 6/2) very stony fine sandy loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, very friable; 60 percent stones and cobbles, mostly sandstone; neutral (pH 7.0); abrupt smooth boundary. (0 to 14 inches thick)

R--15 inches; noncalcareous hard sandstone.

TYPE LOCATION: Boulder County, Colorado; approximately 1,000 feet south and 1,500 feet west of the NE corner of Sec. 7, T. 2 N., R. 70 W.

RANGE IN CHARACTERISTICS: The mollic epipedon is 7 to 20 inches thick and depth to the lithic contact ranges from 10 to 20 inches. Organic carbon ranges from .7 to about 2 percent in the mollic epipedon and decreases uniformly with increasing depth. The soil is 80 to 100 percent base saturated. The matrix material of the control section is typically fine sandy loam but clay ranges from 5 to 18 percent, silt from 5 to 35 percent, and sand from 52 to 80 percent with more than 35 percent fine sand or coarser. Rock fragments range from 35 to about 75 percent by volume and consist mainly of stones and cobbles. The mean annual soil temperature ranges from 47 to 58 degrees F and mean summer soil temperature ranges from 59 to 72 degrees F. The time the soil temperature at depths of 20 inches is 41 degrees F or higher ranges from about 230 to 305 days. Cumulative time the soil is moist in some part of the moisture control section and soil temperature at depths of 20 inches is 41 degrees F or higher ranges from about 56 to 152 days.

The A horizon has hue of 5Y through 7.5YR, value of 4 or 5 dry, 2 or 3 moist, and chroma of 2 or 3. It is slightly acid to mildly alkaline (pH 6.1 to 7.8). This horizon usually has fine granular structure but it has subangular blocky structure in some pedons. It is soft or slightly hard.

The C horizon has hue of 5Y through 7.5YR. It is slightly acid to mildly alkaline (pH 6.1 to 7.8). This horizon is generally noncalcareous but is inconsistently calcareous in the few inches immediately above the bedrock in some pedons. This horizon is absent in some pedons and the mollic epipedon extends to the bedrock.

COMPETING SERIES: These are the Faraway, Oro Grande, and Santana series. Faraway soils contain rock fragments mainly of gravel size and contain less than 35 percent fine sand or coarser. Oro Grande soils are calcareous throughout and have more than 18 percent clay in the control section. Santa soils have more than 18 percent clay and less than 35 percent rock fragments in the control section.

GEOGRAPHIC SETTING: The Baller soils are on upland hills and ridges underlain by sandstone bedrock. Slope gradients usually range from 2 to 30 percent. The soils formed in material weathered from sandstone. At the type location the average annual precipitation is 18 inches, with peak periods of precipitation during the spring and summer. The average annual temperature is 48 degrees F, the average summer temperature is 68 degrees F.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the Hargreave and Tassel soils. Hargreave soils have an argillic horizon and have bedrock below depth of 20 inches. Tassel soils have an ochric epipedon.

DRAINAGE AND PERMEABILITY: Well drained; rapid runoff; moderately rapid permeability above bedrock.

USE AND VEGETATION: These soils are used principally as native pastureland. Principal native plants are blue grama, cactus, yucca, green needlegrass, sand dropseed, and scattered juniper.

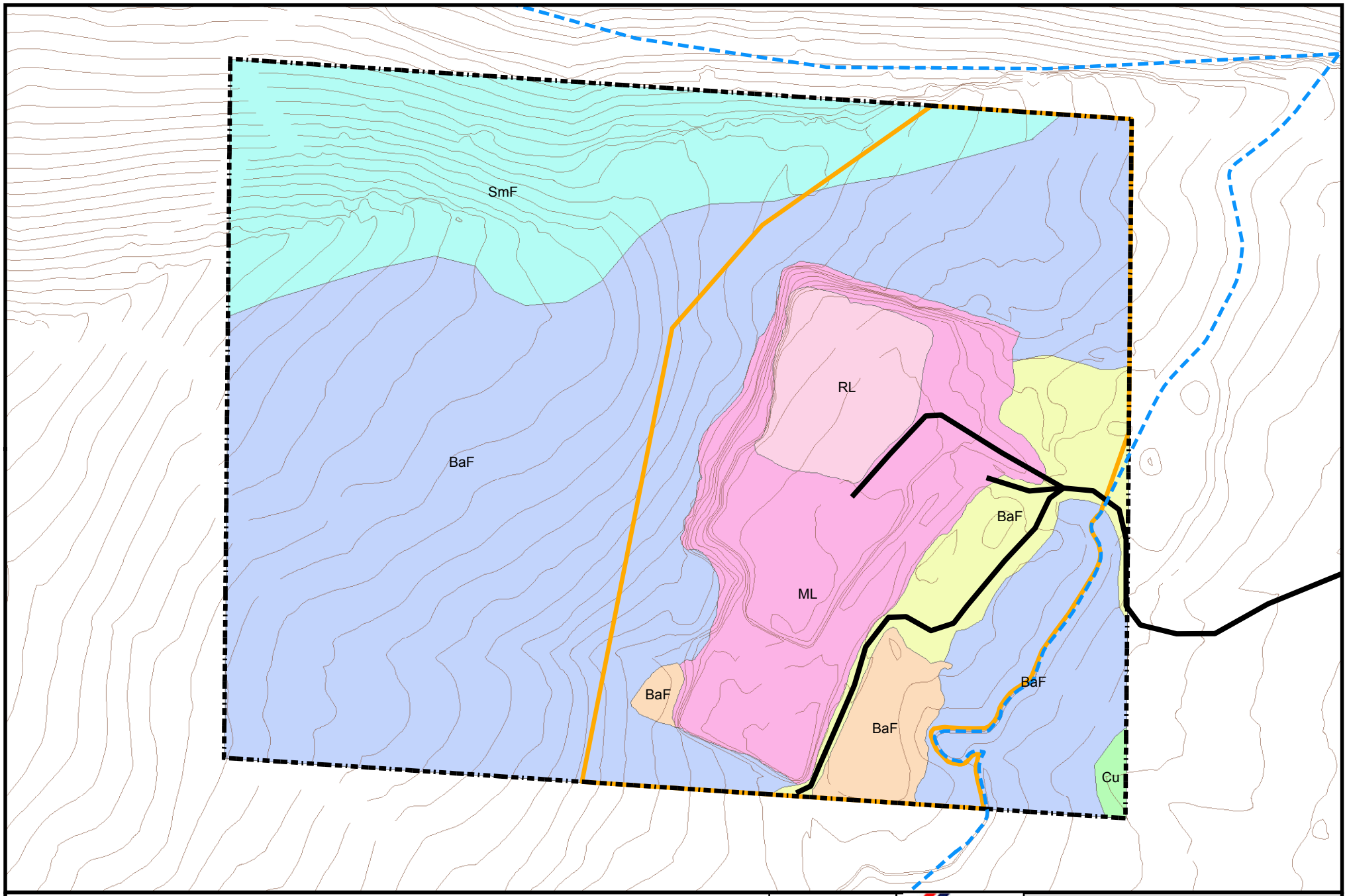
DISTRIBUTION AND EXTENT: Central portions of Colorado adjacent to the Front Range. The series is of moderate extent.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Bozeman, Montana

SERIES ESTABLISHED: Boulder Area, Colorado, 1971.

REMARKS: Last updated by the state 5/75.

The superactive cation exchange activity class was added in 03/2003 to the taxonomic classification by the National Soil Survey Center on request of the Lakewood MLRA office, without review of the soil series property data. The remainder of this document has not been updated.



Soil Type

- Baller stony sandy loam
- Sixmile stony loam
- Colluvial land
- Growth Media Stockpile
- Mined land
- Surface Disturbance
- Temporary Reclamation
- Property Boundary
- Affected Area
- Private Access Road
- Canal/Ditch
- Current Topography (10 ft)

N

1 inch = 200 feet

0 100 200 400 Feet

Habitat Management

CEMEX Building the future

Drawn By: RFB	REVISIONS
Checked By: KEC	DATE / BY
Approved By: DTA	
Date: 8-28-2013	

CEMEX SANDSTONE QUARRY

FIGURE I-1

SOIL SERIES MAP

Cemex Sandstone Quarry
Permit M-1977-361
Exhibit J – Vegetation Information

J-1 Introduction

The Cemex Sandstone Quarry property is ranges from 5,350 ft to 5,600 ft in elevation. This elevation is the Front Range foothills is in the vegetation ecotone between the higher elevation ponderosa pine community and the lower elevation plains grassland community. The vegetation at the site is characterized by ponderosa pine forest, oak and mountain mahogany shrublands, and upland grassland communities.

J-2 Vegetation Communities

The vegetation communities described in this permit conversion application are based on field surveys and digital mapping from a 2013 aerial photograph of the site. A summary of each vegetation community's extent is presented in Table J-1 and shown on Figure J-1.

Table J-1: Vegetation Community Present on the Permitted Mine Property.

	Affected Area		Quarry Property	
Community	Acres	% Vegetation Community Type within Affected Area	Acres	% Vegetation Community Type within Property
Upland Grassland	4.13	26%	5.58	16%
Shrubland	1.21	8%	9.69	27%
Ponderosa Pine Forest	1.87	12%	10.23	29%
Temporary Reclamation	2.26	14%	2.26	6%
Total Vegetated Acreage	***9.47***	***59%***	***27.76***	***78%***
Rock Outcrop	0.01	0%	1.37	4%
Mining Disturbance	6.52	41%	6.65	19%

J-2.1 Upland Grassland

The majority (26%) of the area that will be disturbed for mining and/or reclamation activities as outlined in this permit conversion are upland grassy meadows. These communities are dominated by blue grama (*Bouteloua gracilis*), Western wheatgrass (*Pascopyrum smithii*), needle and thread grass (*Heterostipa comata*), fringed sage (*Artemisia frigida*), field sage (*A. campestris*), and prickly pear cactus (*Opuntia polyacantha*) with only a few shrubs, primarily rubber rabbitbrush (*Ericameria nauseosa*) or yucca (*Yucca glauca*).

J-2.2 Shrubland

The grassy meadows are bordered by shrubland communities which form the transition between the grassland and ponderosa pine forest. These communities make up only 8% of the affected area, but 27% of the total property. The shrublands are dominated by mountain mahogany (*Cercocarpus montanus*), three-leaf sumac (*Rhus trilobata*), and chokecherry (*Prunus virginiana*) with some rubber rabbitbrush closest to the grassland where the soils become deeper.

J-2.3 Ponderosa Pine Forest

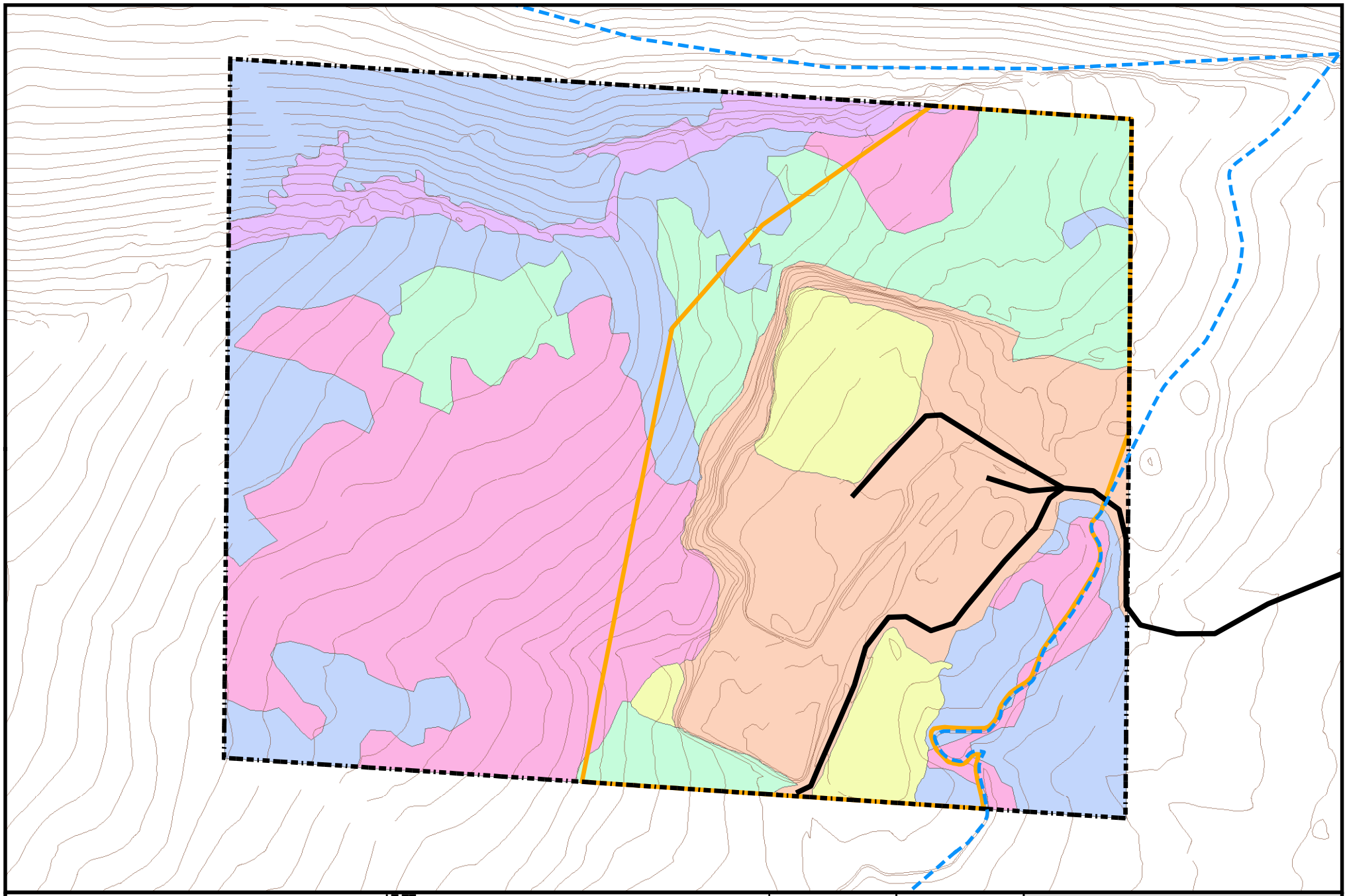
The ponderosa pine forest areas are the dominant on the property, covering 29% of the area. These forests are also the most visible and thus an effort was made to minimize impacts during mining and reclamation with the plans only 1.87 acres in the affected area. These forested areas are dominated by ponderosa pine (*Pinus ponderosa*) growing in very rocky soils and outcrops with minimal understory. The dominant species in the understory are similar to those in the grassland and shrubland communities and include mountain mahogany, three-leaf sumac, needle and thread grass, Western wheatgrass, fringed sage, and prickly pear cactus.

J-2.4 Temporary Reclamation

Several areas on within the Sandstone Quarry permit boundary were reclaimed in 2012. These areas were reclaimed using methods and a seed mixture similar to that described in Exhibit E. All of these areas are establishing well, but will likely be disturbed in the final grading design to achieve positive drainage. The growth media will be salvaged prior to regrading.

J-3 Species of Concern

There are no known State or Federal listed threatened or endangered species on the Cemex Sandstone Quarry property.



Habitat Management
Environmental & Natural Resource Services

CEMEX

Drawn By:	RFB
Checked By:	KEC
Approved By:	DTA
Date:	8-28-2013

REVISIONS		
DATE	BY	

CEMEX SANDSTONE QUARRY

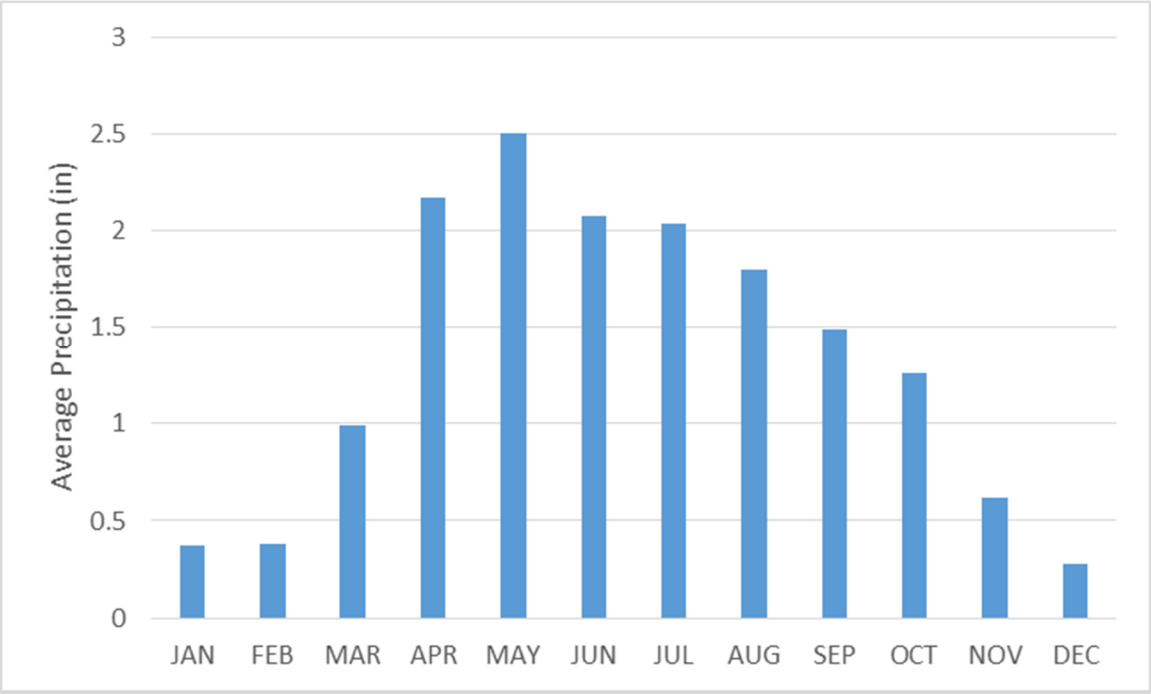
FIGURE J-1
VEGETATION COMMUNITIES MAP

Cemex Sandstone Quarry
Permit M-1977-361
Exhibit K – Climate Information

The climate at the Cemex Sandstone Quarry is typical of the Front Range foothills of Colorado. The average high and low temperatures in July are 90°F and 54°F, respectively, while the average high and low temperatures in December and January are 44°F and 11°F, respectively (The Weather Channel 2013).

Average precipitation is approximately 16 inches of which the majority is summer rainfall. Average frost-free period lasts from mid-May through early October (Plant Maps 2013). Average annual snowfall is approximately 37 inches with the greatest snowfall experienced in February and March (Western Regional Climate Center 2013).

Figure K-1: Average Monthly Precipitation*



* Data are from Flatiron Reservoir Western Regional Climate Center weather station (Western Regional Climate Center 2013) approximately 10 miles north of the permit area and 100 ft higher in elevation.

References

Plant Maps. 2013. Interactive USDA Gardening and Plant Hardiness Zone Map for Colorado. URL: http://www.plantmaps.com [accessed July 2013].

The Weather Channel. 2013. Monthly Weather for Lyons, CO 80540. URL: http://www.weather.com/weather/wxclimatology/monthly/graph/80540 [accessed July 2013].

Western Regional Climate Center. 2013. Flatiron Reservoir Historic Climate Data. URL: http://www.wrcc.dri.edu/coopmap/ [accessed July 2013].

Cemex Sandstone Quarry
Permit M-1977-361
Exhibit L – Reclamation Costs

Includes:

1. Summary of Reclamation Costs
2. 2012 Average Labor Rates
3. 2013 Third Party Equipment Operation Costs
4. Estimated Reclamation Costs Detail

Cemex Sandstone Quarry Reclamation Cost Summary

Task	Estimated Cost
Soil Stripping	$ 15,274.31
Blasting	$ 239,906.98
Grading	$ 226,762.06
Revegetation	$ 149,362.67
Other Reclamation Costs (Supervision, Maintenance, Monitoring, Etc.)	$ 226,614.02
Total	**$ 857,920.03**

2012 Reclamation Labor Rates

Source of base rates: Colorado Labor Market 2012 Employment Wage Statistics (http://www.colmigateway.com)

Worker Classification	Base Rate	Fringes[1]	FICA[2]	SIIS[3]	Unemployment[4]	Workers' Comp[5]	Total
Equipment Operator	$ 21.30	$ 4.69	$ 1.63	$ 1.35	$ 0.81	$ 3.41	$ 33.18
Truck Driver	$ 15.65	$ 3.44	$ 1.20	$ 0.99	$ 0.59	$ 2.50	$ 24.38
Laborer	$ 15.22	$ 3.35	$ 1.16	$ 0.96	$ 0.58	$ 2.44	$ 23.71
Mechanic	$ 21.65	$ 4.76	$ 1.66	$ 1.37	$ 0.82	$ 3.46	$ 33.73
Foreman	$ 32.05	$ 10.90	$ 2.45	$ 2.03	$ 1.22	$ 5.13	$ 53.77
Superintendent	$ 43.93	$ 14.94	$ 3.36	$ 2.78	$ 1.67	$ 7.03	$ 73.71

[1]Fringes		
(Operator/ Mechanic/ Truck driver/ Laborer)	22%	Source: Avg of Colorado Contractor's Assn. 1999 & 2001 Surveys + Davis Bacon
(Foreman/ Superintendent)	34%	Wage Rate Decision for Colorado SUC D2001-016 12/20/2001
[2]FICA	7.65%	Source: http://www.socialsecurity.gov/OACT/ProgData/taxRates.html
[3]SIIS	6.33%	Source: Avg of Colorado Contractor's Assn. 1999 & 2001 Surveys
[4]Unemployment	3.80%	Source: www.coworkforce.com - Colorado Department of Labor and Employment
[5]Workers Comp	16.00%	Source: Avg of Colorado Contractor's Assn. 1999 & 2001 Surveys

2013 Third Party Reclamation Equipment Rates

Equipment	Monthly Rental[1]	Hourly Cost	Operating Cost/Hour					Total Cost/Hour		
			Fuel Burn[2]	Fuel Cost[3]	Service[4]	SMM[5]	Total	Equipment[6]	Labor[7]	Total
Dozers/Compactors										
D6R/T Dozer	$ 10,080	$ 57.27	6.5	$ 26.00	$ 2.50	$ 1.15	$ 29.65	$ 86.92	$ 33.18	$ 120.10
D7R Dozer	$ 14,960	$ 85.00	8.5	$ 34.00	$ 2.50	$ 1.70	$ 38.20	$ 123.20	$ 33.18	$ 156.38
D8T Dozer	$ 17,670	$ 100.40	11.5	$ 46.00	$ 2.50	$ 2.01	$ 50.51	$ 150.91	$ 33.18	$ 184.09
Loaders										
938 Loader	$ 6,560	$ 37.27	4	$ 16.00	$ 2.50	$ 0.75	$ 19.25	$ 56.52	$ 33.18	$ 89.70
950 Loader	$ 8,090	$ 45.97	4	$ 16.00	$ 2.50	$ 0.92	$ 19.42	$ 65.39	$ 33.18	$ 98.57
972 Loader	$ 12,210	$ 69.38	6	$ 24.00	$ 2.50	$ 1.39	$ 27.89	$ 97.27	$ 33.18	$ 130.45
420 Backhoe Loader	$ 2,790	$ 15.85	3	$ 12.00	$ 2.50	$ 0.32	$ 14.82	$ 30.67	$ 33.18	$ 63.85
Excavators										
320 Excavator	$ 6,320	$ 35.91	5	$ 20.00	$ 2.50	$ 0.72	$ 23.22	$ 59.13	$ 33.18	$ 92.31
320 Excavator w/Thumb	$ 7,380	$ 41.93	5	$ 20.00	$ 2.50	$ 0.84	$ 23.34	$ 65.27	$ 33.18	$ 98.45
330 Excavator	$ 10,110	$ 57.44	8	$ 32.00	$ 2.50	$ 1.15	$ 35.65	$ 93.09	$ 33.18	$ 126.27
330 Excavator w/Thumb	$ 11,580	$ 65.80	8	$ 32.00	$ 2.50	$ 1.32	$ 35.82	$ 101.62	$ 33.18	$ 134.80
345 Excavator	$ 15,390	$ 87.44	10	$ 40.00	$ 2.50	$ 1.75	$ 44.25	$ 131.69	$ 33.18	$ 164.87
Trucks										
Water Truck (4000 gal)	$ 6,130	$ 34.83	4	$ 16.00	$ 2.50	$ 0.70	$ 19.20	$ 54.03	$ 33.18	$ 87.21
10 CY Hwy Truck								$ 60.00	$ 33.18	$ 93.18
730 Articulated Off-Road Truck	$ 12,710	$ 72.22	6	$ 24.00	$ 2.50	$ 1.44	$ 27.94	$ 100.16	$ 33.18	$ 133.34
740 Articulated Off-Road Truck	$ 18,180	$ 103.30	8	$ 32.00	$ 2.50	$ 2.07	$ 36.57	$ 139.87	$ 33.18	$ 173.05
Mechanic's Truck	$ 6,130	$ 34.83	2	$ 8.00	$ 2.50	$ 0.70	$ 11.20	$ 46.03	$ 33.18	$ 79.21
Pickup								$ 15.00		
Graders										
120M Grader	$ 6,950	$ 39.49	4	$ 16.00	$ 2.50	$ 0.79	$ 19.29	$ 58.78	$ 33.18	$ 91.96
12M Grader	$ 7,050	$ 40.06	4	$ 16.00	$ 2.50	$ 0.80	$ 19.30	$ 59.36	$ 33.18	$ 92.54

[1]Monthly rental rates for Caterpillar equipment from 2013 WagnerEquipment.com
[2]Fuel burn in gallons per hour from the Caterpillar Performance Handbook
[3]Diesel included at $4.00/gallon
[4]Service cost assumes average service cost of $500 and a service interval of 200 hours
[5]SMM tax is calculated at 2% of the rental rate divided by 176 hours/month
[6]Equipment Rates calculated from rental and operating costs or from 2012 contractor quotes provided to Cemex
[7]Labor rates from the Labor Rates Table

2013 Detailed Final Reclamation Cost Estimate

Soil Stripping

Task	Equipment Type	Qty	Material Quantity		Productivity		Hours	Equipment Cost/Unit	Equipment Total Cost	Labor Cost/Unit	Labor Total Cost	Materials Cost/Unit	Materials Total Cost	Total Cost
Pull back edges	Excavator (330)	1	2,361	cy	73.2	cy/hr	32.3	$ 93.09	$ 3,006.81	$ 33.18	$ 1,071.71			$ 4,078.52
Push open areas	Dozer (D6)	1	2,895	cy	225	cy/hr	12.9	$ 86.92	$ 1,121.27	$ 33.18	$ 428.02			$ 1,549.29
Load stockpile	Excavator (330)	1	6,572	cy			25.7	$ 93.09	$ 2,392.41	$ 33.18	$ 852.73			$ 3,245.14
Haul stockpile	Haul truck (30T)	2	6,572	cy	256.5	cy/hr	25.7	$ 100.16	$ 5,148.22	$ 24.38	$ 1,253.13			$ 6,401.36
Totals							**96.6**		**$ 11,668.71**		**$ 3,605.59**		**$ -**	**$ 15,274.31**

Blasting

Task	Equipment	Quantity[1]		Productivity	Hours	Equipment Cost/Unit	Equipment Total Cost	Labor Cost/Unit	Labor Total Cost	Materials Cost/Unit	Materials Total Cost	Total Cost
Reclamation	($0.55/ton)	436,195	tons				(based on 2012 contractor quote)					$239,906.98
Totals					**0**		**$ -**		**$ -**		**$ -**	**$239,906.98**

[1] Volume calculated from cut fill models shown in Geotechnical Stability Exhibit * 2.125 [bulk density of sandstone in Caterpillar Performance Handbook] * 90% [accounts for cast blasting]

Grading

Task	Equipment	Quantity		Productivity		Hours	Equipment Cost/Unit	Equipment Total Cost	Labor Cost/Unit	Labor Total Cost	Materials Cost/Unit	Materials Total Cost	Total Cost
Grade Blasted Material													
Spread Blasted Material	Bull Dozer (D8)	2	221,690	cy	360	cy/hr	615.9	$ 150.91	$185,890.94	$ 33.18	$ 40,871.12			$226,762.06
Totals							**615.9**		**$185,890.94**		**$ 40,871.12**		**$ -**	**$226,762.06**

Revegetation

Task	Equipment		Quantity[2]		Productivity		Hours	Equipment Cost/Unit	Equipment Total Cost	Labor Cost/Unit	Labor Total Cost	Materials Cost/Unit	Materials Total Cost	Total Cost
Growth Media Application (18 inches)														
Load	Front End Loader (950)	1	11,828	cy			46.2	$ 65.39	$ 3,021.02	$ 33.18	$ 1,532.92			$ 4,553.93
Haul	Haul truck (30T)	2	11,828	cy	256.5	cy/hr	46.2	$ 100.16	$ 9,254.78	$ 24.38	$ 2,252.71			$ 11,507.50
Spread (2:1)	Bull Dozer (D6)	1	3,688	cy	198	cy/hr	18.7	$ 86.92	$ 1,625.40	$ 33.18	$ 620.47			$ 2,245.87
Spread (50:1)	Bull Dozer (D6)	1	8,140	cy	180	cy/hr	45.3	$ 86.92	$ 3,937.48	$ 33.18	$ 1,503.05			$ 5,440.53
Imported Growth Media Application (18 inches)														
Load	Front End Loader (950)	1	19,221	cy			213.6	$ 65.39	$ 13,967.30	$ 33.18	$ 7,087.25			$ 21,054.55
Haul	Dump Truck (10 CY)	4	19,221	cy	90	cy/hr	213.6	$ 60.00	$ 51,264.00	$ 24.38	$ 20,830.27			$ 72,094.27
Spread (2:1)	Bull Dozer (D6)	1	5,993	cy	198	cy/hr	30.3	$ 86.92	$ 2,633.68	$ 33.18	$ 1,005.35			$ 3,639.03
Spread (50:1)	Bull Dozer (D6)	1	13,228	cy	180	cy/hr	73.5	$ 86.92	$ 6,388.62	$ 33.18	$ 2,438.73			$ 8,827.35
Seed Bed Preparation														
Rip (2:1)	Bull Dozer (D6)	1	4.00	ac	0.5	ac/hr	8.0	$ 86.92	$ 695.36	$ 33.18	$ 265.44			$ 960.80
Rip (50:1)	Bull Dozer (D6)	1	8.83	ac	1	ac/hr	8.9	$ 86.92	$ 773.59	$ 33.18	$ 295.30			$ 1,068.89
Fertilizer Application														
Fertilizer (18-10-10)	@ 240 lbs/ac		12.83	ac								$ 105.00	$ 1,347.15	$ 1,347.15
Broadcasting (2:1)	Hand		4.00	ac	0.3	ac/hr	13.4			$ 33.18	$ 889.22			$ 889.22
Broadcasting (50:1)	ATV		8.83	ac	1.5	ac/hr	5.9	$ 15.00	$ 88.50	$ 33.18	$ 195.76			$ 284.26
Seed Application														
Seed	@ 16 lbs/ac		12.83	ac								$ 160.00	$ 2,052.80	$ 2,052.80
Broadcasting (2:1)	Hand		4.00	ac	0.3	ac/hr	13.4			$ 33.18	$ 889.22			$ 889.22
Broadcasting (50:1)	ATV		8.83		1.5	/hr	5.9	$ 15.00	$ 88.50	$ 33.18	$ 195.76			$ 284.26
Harrowing														
Harrow (2:1)	Hand		4.00	ac	0.24	ac/hr	16.7			$ 33.18	$ 1,108.21			$ 1,108.21
Harrow (50:1)	ATV		8.83	ac	2	ac/hr	4.5	$ 15.00	$ 67.50	$ 33.18	$ 149.31			$ 216.81
Mulching														
Hydromulch (2:1)	($1,400/acre)		4.00	ac					(based on 2012 contractor quote)					$ 5,600.00
Native Hay Mulch (50:1)	($600/acre)		8.83	ac					(based on 2012 contractor quote)					$ 5,298.00
Totals							**764.1**		**$ 93,805.73**		**$ 41,258.99**		**$ 3,399.95**	**$149,362.67**

[2] Acres are slope corrected to account for actual surface area for reclamation.

Other Reclamation Costs

Task	Description	Quantity	Productivity	Hours	Equipment Cost/Unit	Equipment Total Cost	Labor Cost/Unit	Labor Total Cost	Materials Cost/Unit	Materials Total Cost	Total Cost
Dust Suppression	Water Truck	1		918.3	$ 54.03	$ 49,615.75	$ 24.38	$ 22,388.15			$ 72,003.90
Maintenance	Mechanic's Truck	1		918.3	$ 46.03	$ 42,269.35	$ 33.73	$ 30,974.26			$ 73,243.61
Supervision	Foreman	1		918.3	$ 15.00	$ 13,774.50	$ 53.77	$ 49,376.99			$ 63,151.49
Supervision	Superintendent	1		59.8	$ 15.00	$ 897.00	$ 73.71	$ 4,407.86			$ 5,304.86
Bond Release Monitoring	3 visits					(based on 2012 contractor quote)					$ 12,000.00
Revegetation Maintenance	10% of revegetation costs										$ 910.16
Totals				**2814.7**		**$106,556.60**		**$107,147.26**		**$ -**	**$226,614.02**

Cemex Sandstone Quarry
Permit M-1977-361
Exhibit M – Other Permits and Licenses

Cemex holds several other permits and licenses as a part of this operation (Table M-1). These permits, licenses, and authorizations are on file with the agencies listed and are located in the environmental files at the Cemex Lyons Plant.

Table M-1: Cemex Sandstone Quarry Permits and Authorizations

Agency	Item	Description	Status	Term
Colorado Division of Reclamation Mining and Safety	Reclamation Permit M-1977-361	All aspects of construction operations and Reclamation	Current	Life of Mine
Colorado Department of Public Health and Environment; Water Quality Control Division	Stormwater Permit # COR34-0561	Certification to Discharge Under CDPS General Stormwater Discharges Permit COR340000 Associated With Sand and Gravel Mining and Processing	Under Administrative extension	Administrative extension issued 10/9/2012
Colorado Department of Public Health and Environment; Air Quality Control Division	Air Quality Operating Permit #95OPBO082	Sandstone Quarry construction air permit was incorporated into the revised Title V permit for the Lyons Quarry and Dowe Flats Quarry	Current	Title V renewal & modification 4/1/2013

Cemex Sandstone Quarry
Permit M-1977-361
Exhibit N – Source of Legal Right to Enter

The entire affected land boundary described in this permit conversion is within the boundary of property owned by Cemex Construction Materials South LLC (Cemex). However, the only road to access the property crosses the Loukonen Bros Stone property owned by Loukonen Family LLC. The following documents are included in this exhibit to document Cemex's right to enter the areas included in the affected land boundary:

- 2013 Property Tax receipt
- Loukonen Bros lease agreement dated 1/1/2013 attesting to understanding of access easement
- Easement agreement with Loukonen Bros dated 8/10/2001 outlining access easement

2013 REAL PROPERTY NOTICE OF VALUATION

0104382

In order to save postage and printing costs, this is a condensed version of your Notice of Valuation your entire Notice of Valuation which may include a listing of property characteristics germane to value or san sales, further details on the appeal process, sales data used for this valuation cycle and an online appeal at www.bouldercountyassessor.org.

Property Owner: CEMEX INC
PIN No: 90507 (Required to e-file an appeal.)

Account	Property Address/Description
R0118439	12800 N FOOTHILLS HY MINERALS ONLY (SAND & GRAVEL) NE 1/4 SE 20-3N-70 LESS STRIP 50 FT X 669.52 FT I

Classification	Prior	Current	Difference
NATURAL RESRC-TAXABLE VALUE	200	200	0
Total	200	200	0

For Senior Exemption application call 303-441-3530; Veteran Exemption application call 303-284-6077.
Prior estimated taxes: $5. Current estimated taxes: $5 based on an ESTIMATE of 2013 tax rates.
Change in Estimated taxes: $0. This is not a tax bill.

Your property was valued as it existed on January 1, 2013, using an appraisal date of June 30, 2012.
If you are unable to view your Notice of Valuation online, please call us at 303-441-3530.

Check here if new address.

Place sti

Post Offi
deliver m
proper

Boulder County Assessor
PO Box 471
Boulder, CO 80306

ANNUAL CRUSHER SITE LEASE

THIS AGREEMENT is made as of January 1, 2013 between CEMEX Construction Materials South, LLC, ("Lessor") and Loukonen Brothers Stone Company, ("Lessee").

1. Land Description

Lessor owns the real property described in attached Exhibit A ("Premises"). Lessee desires to lease the Premises for stone crushing and/or storage of materials associated with its stone business on the terms set forth in this agreement ("Lease"), and Lessor desires to lease the Premises to Lessee on the terms set forth in this Lease.

2. Term

The term of this Lease is 12 months, beginning on January 1, 2013 and ending at 12:00 midnight, December 31, 2013, unless terminated sooner as provided by this Lease or by law. Lessee or Lessor may terminate the Lease at any time before the end of the lease term by providing written notice thirty (30) days in advance of termination. No refund shall be granted for early lease termination by Lessee.

Any use of the Premises by Lessee after the termination or expiration of the Lease term shall not constitute or be construed as a renewal of this Lease. If Lessee holds over and remains in possession of the Premises after this Lease expires, it shall not be deemed or construed to be a renewal or an extension of this Lease (See Paragraph 19).

3. Rent

Lessee shall pay Lessor one hundred dollars ($100.00) as rent for the Premises during the Lease term. The entire sum is due upon signing of this agreement. Payment shall be made to CEMEX Inc., and mailed to CEMEX, Attention Linda Jackson, P.O. Box 529 Lyons, Colorado 80540 or hand delivered to Linda Jackson. Default of payment shall be grounds for immediate termination by written notice.

4. Use of Premises and Duties of Lessee

Lessee may use the Premises for rock crushing, stone stockpiles, other supplies and related lawful activities.

Lessee understands Lessor's sandstone quarry access easement crosses the Premises, and agrees its use of the Premises and its related stone yard activities will not to interfere with use of this easement by Lessor or its agents.

Lessee shall not make any unlawful, wasteful, or offensive use of the Premises (e.g., growing marijuana) and shall maintain it in a reasonable state of repair. Lessee shall keep the Premises free and clear of rubbish, trash, weeds and reasonably neat at all times.

If required for Lessee's activities on the Premises, Lessee shall acquire and maintain its own expense a Storm Water Permit for the Premises per the Clean Water Act 33 U.S.C. §1251 et seq. (1972). Lessee shall also acquire and maintain any and all other applicable permits and environmental plans (e.g., Spill Prevention Control and Countermeasure Plan, Air Permit etc.).

5. Maintenance

Lessee shall keep the Premises and all improvements (including but not limited to buildings, stockpiles, fences) in good order and repair. Lessee will operate the Premises in accordance with principles of good working practices, will control soil erosion, and be responsible for controlling noxious weeds at Lessee's sole expense (See Exhibit C). Lessor may make any necessary repairs, alterations or maintenance at the expense of Lessee, but shall not be obligated to do so.

6. Purchase of Stone by Lessee

Lessee may purchase blocks of stone from Lessor's adjacent sandstone quarry, as not to exceed 6,000 tons for the year as available. Purchase price for the sandstone will be $ 4.00 per cubic yard. Lessor will first identify the stone available to Lessee, which Lessee may then remove and weigh to determine the amount to be paid. Payment term will be net 30 days. Failure to pay for purchased stone as provided will subject Lessee to remedies at law, but will not be considered a default of this Lease.

7. Compliance with Law

Lessee agrees to comply with any laws, statutes, ordinances or rules of regulations of any governmental authority (local, state or federal) having any jurisdiction over the use or occupancy of the Premises.

8. Indemnification and Risk of Loss

Lessee agrees to indemnify and hold Lessor harmless for any property damage or personal injury arising out of the tenancy or Lessee's operations on the Premises. All machinery on the Premises shall be maintained at Lessee's sole risk. Upon notification, Lessee or designated agent shall respond immediately to remedy any distress or emergency event pertaining to the Premises including but not limited to dust and equipment failure that impinges or restrict Lessors access to the adjacent property, fire flooding etc.

9. Insurance

Lessee shall purchase, maintain and keep current at Lessee's own expense, a Commercial General Liability Insurance policy with minimum limit of one million dollars ($1,000,000) for each occurrence. Prior to execution of the Lease Lessee shall provide to Lessor a Certificate of Insurance that lists CEMEX Construction Materials South, LLC, as Additional Named Insured. This policy shall insure Lessor and Lessee against all liability for injury to persons, livestock, animals and damages to the Premises resulting from use, occupancy, or possession of the Premises by Lessee, its agents, guests and invitees. Lessee shall be responsible for obtaining its own vehicle, fire and

casualty insurance coverage for its personal property. Regardless of the form and amount of insurance, Lessee shall indemnify and hold Lessor harmless from any claims, including attorneys' fees and costs, arising out of or in any manner related to Lessee's use and occupancy of the Premises following damage or destruction by casualty or fire, but if such damage renders the Premises substantially untenantable, the Lessee may terminate this Lease by giving five (5) days written notice to Lessor.

10. Taxes

Lessor shall pay all real property taxes related to the Premises. Lessee shall be responsible for and pay all personal property, inventory, sales, use, income, or other taxes related to Lessee's use or occupancy of the Premises.

11. Condemnation

If all or any part of the Premises is taken for public or quasi-public use under any right of condemnation or eminent domain or similar private purchase as provided by law, this Lease shall terminate as to the effected part, and the entire award shall belong solely to Lessor.

12. Right of Entry

Lessor may enter the Premises at any time during the term for any purpose that does not substantially interfere with Lessee's possession.

13. Subletting and Encumbrances

Lessee shall not assign, sublet or encumber the Premises or any part of the Premises without Lessor's prior written consent. Lessor reserves the right to terminate any sub-lease at any time at Lessor's sole discretion.

14. Mechanic's Liens

Lessor shall not under any circumstance be liable for the payment of any expense incurred for the value of any work done or material furnished to the Premises by Lessee. All such work shall be at Lessee's expense and Lessee shall be solely and wholly responsible to all contractors, laborers and materialmen furnishing labor and material to the Premises. Nothing herein shall authorize Lessee to charge the Premises or any interest of Lessor therein or this Lease with any Mechanic's, Materialman's or other statutory liens and, on the contrary, right and power to change any lien or encumbrance of any kind against Lessor or the Premises is hereby expressly denied.

If because of any act or omission of Lessee, any Mechanic's, Materialman's or other lien or order for the payment of money shall be filed against the Premises or against Lessor (whether or not such lien or order is valid or enforceable) Lessee shall, at Lessee's own cost and expense, cause the same to be canceled and discharged of record, and further shall indemnify and save harmless Lessor from and against any and all resulting costs, expenses, claims or damages, including reasonable attorney's fees.

15. Lessor's Early Termination Right

If at any time during the Lease term, Lessor chooses to begin developing the Premises for any other purpose, Lessor may terminate this lease by giving Lessee thirty (30) days prior written notice. If Lessor terminates the Lease before the end of the Lease term to begin developing the Premises, Lessor will refund rent pro rata to Lessee for the remainder of the Lease term.

16. Default by Lessee and Remedies

Except for failure to pay rent, which is addressed in Paragraph 3, Lessee's failure to perform any obligation under this Lease shall constitute a default and Lessor may terminate the lease as follows: a) Lessor shall give Lessee written notice. b) Lessee shall have ten (10) days to cure the default. c) If Lessee fails to cure the default within ten (10) days Lessor may give written notice of the failure to cure and termination, and take possession of the Premises. If Lease is terminated by Lessee's default, Lessor shall be entitled to retain all rent paid under Paragraph 3.

17. Quiet Possession

Lessor agrees that Lessee, while in compliance with the Lease provisions, and as otherwise limited by the Lease, shall be entitled to possession of the Premises for the term of this Lease.

18. End of Term

At the end of the term, Lessee shall peaceably surrender possession and occupancy of the Premises and all improvements on the Premises, except personal property, in the condition in which Lessee is required to maintain the Premises. Lessee may remove before the end of the term, personal and Company property and must repair any damage to the Premises caused by removing private property. All Lessee's property not removed by the end of the term shall become Lessor's property.

19. Hold Over

No holding over by Lessee, however long, shall renew or extend this Lease. If Lessee remains in possession of the Premises after the Lease term expires, Lessee shall become a Lessee from month-to-month on all the provisions of this Lease, except as to (a) term, which shall be month-to-month, and (b) rent, which shall be at the monthly rate of ten dollars ($10.00). Any month-to-month tenancy is terminable by either Lessor or Lessee on ten (10) days' written notice given to the other party.

20. Notices

All notices shall be hand delivered or sent by certified U.S. mail, return receipt requested, and, if intended for Lessor shall be addressed to Lessor at: CEMEX, P.O. Box 529, Lyons, Colorado 80540, or to any other address Lessor requests in writing, and, if intended for Lessee, shall be addressed to Lessee at: Loukonen Brothers Stone CO., 12993 North Foothills Hwy. Longmont, CO. 80503 or any other address Lessee requests in writing. Mailed notices shall be effective when placed in the U.S. mail, certified, return receipt requested.

21. Attorney's Fees and Costs

If it becomes necessary for either party to engage an attorney to enforce any default or breach of this Lease, the prevailing party in any proceeding brought thereafter shall be entitled to collect reasonable attorney's fees and costs from the other.

22. Access

Access to the Premises shall be from Hwy 36 through the Loukonen Brothers Stone Co. yard operation.

23. Alterations

Lessee shall not make any changes in or additions to the Premises without Lessor's prior written consent, which shall not be unreasonably withheld. Among other requirements, as a condition of approval, Lessor may require, that any additions remain with the Premises or that the Premises be restored to its former condition at the end of the term.

24. Miscellaneous

This Lease, together with all attached exhibits, contains the entire agreement between the parties and shall not be modified except in a writing signed by both parties.

The paragraph headings are inserted only as a matter of convenience and do not define, limit or describe the scope or intent of this Lease or in any way affect its interpretation.

IN WITNESS WHEREOF, the parties have signed this Lease as of the date first set forth above.

Lessor:

CEMEX Construction Materials South, LLC
5134 Ute Highway, Lyons, Colorado 80540
Phone No. 303-823-2100

By: _____ Date: 1/28/13

Bradley Shane Wilson, Plant Manager

Lessee:

Loukonen Brothers Stone Co.
12993 North Foothills Hwy.
Lyons, CO. 80540

Phone No. 303-823-6268

By: _____ Date: 1/8/13

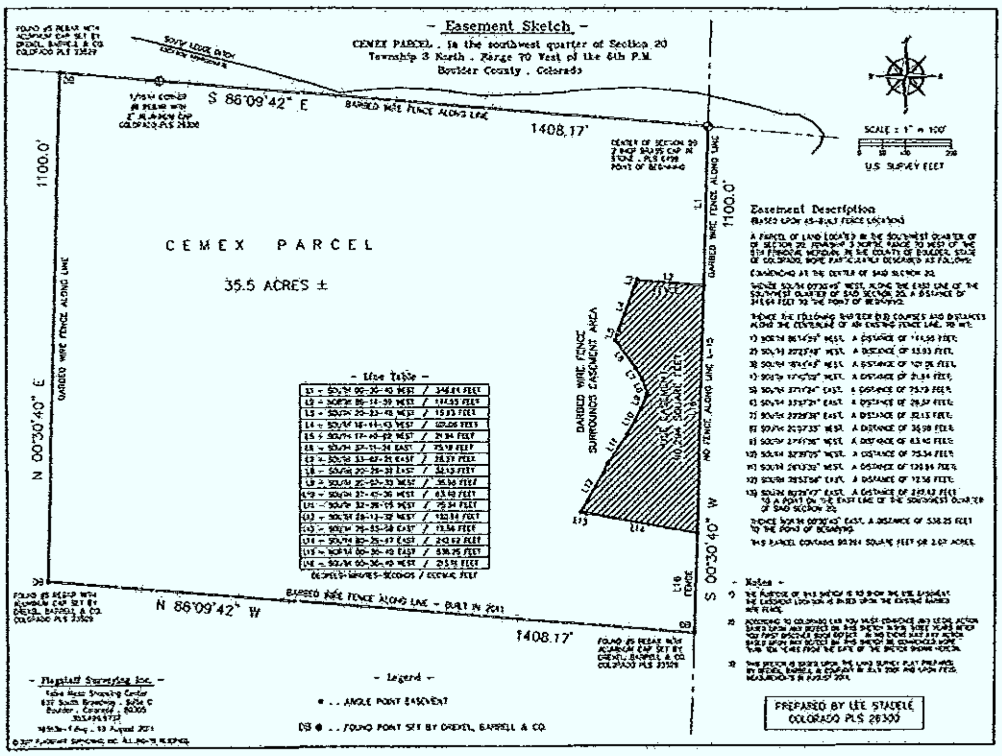
Lessee

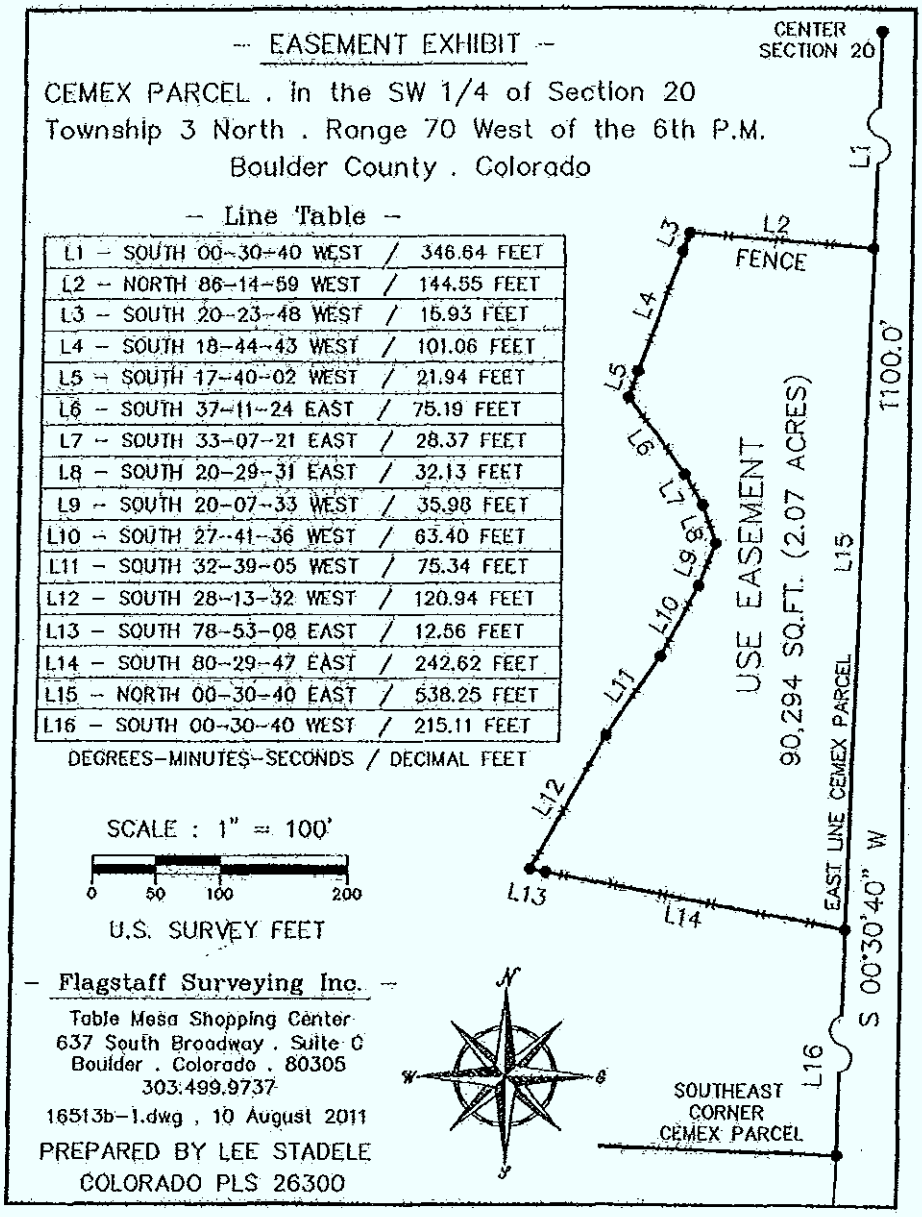
Exhibit A

Premises Description

Lease Parcel is approximately 2.07 acres; SW ¼ of Section 20 Township 3 North Range 70 West of the 6th Principle Meridian Boulder County. This area is identified on the Plat map (Exhibit B) as the "Use Easement". The "Use Easement" is within the CEMEX 35.5 acre Parcel along the center eastern edge.

EXIBIT B


- Easement Sketch -
CEMEX PARCEL, in the southwest quarter of Section 20
Township 3 North, Range 70 West of the 6th P.M.
Boulder County, Colorado
S 86°09'42" E
1408.17'
1100.0'
CEMEX PARCEL
35.5 ACRES ±
N 00°30'40" E
S 00°30'40" W
N 86°09'42" W
1408.17'
- Line Table -
Easement Description
U.S. SURVEY FEET
- Notes -
- Legend -
PREPARED BY LEE STADELE
COLORADO PLS 26300


– EASEMENT EXHIBIT –
CEMEX PARCEL . in the SW 1/4 of Section 20
Township 3 North . Range 70 West of the 6th P.M.
Boulder County . Colorado
– Line Table –
L1 – SOUTH 00–30–40 WEST / 346.64 FEET
L2 – NORTH 86–14–59 WEST / 144.55 FEET
L3 – SOUTH 20–23–48 WEST / 15.93 FEET
L4 – SOUTH 18–44–43 WEST / 101.06 FEET
L5 – SOUTH 17–40–02 WEST / 21.94 FEET
L6 – SOUTH 37–11–24 EAST / 75.19 FEET
L7 – SOUTH 33–07–21 EAST / 28.37 FEET
L8 – SOUTH 20–29–31 EAST / 32.13 FEET
L9 – SOUTH 20–07–33 WEST / 35.98 FEET
L10 – SOUTH 27–41–36 WEST / 63.40 FEET
L11 – SOUTH 32–39–05 WEST / 75.34 FEET
L12 – SOUTH 28–13–32 WEST / 120.94 FEET
L13 – SOUTH 78–53–08 EAST / 12.56 FEET
L14 – SOUTH 80–29–47 EAST / 242.62 FEET
L15 – NORTH 00–30–40 EAST / 538.25 FEET
L16 – SOUTH 00–30–40 WEST / 215.11 FEET
DEGREES–MINUTES–SECONDS / DECIMAL FEET
SCALE : 1" = 100'
0 50 100 200
U.S. SURVEY FEET
– Flagstaff Surveying Inc. –
Table Mesa Shopping Center
637 South Broadway . Suite C
Boulder . Colorado . 80305
303.499.9737
16513b–1.dwg , 10 August 2011
PREPARED BY LEE STADELE
COLORADO PLS 26300
CENTER SECTION 20
L1
L2
L3
L4
L5
L6
L7
L8
L9
L10
L11
L12
L13
L14
L15
L16
FENCE
1100.0'
USE EASEMENT
90,294 SQ.FT. (2.07 ACRES)
EAST LINE CEMEX PARCEL
S 00°30'40" W
SOUTHEAST CORNER CEMEX PARCEL
N
E
S
W

a. Weed Management

Lessee shall structure a weed management plan using control methods effective to the specific weeds on the premises. Acceptable Controls may include Chemical, Biological or Mechanical methods. Control methods employed must prevent weed seed heads from maturing. Colorado State A list Weed species will be managed by total eradication per State regulation. State weed species B list, and Boulder County Weed list species will be aggressively managed. The plan; (control method and type, application sites, target species and estimated timing of applications) will be available to Lessor upon request and may be subject to Lessor's approval. Lessee shall notify Land Manager of application dates. Lessor may inspect progress of all weed management activities.

2. Chemicals: Pollutants

Lessee shall not apply any chemical or other control substances to the Premises, which has a residual effect of greater than two years. No chemicals shall be stored on the Premises. Lessee shall become liable for the reduced valuation of the premises, or other monetary judgment resulting from application or storage of chemicals. Lessees shall take all measures necessary to prevent pollutants from directly or indirectly entering storm drains or watercourses.

4. Mining Activities

Lessee will acquire and maintain all required permits to conduct work on the leased property including, but not limited to Mining, Stormwater, and air permits. All permitting requirements will be the lessee responsibility and at the lessee own cost.

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08/15/2001 03:00P
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EASEMENT AGREEMENT

This EASEMENT AGREEMENT is entered into and is effective as of this 10th day of August, 2001, by and between CEMEX, INC., a Louisiana corporation having an address of 1200 Smith Street, Suite 2400, Houston, Texas 77022-4486 ("CEMEX"), the COUNTY OF BOULDER, a body corporate and politic having an address of P.O. Box 471, Boulder, Colorado 80306 (the "County"), and LOUKONEN FAMILY LLC, a Colorado limited liability company, and Leonard Loukonen individually as sole Heir-at-Law of the Estate of Reino E. Loukonen, Deceased, each having an address of 12993 North Foothills Highway, Longmont, Colorado 80503 (collectively, "Loukonen").

RECITALS

A. On December 17, 1974, E. Leonard Loukonen a/k/a Leonard Loukonen and Reino E. Loukonen a/k/a Reino Loukonen conveyed certain property located in Boulder County (the "Property") to Martin Marietta Corporation by warranty deed recorded December 20, 1974 at Reception No. 125022 of the Boulder County Clerk and Recorder's Office. The Property is further described in Exhibit A, attached hereto and incorporated herein by this reference. On April 3, 1984, Martin Marietta Corporation conveyed the Property to Colorado Cement Enterprises, Inc. by special warranty deed recorded April 5, 1984 at Reception No. 613148 of the Boulder County Clerk and Recorder's Office. CEMEX is the successor-in-interest by merger of Colorado Cement Enterprises, Inc. to the Property.

B. Included with the aforementioned conveyances of the Property and described separately in Exhibit B was an easement (the "Access Easement") for the purpose of ingress and egress across certain adjacent property which is now owned by Loukonen (the "Burdened Property").

C. Contemporaneously with this Easement Agreement, CEMEX is conveying to the County that portion of the Property that is described in Exhibit C, attached hereto and incorporated herein by this reference (the "Subject Property"). CEMEX is retaining that portion of the Property that is described in Exhibit D, attached hereto and incorporated herein by this reference (the "Reserved Property").

D. CEMEX herein conveys to the County a non-exclusive perpetual interest in the Access Easement for purposes of accessing the Subject Property, while retaining its own interest in the Access Easement for purposes of accessing the Reserved Property, subject to the terms and conditions described below.

E. Loukonen herein consents to the conveyance from CEMEX to the County of an interest in the Access Easement, as an appurtenance to the Subject Property, subject to the terms and conditions described below.

AGREEMENT

In consideration of the conveyance of the Subject Property and the promises and covenants hereinafter set forth, the sufficiency of which is acknowledged by all parties, CEMEX, the County, and Loukonen hereby promise, covenant and agree as follows:

1. Grant of Easement. CEMEX hereby grants to the County a non-exclusive perpetual interest in the Access Easement for purposes of ingress and egress to the Subject Property for maintenance operations, patrols, enforcement, fire protection, emergency access, and other purposes associated with the management and maintenance of the Subject Property as Boulder County Open Space. The easement conveyed herein shall be used only by County employees and agents. The easement shall not be used for public access.

2. Non-Interference. CEMEX does not by this conveyance relinquish its own interest in the Access Easement for purposes of accessing the Reserved Property. The County shall not interfere with CEMEX's use of the Access Easement or Loukonen's use of the road on the Access Easement. CEMEX and/or Loukonen shall not interfere with the County's use of the Access Easement.

3. Approval. As the owner of the Burdened Property, Loukonen approves and consents to the conveyance of the easement herein from CEMEX to the County.

4. Maintenance. Each party shall be responsible for any repairs or maintenance necessary for its use of the road located within the Access Easement. No party shall be obligated to any other party for maintaining or repairing said road. Joint repairs or maintenance may be performed by separate agreement among the parties.

5. Binding Effect. The Access Easement shall remain an easement in perpetuity. The terms of this Easement Agreement shall run with the Subject Property, the Reserved Property, the Burdened Property, and the Access Easement, and shall inure to the benefit of and be binding upon the parties, their legal and personal representatives, successors and assigns.

6. Integration. This Easement Agreement contains the entire understanding and agreement of the parties with respect to the subject matter hereof. This Easement Agreement may not be modified or its provisions waived except in writing, executed with the same formalities as this instrument.

7. Enforcement. This Easement Agreement shall be construed in accordance with Colorado law. This Easement Agreement may be enforced in an action for specific performance, injunctive relief, and/or damages in Boulder County District Court. If either party institutes legal proceedings with respect to this Easement Agreement, the non-prevailing party shall reimburse the prevailing party for all court costs and

reasonable attorney fees, costs and disbursements incurred by the prevailing party in connection with such legal proceedings.

8. Counterparts. This Easement Agreement may be executed in any number of counterparts, each of which shall be deemed an original, and all of which shall constitute on and the same agreement.

9. Recording. This Easement Agreement shall be recorded in the Boulder County Clerk and Recorder's Office.

IN WITNESS WHEREOF, the parties hereto have executed this Easement Agreement as of the date first set forth above.

CEMEX, INC., a Louisiana corporation

L. Craig Carleton, Treasurer

LOUKONEN FAMILY LLC

By:
Title:

LEONARD LOUKONEN individually as sole Heir-at-Law of the Estate of Reino E. Loukonen, Deceased

STATE OF TEXAS)
) ss.
COUNTY OF HARRIS)

BEFORE ME, the undersigned authority, on this 10th day of August, 2001, personally appeared L. Craig Carleton, Treasurer of CEMEX, Inc., a Louisiana corporation, known to be to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same as his free act and deed and for the purposes and consideration therein expressed.

MICHELLE RAYMOND
Notary Public State of Texas
My Commission Expires
MAY 04, 2002.

Michelle Raymond
Notary Public

Commission Expires May 4, 2002

STATE OF COLORADO)
) ss.
COUNTY OF BOULDER)

The foregoing instrument was acknowledged before me this _____ day of _____, 2001, by _____ as _____ of the Loukonen Family LLC.

Witness my hand and official seal.

_____
Notary Public

My commission expires: _____

STATE OF COLORADO)
) ss.
COUNTY OF BOULDER)

The foregoing instrument was acknowledged before me this _____ day of _____, 2001, by Leonard Loukonen individually as sole Heir-at-Law of the Estate of Reino E. Loukonen, Deceased.

Witness my hand and official seal.

_____
Notary Public

My commission expires: _____

reasonable attorney fees, costs and disbursements incurred by the prevailing party in connection with such legal proceedings.

Counterparts. This Easement Agreement may be executed in any number of counterparts, each of which shall be deemed an original, and all of which shall constitute on and the same agreement.

Recording. This Easement Agreement shall be recorded in the Boulder County Clerk and Recorder's Office.

IN WITNESS WHEREOF, the parties hereto have executed this Easement Agreement as of the date first set forth above.

CEMEX, INC., a Louisiana corporation

L. Craig Carleton, Treasurer

LOUKONEN FAMILY LLC

E. Leonard Loukonen

By: E. Leonard Loukonen
Title: Manager

Michael Douglas Loukonen

By: Michael Douglas Loukonen
Title: Manager

L. Dean Loukonen

By: L. Dean Loukonen
Title: Manager

LEONARD LOUKONEN a/k/a E. LEONARD LOUKONEN individually as sole Heir-at-Law of the Estate of Reino E. Loukonen, Deceased

Leonard Loukonen

Leonard Loukonen a/k/a E. Leonard Loukonen
a/k/a E. Leonard Loukonen

COUNTY OF BOULDER, a body corporate and politic

Jana L. Mendez, Chair

Paul D. Danish, Vice-Chair

Ronald K. Stewart, Commissioner

STATE OF COLORADO)
) ss.
CITY OF BOULDER)

The foregoing instrument was acknowledged before me this 7 day of August, 2001, by Jana L. Mendez, Chair, Paul D. Danish, Vice-Chair, and Ronald K. Stewart, Commissioner, of the Board of County Commissioners of Boulder City.

Witness my hand and official seal.

Notary Public

My commission expires: 10-17-2001

ATE OF TEXAS)
) ss.
UNTY OF HARRIS)

BEFORE ME, the undersigned authority, on this ____ day of _____, 2001, personally appeared L. Craig Carleton, Treasurer of CEMEX, Inc., a Louisiana corporation, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same as his free act and deed and for the purposes and consideration therein expressed.

_____
Notary Public

Commission Expires: _____.

ATE OF COLORADO)
) ss.
UNTY OF BOULDER)

The foregoing instrument was acknowledged before me this 10th day of Aug, 2001, by E. Leonard Loukonen as Manager of the Loukonen Family LLC.

Witness my hand and official seal.

SUSAN PURCELL
NOTARY PUBLIC, STATE OF COLORADO

Susan Purcell
Notary Public

MY COMMISSION EXPIRES:
November 3, 2002

My commission expires: _____

ATE OF COLORADO)
) ss.
UNTY OF BOULDER)

The foregoing instrument was acknowledged before me this 10th day of Aug, 2001, by Michael Douglas Loukonen as Manager of the Loukonen Family LLC.

Witness my hand and official seal.

SUSAN PURCELL
NOTARY PUBLIC, STATE OF COLORADO

Susan Purcell
Notary Public

MY COMMISSION EXPIRES:
November 3, 2002

My commission expires: _____

ATE OF COLORADO)
) ss.
UNTY OF BOULDER)

The foregoing instrument was acknowledged before me this 10th day of
ust, 2001, by L. Dean Loukonen as Manager of the Loukonen Family LLC.

Witness my hand and official seal.

SUSAN PURCELL
NOTARY PUBLIC, STATE OF COLORADO

Susan Purcell
Notary Public

My commission expires: MY COMMISSION EXPIRES: November 3, 2002

ATE OF COLORADO)
) ss.
UNTY OF BOULDER)

The foregoing instrument was acknowledged before me this 10th day of
ust, 2001, by Leonard Loukonen a/k/a E. Leonard Loukonen individually as sole Heir-
Law of the Estate of Reino E. Loukonen, Deceased.

Witness my hand and official seal.

SUSAN PURCELL
NOTARY PUBLIC, STATE OF COLORADO

Susan Purcell
Notary Public

My commission expires: MY COMMISSION EXPIRES: November 3, 2002

2186012
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EXHIBIT A
The Property

The Southwest 1/4 of Section 20, T3N, R70W, 6th P.M., Boulder County, Colorado.

Together with an easement for the purpose of ingress and egress, said easement being 30.00 feet wide, 15.00 feet on each side of the following described centerline:

Commencing at the South 1/4 corner of Section 20, Township 3 North, Range 70 West of the 6th P.M., thence North 0°30'40" East, 2135.00 feet along the North-South centerline of said Section 20 to the True Point of Beginning; thence South 27°54' East, 70.00 feet; thence South 68°27' East, 53.00 feet; thence North 71°56' East, 105.00 feet; thence North 63°11' East, 375.00 feet;
thence North 73°42' East, 64.00 feet; thence South 88°42' East, 202.00 feet; thence South 64°46' East, 101.00 feet; thence South 54°59' East, 160.00 feet; thence South 70°34' East, 350.00 feet to a point on the approximate centerline of Colorado State Highway No. 7, said point being the Point of Termination.

County of Boulder, State of Colorado.

EXHIBIT B
The Access Easement

An easement for the purpose of ingress and egress, said easement being 30.00 feet wide, 15.00 feet on each side of the following described centerline:

Commencing at the South 1/4 corner of Section 20, Township 3 North, Range 70 West of the 6th P.M., thence North 0°30'40" East, 2135.00 feet along the North-South centerline of said Section 20 to the True Point of Beginning; thence South 27°54' East, 70.00 feet; thence South 68°27' East, 53.00 feet; thence North 71°56' East, 105.00 feet; thence North 63°11' East, 375.00 feet;
thence North 73°42' East, 64.00 feet; thence South 88°42' East, 202.00 feet; thence South 64°46' East, 101.00 feet; thence South 54°59' East, 160.00 feet; thence South 70°34' East, 350.00 feet to a point on the approximate centerline of Colorado State Highway No. 7, said point being the Point of Termination,

EXCEPT any portion thereof lying within Colorado State Highway No. 7 right-of-way,

County of Boulder, State of Colorado.

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08/15/2001 03:00P
Boulder County Clerk, CO E R 0.00 D 0.00

EXHIBIT C
The Subject Property

A tract of land located in the SW 1/4 of Section 20, T3N, R70W of the 6th P.M., Boulder County, Colorado, described as follows:

Commencing at the center of said Section 20, thence S 00°30'40" W, 1100.00 feet along the East line of the SW 1/4 of said Section 20 to the True Point of Beginning;

Thence N 86°09'42" W, 1408.17 feet parallel with the North line of the SW 1/4 of said Section 20;

Thence N 00°30'40" E, 1100.00 feet parallel with the East line of the SW 1/4 of said Section 20 to the North line of the SW 1/4 of said Section 20;

Thence N 86°09'42" W, 976.72 feet along the North line of the SW 1/4 of said Section 20 to the W 1/4 corner of said Section 20;

Thence S 01°04'10" W, 2613.99 feet along the West line of the SW 1/4 of said Section 20 to the Southwest corner of said Section 20;

Thence S 80°09'16 E, 2438.63 feet along the South line of the SW 1/4 of said Section 20 to the S 1/4 corner of said Section 20;

Thence N 00°30'40" E, 1770.98 feet along the East line of the SW 1/4 of said Section 20 to the True Point of Beginning.

EXHIBIT D
The Reserved Property

A tract of land located in the SW1/4 of Section 20, T3N, R70W of the 6th P.M., Boulder County, Colorado, described as follows:

Beginning at the center of said Section 20, thence S00°30'40"W 1100.00 feet along the East line of the SW1/4 of said Section 20;

Thence N86°09'42"W, 1408.17 feet parallel with the North line of the SW1/4 of said Section 20;

Thence N00°30'40"E, 1100.00 feet parallel with the East line of the SW1/4 of said Section 20 to the North line of the SW1/4 of said Section 20;

Thence S86°09'42"E, 1408.17 feet along the North line of the SW1/4 of said Section 20 to the point of beginning.

Cemex Sandstone Quarry
Permit M-1977-361
Exhibit O – Owner of Record of Affected Land (Surface Area) and Owners of Substance to be Mined

The entire affected land boundary described in this permit conversion is within the boundary of property owned by Cemex Construction Materials South LLC (Cemex). Cemex is also the sole owner of the sub-surface substance to be mined. The Cemex Locals Office is located at the following address:

Cemex Construction Materials South LLC
5134 Ute Highway
Lyons, CO 80540

The South Ledge Ditch Company manages the South Ledge Ditch which traverses the eastern edge of the property. Cemex is the primary shareholder in the South Ledge Ditch Company with the office address of:

South Ledge Ditch Company
c/o Cemex Construction Materials South LLC
5134 Ute Highway
Lyons, CO 80540

Cemex Sandstone Quarry
Permit M-1977-361
Exhibit P – Municipalities Within Two Miles

The Town of Lyons, Colorado approximately ½ mile from the Sandstone Quarry. The Town of Lyons municipal offices are located at the following address.

Town of Lyons
432 5th Avenue
P O Box 49
Lyons, CO 80540

Cemex Sandstone Quarry
Permit M-1977-361
Exhibit Q –Proof of Mailing of Notices to Board of County Commissioners and Soil Conservation District

Includes:

1. Proof of Mailing of Notice to Boulder County Board of County Commissioners
2. Proof of Mailing of Notice to Longmont Soil Conservation District

August 29, 2013

Certified Mail

Boulder County Board of County Commissioners
PO Box 471
Boulder, CO 80306

RE: Notice of Conversion of the Cemex Sandstone Quarry Mining and Reclamation Permit from a Limit Impact (110) Operation to a Regular (112) Operation

To Whom It May Concern:

Cemex Construction Materials South LLC (Cemex) intends to submit an application to the Colorado Mined Land Reclamation Board (Board) to convert its Mining and Reclamation Permit for the Sandstone Quarry outside of Lyons, Colorado (M-1977-361) from a Limited Impact (110) permit to a Regular (112) permit. As required by the Colorado Mined Land Reclamation Art as amended, Cemex is required to notify the local Board of the County Commissioners of the application. A copy of the complete conversion application is on file with the Division of Reclamation, Mining and Safety and the Boulder County Clerk and Recorder.

Attached is a formal Notice of Filing Application as required. If you have any questions, please contact me at 303-823-2100 or the Division of Reclamation, Mining and Safety at the number in the attached notice.

Sincerely,

Bradley S. Wilson

Plant Manager
Cemex Construction Materials South LLC

NOTICE OF FILING APPLICATION
FOR COLORADO MINED LAND RECLAMATION PERMIT CONVERSION
FROM A LIMITED IMPACT (110) CONSTRUCTION MATERIALS EXTRACTION OPERATION
TO A REGULAR (112) CONSTRUCTION MATERIALS EXTRACTION OPERATION

NOTICE TO THE BOARD OF COUNTY COMMISSIONERS
BOULDER COUNTY

Cemex Construction Materials South LLC (Cemex) (5134 Ute Highway, Lyons, CO 80540) has applied for a permit conversion from a Limited Impact (110) Reclamation Permit to a Regular (112) Reclamation Permit from the Colorado Mined Land Reclamation Board (Board) to conduct the extraction of construction materials operations in Boulder County. The attached information is being provided to notify you of the location and nature of the proposed operation. The entire application is on file with the Division of Reclamation, Mining, and Safety (DRMS) and the local county clerk and recorder.

Cemex proposes to reclaim the affected land to use. Pursuant to Section 34-32.5-116(4)(m), C.R.S., the Board may confer with the local Board of County Commissioners before approving of the post-mining land use. Accordingly, the Board would appreciate your comments on the proposed operation. Please note that, in order to preserve your right to a hearing before the Board on this application, you must submit written comments on the application within twenty (20) days of the date of last publication of notice pursuant to Section 34-32.5-112(10), C.R.S.

If you would like to discuss the proposed post-mining land use, or any other issue regarding this application, please contact the Division of Reclamation, Mining, and Safety, 1313 Sherman Street, Room 215, Denver, Colorado 80203, (303) 866-3567.

7013 1090 0002 0636 6477

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BOULDER CO 80306 OFFICIAL USE

Postage	$ $5.60
Certified Fee	$3.10
Return Receipt Fee (Endorsement Required)	$0.00
Restricted Delivery Fee (Endorsement Required)	$0.00
Total Postage & Fees	$ $8.70

0181

GREENWOOD VILLAGE BR ENGLEWOOD CO 80112 USPS

Postmark Here

08/30/2019

Sent To

Street, Apt. No.; or PO Box No.

City, State, ZIP+4

PS Form 3800, August 2006 See Reverse for Instructions

August 29, 2013

Certified Mail

Board of Supervisors
Longmont Soil Conservation District
9595 Nelson Road, Suite D
Longmont, CO 80501

RE: Notice of Conversion of the Cemex Sandstone Quarry Mining and Reclamation Permit from a Limit Impact (110) Operation to a Regular (112) Operation

To Whom It May Concern:

Cemex Construction Materials South LLC (Cemex) intends to submit an application to the Colorado Mined Land Reclamation Board (Board) to convert its Mining and Reclamation Permit for the Sandstone Quarry outside of Lyons, Colorado (M-1977-361) from a Limited Impact (110) permit to a Regular (112) permit. As required by the Colorado Mined Land Reclamation Art as amended, Cemex is required to notify the local Soil Conservation District of the application. A copy of the complete Conversion application is on file with the Division of Reclamation, Mining and Safety and the Boulder County Clerk and Recorder.

Attached is a formal Notice of Filing Application as required. If you have any questions, please contact me at 303-823-2100 or the Division of Reclamation, Mining and Safety at the number in the attached notice.

Sincerely,

Bradley S. Wilson

Plant Manager
Cemex Construction Materials South LLC

NOTICE OF FILING APPLICATION
FOR COLORADO MINED LAND RECLAMATION PERMIT CONVERSION
FROM A LIMITED IMPACT (110) CONSTRUCTION MATERIALS EXTRACTION OPERATION
TO A REGULAR (112) CONSTRUCTION MATERIALS EXTRACTION OPERATION

NOTICE TO THE BOARD OF SUPERVISORS
OF THE LONGMONT CONSERVATION DISTRICT

Cemex Construction Materials South LLC (Cemex) (5134 Ute Highway, Lyons, CO 80540) has applied for a permit conversion from a Limited Impact (110) Reclamation Permit to a Regular (112) Reclamation Permit from the Colorado Mined Land Reclamation Board (Board) to conduct the extraction of construction materials operations in Boulder County. The attached information is being provided to notify you of the location and nature of the proposed operation. The entire application is on file with the Division of Reclamation, Mining, and Safety (DRMS) and the local county clerk and recorder.

Cemex proposes to reclaim the affected land to use. Pursuant to Section 34-32.5-116(4)(m), C.R.S., the Board may confer with the local Board of County Commissioners before approving of the post-mining land use. Accordingly, the Board would appreciate your comments on the proposed operation. Please note that, in order to preserve your right to a hearing before the Board on this application, you must submit written comments on the application within twenty (20) days of the date of last publication of notice pursuant to Section 34-32.5-112(10), C.R.S.

If you would like to discuss the proposed post-mining land use, or any other issue regarding this application, please contact the Division of Reclamation, Mining, and Safety, 1313 Sherman Street, Room 215, Denver, Colorado 80203, (303) 866-3567.

7013 1090 0002 0636 6460

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(Domestic Mail Only; No Insurance Coverage Provided)

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OFFICIAL USE

LONGMONT CO 80501

Postage	$ $5.60	0181
Certified Fee	$3.10	
Return Receipt Fee (Endorsement Required)	$0.00	Postmark Here
Restricted Delivery Fee (Endorsement Required)	$0.00	AUG 30 2013
Total Postage & Fees	$ $8.70	08/30/2013

GREENWOOD VILLAGE BR ENGLEWOOD CO 80112 USPS

Sent To

Street, Apt. No.; or PO Box No.

City, State, ZIP+4

PS Form 3800, August 2006 — See Reverse for Instructions

Cemex Sandstone Quarry
Permit M-1977-361
Exhibit R –Proof of Filing with County Clerk

Includes:

1. Receipt from Boulder County Clerk and Recorder's Office

BOULDER COUNTY CLERK & RECORDER
1750 33RD ST SUITE 201
BOULDER, CO 80301

DATE 8-30-13

RECEIVED OF Cemex Sandstone Quarry
Reclamation Permit M-1977-361

RECORDING $

DOCUMENTARY FEE $

COPIES $

UCC SEARCH $

TORRENS FILING $

OTHER Public Notice $ 0

TOTAL $ 0

BOULDER COUNTY CLERK RECORDER

BY Jessica Martinez

Cemex Sandstone Quarry
Permit M-1977-361
Exhibit S –Permanent Man-Made Structures

The only permanent man-made structures within 200 ft of the proposed affected land boundary are the barbed wire property boundary fence and the South Ledge Irrigation Ditch. The fence is owned by Cemex Construction Materials South LLC and the ditch is managed by South Ledge Ditch Company. The proposed mining and reclamation activities at the Sandstone Quarry will not impact either structure.

A structure agreement signed and notarized by Cemex and the South Ledge Ditch Company is included in this section.

Structure Agreement

This letter has been provided to you as the owner of a structure on or within two hundred (200) feet of a proposed mine site. The State of Colorado, Division of Reclamation, Mining and Safety (DRMS) requires that where a mining operation will adversely affect the stability of any significant, valuable and permanent man-made structure located within two hundred (200) feet of the affected land, the Applicant shall either:

a) Provide a notarized agreement between the Applicant and the Person(s) having an interest in the structure, that the Applicant is to provide compensation for any damage to the structure; or

b) Where such an agreement cannot be reached, the Applicant shall provide an appropriate engineering evaluation that demonstrates that such structure shall not be damaged by activities occurring at the mining operation; or

c) Where such structure is a utility, the Applicant may supply a notarized letter, on utility letterhead, from the owner(s) of the utility that the mining and reclamation activities, as proposed, will have "no negative effect" on their utility. (*Construction Materials Rule 6.3.12 and Rule 6.4.19 & Hard Rock/Metal Mining Rule 6.3.12 and Rule 6.4.20)*

The Colorado Mined Land Reclamation Board ("Board") has determined that this form, if properly executed, represents an agreement that complies with Construction Materials Rule 6.3.12(a), Rule 6.4.19(a), and C.R.S. § 34-32.5-115(4)(e) and with Hard Rock/Metal Mining Rule 6.3.12(a), Rule 6.4.20(a), and C.R.S. § 34-32-115(4)(d). This form is for the sole purpose of ensuring compliance with the Rules and Regulations and shall not make the Board or Division a necessary party to any private civil lawsuit to enforce the terms of the agreement or create any enforcement obligations in the Board or the Division.

The following structures are located on or within 200 feet of the proposed affected area:

1. South Ledge Irrigation Ditch

CERTIFICATION

The Applicant, Cemex Construction Materials South LLC, by Bradley S. Wilson, Cemex Lyons Plant Manager, does hereby certify that the South Ledge Ditch Company shall be compensated for any damage from the proposed mining operation to the above listed structure(s) located on or within 200 feet of the proposed affected area described within Exhibit A, of the Reclamation Permit Application for the Cemex Sandstone Quarry, File Number M-1977-361.

This form has been approved by the Colorado Mined Land Reclamation Board pursuant to its authority under the Colorado Land Reclamation Act for the Extraction of Construction Materials and the Colorado Mined Land Reclamation Act for Hard Rock, Metal, and Designated Mining Operations. Any alteration or modification to this form shall result in voiding this form.

NOTARY FOR PERMIT APPLICANT

ACKNOWLEDGED BY:

Applicant CEMEX CONSTRUCTION MATERIALS SOUTH, LLC Representative Name Bradley S. Wilson

Date August 29, 2013 Title PLANT MANAGER

STATE OF Colorado)
) ss.
COUNTY OF Boulder)

The foregoing was acknowledged before me this 29 day of August, 2013, by Bradley S Wilson as Plant Manager of Cemex Construction Materials South, LLC

Notary Public MaryLinda Littlejohn Jackson My Commission Expires: Aug. 31, 2017

NOTARY FOR STRUCTURE OWNER

ACKNOWLEDGED BY:

Applicant South Ledge Ditch Co Representative Name Patrick R Fischer

Date August 29, 2013 Title President

STATE OF Colorado)
) ss.
COUNTY OF Boulder)

The foregoing was acknowledged before me this 29 day of August, 2013, by Patrick R Fischer as President of South Ledge Ditch

Notary Public MaryLinda Littlejohn Jackson My Commission Expires: Aug. 31, 2017

Cemex Sandstone Quarry
Permit M-1977-361
Rule 6.5 – Geotechnical Stability Exhibit

Includes:

Complete geotechnical stability report produced by Engineering Analytics Inc.

LYONS SANDSTONE QUARRY
Geotechnical Reclamation Plan

Prepared for:

CEMEX

5134 UTE Highway
Longmont, Colorado
80503

Prepared by:

Engineering Analytics, Inc.

1600 Specht Point Road, Suite 209
Fort Collins, Colorado 80525
(970) 488-3111
Fax (970) 488-3112

Project No. 110307

August 29, 2013

COLORADO LICENSED
JAMES A. CREMEENS
40683
PROFESSIONAL ENGINEER

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2.0 SITE VISIT 1

3.0 GEOTECHNICAL RECLAMATION PLAN 1

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1.0 INTRODUCTION

The Cemex, Lyons Plant (Cemex), near Lyons, Colorado, operates a Sandstone Quarry. This is a small quarry relative to the Dowe Flats limestone quarry also operated by Cemex near the Lyons Plant. The sandstone is extracted for use as a silica additive in the cement manufacturing process.

The Sandstone Quarry is currently operating under a Limited Impact (110) Mining and Reclamation Permit administered by the Colorado Division of Reclamation, Mining and Safety (DRMS). Cemex anticipates re-permitting the site to a Regular (112) Mining and Reclamation Permit which will allow disturbance of greater than 10 acres, to facilitate reclamation of the site. The location of the Cemex Sandstone Quarry is shown on Figure 1.

The Engineering Analytics, Inc. (EA) scope of work included assisting Cemex and their consultant, Habitat Management, Inc., with the development of a revised reclamation permit application for the DRMS. The tasks related to our scope of work included:

- Completion of a site visit to observe the pit configuration and discuss reclamation options
- Development of permit level reclamation grading plan
- Development of rock and backfill strength parameters
- Completion of slope stability analyses of the critical closure slope
- Development of this report presenting the results of our design and analyses

This report is provided to satisfy the Geotechnical Stability Exhibit requirement of the permit application as outlined in Rule 6.5 of the Construction Materials Mineral Rules and Regulations.

2.0 SITE VISIT

EA personnel visited the Cemex Sandstone Quarry on February 5, 2013. Figure 2 presents the topography of the existing quarry.

During the site visit, EA personnel observed that the quarry walls were comprised of densely fractured, blocky, medium-to fine-grained, silica-cemented sandstone. Quarry walls had been excavated at steep angles of approximately 70°. The quarry walls appeared to have been stable, with no evidence of slope instability or rockfall.

3.0 GEOTECHNICAL RECLAMATION PLAN

The criteria developed for reclamation of the Sandstone Quarry included:

- Minimize visual/viewshed impact
- Minimize disturbance area

- Minimize impact to existing arboreal vegetation
- Generate material for reclamation within the quarry property boundaries
- Balance cut and fill materials
- Establish long term slope stability
- Establish non-erosive site drainage to facilitate revegetation
- Provide slopes for topsoil distribution
- Provide locations for raptor habitat

3.1 Grading Plan

A primary requirement to meet the design criteria was to change the slope of the steep quarry walls to be more compatible with surrounding topography without importing or exporting fill material. Accomplishing this task without importing material will involve cutting the upper parts of the steep quarry walls to reduce the angle of those slopes, which will generate fill to create lesser angle slopes in the lower part of the quarry.

The fill materials will be comprised of sandstone that will be excavated by ripping and/or blasting techniques, as required. Optimum comminution will be achieved to generate a relatively well-graded material, to minimize voids in the fill, and optimize fill stability.

During the design options phase, it became apparent that cutting directly above (west of) the Sandstone Quarry highwall would involve a large amount of surface disturbance and would destroy a large area of arboreal vegetation. The slope above the Sandstone Quarry highwall is characterized by large groups of conifers and interspersed grasslands. Also, the area above the quarry highwall is very visible when viewed from the east (as when approaching Lyons on Highway 66) and from the south (as when approaching Lyons on Highway 36).

The area to the north of the quarry, between the existing Sandstone Quarry and the north property boundary, was evaluated as a primary fill material borrow source. Using this north area was preferred because it allowed for minimal excavating along the west highwall, is less visible (provides for more favorable viewshed) when approached from the east and south, minimized the disturbance area, minimized impact to existing conifers, and would allow for free-draining sheet flow of surface water.

The quarry will be operated for about another ten years. Figure 3 shows the anticipated ultimate quarry topography. This ultimate topography was used as the basis for developing the re-graded slope geometry.

The final grading plan is shown on Figure 4. As shown on Figure 4, cut material has been borrowed from the area north of the existing quarry, as previously discussed. The highwall at the west side of the quarry has been cut to a 1.5H:1V slope, which involves a maximum of about 30ft of the upper part of the quarry highway. Below the cut level, fill will be placed, as shown

on Figure 4, at a 2H:1V slope to a depth of nominally 20ft above the existing quarry floor. The re-graded quarry floor will slope at a continuous 2 percent grade, allowing drainage from the reclaimed surface without ponding.
The depths of cut and fill are shown on the isopach map provided as Figure 5. As shown on Figure 5, the maximum depth of cut is the borrow area to the north of the existing quarry, where cut depths will be up to 58ft. Fill depths will be up to 64ft.

The volume of cut required to achieve this grading plan (as shown on Figure 4) was calculated to be 205,268 yd^3. The total amount of fill was calculated to be 246,322 yd^3. EA has calculated that the sandstone rock may increase in volume (bulking) by approximately 20 percent during extraction, and following re-compaction. Compaction will be achieved by control of construction traffic during fill placement.

The bulking factor of the sandstone was developed using the weights and volumes of sandstone currently being hauled from the quarry to the Lyons plant, resulting in a bulking factor or 23 percent. Conservatively, and in consideration of compaction during construction, a bulking factor of 20 percent was used to balance the cut and fill.

Topsoil stockpiles, shown on Figure 3, will be removed from areas of cut and fill and placed in temporary stockpiles. The temporary piles will be distributed following re-grading of the cut sandstone material.

3.2 Slope Stability Evaluation

The vertical highwall that exists in the quarry will be graded to a compound angle slope with cut in the sandstone at 1.5H:1V at the top of the slope. The lower fill slopes will be graded at 2H:1V using spoil material from the cut slopes, as discussed in Section 3.1.

The intact (cut) portion of the highwall will be comprised of medium-to fine-grained, medium strong sandstone. Fill material will be comprised of ripped and/or blasted sandstone that will be compacted in-place by construction equipment.

EA modeled the intact rock mass shear strength/normal stress relationship using the Generalized Hoek-Brown criterion. The Generalized Hoek-Brown criterion yields curvilinear shear strength envelopes that are considered effective representations of intact rock and heavily jointed rock mass behavior. Primary input parameters for the jointed rock mass criterion include Unconfined Compressive Strength (UCS), Geological Strength Index (GSI), a material constant (m_i), and a disturbance factor (D) as defined by Marinos and Hoek (2000). The values for these parameters are shown on Figure 6.

The rock fill material shear strength/normal stress relationship was modeled using the Mohr-Coulomb criterion. The Mohr-Coulomb criterion yields linear shear strength envelopes that are considered representative of rockfill. The slope stability input parameters for the rock fill are friction angle (ϕ) and cohesion (c). Cohesion was maintained at zero, which is appropriate and conservative for rockfill. The zero cohesion value is conservative because

interlocking of angular rock blocks creates "apparent" cohesion that resists shearing. A conservative friction angle of 38° was used for the rock fill. This value is conservative because the rock fill will be comprised of blocky and angular sandstone. By comparison, Leps (1970) cites friction angles for rounded gravel fill having a lower bound of 38°.

Limit-equilibrium analyses were conducted using the commercially available geotechnical modeling software, *Slide 6.0*, developed by *RocScience, Inc.* *Slide 6.0* is a two-dimensional slope stability analysis program that analyzes the stability of a slope by various methods of slices. Spencer's method was selected for the limit equilibrium analyses of this evaluation due to its consideration of both force and moment equilibrium.

Slide 6.0 allows for simulation of earthquake loading by application of static forces that represent seismic inertial forces resulting from potential ground accelerations caused by a seismic event. This method, known as pseudostatic analysis, simulates seismic forces in terms of horizontal acceleration expressed as a coefficient (or percent) of gravity (g). Pseudostatic analyses for the Sandstone Quarry incorporated a horizontal acceleration coefficient equal to 0.05 g. This represents a design earthquake with a 10% probability of exceedance in 250 years (U.S. Geological Survey, 1990). It is common practice to reduce the peak ground acceleration (PGA) by a factor of 0.33 to 0.50 according to research conducted by the U.S. Army Corps of Engineers (Hynes-Griffen and Franklin, 1984). This reduction in horizontal acceleration is justified for earth and rock structures because damage to these types of structures results from sustained ground acceleration. However, EA conservatively applied the full PGA to our pseudostatic analyses and acceptable safety factors were obtained from the analyses.

The results of the stability analyses are presented on Figure 6. As shown on Figure 6, a safety factor of 1.7 was indicated for static conditions. A safety factor of 1.5 was indicated by the pseudostatic analyses for the design earthquake loading conditions.

4.0 POST-RECLAMATION

The re-graded surface will be covered with approximately 12 to 18 inches of growth media prior to revegetation.

Surface water and precipitation will drain freely from the re-graded surface. Velocities will be low and will promote infiltration while limiting erosion.

The excavation of sandstone cut material from the highwall will result in a blocky, irregular surface. Irregularly shaped cut surfaces will be graded to produce uniform slopes that will support topsoil and revegetation. However, sites where sandstone removal has resulted in ledges and alcoves that will be amenable to raptor habitat will be maintained.

5.0 REFERENCES

Hynes-Griffen, M.E. and Franklin, A.G. (1984). *Rationalizing the Seismic Coefficient Method*: United States Army Corp of Engineers, Waterways Experiment Station, CWIS Work Unit 31145

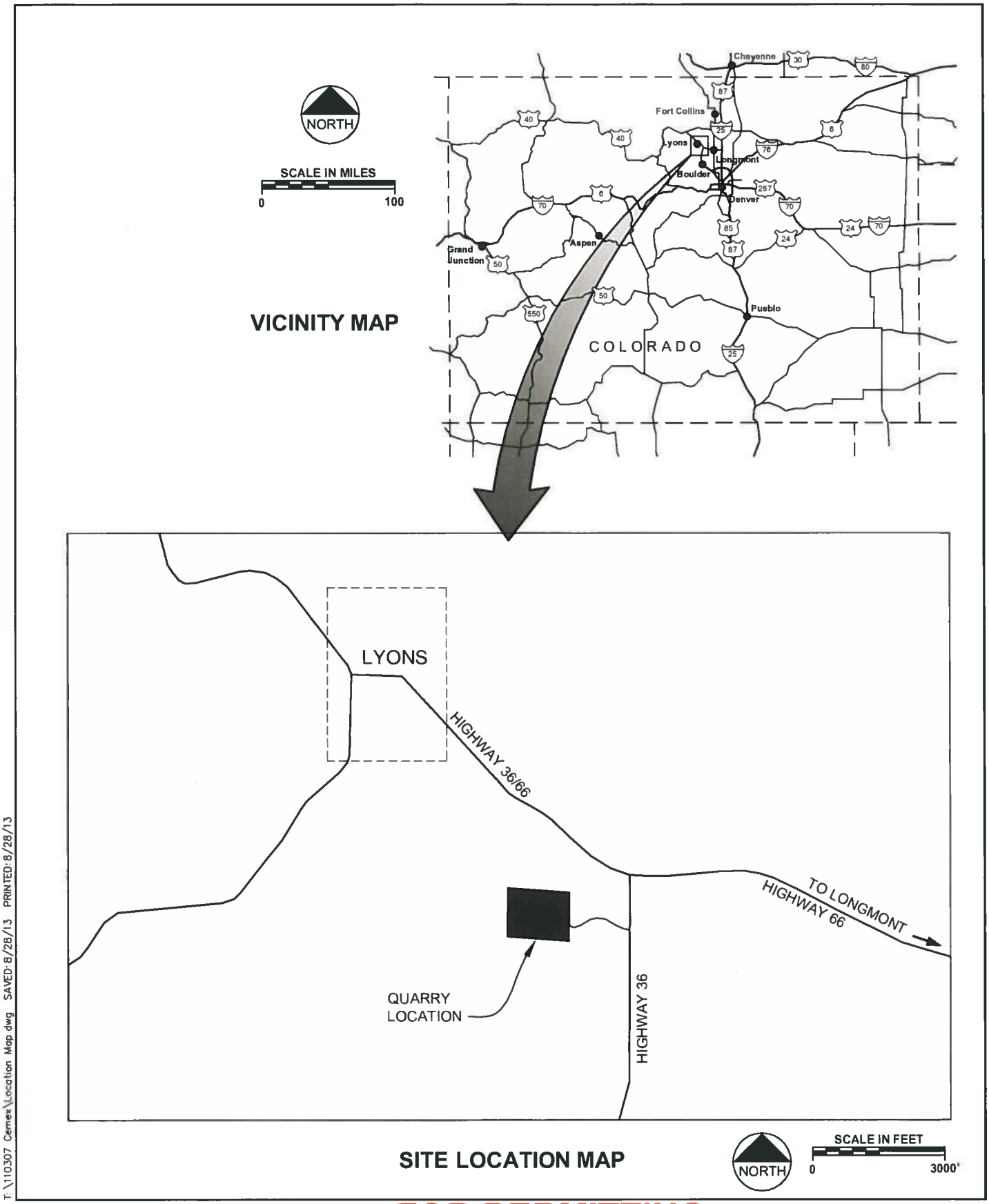
Leps, T.M. (1970). *Review of Shearing Strength of Rockfill.* Journal of the Soil Mechanics and Foundations Division. Proceedings of the American Society of Civil Engineers. Vol. 96, No. SM4. July.

Marinos, P. and Hoek, E. (2000). *GSI: a geologically friendly tool for rock mass strength estimation.* GeoEng2000, Melbourne, Australia

RocScience Inc. (2012) Slide 6.020 [computer software]. Toronto, Ontario. December 3.

U.S. Geological Survey. (1990). *Map D-Horizontal Velocity (90 Percent Probability of Not Being Exceeded in 250 Years* [map]. 2120. 1:7,500,000. Probabilistic Earthquake Acceleration and Velocity Maps for the United States and Puerto Rico. Reston, VA: U.S. Department of the Interior, USGS.

FIGURES



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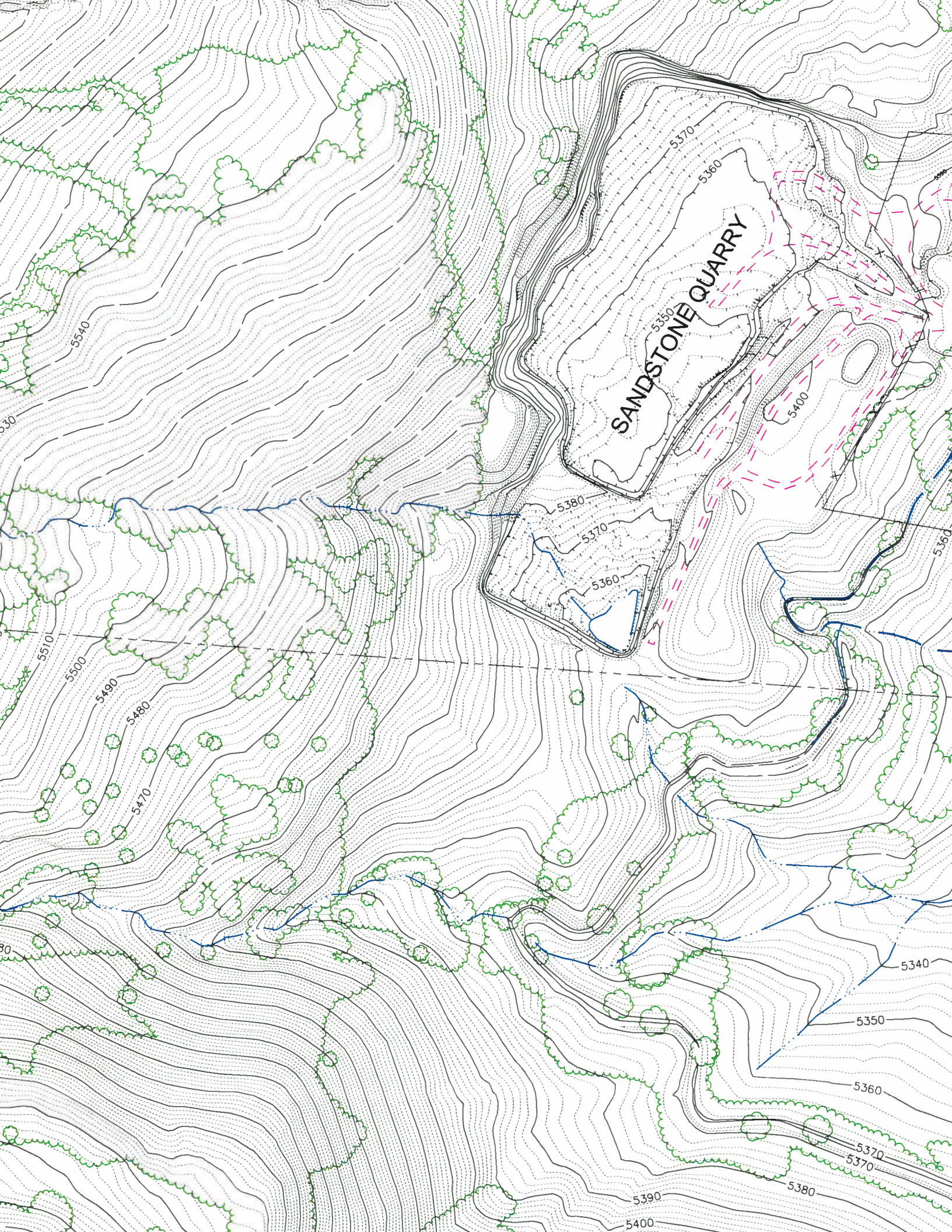
August 2013

FOR PERMITTING
NOT FOR CONSTRUCTION

Engineering Analytics, Inc.

CEMEX

FIGURE 1
SITE LOCATION MAP
CEMEX LYONS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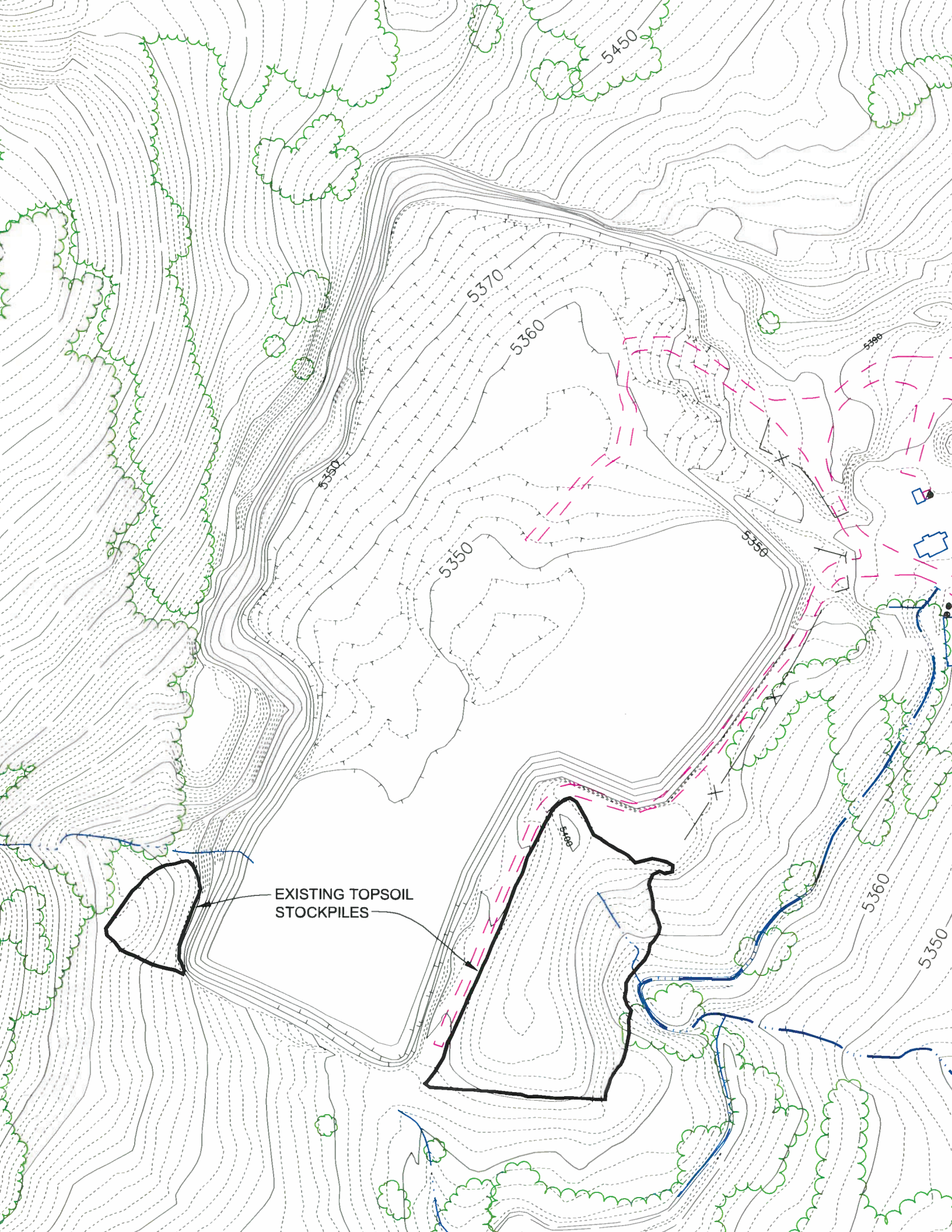
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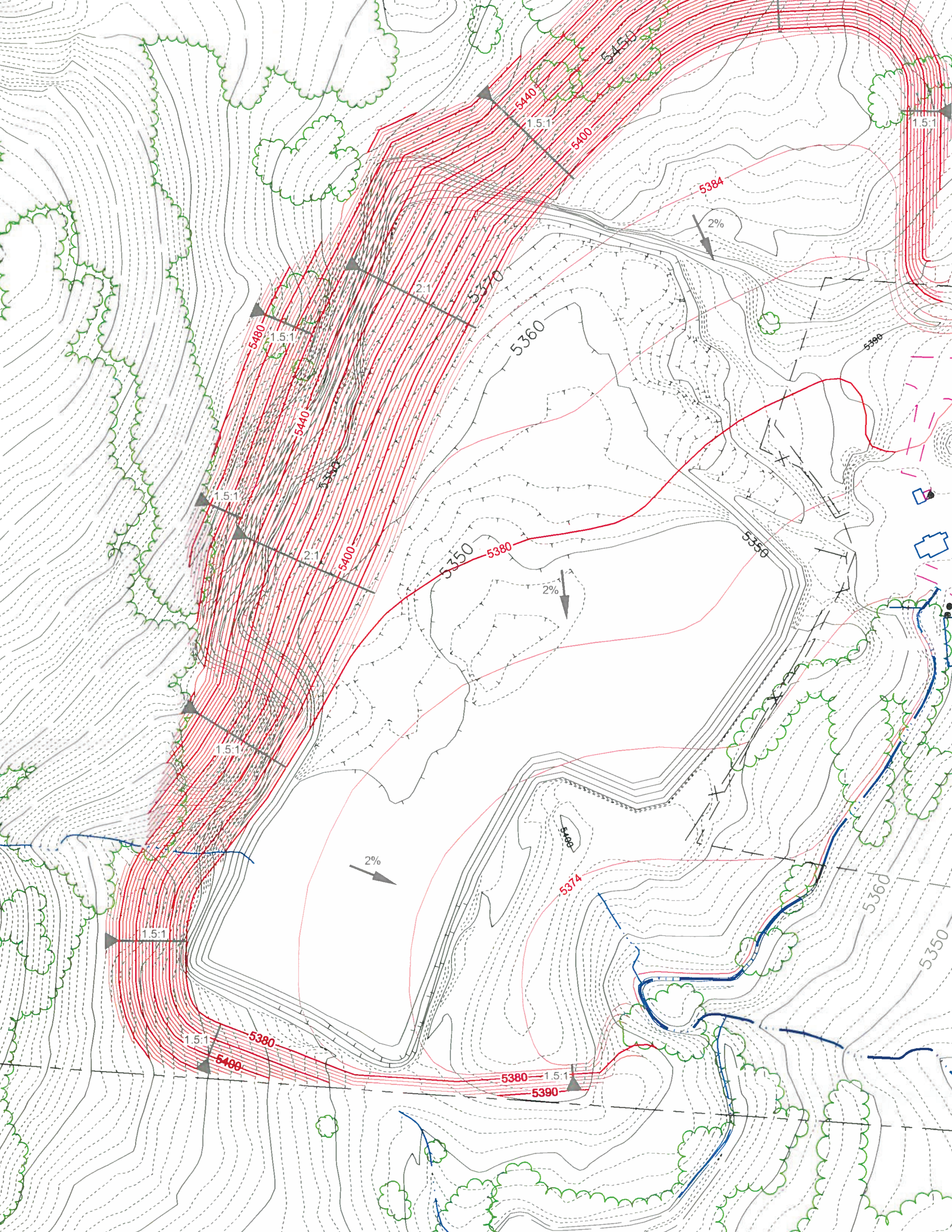
EXISTING TOPSOIL
STOCKPILES



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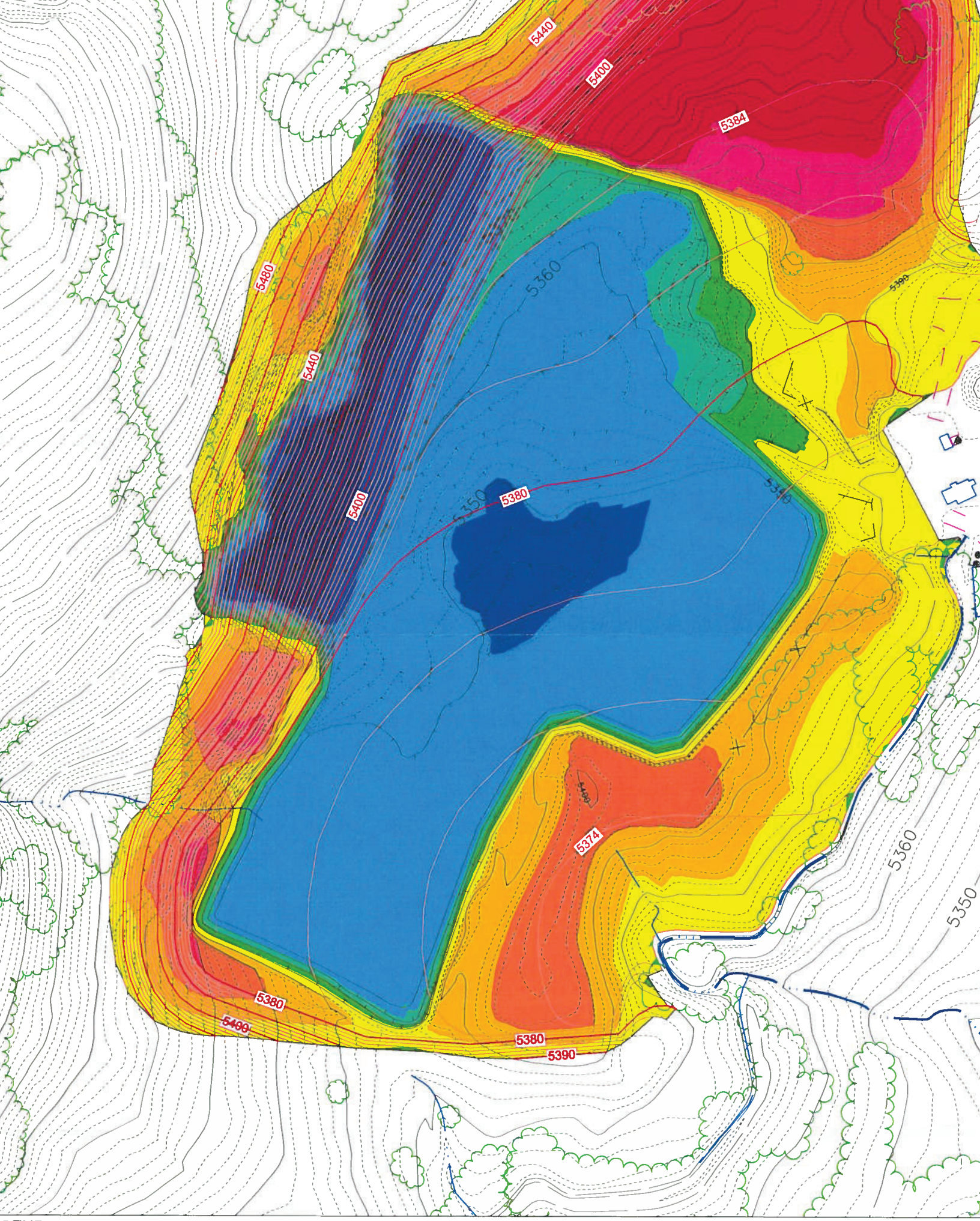
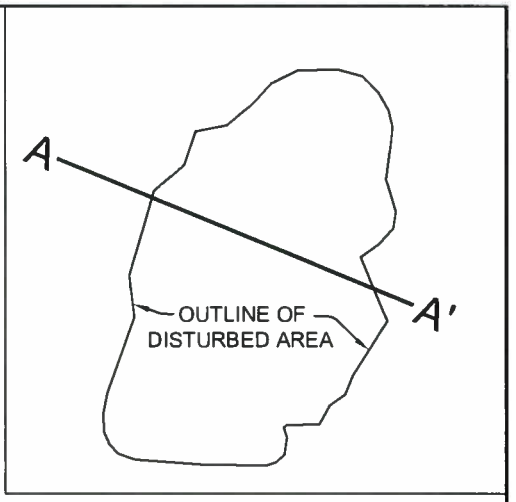


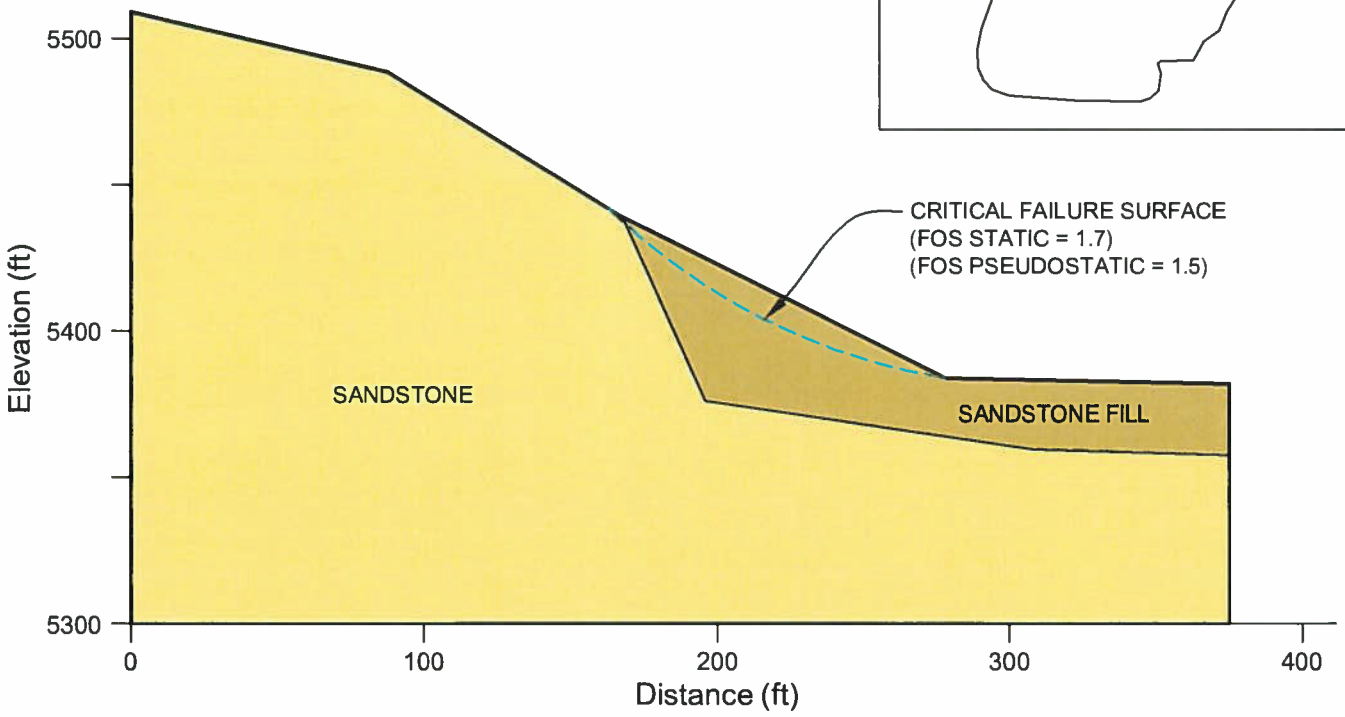
GEND:

EXISTING SURFACE TOPOGRAPHY PROVIDED

-58' to -40' (cut)

0' to 10' (fill)





NOTES:
1. FOS = FACTOR OF SAFETY.
2. TOPOGRAPHIC PROFILE AND MATERIAL BOUNDARIES OBTAINED FROM THE FULL EXTRACTION AND 2H:1V RECLAIMED TOPOGRAPHIC MAPS.

Material	Material Property	Unit Weight (kN/m3)	UCS (kPa)	Hoek-Brown "m" Parameter	Hoek-Brown "s" Parameter	Hoek-Brown "a" Parameter	Cohesion (kPa)	Phi (degrees)
Sandstone	Generalized Hoek-Brown	22.0	29,400	1.888	0.003	0.503	---	---
Sandstone Fill	Mohr-Coulomb	20.4	---	---	---	---	0	38

Note: A horizontal seismic load coefficient of 0.05 was assigned for the pseudostatic simulation (USGS, 1990).

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FIGURE 6
SLOPE STABILITY ANALYSIS
CROSS-SECTION A-A'
CEMEX LYONS

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CEMEX