

13. RECLAMATION PROCEDURES - LAND SHAPING

Long continuous slopes should be avoided or broken up with surface contours, ditches, or complex slope shape.

- a) What will be the:
  - i) -steepest above-water *excavated* slopes left after mining? (1½:1 is generally maximum) 1½:1
  - ii) -steepest above-water *fill* slopes left after mining? (2:1 is generally maximum) 2:1
- b) What will be done to ensure the stability of excavated slopes?  
Seeding and mulching and reforestation
- c) What will be done to ensure the stability of fill slopes?  
Same as above
- d) Will this site be shaped or backfilled to blend in with surrounding topography?  yes  no

4. POST-MINING WATER IMPOUNDMENT(S)

- a) Number of impoundment(s) N/A
- b) Use of impoundment(s) N/A
- c) Total surface area in acres N/A
- d) Average depth N/A

- e) How much is the water level expected to fluctuate annually? N/A
- f) What will be the steepest and flattest in-water slopes after mining? N/A

*Generally 3:1 in-water slopes are the steepest allowable, except off islands. To increase potential for wetland habitat establishment, 5:1 to 20:1 slopes are needed.*

- g) Will shallow ponds, shorelines, or other areas conducive to wetland plant development be left?  yes  no
- h) What will be the impoundment water source?  
N/A

**WRD** *A water right for the water source may be needed from the Water Resources Department.*

- i) What will be done for wildlife & fish enhancement, e.g. fish structures, islands, peninsulas, and irregular shorelines?  
N/A
- j) If wetlands are to be constructed, explain the methods and final configuration.  
N/A

15. OTHER PERMITS

In order to assist other agencies in the review of this plan and their ability to ascertain compliance with their laws, list all permits by type and number that are held (or applications filed) for this mine site or processing equipment (such as fill/removal permits, water rights, air quality and stormwater or waste water permits).

State / Permit Name	Permit Number
Lane County / Conditional Use Permit	

*in proc*

16. LANDOWNER CONSENT

As surface or mineral rights owner, I concur with the proposed subsequent use for any mining operation and with the operating and reclamation plan as submitted. I also agree to allow access to the State Department of Geology and Mineral Industries or their agents for reclamation of the mine site if it is declared abandoned by the Department of Geology and Mineral Industries.

Appropriate signatures are needed for EACH land parcel

I CONCUR (Surface Rights)

Name (Please Print or Type) \_\_\_\_\_

Signature \_\_\_\_\_

Title \_\_\_\_\_

Date \_\_\_\_\_

I CONCUR (Mineral Rights):

Name (Please Print or Type) \_\_\_\_\_

Signature \_\_\_\_\_

Title \_\_\_\_\_

Date \_\_\_\_\_

COPY

17. APPLICANT'S ACCEPTANCE

Name (Please Print or Type) Kristofer R. Jensen

Signature Kristofer R. Jensen

Title Gen. Superintendent

Date February 4, 1948

18. PREPARED BY (IF OTHER THAN APPLICANT)

Name (Please Print or Type) \_\_\_\_\_

Signature \_\_\_\_\_

Title \_\_\_\_\_

Company \_\_\_\_\_

Date \_\_\_\_\_

## Properties within 1,500 feet of purposed quarry site:

Tax Lot 3501	Bob Marques / Forest Property borders the west side of Tax Lot 3500
Tax Lot 3400	James Smakall / Forest Property borders the east side of Tax Lot 3500
Tax Lot 3600	Bettie, Robert & Ed Troxclair / Forest Property is located to the southwest of Tax Lot 3500
Tax Lot 3602	Barney Faulk / Forest Property borders the south of Tax Lot 3500

A map showing location of above tax lots and a circle indicating the 1500' impact area is attached hereto.

The tax lots listed above are the only tax lots within the 1500 feet impact area. All of these tax lots are under forest zoning. Ross and Norma Bradford own the property bordering the north side of Tax Lot 3500. As well as tax lot #800 and #100 which encompasses the access to the quarry property off of Cedarcroft Road.

See Map 19

NORTH

040-11

040

See Map 19 02 19

See Map 19 02 20

Ross Bradford Property

Shupe Jim

ROAD (Bear Creek Rd)

NO 696

Impact

1500

Existing Quarry

BLM

Chris Meyers

Lot 4310  
B. Marquis

Lot 3500  
Ross Bradford

Lot 3400

Tax Lotted on Map 19 02 20

Tax Lotted on Map 19 02 20

Tax Lotted on Map 19 02 20

Lot 4307  
B. Marquis

Lot 3802  
B. Frank

Smakall Property

040-01 See Map

040-0

Lot 4304  
B. Texada

Lot 3300  
B. Texada

3300

19 02 29

Lot 4301

Lot 4289  
3700

Lot 3800  
3800

3900

4400

4600

4800

040-06

Lot 4266  
4000

Lot 4244  
4100

Lot 4200  
4200

31

4500

32

4700

F

**BRADFORD PIT SITE PLAN:**

1. See attached Site Plan
2. Dimensions of proposed quarry would encompass approximately 20 acres out of the total 40 acres parcel as shown on the attached site plan. This would include loading areas and stockpiles.
3. Setbacks: 50' from property line on all quarry perimeters.
4. Location: Off of Bear Creek to Cedarcroft to private road owned by Ross and Norma Bradford.
5. Hours of operation: Monday through Saturday, 7:00 a.m to 4:30 p.m. Normally, BJ Equipment Company operates Monday through Friday; however, if a special job was in progress and needed supplies from the quarry a Saturday would be implemented.
6. Blasting Procedures attached.



**centurywest**  
ENGINEERING CORPORATION

LOG OF BORING B1

(Page 1 of 1)

B.J. Equipment Co.  
Eugene, Oregon  
Aggregate Resource Evaluation

Date Excavated : 7/7/98      Sampling Method : N/A  
Hole Diameter : 6 inches      Logged By : Glenn Cook  
Drilling Contractor : BJ Equipment Co.      Total Depth : 70 feet bgs  
Drill Rig : Gardner-Denver SCH 5000C

Project No.: 12327.001.01

Depth in Feet	GRAPHIC	USCS	DESCRIPTION
0		ML	Sandy clay SILT, with gravels, reddish brown, moist, moderately firm.
5			BASALT bedrock, gray, dense, minor fractures.
10			
15			
20			
25			
30			
35		VL	
40			
45			
50			
55			
60			
65			
70			



**centurywest**  
ENGINEERING CORPORATION

LOG OF BORING B2

(Page 1 of 1)

B.J. Equipment Co.  
Eugene, Oregon  
Aggregate Resource Evaluation

Date Excavated : 7/7/98      Sampling Method : N/A  
Hole Diameter : 6 inches      Logged By : Glenn Cook  
Drilling Contractor : BJ Equipment Co.      Total Depth : 70 feet bgs  
Drill Rig : Gardner-Denver SCH 5000C

Project No.: 12327.001.01

Depth in Feet	GRAPHIC	USCS	DESCRIPTION
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70		VL	BASALT bedrock, gray, dense, minor fractures.



**centurywest**  
ENGINEERING CORPORATION

LOG OF BORING B3

(Page 1 of 1)

B.J. Equipment Co.  
Eugene, Oregon  
Aggregate Resource Evaluation

Date Excavated : 7/7/98      Sampling Method : N/A  
Hole Diameter : 6 inches      Logged By : Glenn Cook  
Drilling Contractor : BJ Equipment Co.      Total Depth : 70 feet bgs  
Drill Rig : Gardner-Denver SCH 5000C

Project No.: 12327.001.01

Depth in Feet	GRAPHIC	USCS	DESCRIPTION
0		SM	Silty SAND, with gravels, reddish brown, dry, moderately firm.
0 - 15		VL	BASALT bedrock, gray, dense.
15 - 25		VL	BASALT bedrock, light brown, moderately dense, moderately fractured, some minor (6") soil seams.
25 - 70		VL	BASALT bedrock, gray, dense, minor fractures.



B.J. Equipment Co.  
Eugene, Oregon  
Aggregate Resource Evaluation

Date Excavated : 7/7/98  
Hole Diameter : 6 inches  
Drilling Contractor : BJ Equipment Co.  
Drill Rig : Gardner-Denver SCH 5000C

Sampling Method : N/A  
Logged By : Glenn Cook  
Total Depth : 70 feet bgs

Project No.: 12327.001.01

Depth in Feet	GRAPHIC	USCS	DESCRIPTION
0	[Graphic: 0-5 feet depth]	SM	Silty SAND, with gravels, cobbles and boulders.
5			
10	[Graphic: 10-70 feet depth]	VL	BASALT, gray, dense, minor fractures.
15			
20			
25			
30			
35		SM	Silty SAND, with cobbles, reddish brown.
40			
45		VL	BASALT bedrock, gray, dense, minor fractures.
50			
55			
60			
65			
70			



**centurywest**  
ENGINEERING CORPORATION

**LOG OF BORING B5**

(Page 1 of 1)

B.J. Equipment Co.  
Eugene, Oregon  
Aggregate Resource Evaluation  
Project No.: 12327.001.01

Date Excavated : 7/7/98      Sampling Method : N/A  
Hole Diameter : 6 inches      Logged By : Glenn Cook  
Drilling Contractor : BJ Equipment Co.      Total Depth : 70 feet bgs  
Drill Rig : Gardner-Denver SCH 5000C

Depth in Feet	GRAPHIC	USCS	DESCRIPTION
0	[Graphic: Dotted pattern]	SM	Silty SAND, with cobbles.
5			
10	[Graphic: Grid pattern]	VL	BASALT, gray, dense, minor fractures.
15			
20			
25			
30			
35			
40			
45			
50			
55			
60	[Graphic: Dotted pattern]	SM	Silty SAND, light brown.
65			
70			
75			
80			
85	[Graphic: Grid pattern]	VL	BASALT bedrock, gray, dense, minor fractures.
90			
95			
100			
105			

09-17-1998 c:\461BJEQUIPB5.BOR



**centurywest**  
ENGINEERING CORPORATION

LOG OF BORING B6

(Page 1 of 1)

B.J. Equipment Co.  
Eugene, Oregon  
Aggregate Resource Evaluation

Date Excavated : 7/7/98      Sampling Method : N/A  
Hole Diameter : 6 inches      Logged By : Glenn Cook  
Drilling Contractor : BJ Equipment Co.      Total Depth : 70 feet bgs  
Drill Rig : Gardner-Denver SCH 5000C

Project No.: 12327.001.01

Depth in Feet	GRAPHIC	USCS	DESCRIPTION
0 5 10 15 20 25 30 35		ML	Clay SILT, with some gravels, medium brown, damp, moderately firm.
40 45 50 55 60 65 70			

Client: CWEC  
 Project: BJ Equipment  
 Sampled By:  
 Sample Des: Rock

 Date Received: 7/9/98  
 Date Tested: 7/14/98  
 Ordered By:  
 Date Sampled:

Lab # 1180

### AGGREGATE DURABILITY TESTS

#### LOS ANGES RATTLER (LAR) ASTM C-131, OSHD TM 211

		PERCENT LOSS	SPEC.
INITIAL WT.	5005.8	18.8%	<30.0 %
FINAL WT.	4066.9		
GRADING	A		

#### OREGON AIR DEGRADATION, OSHD TM 208

Initial Weight	100.4		
Weight Retained On #20	82.5		
Percent Passing #20	17.8%	Specification	<30.0 %
Sediment Height	1.5"	Specification	<3.0"

#### SOUNDNESS ASTM C-88, OSHD TM 206

##### Coarse Fraction

Size	Grading	In. Wt.	Wt. After	Weighted Average Loss
1 1/2-3/4	33.0%	1511.1	1486	0.55%
3/4-3/8	33.0%	1000.8	941.6	1.95%
3/8-#4	33.0%	302.6	273.3	3.20%

 Total Coarse Loss  
 Specification

 5.7%  
 12.0% max

March 2, 1999

Project No.: 12327.001.01

Mr. Kristopher Jeremiah  
BJ Equipment Company  
34964 Highway 58  
Eugene, Oregon 97405

Re: Aggregate Resource Evaluation, Assessors Map 19 02 30, Tax Lot 3500

Dear Mr. Jeremiah,

At the request of Mr. James W. Spickerman, we are providing additional information which can be referenced for your project on the subject property. This is to clarify the use of certain acronyms used in our report dated September 10, 1998. The following table presents the common test name, corresponding Oregon Department of Transportation (ODOT) Test Method, acceptance specification for aggregate base, and test result.

Common Test Name	ODOT Test Method	Base Rock Specification	Test Result
Abrasion (Los Angles Rattler)	TM 211	≤35.0%	18.8%
Oregon Air Degradation	TM 208	≤30.0% ≤75mm	17.8% 37.5mm
Sodium Sulfate Soundness	TM 206	NA	5.7%

The acronyms used in our report which were unclear to the County staff are as follows:

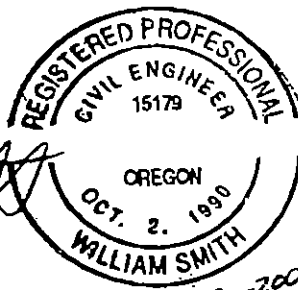
- **ASTM** - American Society for Testing Materials.
- **OSHD** - Oregon State Highway Department (now ODOT).
- **OAED** - a typing error, should read OSHD.

The results of the testing remain unchanged. All tests meet the specifications for base rock used for ODOT projects. Century West hopes this information clarifies the previously reported investigation results.

Sincerely,



William A. Smith, P.E.



Exp. 6-30-2000

fax: James W. Spickerman

# Operating and Reclamation Plan

For sites in sensitive locations, additional information may be required.  
If more space is needed, attach additional sheets or use the blank sheet provided at the end of this form.

**Oregon Department of Geology and Mineral Industries**  
**Mined Land Reclamation Program**  
1536 Queen Avenue, SE  
Albany OR 97321-6687  
(541) 967-2039  
Fax (541) 967-2075

EXHIBIT B

MUCH OF THE INFORMATION REQUESTED CAN BE EXPLAINED ON THE MINE PLAN MAP. SEE PAGE 7 FOR MAP REQUIREMENTS.

1. PRE-MINE CONDITIONS

- a) Current land use and zoning Forestry FI
- b) Average depth of topsoil 2' 0-5'
- c) Type and density of vegetation Douglas fir, black berry, asp grass
- d) Are there any springs, seeps, intermittent or perennial streams on or near the site?.....  yes  no  
If yes, list here and locate on mine plan map.
- e) Has a wetland delineation been completed?.....  yes  no  
If yes, attach report.
- f) Has a landslide investigation been completed on this property?.....  yes  no  
If yes, attach report.

2. POST-MINING LAND USE

- a) What is the planned post-mining beneficial use of the permit area?
  - Agriculture
  - Range/Open Space
  - Forestry
  - Housing/Construction
  - Wildlife/Wetland
  - Recreation
  - Other

The post-mining use must be compatible with the local comprehensive plan or have specific land-use approval. For significant aggregate sites, which are zoned for mining, local government must determine the post-mining land use.

3. RECLAMATION TIMING

Oregon law requires reclamation to be completed within 3 years after completion of mining on any segment of the mine area.

- a) How many days after mining is completed will reclamation begin?  
\_\_\_\_\_
- OR
- b) If reclamation will be concurrent with mining, explain the procedure for concurrent reclamation.

As soon as any area is not needed for mining purposes we will recover w/ original topsoil and replant area according to Forest Practices replanting regulations

4. OPERATING PLAN

- a) Mining method(s) to be employed (mark all that apply)
  - single bench  multiple bench  pond excavation
  - placer mine  side hill cut  hill top
  - other: \_\_\_\_\_
- b) Equipment to be used for mining:  
drills, loaders, dozers, excavators, rock crushers.
- c) Will there be on-site processing?.....  yes  
If yes, check type of processing:
  - wash water contained in a closed system source of water: \_\_\_\_\_
  - wash water discharged off site
  - dry processing
  - other: \_\_\_\_\_
- d) Will blasting be employed? .....  yes
- e) Distance to closest structure not owned by permittee.  
1.2 miles 2600'
- f) Disposition of removed vegetation.  
burn or used as brush sediment barrier
- g) Soil types which will be disturbed by mining, processing, reclamation.  
forest soil
- h) Average soil salvage depth all avail.
- i) Overburden removal depth 0-3'
- j) Will soil, overburden, rock waste or crusher reject dust stockpiles be created during mining?.....  yes  
If yes, list the estimated volume of each at the end of form and locate on a mine plan map.

Additional information may be required for large dust or those located on steep terrain.

- k) Will this plan require excavating across any property.....  yes
- l) How and where will soil or subsoils be stored for reclamation? Locate storage areas on mine plan map  
Vegetated berms along permit site
- m) What measures will be taken to reduce compaction and prevent water and wind erosion of the topsoil stockpiles when will they be implemented?  
plant w/ annual rye w/ other species as recommended by DOBA

- n) What will be the minimum property line setback:  
 for the excavation 50'  
 for processing or storage 50'

**WATER RESOURCE PROTECTION**

- a) Will mining occur below groundwater level?  yes  no  
 b) Will mine site dewatering be necessary?  yes  no  
 If yes, explain procedure and estimated depth to which water will be drawn down inside of the mine and where water will be discharged.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**WRD** A permit may be required from the Water Resources Department for dewatering activity. N/A

- c) Will process water be contained on site?  yes  no  
 d) Will storm water be contained on site?  yes  no  
 e) Will a pond(s) be used to contain water?  yes  no

Explain containment procedures.  
apply appropriate BMP's to control turbidity and control erosion to contain stormwater on site

If the answer to c) or d) is yes, please explain discharge procedures.  
see above explanation.

**DEQ** A permit from the Department of Environmental Quality may be required for off-site discharges and is required for any discharge into public waters, wetlands, streams or lakes.

- f) Will any drainages/streams be relocated?  yes  no  
 If yes, complete Section 11.  
 g) What will be the minimum undisturbed setback(s) of the operation from all stream(s) or drainage(s)? min 500'

List the name of stream(s) or drainage(s) and setback from each at the end of this form and locate on a mine plan map.

- h) How will the buffer(s) be identified and protected during mining and reclamation?  
leave berms & trees as visual screen.

- i) Describe methods employed to control erosion in the permit area. Be specific, i.e., seeding and mulching, sediment basins or ponds, contour ditching, waterbars, etc.  
Seeding & mulching any overland that has been eroded.  
Any access roads will be ditched and drained w/ French drains or water

- j) Will settling ponds/dams be constructed?  yes  no  
 State the number and size of the impoundment(s) and how they will be built. Will the pond be excavated or will be constructed? Locate on a mine plan map.  
Constructed as needed.

- k) If dams will be constructed, how high will they be and what is the maximum amount of water (in acre feet) to be impounded behind each dam?  
N/A

**WRD** If a dam is higher than 10 feet, and stores more than 9.2 acre feet of water, approval from the Water Resources Dept. is required prior to construction.

- N/A If berms or a dam will be constructed, describe construction details and attach a sketch showing construction methods.

- m) How deep will impoundment(s) be?  
 n) If the impoundment(s) are to be removed upon completion of mining, how will they be drained and/or filled?

- o) Will settling ponds, wetlands, or a water impoundment be left upon final reclamation?  yes  no

**6. GROUNDWATER INFORMATION**

- a) Proposed mine depth 120'  
 b) Groundwater depth unknown  
 (Under static (pre-mine) conditions)  
 c) What is groundwater depth estimate based on?  
no estimates  
 d) Flow direction of groundwater, if known. unknown  
 e) Distance to closest well outside the permit boundary,  
approx 2000'

Wells within permit area must be shown on mine plan map. Attach a copy of the well log(s).



7. VISUAL AND NOISE SCREENING

Screening can be very effectively employed to isolate sites from public notice and to minimize noise from operations.

- a) Does a natural landform or vegetative screen currently exist along the permit boundary? ...  yes  no
If yes, what screen width will be maintained during mining?

outer edge maintained until quarry floor lowered

- b) Will a berm and/or vegetation be established to develop a visual screen for the operation? ...  yes  no
If yes, describe the height and width of the berms and/or the type and density of vegetation; show location on mine map.

(Crushed rock stockpiles, although not permanent, can also be used to reduce noise from the operation.)

overburden piles will be vegetated along perimeter.

8. EQUIPMENT AND STRUCTURES REMOVED

- a) Upon final reclamation, will all structures, visual berms, equipment, and refuse be removed? ...  yes  no
If no, explain what will be left.

9. RECLAMATION TECHNIQUES

- a) What will be done with oversized rock not used during mining?

Oversize will be reduced and crushed

- b) What will be the average depth of soil replaced on the area to be reclaimed? 2'

If less than 12" of topsoil is available, a substitute material may be required.

- c) Will additional material be utilized as a soil substitute to complete the revegetation? ...  yes  no
If yes, specify type(s), amount(s), and source(s).

- d) Will any waste products, such as tailings, crusher rejects, etc., be generated during mining? ...  yes  no
If yes, what will be done with them?

- e) How will processing and stockpile sites be reclaimed? If they are to be revegetated, explain procedures which will be employed to decompact areas prior to topsoiling/seedling.

yes, cover w/ soil where available or shoot floors to improve permeability

10. REVEGETATION TECHNIQUES

- a) Species to be seeded/planted by type and amount.

As recommended by DOBAM or State Forestry Department

- b) Describe method and time of year for planned plant: grass + stabilization - hand broadcast
tree reforestation - hand plant

- c) List fertilizers and lime to be used (include amount).

As recommended by DOBAM or State Forestry Department

- d) List type and amount of mulch or other erosion control techniques such as erosion netting.

Mulch as required
Seed as required

Vegetative survival comparable to the density of original ground cover will normally be considered acceptable

11. RECLAMATION PROCEDURES - POST-MINE DRAINAGE CONTROL AND RECONSTRUCTION

- a) During reclamation, will stream channel and/or bank stabilization and rehabilitation be necessary? ...  yes  no
If yes, attach plans.

DSL

A Division of State Lands' permit is required for relocation of all perennial and some intermittent courses.

- b) How will surface water runoff and erosion be control upon completion of mining? Describe and list structure that will be used.

apply appropriate BMP's to control surface water runoff

12. RECLAMATION PROCEDURES - IMPOUNDMENTS & POND DECOMMISSIONING

- a) Will dewatering be required? ...  yes
b) Will it be necessary to backfill a water filled excavation or pond? ...  yes
c) How will settling ponds be stabilized and revegetated?

yes where applicable

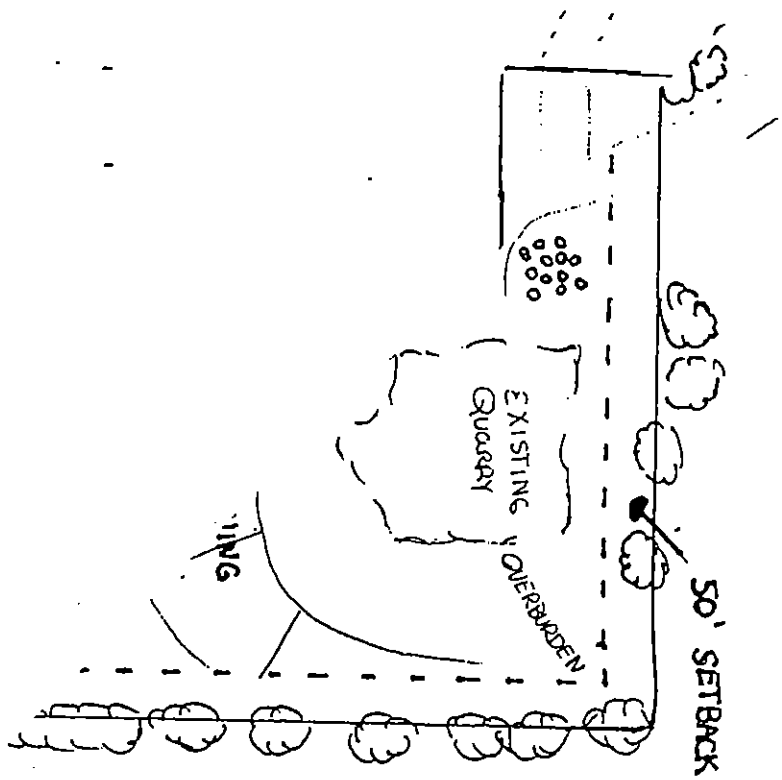
- d) How will quality of imported backfill be monitored, protect groundwater quality?

no back fill needed

Monitoring may be required to ensure groundwater protection.

# BRADFORD

# QUARRY



Key

EXISTING QUARRY

DUGAMI PERMIT BOUNDARY (2004)

PROPERTY BOUNDARY

STOCK PILE

EXISTING ACCESS

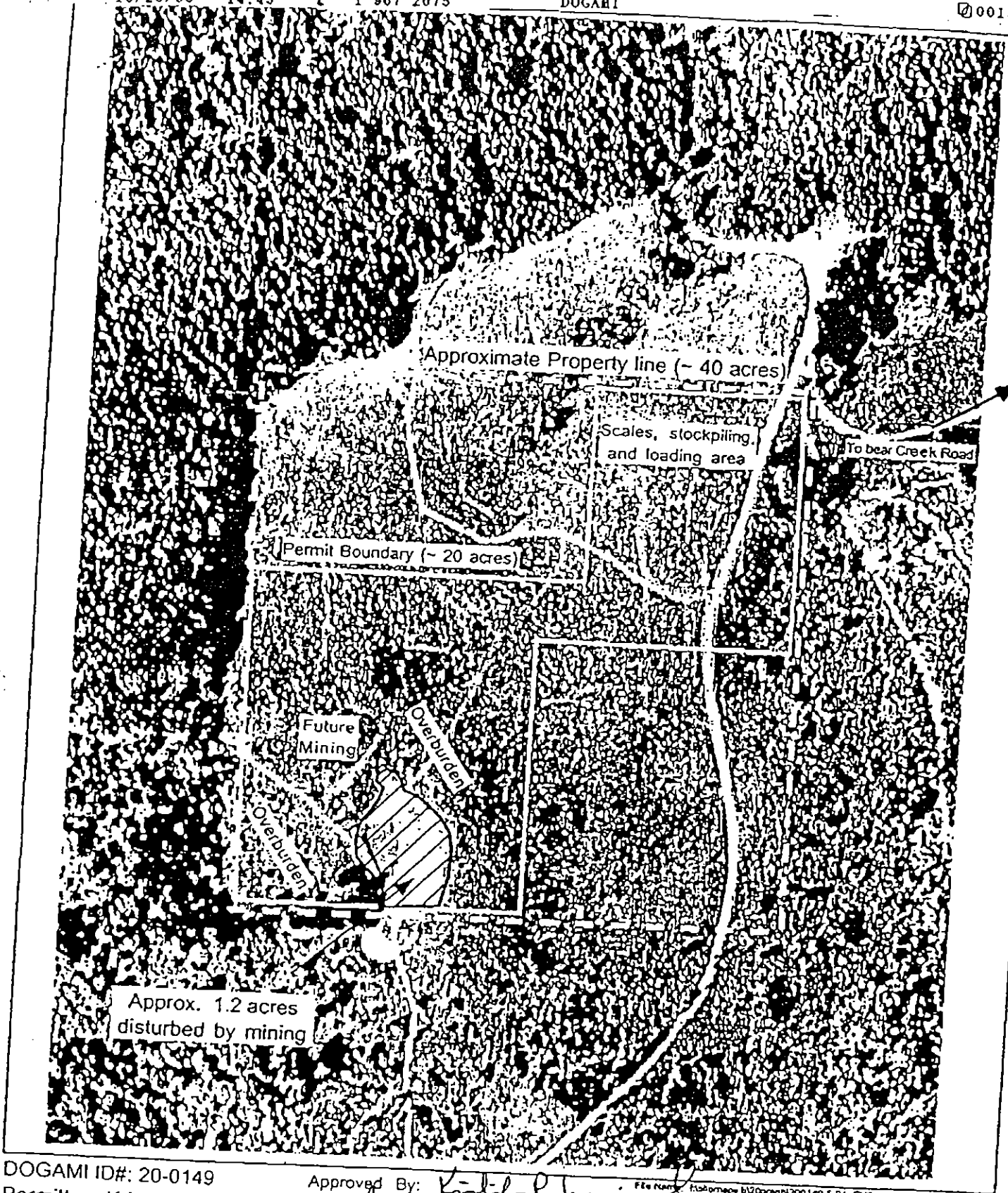
SLOPE

50' SETBACK FROM BOUNDARIES

## SITE PLAN

BRADFORD  
PERMIT No.





DOGAMI ID#: 20-0149

Permittee: Kristofer Jeremiah

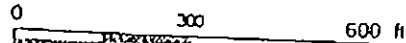
Site Name: Bradford Quarry

Photo Source / Date: WAC 5/7/94

Prepared By / Date: Peter Wampler 7/30/98

Approved By: *Kristofer Jeremiah*  
Date: *Aug 28, 1998*

File Name: H:\domeaw\b20\qprn200149 5-94 .CVS



Approx. scale 1 in = 300 ft +/- 20 ft

Oregon Dept. of Geology and Mineral Industries  
Mined Land Reclamation Program



RECEIVED  
SEP 1 1998

MLR

C

## BRADFORD QUARRY BLASTING PROCEDURES

Blasting will be performed intermittently Monday through Friday between the hours of 10:00 a.m. and 4:30 p.m.

24 hours notice will be given to any residence who wish to be notified before blasting.

Seismographs will be set at nearest dwellings to monitor all blasting operations.

All blasting procedures will conform with the Office of Surface Mining Recommendations.

All quarry access will be secured during blasting operations.

Blasting operations will be performed to assure the safety of all persons and property in the vicinity.

Blasting will be performed only by Federal and State licensed blasters.

TRAFFIC IMPACT ANALYSIS  
FOR  
PROPOSED BRADFORD PIT QUARRY

June, 1998

Prepared for:

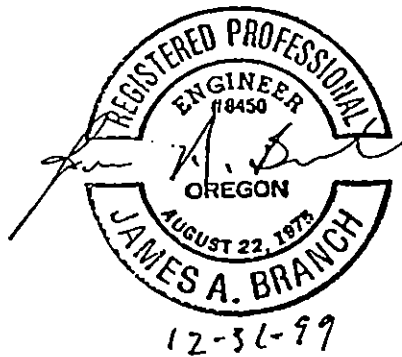
B.J. EQUIPMENT COMPANY  
P.O. Box 543  
Cottage Grove, OR 97424

Prepared by:

BRANCH ENGINEERING  
310 Fifth Street  
Springfield, Oregon 97477  
Phone (541) 746-0637  
FAX (541) 746-0389

TRAFFIC IMPACT ANALYSIS  
FOR  
PROPOSED BRADFORD PIT QUARRY

June, 1998



Prepared by:

BRANCH ENGINEERING  
310 Fifth Street  
Springfield, Oregon 97477

## Table of Contents

INTRODUCTION .....	1
EXISTING CONDITIONS .....	1
Roadway System .....	1
Existing Traffic Volumes .....	2
FUTURE TRAFFIC VOLUMES .....	2
LEVEL OF SERVICE .....	2
SIGHT DISTANCE EVALUATION .....	4
ROADWAY STRUCTURAL ANALYSIS .....	4
CONCLUSIONS AND RECOMMENDATIONS .....	5

## List of Figures

Figure 1	Vicinity Map
Figure 2	1998 Existing Traffic Volumes
Figure 3	Site Generated Traffic Volumes
Figure 4	1998 'Build' Traffic Volumes
Figure 5	Core Sample Locations

## Appendices

Level of Service Calculations
Core Sample Analysis

## INTRODUCTION

The purpose of this report is to document the traffic impact analysis performed for the proposed Bradford Pit Quarry near Creswell, Oregon. The study addresses the existing traffic conditions in the project vicinity and forecasts the operating conditions of the roadway system during operation of the quarry. This report also summarizes results of a structural analysis performed for roadways on the travel route and recommends any improvements necessary to mitigate impacts to the existing transportation system.

Access to the Bradford Pit Quarry is proposed via a private road extending from the end of Cedarcroft Road, east of Creswell, as shown in Figure 1. Proposed development consists of a quarry and rock crushing operation on approximately 40 acres of previously logged and quarry mined land.

The proposed quarry and rock crushing facilities are expected to be complete by 1999 and have a service life of approximately 20 years. Quarry mining and rock crushing operations will be conducted between the hours of 7:00AM and 5:00PM Monday through Friday.

## EXISTING CONDITIONS

### **Roadway System**

Cloverdale Road is a county arterial roadway providing connection between Creswell and Pleasant Hill. The roadway is 32 feet wide in the project vicinity and has a posted speed of 55 MPH.

Bear Creek Road is a county roadway extending east from Cloverdale Road. The roadway is 24 feet wide in the project vicinity and has a posted speed of 50 MPH. The roadway has been used by the timber industry as a haul road for many years.

Cedarcroft Road is an rural county roadway extending south from Bear Creek Road. The roadway has a paved width of 24 feet for approximately 750 feet, followed by a 22 foot wide gravel surface. There is currently no traffic control at the intersection of Cedarcroft Road with Bear Creek Road, and no lane striping on the roadway. Cedarcroft Road was originally constructed for the hauling of timber and rock from the area surrounding the project site.



### **Existing Traffic Volumes**

Existing peak hour traffic volumes were determined from a traffic count performed at the intersection of Bear Creek Road with Cloverdale Road. The count was conducted by Branch Engineering in June, 1998 from 4:30 to 5:30 PM. The count hour was selected to analyze the highest Cloverdale Road and Bear Creek Road traffic volumes during the quarry's hours of operation. The 1998 existing traffic volumes are shown in Figure 2.

### **FUTURE TRAFFIC VOLUMES**

Bradford Pit Quarry is projected to generate a maximum of 86 trips per day based on maximum production capacity of the quarry and rock crushing facilities. The trip generation calculations used in this analysis are summarized below:

Maximum rock production: 100,000 cubic yards per year  
100,000 cubic yards per year / 250 work days per year = 400 cubic yards per day  
400 cubic yards per day / 10 cubic yards per truck = 40 trucks  
On-site employees: 3  
Total trips = number of vehicles (43) x (2) = 86 trips per day

Dividing the number of truck trips throughout the 10 hours of operation and adding on-site employees leaving the site equates to eleven trips in the PM peak hour, four entering and seven exiting.

A conservative approach was used in this analysis to project the maximum number of trips generated by the site. The actual number of trips per day is expected to be less than 86, as trucks with haul capacities greater than 10 cubic yards will be used in transporting rock from the quarry.

The site generated trips were distributed equally north and south on Cloverdale Road to estimate future conditions. Actual travel patterns will depend on the locations of construction projects throughout the southern Willamette Valley. The site generated traffic is shown in Figure 3 and the 1998 'Build' traffic (1998 existing traffic plus site generated traffic) is shown in Figure 4.

### **LEVEL OF SERVICE**

Level of service (LOS) describes the quality of traffic flow at an intersection. It can be based on either vehicle delay or the volume to capacity ratio, and is classified by a letter scale from 'A' to 'F'. LOS 'A' represents optimum operating conditions and minimum delay. LOS 'F' indicates over capacity conditions causing unacceptable delay. LOS 'D' is considered the minimum acceptable level of service. Roadway or intersection improvements are often necessary when the level of service is below 'D'. The level of service determined by average delay per vehicle as

established in the Highway Capacity Manual is as follows:

<u>Level of Service</u>	<u>Average Delay per Vehicle Unsignalized Intersections</u>
A	≤ 5 sec
B	> 5 and ≤ 10 sec
C	> 10 and ≤ 20 sec
D	> 20 and ≤ 30 sec
E	> 30 and ≤ 45 sec
F	> 45 sec

A level of service analysis was performed for the PM peak hour at the Bear Creek Road/Cloverdale Road and Cedarcroft Road/Bear Creek Road intersections. Levels of service at these intersections were calculated using the computer program Highway Capacity Software (HCS) developed by McTrans. For unsignalized intersections, a level of service is reported only for movements which have to yield the right-of-way.

The following table indicates the projected levels of service at the studied intersections:

<b>LEVEL OF SERVICE (PM Peak Hour)</b>		
<b>Intersection</b>	<b>1998 Existing</b>	<b>1998 'Build'</b>
Bear Creek Road/Cloverdale Road		
Westbound Left Turn	A	A
Westbound Right Turn	A	A
Southbound Left Turn	A	A
Cedarcroft Road/Bear Creek Road		
Northbound Left Turn	A	A
Northbound Right Turn	A	A
Westbound Left Turn	A	A

The level of service analysis indicates all movements at the studied intersections are projected to operate at LOS 'A' with the proposed development and the additional trips generated by the development are not expected to have significant adverse impact on the roadway system.

**SIGHT DISTANCE EVALUATION**

The Bear Creek Road/Cloverdale Road and Cedarcroft Road/Bear Creek Road intersections were evaluated to determine if the existing sight distances are adequate to serve trucks entering the roadways. Site distances measured in the field were compared to the minimum stopping sight distance recommended by the American Association of State Highway and Transportation Official's manual, A Policy on Geometric Design of Highways and Street, 1990. The results of this evaluation are shown in the following table:

<b>STOPPING SIGHT DISTANCE EVALUATION</b>		
<b>Intersection/Movement</b>	<b>Measured Distance</b>	<b>Recommended Distance</b>
Bear Creek Road/Cloverdale Road Westbound Left Turn Westbound Right Turn	940 ft unrestricted	550 ft 550 ft
Cedarcroft Road/Bear Creek Road Northbound Left Turn Northbound Right Turn	580 ft 680 ft	550 ft 550 ft

The site distance evaluation indicates the intersections are expected to operate safely with large trucks entering the existing roadways. Adequate distance is provided for vehicles on Bear Creek Road and Cloverdale Road to slow or stop as necessary allowing trucks to accelerate to travel speeds.

**ROADWAY STRUCTURAL ANALYSIS**

The roadway structure on Bear Creek Road and Cedarcroft Road was analyzed to ensure adequate strength is provided to support the number of loaded haul trucks generated by the proposed quarry. Asphalt core samples were taken at four locations along the travel route, two on Bear Creek Road, and two on Cedarcroft Road as shown in Figure 5. Professional Service Industries (PSI) extracted the samples and conducted the core analysis, providing data on thickness, specific gravity, density, and percent compaction of the existing pavement structure. A summary of this data is provided in the table on the following page.

Field tests also included exploration of the base rock beneath the existing asphalt paving. The base rock thickness was determined at each of the core sample locations and is listed in the table below. Base rock at each location was found to be well compacted 1 ½"-0 aggregate.

CORE SAMPLE SUMMARY					
Sample No.	Base Rock Thickness	AC Thickness	Bulk Specific Gravity	Density (PCF)	Percent Compaction
1	16"	2.47"	2.22	138.2	90.3
2	18"	2.02"	2.24	139.4	91.2
3	12"	3.48"	2.23	138.8	90.7
4	14"	2.63"	2.18	135.7	88.4

The pavement surfaces on Bear Creek Road and Cedarcroft Road were examined during field visits to identify any defects in the pavement structure. Both roadways were found to be in good condition and no significant grooves or cracks were noted.

Bear Creek Road and Cedarcroft Road are under Lane County Jurisdiction and inventoried in the County's Pavement Management System. The County will review the core sample data, indicate the extent of impact to the roadway structure, and determine if mitigation of these impacts is necessary.

Scales will be installed at the quarry site to ensure trucks leaving the quarry meet legal weight requirements.

### CONCLUSIONS AND RECOMMENDATIONS

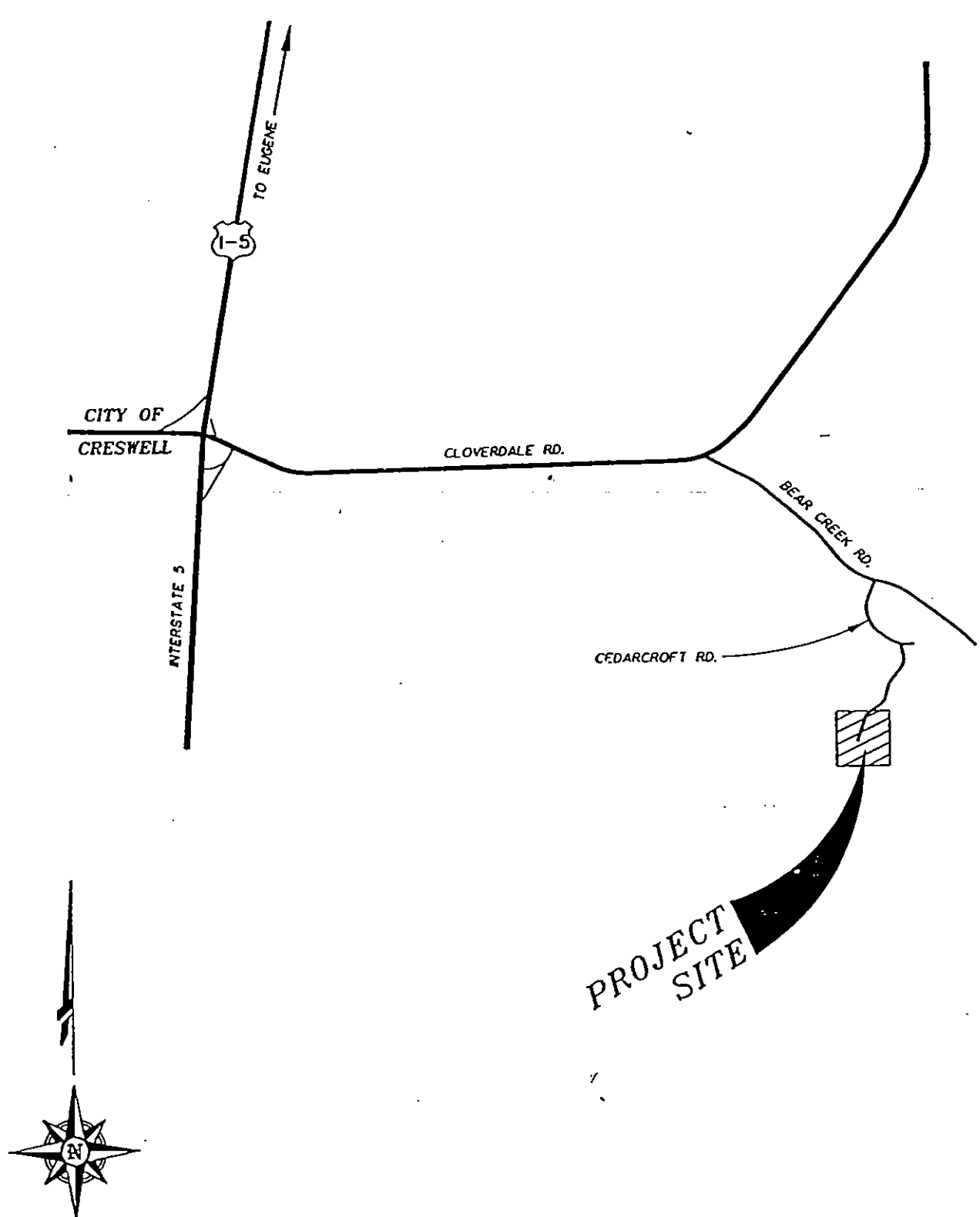
The proposed quarry and rock crushing operation is projected to generate a maximum of 86 trips per day and 11 trips during the PM peak hour. This report indicates the additional trips are not expected to have significant adverse impact on the operating characteristics of existing roadways and intersections. The Bear Creek Road/Cloverdale Road and Cedarcroft Road/Bear Creek Road intersections were found to have adequate sight distance for vehicles to slow or stop as necessary for trucks entering the roadway.

In order to minimize the risk of accidents at the studied intersections, it is recommended a stop sign be placed at the Cedarcroft Road/Bear Creek Road intersection. It is also recommended vegetation along Bear Creek Road, particularly east of the Cedarcroft Road intersection be regularly cut back as far as possible to provide the greatest available sight distance for vehicles approaching from the east.

Bear Creek Road and Cedarcroft Road have been used as timber and rock haul roads for many years. Sight distances, grades, and radii of curvature on these roadways were found to be suitable for large trucks. The proposed project could be beneficial to the overall roadway system as construction projects in the Creswell vicinity are anticipated in the coming years. Availability of rock from a location near future construction projects would reduce the number of miles in the overall roadway system traveled by rock haul vehicles.

Figures

# VICINITY MAP

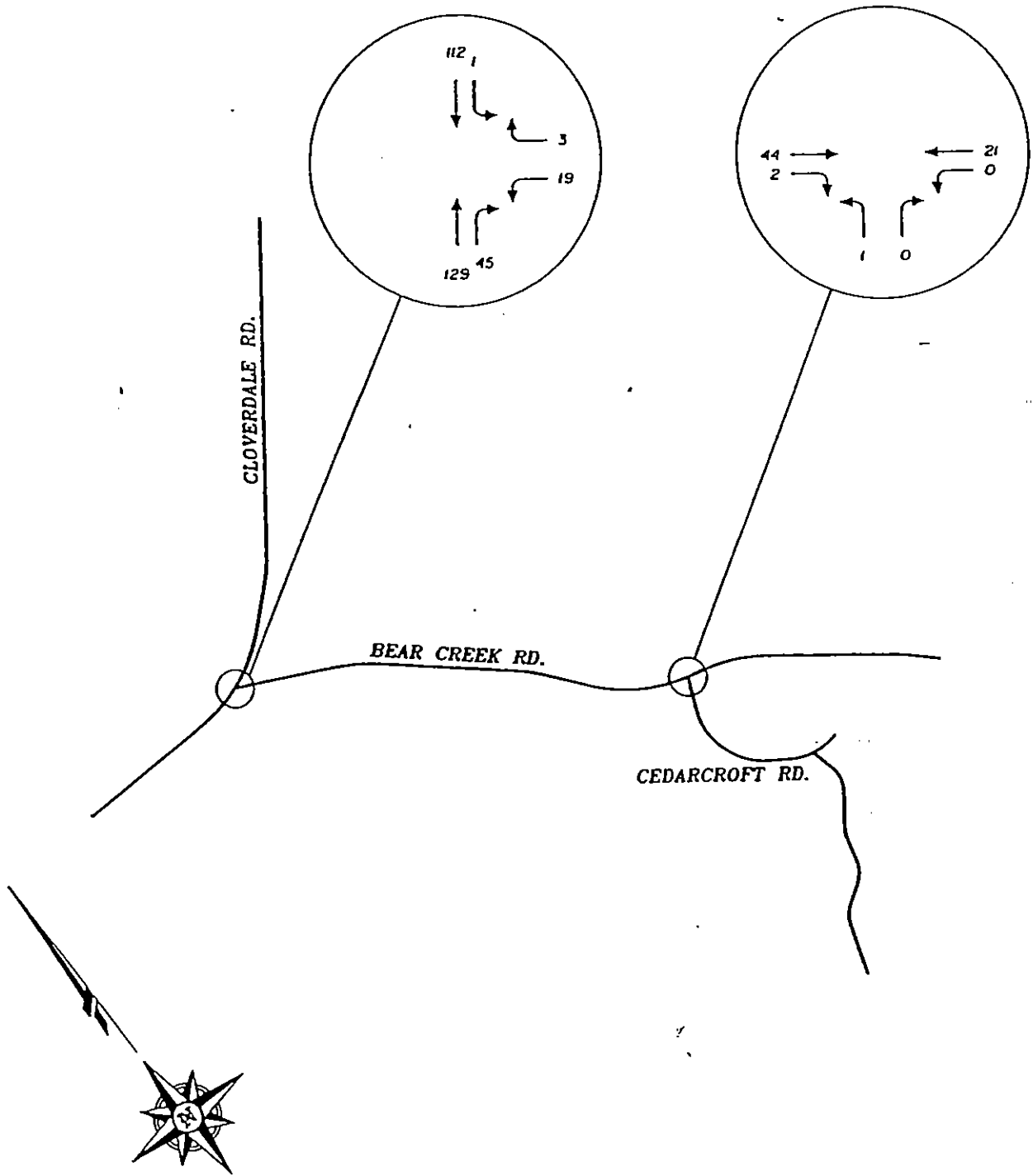


**PROJECT  
SITE**

FILE NAME: E:\98\98141\98141.DWG

FIGURE 1

# 1998 EXISTING TRAFFIC VOLUMES (PM PEAK HOUR)

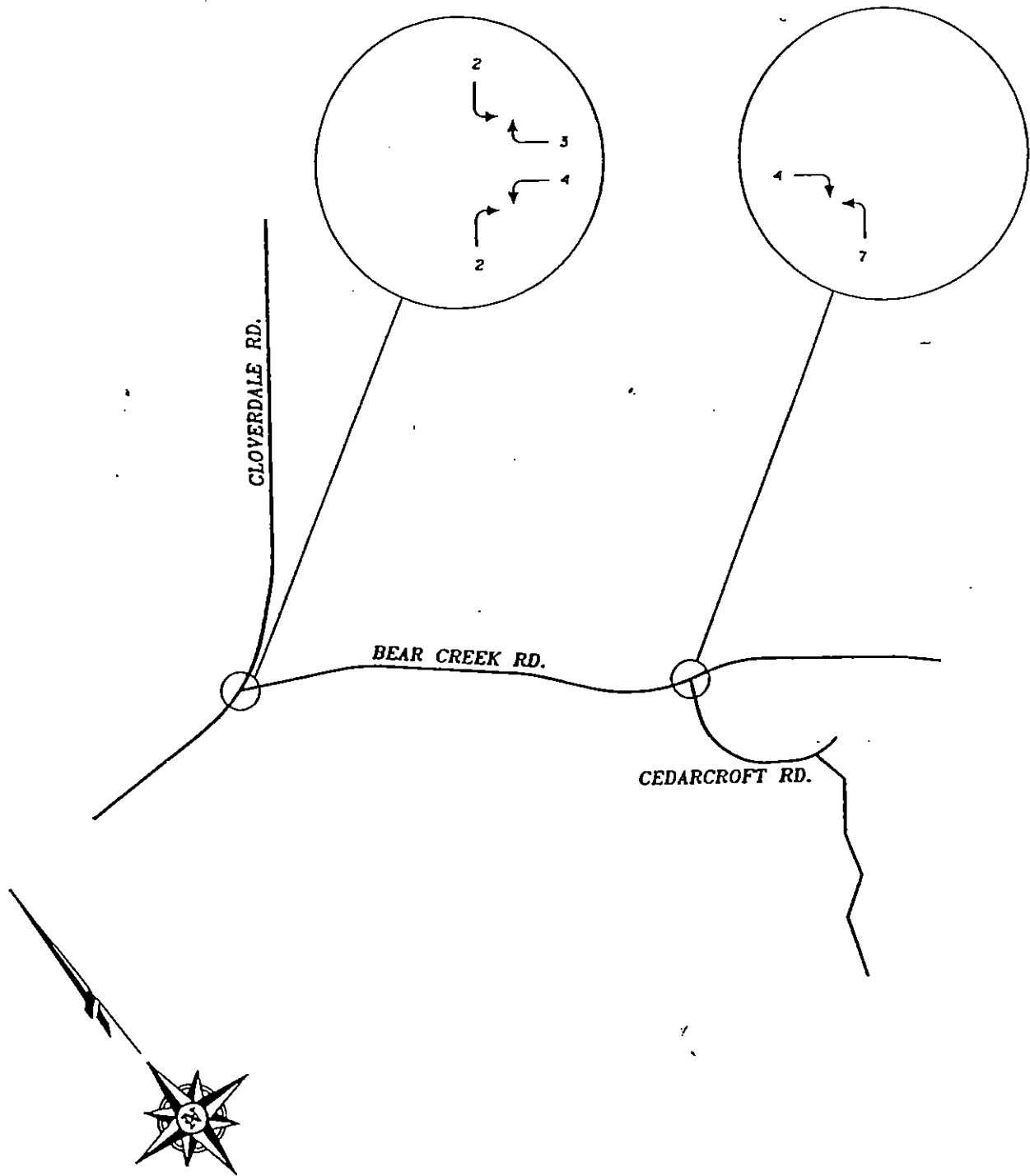


FILE NAME: E:\98\98141\98141.DWG

FIGURE 2



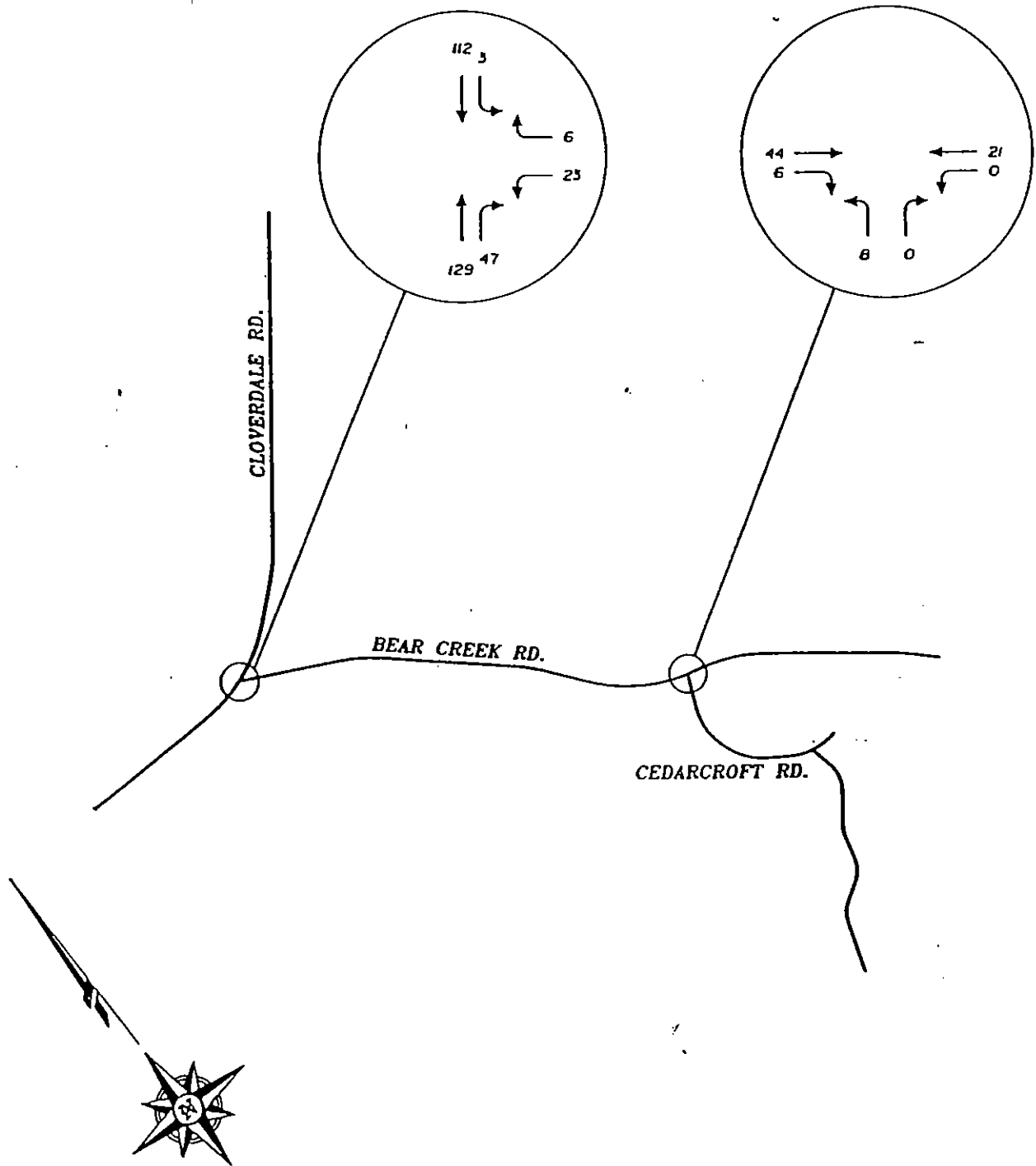
# SITE GENERATED TRAFFIC VOLUMES (PM PEAK HOUR)



FILE NAME: E:\98\98141\98141.DWG

FIGURE 3

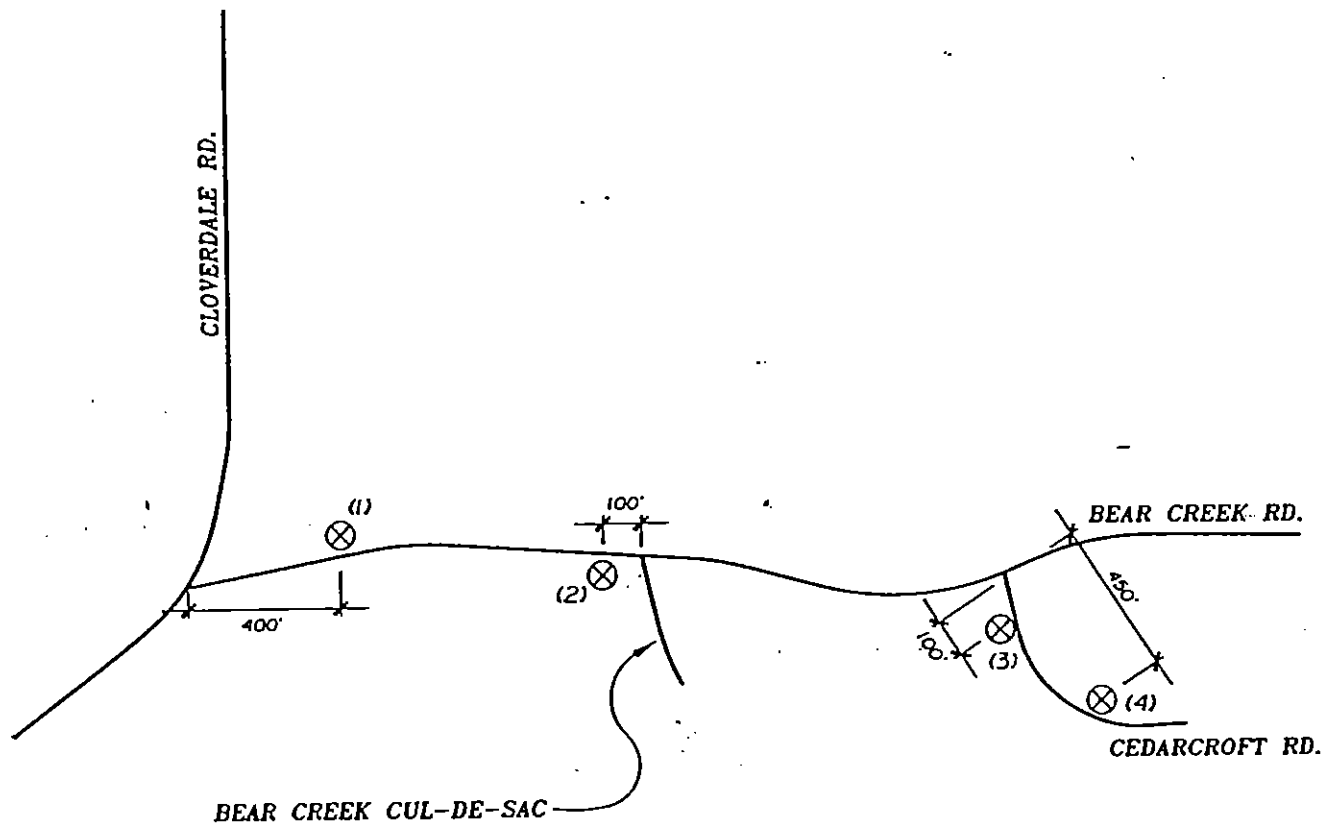
# 1998 'BUILD' TRAFFIC VOLUMES (PM PEAK HOUR)



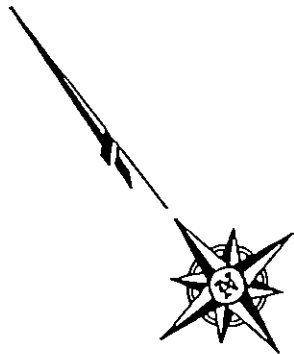
FILE NAME: E:\98\98141\98141.DWG

FIGURE 4

# CORE SAMPLE LOCATIONS

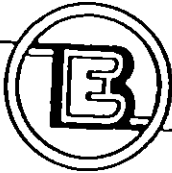


⊗ CORE SAMPLES TAKEN BETWEEN WHEEL TRACKS ON SIDE OF ROADWAY AS SHOWN ABOVE



FILE NAME: E:\98\98141\98141.DWG

FIGURE 5



# Branch Engineering

October 15, 1998

Thom Lanfear  
Lane County Land Management Division  
125 East 8th Avenue  
Eugene, OR 97401

310 5th Street  
Springfield, Oregon 97477  
(541) 746-0637  
Fax (541) 746-0389

Re: Supplement to Traffic Impact Analysis for Proposed Bradford Pit Quarry

Dear Thom,

The Traffic Impact Analysis dated June, 1998 indicated 50 percent of the site generated trips were assigned to and from the north on Cloverdale Road and 50 percent were assigned to and from the south. Per your request, Branch Engineering performed additional analysis at the Cloverdale Road/Bear Creek Road intersection. The Cloverdale Road/Bear Creek Road intersection was evaluated to determine the impact at the intersection if 100 percent of the site generated trips were assigned to and from the north or south. Level of service calculations indicate assigning 100 percent of the site generated trips to and from the south would create the greatest impact. The calculations further indicate all movements at the Cloverdale Road/Bear Creek Road intersection are projected to operate at LOS 'A' in this "worst case scenario". The revised figures and calculations are attached for your use.

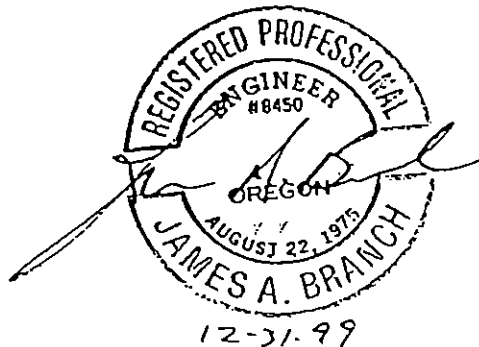
The conclusion of this analysis is the same as that stated in the Traffic Impact Analysis in that the additional trips will not have a significant adverse impact on the operating characteristics of the existing roadways and intersections.

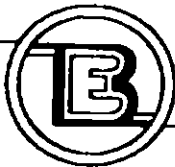
If you have any further questions please do not hesitate to call.

Sincerely, .ll

James A. Branch, P.E.

cc: B.J. Equipment Co.





# Branch Engineering, Inc.

310 5th Street  
Springfield, Oregon 97477  
(541) 746-0637  
Fax (541) 746-0389

March 15, 1999

James W. Spickerman  
Gleaves Swearingen Larsen Potter Scott & Smith LLP  
975 Oak Street, Suite 800  
Eugene, OR 97401

Re: Supplement to Traffic Impact Analysis for Proposed Bradford Pit Quarry

Dear Mr. Spickerman,

In response to your letter dated March 5, 1999, this supplement addresses the following two issues:

- (1) Extension of TIA to include Highway 58 / Cloverdale Road intersection
- (2) Sight distance on Bear Creek Road at Bradford Road

Branch Engineering extended the study of the subject project along Cloverdale Road to Highway 58 (the nearest arterial) per your request. I specifically investigated the level of services (LOS) at the intersection of Cloverdale Road with Highway 58.

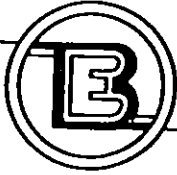
The existing LOS for the northbound approach was found to be LOS 'B'. Evaluating the worst case scenario with all project PM peak hour trips assigned to this intersection, the northbound approach is calculated to operate at LOS 'C'. All other movements were found to operate at LOS 'C' or better.

Also, I have been made aware of an unsafe existing condition on a nearby residential street. Christopher M. Clemow, P.E. identified inadequate sight distance to the right when entering left from South Bradford Road on to Cloverdale Road. South Bradford Road is not planned for access or egress with the proposed quarry. I agree with Mr. Clemow that there is less than desirable sight distance. However, this problem needs to be addressed with or without the proposed development. Mitigation may include tree removal, regrading of the cut slope, speed reduction measures and additional signing.

The conclusion of this analysis is the same as that stated in the Traffic Impact Analysis in that the additional trips will not have significant adverse impact on the operating characteristics of the existing roadways and intersections.

Respectfully Submitted,

James A. Branch, P.E.



# Branch Engineering, Inc.

May 3, 1999

James W. Spickerman  
Gleaves Swearingen Larsen Potter Scott & Smith LLP  
975 Oak Street, Suite 800  
Eugene, Oregon 97401

310 5th Street  
Springfield, Oregon 97477  
(541) 746-0637  
Fax (541) 746-0389

**Re: Supplement to Traffic Impact Analysis for Proposed Bradford Pit Quarry**

Dear Jim,

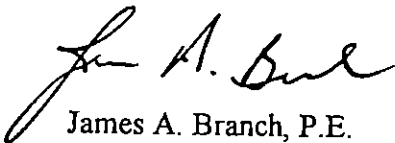
This supplement to the Traffic Impact Analysis (TIA) is in response to your letter dated April 27, 1999.

Branch Engineering previously investigated levels of service (LOS) at the Highway 58/Cloverdale intersection per your request for a worst case scenario assuming Highway 58 to be the nearest arterial. Classifying Interstate 5 as an arterial would result in it being the nearest arterial instead of Highway 58. Therefore, the purpose of this report is to specifically investigate the LOS at the ramp intersections of Interstate 5 and Cloverdale Road/Oregon Avenue.

The existing LOS of the Interstate 5 NB ramps/Cloverdale Road intersection was determined to be LOS 'A - B'. With all site generated PM peak hour trips assigned to this intersection, it is found that the LOS will remain the same (LOS 'A - B'). The LOS of the SB Interstate 5 ramps intersection with Oregon Avenue was also investigated and found not to change with the slight increase of traffic generated by the proposed quarry site.

The conclusion of this analysis is the same as that stated in the Traffic Impact Analysis in that the additional trips will not have significant adverse impact on the operating characteristics of the existing roadways and intersections.

Respectfully submitted,



James A. Branch, P.E.

c: BJ Equipment Company, LLC

# ACOUSTICAL ENGINEER

Arthur M. Noxon, PE

FOR ACOUSTICS, NOISE AND VIBRATION CONTROL  
*engineering survey, analysis, design and project management*

February 12, 1999

James Spickerman, Attorney  
Citizen's Bank Building Suite 800  
975 Oak St  
Eugene, OR 97401

RE: Noise Impact Study for the Bradford Quarry

A noise study was commissioned at the Saginaw Quarry. The purpose was to use this site as a reference site in order to project an expected noise for an equivalent setup at the proposed Bradford Quarry site. The result of this testing is that the operation of the Bradford Quarry should not impose any negative noise impacts on the surrounding homes.

## Background

The basis for expanding the noise field was achieved by measuring the process of the Saginaw Quarry at a range of 150'. The quarry was about 100' wide, 80' deep and 300' long. It was open at either end and the long sides of the quarry were sheer vertical cliffs of rock. The sound measurement point selected was on the rim of the quarry, midway along one of the long sides. From this vantage point the entire side of the rock crushing line of equipment was in full view. The noise measured included not only the direct sound from the crushing operation but the reflected sounds off the sheer vertical walls of the pit. It is difficult to imagine finding a reference point that could be more representative of the most extreme example for measuring the noise output from the rock processing equipment.

## Test and Baseline Result

DEQ requires that the L50, L10 and L1 not be exceeded in the daytime by more than 50, 60 and 75 dB,A respectively at a dwelling. L50 means noise levels exceeded 50% of the time, the L10 and L1 are likewise. For the quarry measurements, the sound was very steady. The L10 was only 1 dB more than the L50 and the L1 registered no more than 2 dB,A more than the L50. Clearly, the L50 is the controlling component of the noise.

At the rim, the noise from the quarry operation produced an L50 of about 78 dB,A. The rule for expansion of sound is 6 dB reduction for every doubling of distance. This assumes a flat surface with no absorption. Following this rule, the DEQ daytime limit for the L50 of 55 dB,A would be reached at 2100 feet and beyond this, the quarry noise would fall below DEQ limits.

In fact, the surrounding area of the quarry is not flat. Hills block some of the expansion of sound and the ground falls away in many directions due to the elevated location of the quarry relative to the dwellings nearby. Both the hills and the downhill slopes contribute to further weakening the noise beyond that due to natural expansion on the flat. Sloped ground adds around 2 dB per doubling of distance. Hills that block out the view of the noise will easily attenuate an additional 15 dB over that on the flat.

### Projections

The closest dwelling is some 2300' to the south and just outside the DEQ limit line of 2100' but it is also placed well behind a hill and that will easily reduce the quarry noise by an additional 15 dB. The next closest dwelling is 3300' to the north but the ground slopes away and the levels there will be attenuated an additional 9 dB beyond the projected 51 dB,A due to flat expansion. The next set of houses are ranging just over 4000' and are in a variety of directions. Noise levels just over 4000' from the quarry and projected for flat expansion is estimated at about 49 dB,A and the slope effect will reduce this an additional 10 dB. All the nearby houses will be exposed to noise levels well below the daytime DEQ limit of 55 dB,A.

### Discussion

There are additional factors present in the operation of the quarry that were not measured. We have the noise from rocks being dumped into dump trucks and we have drilling and blasting. The dump truck loading is short in duration, less than 15 seconds typically and fairly intermittent depending on the number of trucks out per day. The LI would be the only measure to apply here and DEQ sets the limit at 75 dB,A. A dump will register around 85 dB,A at 50' but that noise drops to 75 dB well within 200' and by 1600' the noise on the flat will drop an overall 30 dB, down to 55 dB,A. The dumping of rock into trucks will not be a noise problem.

Drilling and blasting is another source. Drilling machines attain up to 105 dB,A at distances of 10' but this expands out and by the distance of 2400' the noise level is reduced some 48 dB on the flat, down to 57 dB,A. Then when the sound shadowing effects of hills and sloping ground is added in, the levels drop an additional 10 to 15 dB and fall well below the DEQ limits, even when added to the quarry noise.

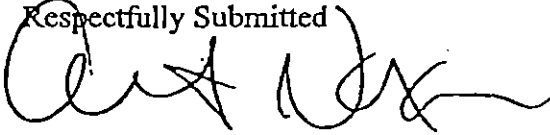
Modern sequence blasting is practically inaudible even at distances of 1/4 mile. DEQ levels allow upwards of 100 dB for blasting and at the distances involved here, the noise levels of sequenced blasting will range near below 50 dB, based on my experience with other quarry blasting measurements.



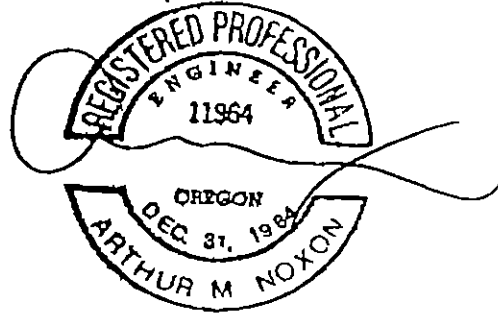
Conclusion

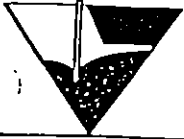
These predictions are based on the quarry noise being directed somewhat like a megaphone towards any one direction and still DEQ compliance is attained for every scenario.

Respectfully Submitted



Arthur Noxon, PE  
Acoustical Engineer





# *EGR & Associates, Inc.*

Engineers, Geologists and Surveyors

2535B Prairie Road  
Eugene, Oregon 97402  
(541) 688-8322  
Fax (541) 688-8087

February 12, 1999

Jim Spickerman, Attorney  
Gleaves, Swearingen, Larsen, Potter, Scott & Smith  
P.O. Box 1147  
Eugene, OR 97440-1147

RE: PA 98-5144, Bradford Quarry Site, T19S R2W Section 30 TL 3500

Dear Mr. Spickerman:

I have reviewed the Application for the Bradford Quarry Site, PA 98-5144, and I have visited the site and toured the area surrounding the existing quarry. As you have requested, this letter offers my observations, conclusions and recommendations based upon the above mentioned review, relative to impacts to surface water and groundwater. Additionally, the issue of blast effects will also come up, if it hasn't already, and I will add my experience regarding that issue as well.

There are two issues of importance for any quarry site of any significant size. Those are any changes in recharge or groundwater flow that either increases or decreases groundwater resources. The other issue is whether the activity significantly or unacceptably will have an impact on water quality.

## SITE DESCRIPTION

The proposed Bradford Quarry Site is located about 1.5 miles south of Cloverdale Road and 1 mile southwest of Bear Creek Road. Access is by way of Cedarcroft and Bradford Roads. The site is a 40 acre parcel in the NW Quarter of Township 19 South, Range 2 West, Section 30. Physically, the site is on the top of a small hillock, or butte, which lies along a ridge coming off of a much larger mountain. The site has already been in use as a quarry site with rock excavated from the hill top and apparently crushed and stockpiled.

EXHIBIT E

## GROUNDWATER IMPACTS

A quarry operation has the potential to increase, or decrease, recharge to the aquifer and thus change surrounding users water supply. A quarry can also open pathways which could increase the potential for groundwater quality impacts.

### *Potential for Changes to Recharge at the Proposed Quarry Site*

A quarry can, if it is constructed into water bearing materials and provides a drainage pathway or is consistently pumped out, cause groundwater to be discharged from the ground. If this condition occurs the groundwater resource will be depleted by the amount of water that otherwise would have stayed in the ground if the quarry were not present. Conversely, a quarry can capture precipitation water and hold it above the water table where, over time, it is recharged down through the rock and actually will increase the quantity of water that recharges the groundwater aquifers below. -Not uncommonly, quarries are situated such that neither groundwater is intercepted in the excavation nor is precipitation held in the quarry and thus the overall net effect is negligible to the groundwater beneath.

In the case of the Bradford Quarry Site the excavation will be in an area where groundwater is being recharged to the aquifer. These areas are identified by: commonly being located in upslope positions (well away from streams), a greater distance to groundwater (relatively speaking only), and higher fluctuations in water levels (also relatively speaking). If the quarry is constructed to generally retain surface water (precipitation) then the net effect will be to increase recharge and additional water will be added to the groundwater aquifer. If the quarry is constructed to drain surface water then the impact on groundwater will be negligible.

Finally, as the quarry progresses deeper into the ground it may encounter naturally occurring groundwater. At these deeper excavation depths the amount of groundwater which will be intercepted by the excavation and discharged to surface water will not have a significant effect on the groundwater supply. This can readily be seen in the topographic expression of the ground. The elevation of the top of the quarry is about 1400 to 1440 feet above mean sea level (MSL). If the quarry were to remove 70 feet of material from the top of the hill the base elevation of the quarry will be at 1330 feet MSL. The nearest dwellings are at least 2,300 feet south and 3,500 feet north and an elevation below 1000 feet MSL (or 280 feet below the bottom of the quarry). The well at that location is no doubt drilled below that 1000 foot level.

It is impossible, hydrologically, for the quarry to lower the groundwater below the quarry floor level, and therefore impossible for the quarry to remove sufficient water for there to be an impact on wells 200 feet away drilled into rock some 300 feet plus below the bottom of the quarry, since groundwater levels will still be at the quarry floor level.

### *Water Quality Concerns*

It is possible, any time a quarry site is in a recharge zone, that contamination could find a pathway to the aquifer through the quarry excavation. This possibility can be readily mitigated against with the implementation of some simple preventive measures. The primary concern is that fuels and lubricants from the mining operation equipment does not infiltrate the ground through the quarry floor. A spill prevention and clean-up plan must be prepared for the site (it is required by law anyway), and the proper spill clean-up materials kept on-site and readily available at all times. The risk from quarries, based upon long term experience, is that quarries present about the same level of risk as a heavily traveled road. Serious leaks from equipment are relatively uncommon one time events which are easily identified, easily cleaned-up, and of limited size. The history has been that quarries cause far fewer groundwater contamination problems than septic tank systems and other such sources that have long standing discharges.

Fuels and oils are most commonly spilled in small quantities, amounting to a few gallons which are then easily adsorbed with the proper clean-up materials and disposed of at a landfill facility. What cannot immediately be picked up biodegrades readily when the contamination is in small amounts and low concentrations. Even today the DEQ allows on-site remediation of hydrocarbon spills much larger than will occur from an isolated equipment failure. The risk is not zero, but it is well within the bounds of commonly accepted practice.

### *Blasting Effects*

The quarry will require periodic blasting to loosen rock for removal by quarry equipment. The operators of the site expect that they might blast approximately 12 times per year. Quarry blasting, as carried out by those trained and certified to use explosives appropriately, is relatively safe. Three main concerns are generally expressed: ground shaking, projectiles, and air blast.

Ground shaking is the most commonly feared and the least likely to cause damage. Both wells and dwellings are only rarely damaged by ground shaking, and then only if they are very close to the blast area. In particular, it can be seen with the example of earthquakes that ground shaking does not damage wells. In earthquake areas, where the ground shaking is sufficient to collapse houses, only rarely are any wells damaged by the earthquake. Energy dissipates rapidly as it moves through the ground.

Of some concern is the possibility that loose rock or unknown fractures can allow for rocks to be thrown by a blast. With any blast of appropriate design no dwelling could possibly be struck from this quarry site. The closest house to the north, which is owned by Mr. Bradford, is approximately 3,500 feet from the quarry site. The closest house to the south is 2,300 away but is behind a hill.

Of most concern to the master blasters is the possibility of "air blast". This shock wave through the air can cause dwellings to shake with the result of cracked plaster and even broken glass. However, blasters carefully control conditions such that such shock waves do not occur. The natural configuration of this site is good for controlling shock wave effects because the dwellings to be protected are far away (>2000 feet), down hill, on the same slope, and there is open space (no nearby reflective hills) in all directions from the site. This configuration strongly dissipates any shock wave before it reaches any dwellings.

## SUMMARY

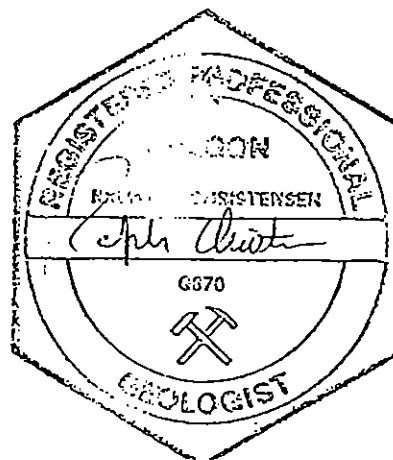
The quarry site will not significantly impact the quantity of groundwater in the area. The quarry will not degrade groundwater quality simply by maintaining a spill prevention and clean-up plan, as required by law, and promptly removing any spilled oils or fuels from the quarry area using the appropriate clean-up materials. This is the same kind of effort that logging companies, construction companies, and farm operations use. Blasting will not adversely effect groundwater, wells, or dwellings when it is performed by professionals trained and certified to conduct it properly.

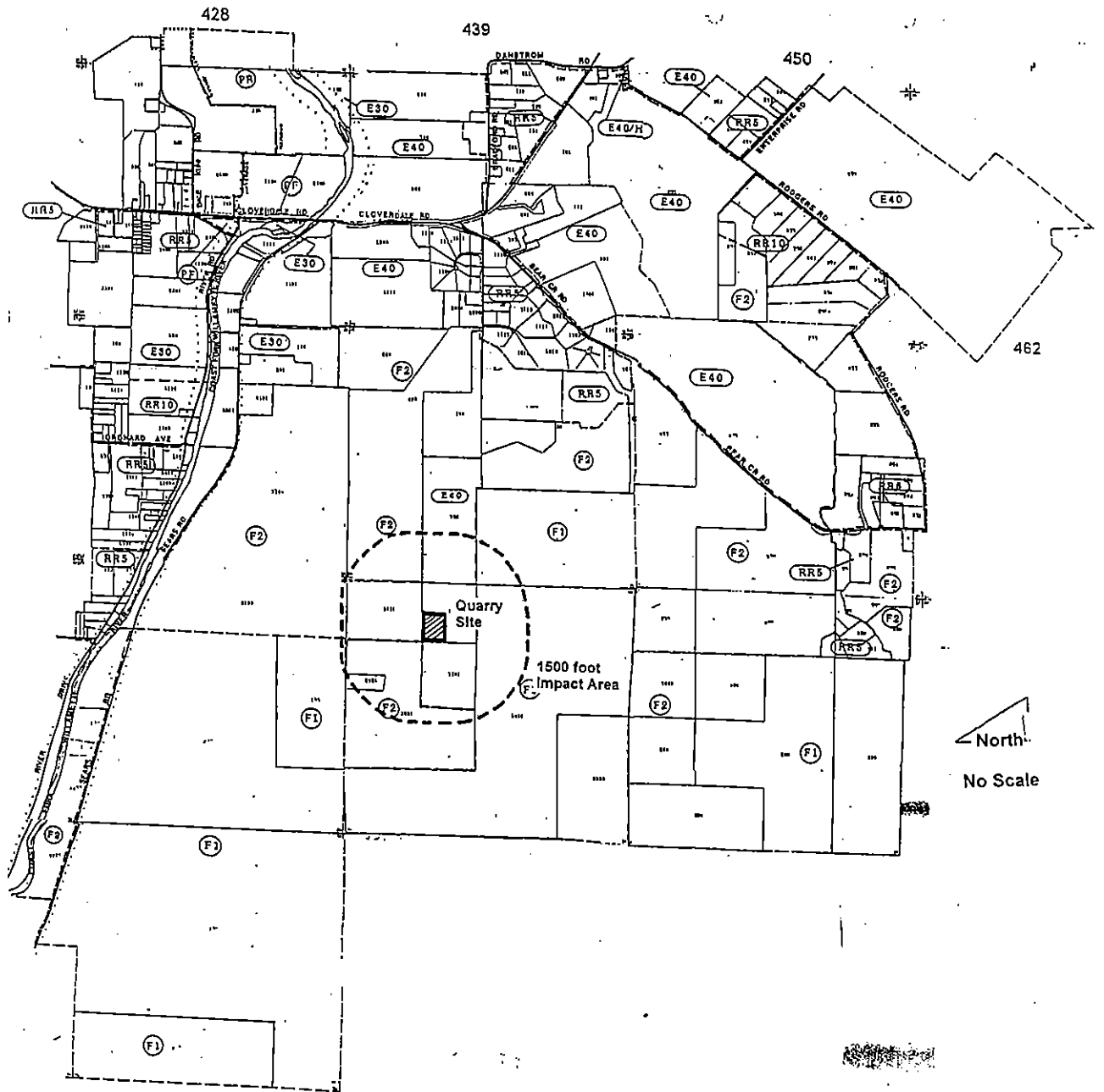
If I can be of any further assistance please let me know.

Sincerely,



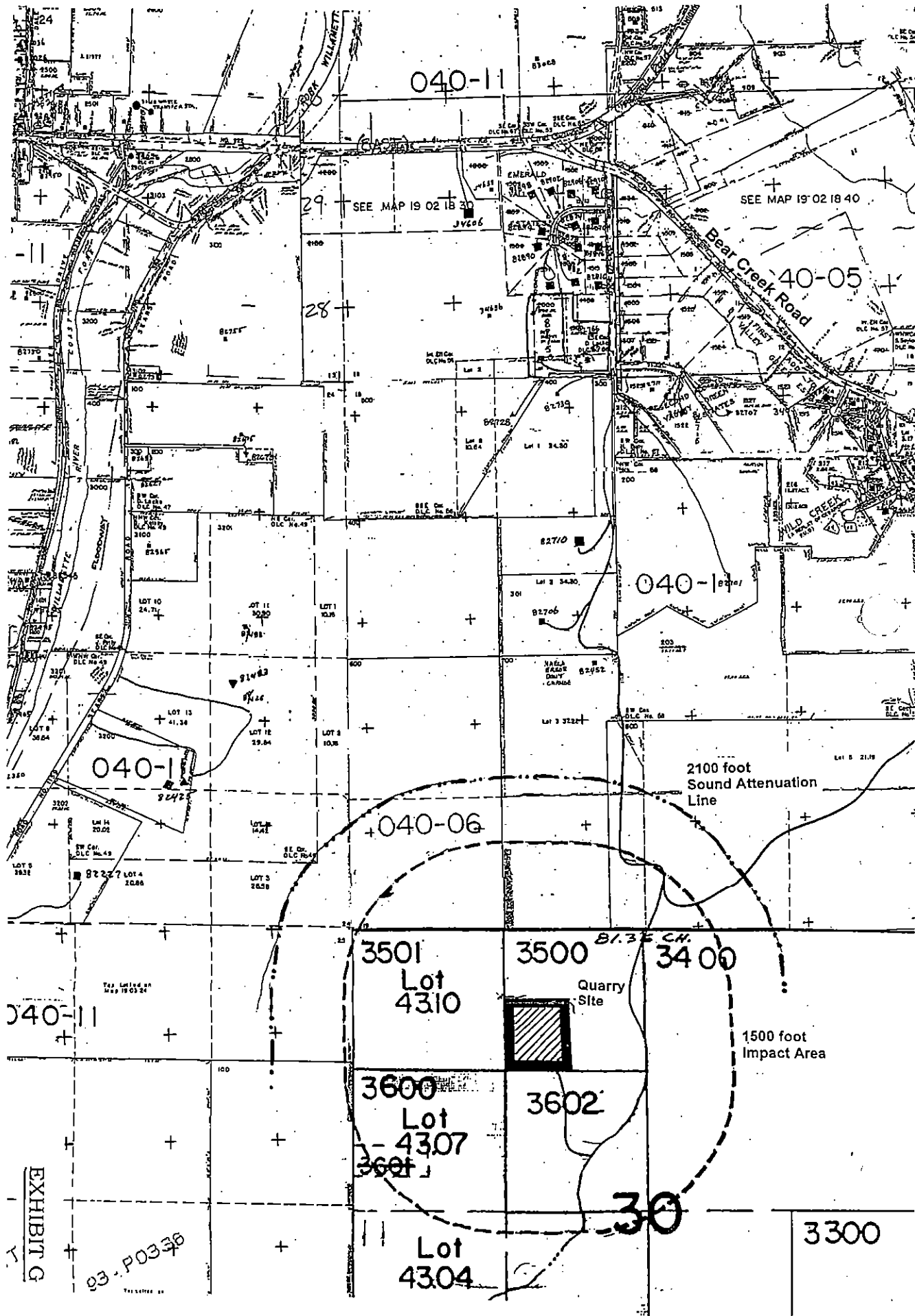
Ralph Christensen  
Geologist G-870





North  
No Scale

EXHIBIT F



040-11

29 + SEE MAP 19 02 18 30

SEE MAP 19'02 18 40

28 +

Bear Creek Road  
040-05

040-11

040-11

2100 foot  
Sound Attenuation  
Line

040-06

3501  
Lot  
4310

3500  
81.35 CH.  
34 00

Quarry  
Site

1500 foot  
Impact Area

3600  
Lot  
4307

3602

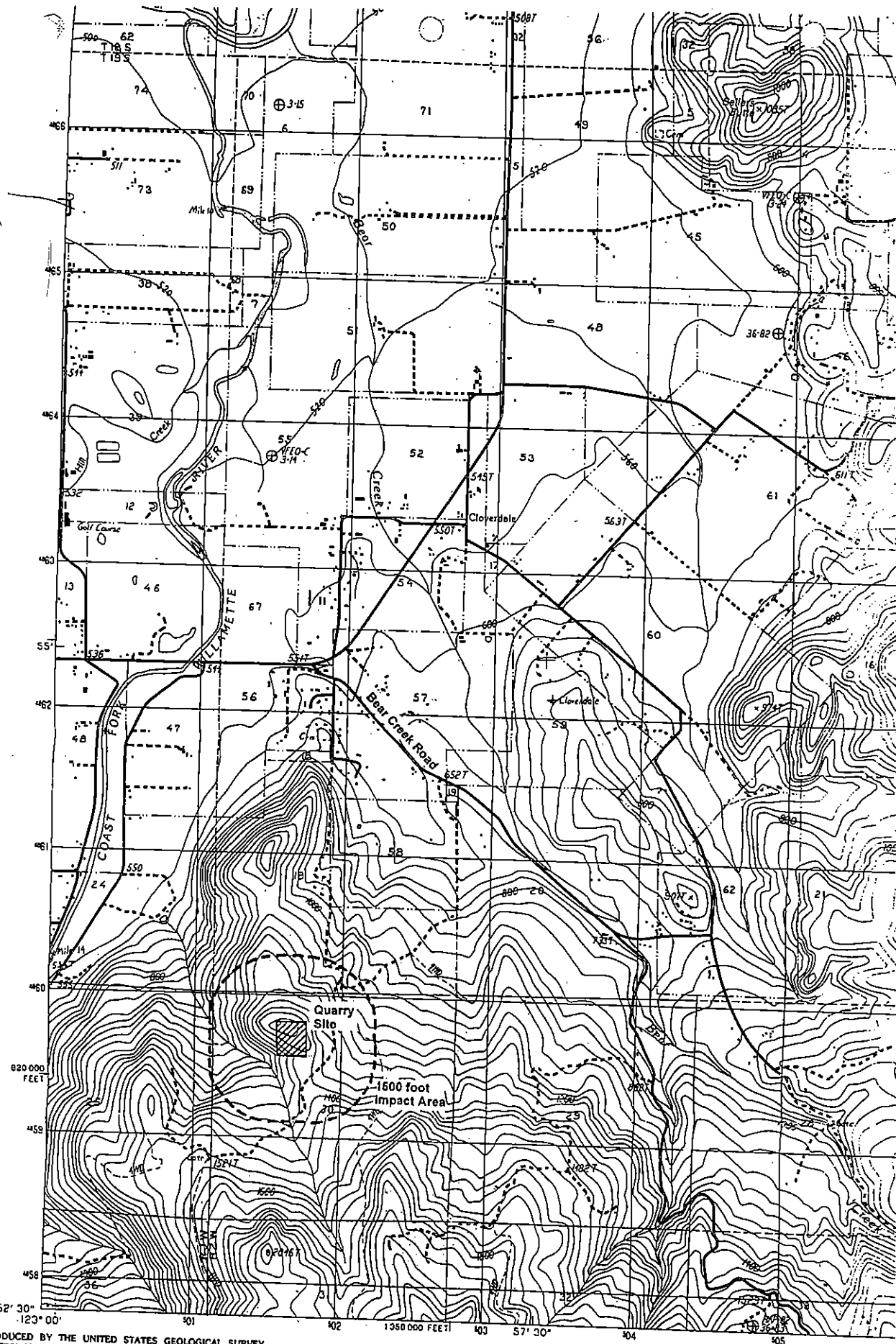
30

Lot  
4304

3300

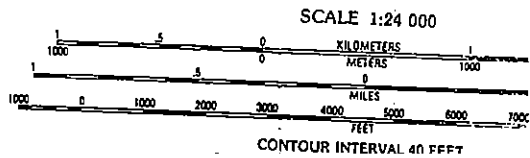
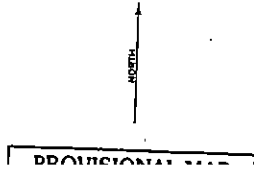
EXHIBIT G

03-P0336



**EXHIBIT H**

13° 52' 30" N  
 123° 00' W  
 PRODUCED BY THE UNITED STATES GEOLOGICAL SURVEY  
 CONTROL BY USGS, NOS NOAA AND STATE OF OREGON  
 COMPILED FROM AERIAL PHOTOGRAPHS TAKEN 1981-83  
 FIELD CHECKED 1984. MAP EDITED 1984  
 PROJECTION LAMBERT CONFORMAL CONIC  
 GRID 1000-METER UNIVERSAL TRANSVERSE MERCATOR ZONE 10  
 10,000-FOOT STATE GRID TICKS OREGON SOUTH ZONE  
 UTM GRID DECLINATION 0° EAST  
 1980 MAGNETIC NORTH DECLINATION 11° EAST  
 VERTICAL DATUM NATIONAL GEODETIC VERTICAL DATUM OF 1929  
 HORIZONTAL DATUM 1927 NORTH AMERICAN DATUM  
 To place on the predicted North American Datum of 1983,  
 move the projection lines







990720

7/23/99

Findings from Neighbors

At the Lane County Planning Commission meeting April 6, the applicant was directed by the Planning Commission to prepare its findings for submission to the Board of County Commissioners (BCC). See quotes from that meeting below:

"Phelps: Mr. Chair, I would move that the applicant be directed to prepare the findings for the submittal to the board of commissioners.

Myers: Second?

Woman: I second that motion.

Myers: We have motion and second. Any deliberation? All those in favor signify by saying Aye.

Aye. ...."

"Landfear: The process at this point is that the applicant's agent will prepare findings of this decision by the Planning Commission and it will be brought forward to the Board of Commissioners for review and adoption." [emphasis added]

The applicant did not do as he was instructed, but instead wrote up findings as he wished the BCC might determine them to be.

Since the applicant took the liberty to write his own view, it is only fair that the Bear Creek Neighbors have a chance to write up the findings as we believe the BCC should properly determine. While our approach complies with the law, primarily OAR 660-023-180, the advantage of our approach is that it also complies with the mission of the Lane County Land Management Division and multiple related Lane Codes:

**To manage growth and development in rural Lane County in order to provide a pleasant, safe, and clean environment for all county residents.**

Additionally, these findings are easier to understand because they are intuitively correct.

Our Findings are attached, with some interspersed commentary regarding the applicants Findings.

Sincerely,

The Bear Creek Neighbors

FILE # PA 98-5144  
EXHIBIT # 115A

Findings of Bear Creek Neighbors  
regarding the proposed Bradford Quarry

These findings take a stepwise approach similar to that in the rules.

**OAR 660-023-180(2):**

"Local governments are not required to amend acknowledged inventories or plans with regard to mineral and aggregate resources except in response to an application for a PAPA, or at periodic review as specified in OAR 660-023-0180(7)." [emphasis added]

The BCC finds that it is required to amend acknowledged inventories or plans because the applicant has applied for a PAPA. The requirement is to amend inventories or plans, not both. The Board finds that the Bradford resource is significant as defined by OAR 660-023-180 (3). Therefore it will be added to the inventory of significant aggregate sites in Lane County. No plan amendment or change in zoning is needed to comply with this section.

**OAR 660-023-180(4):**

"For significant mineral and aggregate sites, local governments shall decide whether mining is permitted. For a PAPA application involving a significant aggregate site, the process for this decision is set out in subsections (a) through (g) of this section. ..." [emphasis added]

The applicant conveniently omitted reference to this preamble and jumped right in to the subsections. This section focuses on local governments and means local considerations regarding mining shall prevail, assuming they are consistent with state laws and rules. This is consistent with Clark deference and with LUBA interpretation. [FN1] Mining is not automatically permitted just because a significant site exists, but must be specifically approved based on weighing the value of conflicting uses versus resource use.

To weigh this evidence we first need to determine an impact area.

**OAR 660-023-180(4) (a):**

The local government shall determine an impact area for the purpose of identifying conflicts with proposed mining and processing activities. The impact area shall be large enough to include uses listed in subsection (b) of this section and shall be limited to 1,500 feet from the boundaries of the mining area, except where factual information indicates significant potential conflicts beyond this distance. For a proposed expansion of an existing

aggregate site, the impact area shall be measured from the perimeter of the proposed expansion area rather than the boundaries of the existing aggregate site and shall not include the existing aggregate site. [emphasis added]

Part of the subsection (b) referred to above is repeated here for convenience of reference:

OAR 660-023-180(4) (b)(B):

**Potential conflicts to local roads used for access and egress to the mining site within one mile of the entrance to the mining site unless a greater distance is necessary in order to include the intersection with the nearest arterial identified in the local transportation plan.**

It is clear that the purpose of this first paragraph is to identify conflicts, not to ignore them. We identify conflicts by looking for them, not by closing our eyes and limiting our vision. Thus, it is clear that the intent of this rule is to expand the impact area if conflicts are possible. Depending on existence of factual information, the second paragraph requires that the impact area may need to extend to the intersection with the nearest arterial.

Furthermore, a single impact area needs to be identified, not multiple impact areas for different conflicts. The rule states "an impact area", not "impact areas", "multiple impact areas", or other such plural language. Additionally we note:

OAR 660-023-0010 Definitions (3)

"Impact area" is a geographic area within which conflicting uses could adversely affect a significant Goal 5 resource.

Whether conflicting uses actually do adversely affect a significant Goal 5 resource is not the issue at this point, just that they could. This is further support for the expansionist view of identifying the impact area. Later in the process the rules address determination of whether conflicting uses really do adversely impact the resource use and vice versa. At this first step, we are not to limit the impact area based on presumed importance of conflicts, but rather identify an area large enough to include all potential conflicts.

The impact area definition once again makes reference to its singular nature. By ignoring this singular nature, the planning department erroneously instructed the Planning Commission that multiple impact areas are permitted, each for a different conflict. Note the transcript:

Man: Can we split that conflict [impact] area and have one range of conflict for everything except road and then extent the conflict [impact] area for road only? Because of the surfacing conditions and things like that?

Landfear: It appears that the way the rule is written you get to do that. Um, they are required to review impacts to roads going out to the nearest arterial, which in this case is quite a bit further than 2100 feet. So, under the roads it appears that is a...

Woman: You talking about Cloverdale or Bear Creek road?

Landfear: The nearest arterial in the record is Highway 58 so it'd be all the way down Cloverdale to Highway 58. For practical purposes, I-5 is probably the arterial that they'll be using, but in the record and in the lane code and plan, Highway 58 is the nearest arterial that's identified.

This is clearly an error in the applicant's findings and the planning process, which can and should be rectified by the BCC. Proper interpretation of the rule would recognize a single impact area that includes all potential conflicts.

Now we must see how the rules define conflict. Looking at the two definitions of conflicting use within OAR 660-023 clarifies its meaning as applied to mineral and aggregate resources.

The general Goal 5 definition is:

**OAR 660-023-0010 Definitions (1) :**

**"Conflicting use" is a land use, or other activity reasonably and customarily subject to land use regulations, that could adversely affect a significant Goal 5 resource (except as provided in OAR 660-023-0180(1)(b)). Local governments are not required to regard agricultural practices as conflicting uses. [emphasis added]**

This contrasts with the definition specific to Mineral and Aggregate Resources, which is:

**OAR 660-023-0180 (1)(b)**

**"Conflicting use" is a use or activity that is subject to land use regulations and that would interfere with, or be adversely affected by, mining or processing activities at a significant mineral or aggregate resource site (as specified in sections 4(b) and (5) of this rule). [emphasis added]**

The major difference between this definition, which is specific to mineral and aggregate resources, and that for general Goal 5 resources is the phrase "or be adversely affected by". It clarifies further that a particular concern regarding Mineral and Aggregate Resources is not only the conflicts that would interfere with the resource, but also the conflicts that the resource would inflict upon its surroundings.

We now examine the nature of aggregate mining, for without an understanding of what the mining entails, it would be difficult to identify any potential conflicts, and therefore an impact area. From the statutes regarding mining we note:

ORS 517.750 (11)

"Processing" includes, *but is not limited to*, crushing, washing, milling and screening as well as the batching and blending of mineral aggregate into asphalt and portland cement concrete located within the operating permit area. [emphasis added]

The hauling of crushed aggregate is an integral part of the processing activity. If there were no hauling off site, the process would be very different, as is recognized in the rules regarding limited mining for local use:

OAR 632-030-0016 [in part]

**Total Exemptions**

(1) The following excavation or grading activities are exempt from these rules and do not require the payment of fees, posting of bond or submittal of reclamation plans:

(a) Access road excavation site. To maintain a total exemption, no more than 5,000 cubic yards of material from an access road mining site may be sold, traded, or used off site for another purpose during any period of 12 consecutive months;

(b) Farming and cemetery operations. Excavation or grading activities conducted in the process of farming or cemetery operations are exempt. To maintain this exemption, no more than 5,000 cubic yards of material may be sold, traded, or used off site for another purpose during any period of 12 consecutive months; [emphasis added]

We see that taking the aggregate off site changes the nature of the operation to one that is no longer exempt from these mining rules. Taking the material off site is an integral part of the aggregate mining process. Even the haul roads themselves are integrally related to the mining process, as noted in the list of items required to be submitted to DOGAMI with the permit application.

OAR 632-030-0025

**Requirements for the Reclamation Plan**

(1) The applicant shall submit a Reclamation Plan to the Department. Information that the Department may require in a reclamation plan includes but is not limited to the following information:

\*\*\*\*

(d) Maps, aerial photographs or design drawings of appropriate scale may be required by the Department. Information that typically may be required on maps, aerial photographs or design drawings includes but is not limited to:

- (A) Permit area boundary;
- (B) Mine location;
- (C) Waste rock or overburden stockpiles;
- (D) Processing plant location;

- (E) Ancillary facilities location;
- (F) Haul roads;
- (G) Topsoil stockpile locations;
- (H) Typical cross sections;
- (I) Plan views and profiles;
- (J) Existing watercourses and ponds;
- (K) Interim watercourses and ponds;
- (L) Reconstructed watercourses and ponds;
- (M) Post-mining topography;
- (N) Property lines. [emphasis added]

Thus, when we determine an impact area we need to look at all facets of the mining operation, including the transportation of aggregate from the site. Bear Creek Neighbors have submitted multiple testimonies, verbal and written, regarding the potential conflicts the proposed quarry will have on the neighborhood. The record showing such testimony is a fact available to the BCC. That this many people with such intensity and variety of concerns have taken time and effort to point out their concerns is factual evidence of a potential conflict. OAR 660-023-180(4) (b)(B) thus requires expansion of the impact area to the nearest arterial. The validity of these concerns will be discussed below.

The BCC thus finds that the impact area includes the quarry itself plus South Bradford Road, Cedarcroft Road and Bear Creek Road to Cloverdale and from there to Highway 58.

\*\*\*\*\*

Having identified an impact area that is large enough to include actual and potential conflicts with the proposed quarry, the county now needs to identify specific conflicts to particular land uses.

**OAR 660-023-180(4) (b):**

**The local government shall determine existing or approved land uses within the impact area that will be adversely affected by proposed mining operations and shall specify the predicted conflicts. For purposes of this section, "approved land uses" are dwellings allowed by a residential zone on existing platted lots and other uses for which conditional or final approvals have been granted by the local government. For determination of conflicts from proposed mining of a significant aggregate site, the local government shall limit its consideration to the following: [emphasis added]**

The BCC has found that there are multiple residential dwellings (zoned RR5) that are within the impact area that will be adversely affected by proposed mining operations. There are also county roads which will be affected.

Where a land use regulation requires that a proposed use demonstrate consistency with a comprehensive plan, the

local government may measure the consistency of the proposed use with policies and other relevant standards in

the comprehensive plan, even ones that, in themselves, may not constitute specific, mandatory approval criteria.

Trademark Construction, Inc. v. Marion County, \_\_\_ Or LUBA \_\_\_ (LUBA No. 97-188, March 24, 1998),

slip op. 15.

In the absence of an explicit statement that provisions of a comprehensive plan are not mandatory approval criteria, whether plan provisions constitute approval criteria depends on a case-by-case analysis of the wording

and context of the particular provisions. Trademark Construction, Inc. v. Marion County, \_\_\_ Or LUBA \_\_\_

(LUBA No. 97-188, March 24, 1998), slip op. 14.

The Goal 5 rule does not mandate protection of resource use over conflicting uses. Implicit in the fact that the

Goal 5 rule permits the local government to deny an application to mine a significant aggregate site that in some

circumstances, conflicting uses may prevail over resource use. Trademark Construction, Inc. v. Marion County,

\_\_\_ Or LUBA \_\_\_ (LUBA No. 97-188, March 24, 1998), slip op. 21.



DATE: August 24, 1999

TO: Lloyd Holtcamp  
Lane County Transportation Staff

FROM: Bear Creek Neighbors

SUBJECT: PA98-5144, plan amendment/zone change to  
QM zone, applicant BJ Equipment, Cedarcroft  
Rd. -- Petition Request

Attached is a petition signed by the Bear Creek Neighbors  
for a weight limit sign to be posted on Cedarcroft Road.

We hope that you will post a weight limit sign as soon as possible.

We appreciate your ongoing efforts to protect the roads in our  
neighborhood.

Sincerely,



Linda Fleischli  
Bear Creek Neighbors.

FILE # PA 98-5144  
EXHIBIT # 10A

Petition to Post Weight Limit on Cedarcroft Road

May 1999

Page 1 of 4

The undersigned petitioners request that the Lane County Department of Public Works place a sign on Cedarcroft Road limiting the weight of any vehicle on it to less than 17 tons. The reasons for this request follow:

- We have observed the deterioration of this road from the traffic of trucks hauling aggregate last summer. This deterioration consists of cracks in the road and crumbling at its edges.
- The Lane County Transportation Planning staff has determined that if Cedarcroft Road is subject to loads heavier than this, its life expectancy will be significantly shorter than what was planned when it was built. This determination was based on analyses of core samples as well as Benkelman Beam testing.
- If it is not posted with a weight limit, there is high likelihood that the owner of the Bradford quarry will haul aggregate on this road using gravel trucks that would damage the road.
- The county has an obligation to protect its taxpayers' investment in their roads.

Please post this weight limit as soon as possible.

Print Name	Address	Phone	Signature	Date
Diane Lane	82841 Bradford Rd Creswell 97436	895-4137	<i>Diane Lane</i>	5/29/99
Rick Millhollin	82841 Bradford Rd	895-4137	<i>Rick Millhollin</i>	5/29/99
Alice M. Woods	82846 Bradford Rd	895-4174	<i>Alice M. Woods</i>	5/29/99
Ronald S. Woods	82846 Bradford Rd	895-4174	<i>Ronald S. Woods</i>	5/29/99
ROBERT J. RANTOINE	82771 BRADFORD RD	895-3969	<i>Robt. J. Rantoin</i>	06/5/99
Vicky L Curry	82766 S. Bradford Rd	895-5509	<i>Vicky Curry</i>	6/15/99
Carolyn Kent	82805 S. Bradford Rd	895-4898	<i>Carolyn Kent</i>	6/15/99
WILKARD EVANSON	82910 S. BRADFORD RD.	895-3425	<i>Wilcard Evanson</i>	6/15/99
BERTHABELLE EVANSON	82910 S. BRADFORD RD.	895-3425	<i>Berthabelle Evanson</i>	6-15-99
David R Matthews	82550 Bradford Rd. S	895-4349	<i>David Matthews</i>	7-5-99
Carol J. Matthews	82750 S. Bradford Rd	895-4349	<i>Carol Matthews</i>	7-5-99
KENNETH D. BAIL	82797 S. BRADFORD RD.	895-3626	<i>Kenneth D. Bail</i>	7-5-99
SEROME GARGER	1644 Rosy Turn	461-4916	<i>Serome Garger</i>	7-5-99
Vicki Woffen	1644 Rosy Turn	461-4916	<i>Vicki Woffen</i>	7-5-99

FILE # 98-5144  
EXHIBIT # 168

The undersigned petitioners request that the Lane County Department of Public Works place a sign on Cedarcroft Road limiting the weight of any vehicle on it to less than 17 tons. The reasons for this request follow:

- We have observed the deterioration of this road from the traffic of trucks hauling aggregate last summer. This deterioration consists of cracks in the road and crumbling at its edges.
  - The Lane County Transportation Planning staff has determined that if Cedarcroft Road is subject to loads heavier than this, its life expectancy will be significantly shorter than what was planned when it was built. This determination was based on analyses of core samples as well as Benkelman Beam testing.
  - If it is not posted with a weight limit, there is high likelihood that the owner of the Bradford quarry will haul aggregate on this road using gravel trucks that would damage the road.
  - The county has an obligation to protect its taxpayers' investment in their roads.
- Please post this weight limit as soon as possible.

Print Name	Address	Phone	Signature	Date
ROBERT A STILL	83076 N. BRADFORD RD	895-2534	<i>Robert A Still</i>	6/12/99
Deborah Jellison	83085 N. Bradford Rd	895-4735	<i>Deborah Jellison</i>	6-12-99
Marci Jellison	83085 N. Bradford Rd	895-4735	<i>Marci Jellison</i>	6-12-99
RONALD R. JELLISON	83085 N. Bradford Rd	895-4735	<i>Ronald R Jellison</i>	6/12/99
Paul L. Longstreth	83123 N. Bradford Rd	895-5155	<i>Paul Longstreth</i>	6/12/99
ROBERTINE STILL	83076 N. BRADFORD RD	895-2534	<i>Robertine Still</i>	6/12/99



# Oregon

John A. Kitzhaber, M.D., Governor

Department of Transportation

District 5

3620 Gateway

Springfield, OR 97477

(541) 726-2552

FAX (541) 726-2509

RECEIVED BY  
LAND MANAGEMENT

SEP 14 1999

AM 7,8,9,10,11,12,1,2,3,4,5,6 PM

FILE CODE:

September 13, 1999

Lane County Land Management Division

Attn: Thom Lanfear

Public Service Building,

125 East 8th Ave.

Eugene, OR. 97401

Re: PA 98-5144

This office has reviewed the traffic impact analysis for the Cloverdale Road/Bear Creek Road intersection and noted no decrease in level of service under all the build scenarios. As there is no major impact to ODOT facilities this office will not oppose the plan amendment.

Sincerely,

Michael J. Barker

Access and Development Specialist

mjb

c: file

FILE # PA 98-5144  
EXHIBIT # 117