Appendix E-2-B

Air Resources Board
Bulk Sampling Of McKeon-Ponderosa Road
Pothole Road Study

Air Resources Board

Alan C. Lloyd, Ph.D.
Chairman
2020 L Street • P.O. Box 2815 • Sacramento, California 95812 • www.arb.ca.gov

Winston H. Hickox
Agency Secretary

Gray Davis
Governor

MEMORANDUM

TO: Dan Donohoue, Chief
Emissions Assessment Branch
Stationary Source Division

FROM: George Lew, Chief
Engineering and Laboratory Branch
Monitoring and Laboratory Division

DATE: March 23, 2000

SUBJECT: RESULTS OF BULK SAMPLING OF UNPAVED ROADS

This memorandum transmits the results of analyses of bulk samples taken from unpaved or aggregate covered roads in El Dorado County and Placer County. Samples were taken from three unpaved county roads in El Dorado County, a pothole consumed section of an abandoned county road in Placer County, a private homeowner association road in El Dorado County, and a school bus stop and turn-around whose surface is covered with serpentine aggregate. A total of seven samples were collected in accordance with Air Resources Board (ARB) Test Method 435.

The bulk samples are representative of the area of road sampled. The analysis was performed by ARB's contract lab RJ Lee in San Leandro. At ARB's direction, R. J. Lee modified the ARB Test Method 435 by performing a 1000 point count analysis instead of a 400 point count as required by the test method. This 1000 point count requirement is more stringent than the 400 count procedure and is therefore an acceptable modification of Method 435. The results are tabulated in Attachment I. The report from RJ Lee is attached (Attachment II). A map showing the approximate location of the roads sampled is also attached (Attachment III).

Ten roads in El Dorado County, as follows, were identified as being non-paved county maintained roads; South Shingle Road, Farnham Ridge Road, Indian Diggins Road, Consumnes Mine Road, Park Creek Road, Goose Flat Road, Mt. Murphy Road, Bayne Road, Bear Creek Road and Breedlove Road. The roads were identified by a contractor in a report (Attachment IV) to the El Dorado County Department of Transportation. Staff of the Testing Section (MLD) and Industrial Section (SSD) performed a site assessment of the identified county maintained roads. Only three of

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the roads had a section of serpentine-like aggregate. One of the three roads had two sections of serpentine-like aggregate. Thus, A total of four bulk samples were taken one each at Breedlove Road, Bear Creek Road and two at Bayne Road. One sample was taken from each section of road with serpentine-like aggregate. Bulk samples were of loose road material. RJ Lee reported that the asbestos content was 0.1% or less in the four samples.

The serpentine aggregate road base material exposed by the potholes at the McKeon Ponderosa Way, had an asbestos concentration of 0.2%. In July 1999, MLD staff conducted ambient air monitoring on this road (results transmitted to Todd Wong in a memorandum dated September 4, 1999). The purpose of the air monitoring was to determine the asbestos exposure from local traffic driving across the road base material exposed by the potholes. The bulk samples were taken near the air-monitoring site which showed the highest average airborne asbestos concentration.

A bulk sample from Moonbeam Lane in El Dorado County was also collected in accordance with ARB Test Method 435. Attachment III shows the approximate location of the private road. The road was sampled because it had been scraped clean of serpentine aggregate material. However, a fine powder of serpentine was present on the road. The bulk sample was a representative sample of the loose material on a thirty-foot section of the road. RJ Lee reported that the bulk sample contained 0.8% asbestos.

A school district in El Dorado County spread serpentine aggregate at a school bus stop on Sliger Mine Road. The turn-around was sampled in accordance with ARB Test Method 435. The RJ Lee Report states that the asbestos content was 1.2%.

If you have questions, comments or need further information, please contact me at 327-0900.

Attachments (4)

cc: Bill Loscutoff

Attachment I
Results of Bulk Sampling

Log Number	Sample Number	Sampling Location (Road Name)	Asbestos Concentration
1	BR-1	Baynes Road 1 section	ND
2	BR-2	Baynes Road 2 section	ND
3	BR	Bredlove Road	0.1%
4	BCR	Bear Creek Road	ND
5	SMR	Sliger Mine Road (School Bus Turn-Around)	1.2%
6	ML	Moonbeam Lane	0.8%
7	FH-1	McKeon Ponderosa Way	0.2%

ND - No Asbestos Detected

Attachment II
RJ Lee Report

RJ LeeGroup, Inc.

February 24, 2000

330 McCormick Street • San Leandro, CA 94577
510/567-0480 • FAX 510/567-0488

Mr. George Lew
California Air Resources Board
P.O. Box 2815
1900 14th Street
Sacramento, CA 95814

RE PLM Point Count Asbestos Results for Samples as Shown on Table I
RJ Lee Group, Inc. Job No. AOC911097-PC
Client P.O. Job Number C-99-103
Client Job Name/Location C-99-103

Dear Mr. Lew

Due to typographical errors, we are rescinding the previous report from RJ Lee Group, Inc. for the above referenced samples. Enclosed are the results from the polarized light microscopy (PLM) asbestos analysis of the above referenced samples. Samples were analyzed in accordance with guidelines set forth in the State of California, Air Resources Board (ARB), Test Method 435, Determination of Asbestos Content of Serpentine Aggregate (06/06/91)

Table I lists each sample identification number, gross sample description, type(s) and concentration of asbestos, type(s) and concentration of non-asbestos fibers, major components and concentration of non-fibrous material (NFM), sample run date, analyst, and the number of asbestos points counted in 1000 total points. Asbestos concentrations are given in percents to the nearest 0.1%.

The ARB Method 435, Section 8.3 lists two exceptions to the point count rule. Exception I states: "If the sample is suspected of containing no asbestos a visual technique can be used to report that the sample does not contain asbestos." If the sample is point counted, and asbestos is observed but not counted, the sample will be reported as containing <0.1% asbestos. Exception II states: "If the sample is suspected to have an asbestos content in excess of ten percent, a visual technique can be used to report that the sample contains greater than ten percent asbestos." In the case of Exception II, the visual technique allowed in the National Institute of Standards and Technology's (NIST) National Voluntary Laboratory Accreditation Program (NVLAP), Bulk Asbestos Handbook (NIST publication number NISTIR 88-3879, 10/88) will be followed. If either exception is used it will be noted under the Asb/Points category of Table I.

RJ Lee Group, Inc. is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) (NVLAP Participant Number 1208-2) for bulk asbestos fiber analysis (PLM), and by the California Department of Health Services, Environmental Laboratory Accreditation Program (CALELAP) for bulk asbestos analysis. Neither the NVLAP Accreditation of this laboratory nor this report may be used to claim product endorsement by NVLAP or any agency of the U.S.

These results are submitted pursuant to RJ Lee Group's current terms and conditions of sale, including the company's standard warranty and limitation of liability provisions and no responsibility or liability is assumed for the manner in which the results are used or interpreted. Unless notified in writing to return the samples covered by this report, RJ Lee Group, Inc. will store the samples until they are picked up by a California Air Resources Board representative. A shipping and handling fee will be assessed for the return of any samples.

Sincerely,

Stephen S. Yata
Geologist

SSY/sjb

Test Report - California Air Resources Board

Polarized Light, Point Count Analysis Results

Project AOC911097-PC

Sample Number	Client Sample Number	Asbestos: Chrysotile	Amosite	Crocidolite	Anthophyllite	Tremolite	Actinolite	Nonasbestos: Cellulose	Mineral Wool	Fibrous Glass	Synthetic Fibers	Other Fibers	Non-Fibrous Material	Run Date / Analyst
1700069CPL	1-BR-1	-	-	-	-	-	-	-	-	-	-	-	100 %	11/6/99
Grey dirt					*NFM:*	, Misc. Part.								SS
													Asb/Points	0/1000
1700070CPL	2-BR-2	-	-	-	-	-	-	-	-	-	-	-	100 %	11/6/99
Grey dirt					*NFM:*	, Misc. Part.								SS
													Asb/Points	0/1000
1700071CPL	3-BR	0.1 %	-	-	-	-	-	-	-	-	-	-	99.9 %	11/6/99
Grey dirt					*NFM:*	, Misc. Part.								SS
													Asb/Points	1/1000
1700072CPL	4-3CR	-	-	-	-	-	-	-	-	-	-	-	100 %	11/6/99
Grey dirt					*NFM:*	, Misc. Part.								SS
													Asb/Points	0/1000
1700073CPL	5-SMR	1.2 %	-	-	-	-	-	-	-	-	-	-	98.8 %	11/6/99
Grey dirt					*NFM:*	, Misc. Part.								SS
													Asb/Points	12/1000
1700074CPL	6-ML	0.8 %	-	-	-	-	-	-	-	-	-	-	99.2 %	11/6/99
Grey dirt					*NFM:*	, Misc. Part.								SS
													Asb/Points	8/1000
1700075CPL	7-FH1	0.2 %	-	-	-	-	-	-	-	-	-	-	99.8 %	11/6/99
Grey dirt					*NFM:*	, Misc. Part.								SS
													Asb/Points	2/1000

E-2-B-6

Samples received on: Friday, November 5, 1999

Authorized Signature

Scott Stotler, Geologist

Date Monday, November 8, 1999

RJ Lee Group, Inc.
Bay Area Lab

530 McCormick Street
San Leandro, CA 94577

Phone (510) 567-0480
Fax (510) 567-0488

Peter M. Rooney
Secretary for
Environmental
Protection

Air Resources Board

Barbara Riordan, Chairman
P.O. Box 2815 · 2020 L Street · Sacramento, California 95812 · www.arb.ca.gov

Pete Wilson
Governor

November 2, 1999

Steve Yata
RJ Lee Group
530 McCormick St.
San Leandro, CA 94577

Dear Mr. Yata:

Enclosed are 7 bulk samples for a modified ARB Test Method 435 (TM435) analysis. The samples have been crushed as required by TM435. I want a one thousand (1000) point count on each sample instead of the usual 400 point count required by TM435. I do not want any visualization techniques used. I talked to Ben Schiflebin and the cost per sample for a 24 hour turn around would be $75. Ben said, a preliminary report of the analysis would be FAX'd to ARB within the 24 hour period and the final report would be mailed within five working days. Please use the ARB Log # and the ARB sample # as the client's sample # in your tracking system.

Please fax the preliminary results to George Lew at (916) 322-2444. Send the final results along with the completed chain of custody form to:

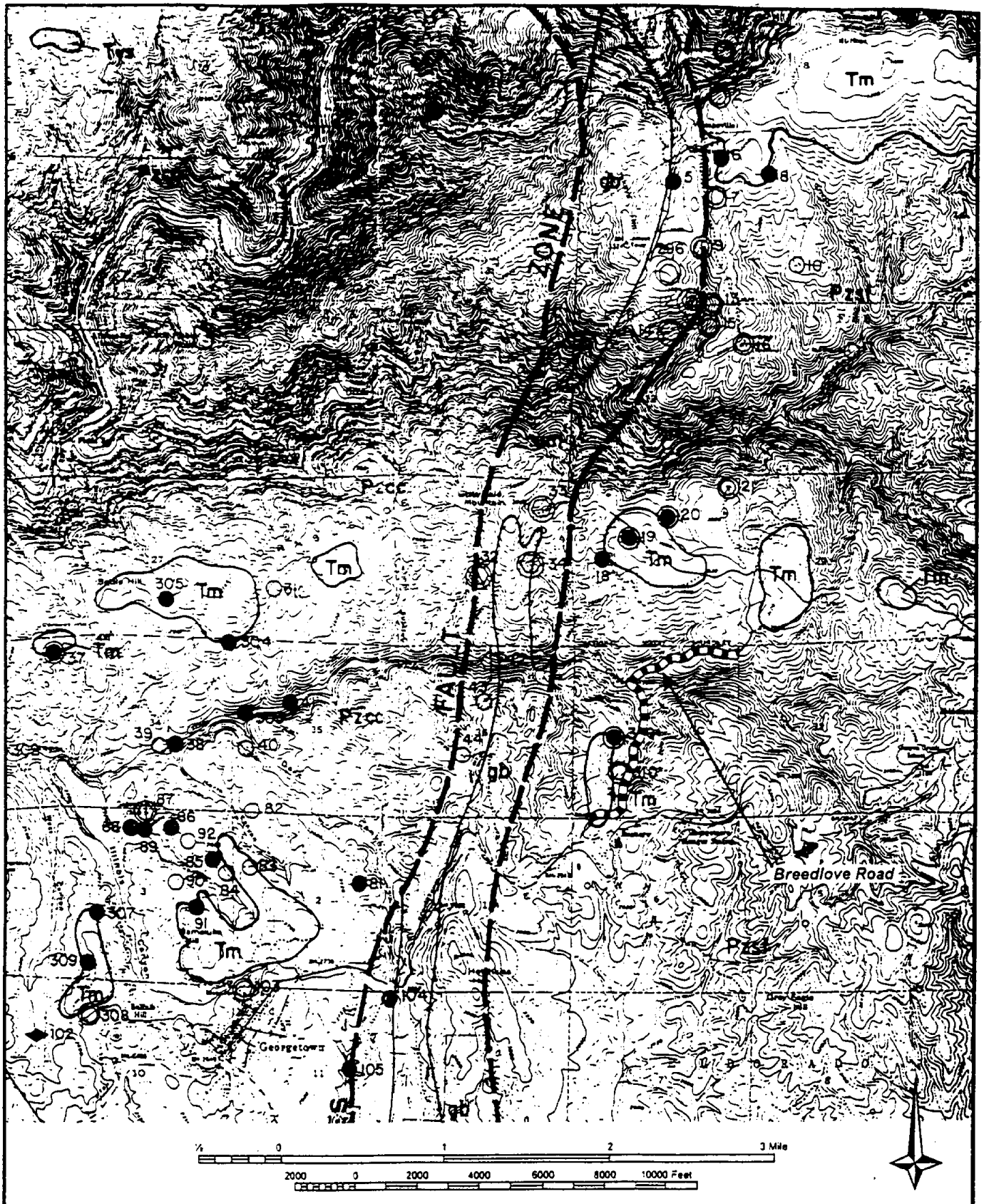
George Lew, Chief
Engineering and Laboratory Branch
Air Resources Board
P. O. Box 2815
600 North Market Blvd
Sacramento, CA 95814

If you have questions, please contact me at (916) 327-1502.

Sincerely,

James E. McCormack
Air Resources Engineer
Monitoring and Laboratory Division

E-2-B-7



YOUNGDAHL & ASSOCIATES, INC. GEOTECHNICAL, ENVIRONMENTAL & CONSTRUCTION LAB	Project No.: 99292	UNPAVED ROADS GEOLOGIC RECONNAISSANCE	FIGURE 6
	September 1999	Breedlove Road - Section 30 El Dorado County, California	

CHAIN OF CUSTODY
CALIFORNIA AIR RESOURCES BOARD
MONITORING & LABORATORY DIVISION
ENGINEERING & LABORATORY BRANCH
P O Box 2815, Sacramento, CA 95812

ASBESTOS SOIL SAMPLING
EL DORADO COUNTY
OCTOBER, 1999

SAMPLE RECORD

Job # : C-99-103 Date: / /99

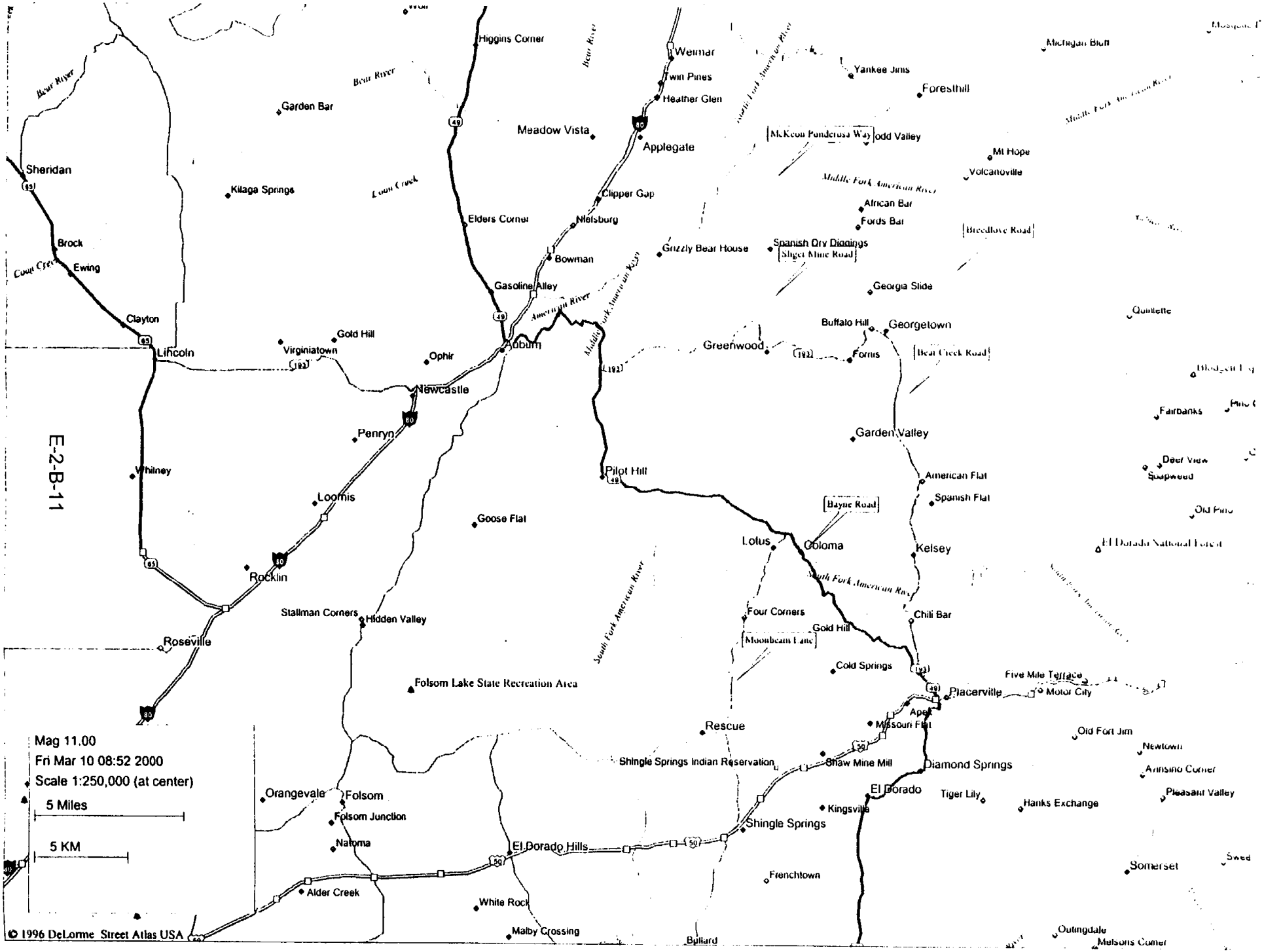
Log numbers: 1 - 6

ACTION	DATE	TIME	INITIALS GIVEN BY	INITIALS TAKEN BY	METHOD OF STORAGE
Sample Collected	10/29/99	0800 - 1500	OL		BUCKET
Transfer					Bucket
Transfer	11/3/99	0730			Buckets
Transfer	11/4/99	0655			Bucket
Transfer	11/4/99	1300			Bucket/Bag
Transfer	11/4/99	1500		UR	Bag
Transfer					

LOG #	ID #	✓	DESCRIPTION
1	BR-1		BAYNES RD.
2	BR-2		BAYNES RD.
3	BR		BREDLOVE RD.
4	BCR		BEAR CREEK RD.
5	SMR		SLIGER MINE RD.
6	ML		MOONBEAM LANE
7	FH1		McGUIRE/PONDEROSA RD.
			Seven bags sealed at Chevax lab

RETURN THIS FORM TO: Oscar R. Lopez (916) 323-1161

Attachment III
Map Showing Approximate Location of Unpaved Roads


Higgins Corner
Weimar
Twin Pines
Heather Glen
Yankee Jims
Foresthill
Michigan Bluff
Bear River
Garden Bar
Meadow Vista
Applegate
McKeon Ponderosa Way
odd Valley
Mt Hope
Volcanoville
Sheridan
Kilaga Springs
Loon Creek
Clipper Gap
Middle Fork American River
African Bar
Fords Bar
Elders Corner
Nielsburg
Breedlove Road
Brock
Ewing
Coon Creek
Bowman
Grizzly Bear House
Spanish Dry Diggings
Sliger Mine Road
Gasoline Alley
Georgia Slide
American River
Clayton
Gold Hill
Buffalo Hill
Georgetown
Quintette
Lincoln
Virginiatown
Ophir
Auburn
Greenwood
Fornis
Bear Creek Road
Newcastle
Fairbanks
Penryn
Garden Valley
Deer View
Whitney
Pilot Hill
American Flat
Soapweed
Loomis
Spanish Flat
Bayne Road
Old Pino
Goose Flat
Lotus
Coloma
Kelsey
El Dorado National Forest
Rocklin
South Fork American River
Stallman Corners
Hidden Valley
Four Corners
Chili Bar
Gold Hill
Moonbeam Lane
Roseville
Cold Springs
Five Mile Terrace
Folsom Lake State Recreation Area
Placerville
Motor City
Apex
Missouri Flat
Rescue
Old Fort Jim
Newtown
Shingle Springs Indian Reservation
Shaw Mine Mill
Diamond Springs
Arinsino Corner
Orangevale
Folsom
El Dorado
Tiger Lily
Pleasant Valley
Hanks Exchange
Kingsville
Folsom Junction
Shingle Springs
Natoma
El Dorado Hills
Somerset
Frenchtown
Alder Creek
White Rock
Malby Crossing
Bullard
Outingdale
Melsons Corner
Mag 11.00
Fri Mar 10 08:52 2000
Scale 1:250,000 (at center)
5 Miles
5 KM
© 1996 DeLorme Street Atlas USA

E-2-B-11

Attachment IV
Report on Unpaved County Roads in El Dorado County

YOUNGDAHL
& ASSOCIATES INC.
GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING

RECEIVED
Oct 27 3 24 PM '99
BOARD OF SUPERVISORS
EL DORADO COUNTY

El Dorado County
Department of Transportation
2850 Fairlane Court
Placerville, CA 95667

Project No. 99292
13 September 1999

Attention: Mr. Keith Harvey

Subject: **SECTIONS OF EL DORADO COUNTY UNPAVED ROADS**
Geologic Reconnaissance for Potential Asbestos Conditions
Letter Report

Reference: Draft Map of Areas Within El Dorado County Requiring Investigation/Evaluation for the Presence of Naturally Occurring Asbestiform Minerals, prepared by SAGE Environmental Science Committee, July 1999.

Dear Mr. Harvey:

At your request, Youngdahl & Associates, Inc. has performed a geologic reconnaissance of 14 sections of unpaved El Dorado County roads. The sections were selected by the El Dorado County Department of Transportation (D.O.T.)on the basis of the referenced map. The referenced map utilizes sections of USGS 7.5 minute quadrangles to identify a section as either not likely to contain asbestos or to identify sections that should be further evaluated. Those areas of unsurfaced roads that fall outside of the areas of further evaluation identified on the referenced map are considered unlikely to contain significant quantities of naturally occurring asbestos. Many of these roads are completely unsurfaced, relying on native soils/rock to provide a road bed.

The primary focus of our geologic reconnaissance was to identify sections of road that, based on the types of rock present, have a potential to contain naturally occurring asbestos and may require additional investigation/remediation. Our reconnaissance required us to observe the bare road and/or road cuts in sections of unpaved roads. We did not evaluate paved sections of road. A secondary focus was to observe any aggregate materials used to surface roads within these sections to check for the use of serpentine aggregates. This required a periodic visual examination of the aggregates. The following roads were evaluated:

1) South Shingle Road, Section 16;
2) Russell Hollow Road, Section 11;
3) Goose Flat Road, Section 15;
4) An unnamed loop of Pleasant Valley Road, Section 29;
5) Cosumnes Mine Road, Sections 4 and 9;
6) Indian Diggins Road, Sections 17 and 18;
7) Farnham Ridge Road, Sections 25, 30, 29;

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EL DORADO COUNTY

1234 GLENHAVEN COURT ■ EL DORADO HILLS, CA 95762
PHONE (916) 933-0633 FAX (916) 933-6482

8) Mameluke Hill Road near Georgia Slide Road, Section 2;
9) Breedlove Road, Section 30;
10) Bear Creek Road, Sections 19 and 30;
11) Bayne Road, Sections 14, 17, 21;
12) Mosquito Road, Section 14;
13) Mt. Murphy Road, Sections 5, 8, 17; and
14) Park Creek Road, Section 3.

Of the above listed roads, Russell Hollow Road, the unnamed loop of Pleasant Valley Road, Mameluke Hill Road, and Mosquito Road were found to be surfaced with asphalt and were thus not further evaluated.

South Shingle Road, County Road No. 17, Section 16

South Shingle Road passes through the community of Latrobe and heads westerly across the Sacramento County Line. This stretch of the road passes over an area mapped to contain Jurassic Copper Hills Volcanics and gabbroic rocks. In Youngdahl & Associates, Inc. experience, this area also contains small bands of the Jurassic Salt Springs Slate.

The evaluation of the stretch of South Shingle Road west of Latrobe Road began with the measuring of mileage starting at the intersection of South Shingle and Latrobe Roads. The first roadcuts, 0.6 miles west of Latrobe Road but still in the paved section, exposed moderately to highly weathered Copper Hill Volcanics with very closely spaced fractures, probably a metamorphosed subaqueous tuff. The paved section ended 0.65 miles from Latrobe Road. The unpaved road appeared to surfaced with AB (aggregate base) type aggregate. No serpentine or asbestos was observed. A quartz vein was observed at mile 1.05, about 20 feet east of milepost 2.32. The road base appeared to have been oiled at 1.1 miles from Latrobe Road. By mile 1.5, the Copper Hill Volcanics in the vicinity of the road were noted to exhibit "tombstone" outcrops, typical of old submarine lava flows. At 1.8 miles, occasional serpentine fragments was observed to be mixed with the other gravel in the road base. At 2.0 miles the aggregate used on the road surface became very sparse. At mile 2.8 and the end of the stretch of road to be investigated, a large boulder of imported serpentine was observed at mile post 0.57. No asbestos was observed on this section of South Shingle Road. Small amounts of serpentine was observed to be mixed into the aggregate on this road.

Goose Flat Road, County Road 42, Section 15

Goose Flat road is a very lightly used road that connects Rattlesnake Bar Road to Folsom Lake near an idle limestone mine. The road used to be a section of Rattesnake Bar Road that led to a bridge that crossed the North Fork of the American River. The road was once paved but has now deteriorated to the point where the road now has to be partially surfaced with aggregate.

The rocks in this area include Jurassic Copper Hill Volcanics with limestone deposits and probable thin beds of Salt Springs Slate. The road passes very close to the west side of the mapped West Branch of the Bear Mountains Fault Zone. West of this road, ultramafic deposits associated with

chromite deposits are present. In Youngdahl & Associates, Inc. opinion, this stretch of road may lie within the West Branch of the Bear Mountains Fault Zone.

Starting the mileage measurement at the intersection of Rattlesnake Bar Road and Goose Flat Road, the road aggregate appeared to be a combination of metavolcanic rock and limestone without any serpentine or asbestos. At mile 0.05, an idle limestone quarry was observed on the east side of the road. At mile 0.08, an outcrop of metavolcanics/metasediments striking due north and dipping 70 degrees to the east was observed. By the time the end of the road was reached at mile 0.25 at a rock barrier, no serpentine or asbestos was observed either in the road cuts or in the aggregate.

Cosumnes Mine Road, County Road 877, Sections 4 and 9

Cosumnes Mine Road connects String Canyon Road with Sciaroni Road northwest of the community of Grizzly Flat. The road passes through Mesozoic granitic rocks and near Paleozoic Shoo-fly metasediments. The road passes through sections 4 and 9 which are identified on the referenced map as requiring further evaluation for asbestos.

The section that passes through Section 9 is paved. The pavement ends about 125 feet north of private Bevearly Hills Road near 5010 Cosumnes Mine Road. In Section 4. The initial surfacing material was noted to be crushed river gravel and crushed quarried rock. No serpentine or asbestos was observed. Decomposed granite was visible in road cuts near this point. Cosumnes Mine Road enters national forest land 0.4 miles from the end of pavement. At 1.0 mile a gabbroic rock outcrop was observed in a road cut. No serpentine or asbestos was observed in the road cuts, the base of the road, or in the aggregate used to surface the road.

Indian Diggins Road, County Road 92, Sections 17 and 18

Indian Diggins Road passes south and west off of Omo Ranch Road near the community of Omo Ranch. The road serves an area that once included hard rock and placer gold mines. Virtually all of the Section 17 portion of the road is mapped as crossing through Tertiary Mehrten volcaniclastics. (mudflows). The portion that crosses Section 18 passes over Paleozoic Shoo-fly metasedimentary rocks.

For the purposes of our reconnaissance, the mileage was started where the pavement ends, right at the intersection with Omo Ranch Road. At the start of the road, no rock exposures were visible and the road was observed to be surfaced with rounded river gravels and newer crushed rock without serpentine or asbestos. No rock exposures were observed until about 0.7 miles when volcanic conglomerate was found in a road cut. At 1.4 miles from the intersection an exposure of light gray volcanic ash with cobble clasts was observed. At this point the use of aggregate road base ended and the road was observed to be surfaced with native soils. The county road appeared to end at mile 1.9, becoming a logging road/trail. No serpentine or asbestos was observed in the cuts, the base of the road, or in the aggregates used on the road.

Farnham Ridge Road, County Road 93, Sections 25, 30, and 29

Farnham Ridge Road connects Bridgeport School Road with scattered residences and private logging lands. This road crosses a mixture of Tertiary Mehrten Mudflows, Paleozoic Calaveras Formation metasediments and Palezoic Shoo-fly metasedimentary rocks, which are separated by from each other by the Shoo-fly thrust fault.

Our reconnaissance started at the intersection with Bridgeport School Road. The geology of this area is mapped as Tertiary Mehrten Mudflow. The road appeared to be surfaced with a minimal amount of limestone aggregate base rock. One mile down the road, a small amount of unmapped granitic rocks was evidenced by decomposed granite soils with mafic xenolith core stones. At 1.5 miles down the road, the use of aggregate increases on the road, being mostly rounded gravels and not limestone. At 3.8 miles down the road the use of aggregate ended, with the road being surfaced with native soils. At 4.4 miles down the road, the use of limestone aggregate was observed to resume. Rock outcrops of Mehrten mudflows were observed 4.5 miles down Farnham Ridge Road. The use of limestone aggregate road base was observed to end at mile 5.0. The end of the road was reached at a gate at mile 5.3.

Rock exposures were severely limited. Although Farnham Ridge Road is mapped as crossing the Paleozoic Calaveras and Paleozoic Shoe-fly formations, no outcrops were visible. The Shoo-fly thrust fault was not visible. No serpentine or asbestos was observed along this stretch of road or within the aggregate used to surface the road.

Breedlove Road, County Road 112, Section 30

Breedlove Road provides access to residences and the El Dorado National Forrest north of Wentworth Springs Road, east of the community of Georgetown. This road is mapped as passing over Paleozoic Shoo-fly metasediments approximately ½ to 1 mile east of the Melones Fault Zone and the Shoo-fly Thrust Fault.

For the purposes of this evaluation, mileage measurements started at the intersection with Wentworth Springs Road. Breedlove Road was observed to be paved until mile 0.2. At this point, no rock exposures were present. The road was observed to be surfaced with a mixed crushed aggregate containing limestone, unknown metamorphic rocks, and some serpentine. No asbestos was visible. By 0.5 miles down the road, the aggregate was observed to very sparse and the road surfaced with native soils. An increase in aggregate at 0.95 miles did not appear to contain serpentine or asbestos. Road cuts in this area were observed to contain weathered metagraywacke of the Shoo-fly Formation with foliations striking northwest and dipping vertically. At mile 1.8, aggregate was again observed to be in use on the road and contained a trace of serpentine. The end of the road was reached at mile 2.2.

No asbestos or native serpentine was observed along Breedlove Road. Small amounts of serpentine were observed mixed into aggregate used on the road surface.

Bear Creek Road, County Road 46, Sections 19 and 30

Bear Creek Road serves an area extending from the south end of Georgetown to Spanish Flat, northeast of the community of Kelsey. Most of this road is surfaced with asphalt. One section is unsurfaced and passes over Paleozoic Shoe-fly metasediments, Paleozoic metamorphic rocks of the Melones Fault Zone, and the Shoo-fly Thrust Fault.

For the purposes of this reconnaissance, mileage measurements started at the intersection with Meadow Brook Road in a paved stretch. The pavement was observed to end 0.8 miles south of this intersection. Exposures in road cuts at this point appeared to be weathered Shoo-fly graywacke. The road was observed to be surfaced with aggregate that, based on visual observations, contains up to 5% serpentine. A spot check of the road aggregate at mile 1.2 did not find any serpentine or asbestos. A check of the aggregate at the intersection of Branch Way visually identified scattered pieces of serpentine (near paddle marker 3.20). A check of the aggregate at mile 2.3 (paddle marker 2.62) noted scattered pieces of serpentine. The pavement started again at mile 2.5.

Rock exposures along the unpaved stretch of Bear Creek Road were very poor. No asbestos or native serpentine was observed along the unpaved section of this road. Some scattered serpentine fragments were observed to be mixed into the road aggregate.

Bayne Road, County Road 55, Sections 14, 17, and 21

Bayne Road connects the communities of Coloma and Kelsey. Portions of this road are paved and crosses over Mesozoic Granitics, Jurassic Mariposa metasediments, Jurassic Logtown Ridge metavolcanics and metesediments, the West Branch of the Melones Fault Zone, and the Paleozoic Calaveras metasediments.

For the purpose of this evaluation, mileage measurements started near the end of the pavement on the west end of the road near the intersection with private Serenity Lane. The aggregate used at the start of the unpaved section appeared to be comprised of dark gray metasediments or metavolcanics. The first road cut exposures were noted at mile 0.3 and consisted of massive metasediments with some carbonate inclusions. A short paved section of road was observed at mile 0.3 to mile 0.4. A small patch of serpentine aggregate was observed at mile 2.3. At mile 2.8 (paddle marker 1.22) weathered slates were visible in road cuts. The pavement began again at mile 3.0.

No native asbestos or serpentine was observed along Bayne Road. A very small patch of serpentine aggregate was observed.

Mt. Murphy Road, County Road 75, Sections 5, 8, and 17

Mt. Murphy Road is a historic route that connects the communities of Coloma and Garden Valley. The portion of the road that ascends from Coloma up Mt. Murphy has sections that are not currently passable by low ground clearance vehicles and thus appears to have only limited use.

Mt. Murphy Road crosses over Mesozoic granitic rocks, Jurassic Mariposa metasediments, and ultramafic rocks associated with chromite mining and serpentine aggregate mining.

The mileage measurements for our reconnaissance was started at the intersection with Carver Road in Coloma. Mt. Murphy Road starts off in granitic rocks and weathered decomposed granitic soils with an aggregate base of rounded and crushed stream rock without any visible serpentine. At mile 0.5 massive contact metamorphic rock of gneiss was observed in road cuts. Outcrops at mile 0.7 consists of massive, very hard metasediments with common carbonate inclusions. Massive serpentine rock was observed in the road bed at mile 1.3. No serpentine aggregate was observed. The serpentine extended about 100 feet until a point at which the road became paved.

A short stretch of Mt. Murphy Road may be underlain by serpentine near the paved stretch where the road crosses a saddle between Mt. Murphy and Mt. Perry. No serpentine aggregate or asbestos was observed along the unpaved stretch.

Park Creek Road, County Road 88, Section 3

Park Creek Road forms a loop that runs from Sly Park Road southeast of the community of Pollock Pines, passes north of Jenkinson Lake, and connects to Morman Emigrant Trail East of the lake. This road is mapped as crossing Tertiary Mehrten Mudflows in the area north of Jenkinson Lake.

For measurement purposes, mileages were recorded starting at the intersection with Hazel Valley Road. No aggregate was observed to be used on this road. Rock exposures at miles 0.1 and 0.3 were observed to consist of mudflow conglomerates and pyroclastic flows. The end of the study section was reached by approximately mile 2.0. No serpentine or asbestos was observed in rock exposures on in use as road base.

Conclusions

None of the unpaved roads evaluated within the scope of this reconnaissance contained exposures of visible asbestos in either the road bed or in road cuts. No talc schist or other rocks frequently associated with fault zones were observed. A short section of Mt. Murphy Road may be underlain by serpentine, although no asbestos was visible in the limited exposures.

Some of the roads in the Georgetown-Kelsey area were observed to contain varying amounts of serpentine in the aggregate surfacing material. The State of California considers any aggregate surfacing material that contains at least 10% serpentine to be serpentine material and subject to the requirements of testing for asbestos in serpentine as specified in Title 17, California Code of Regulations, section 94147. A portion of Georgia Slide and one small patch on Bayne Road may meet this criteria. Aggregate material mixtures observed on Breedlove Road and Bear Creek Road might also meet this criteria. If testing documentation is available for the serpentine aggregate placed on these roads, then further evaluation would be unnecessary. Such determinations would require additional investigation and analyses.

If you have any questions regarding this geologic reconnaissance, please do not hesitate to contact us at (916) 933-0633.

Very truly yours,
Youngdahl & Associates, Inc.

David C. Sederquist

David C. Sederquist, C.E.G.
Project Geologist
CEG 2133 Expires 9/30/2000

Reviewed by:

Roy C. Kroll

Roy C. Kroll, C.E.G.
Associate Engineering Geologist

CERTIFIED ENGINEERING GEOLOGIST
ROY C. KROLL
No. 1328
EXPIRATION DATE
12-31-00
STATE OF CALIFORNIA

Attachments: Geologic References
Figures 1 through 11 - Geologic Maps of Road Segments
Figures 12 through 19 - Photographs of Roads

Distribution: Four Copies to El Dorado County Department of Transportation

GEOLOGIC REFERENCES

- **Bateman, P.C. and Wahrhaftig, C., (1966):** "Geology of the Sierra Nevada" in Geology of Northern California, Bulletin 190, California Division of Mines and Geology.

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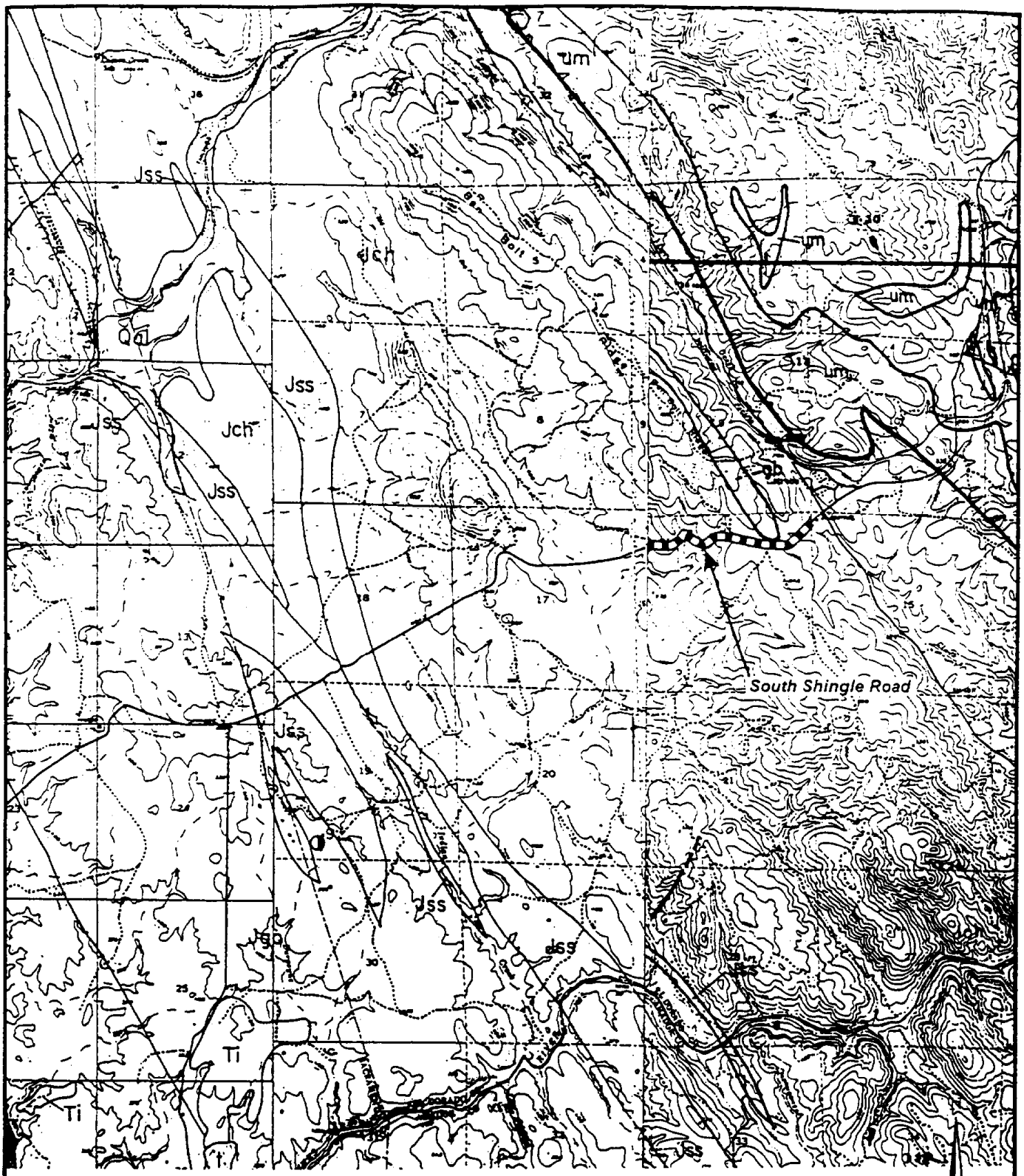


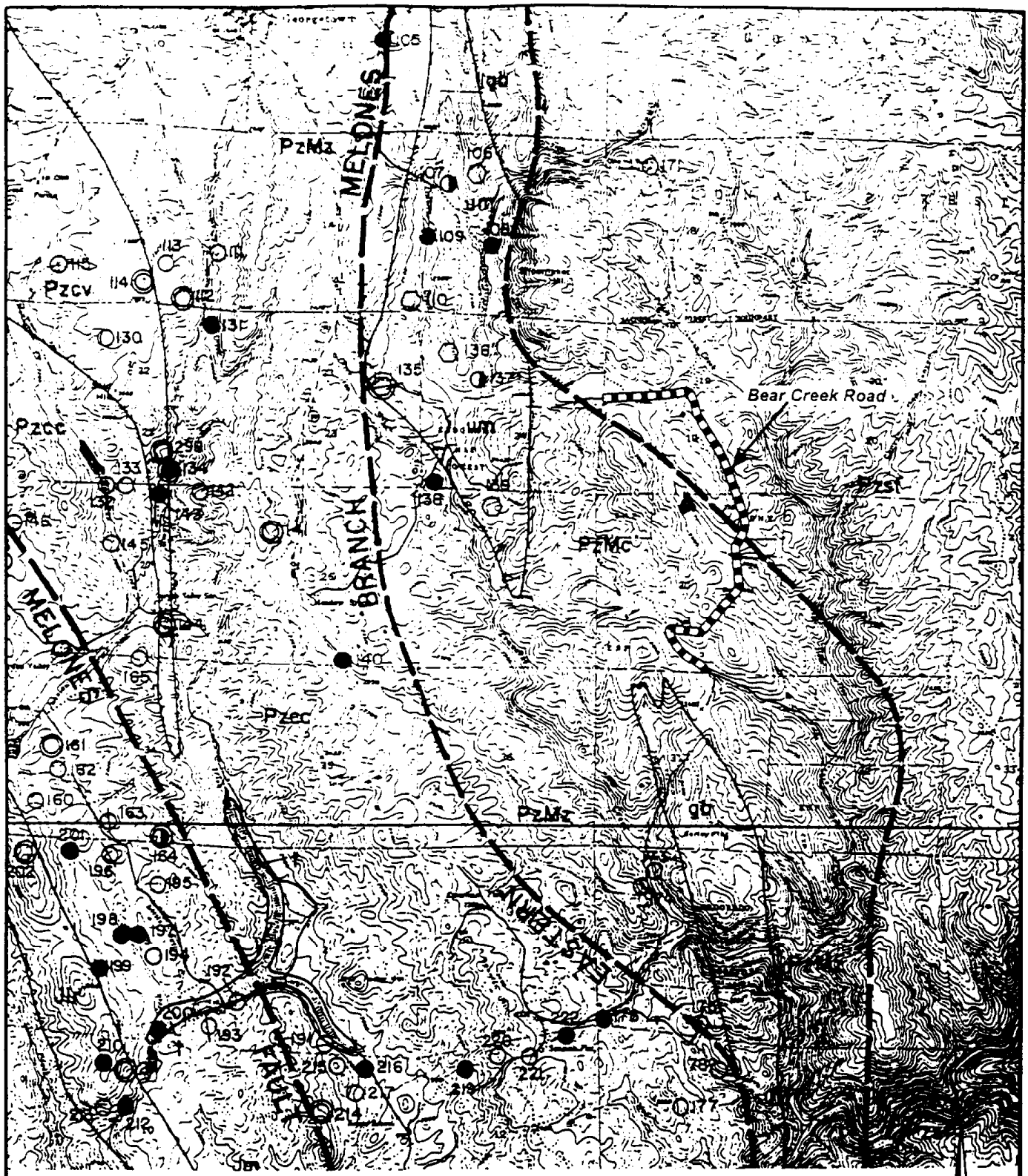
YOUNGDAHL & ASSOCIATES, INC.
GEOTECHNICAL, ENVIRONMENTAL & CONSTRUCTION LAB

Project No.: 99292

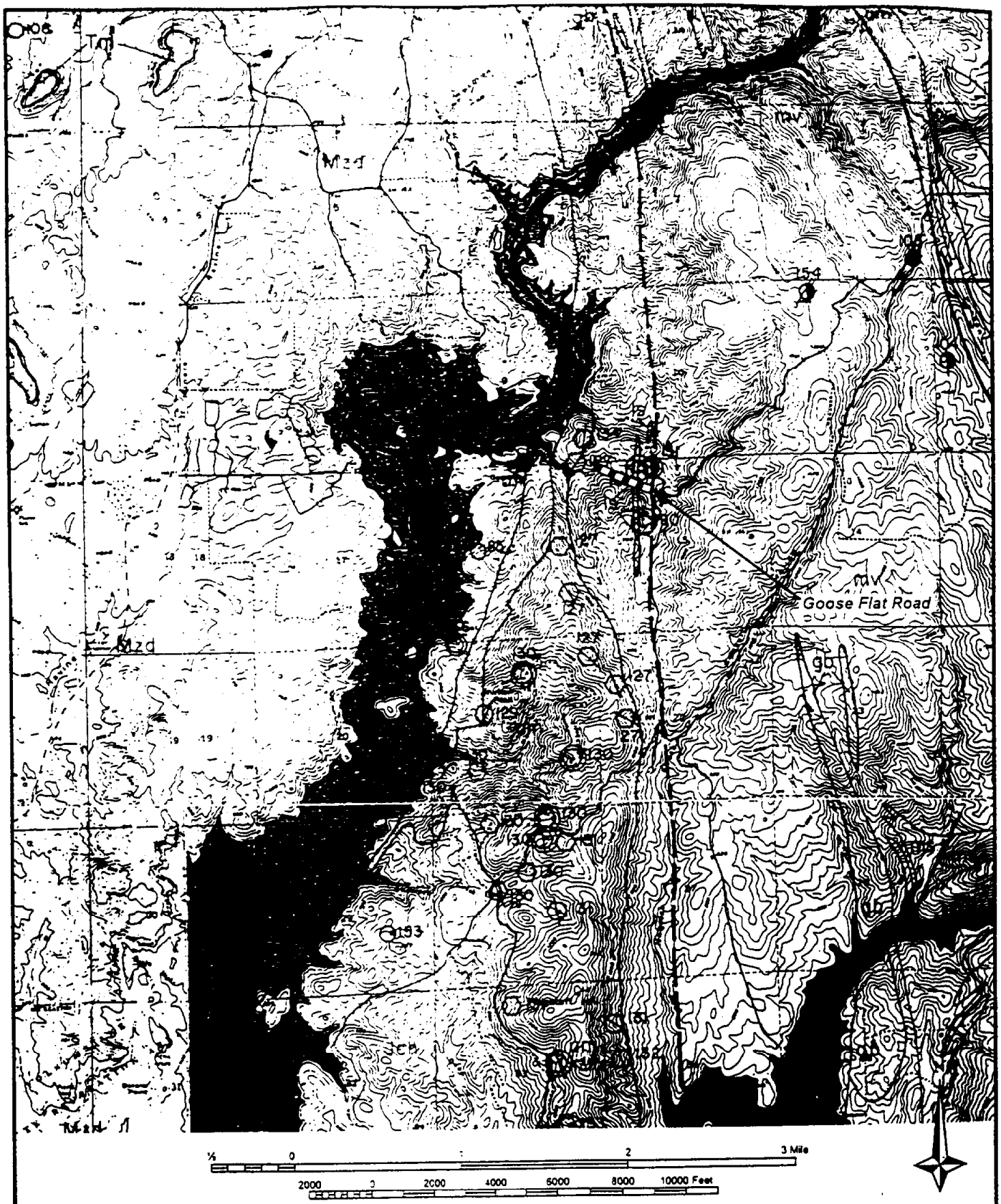
September 1999

UNPAVED ROADS GEOLOGIC RECONNAISSANCE
South Shingle Road - Section 16
El Dorado County, California

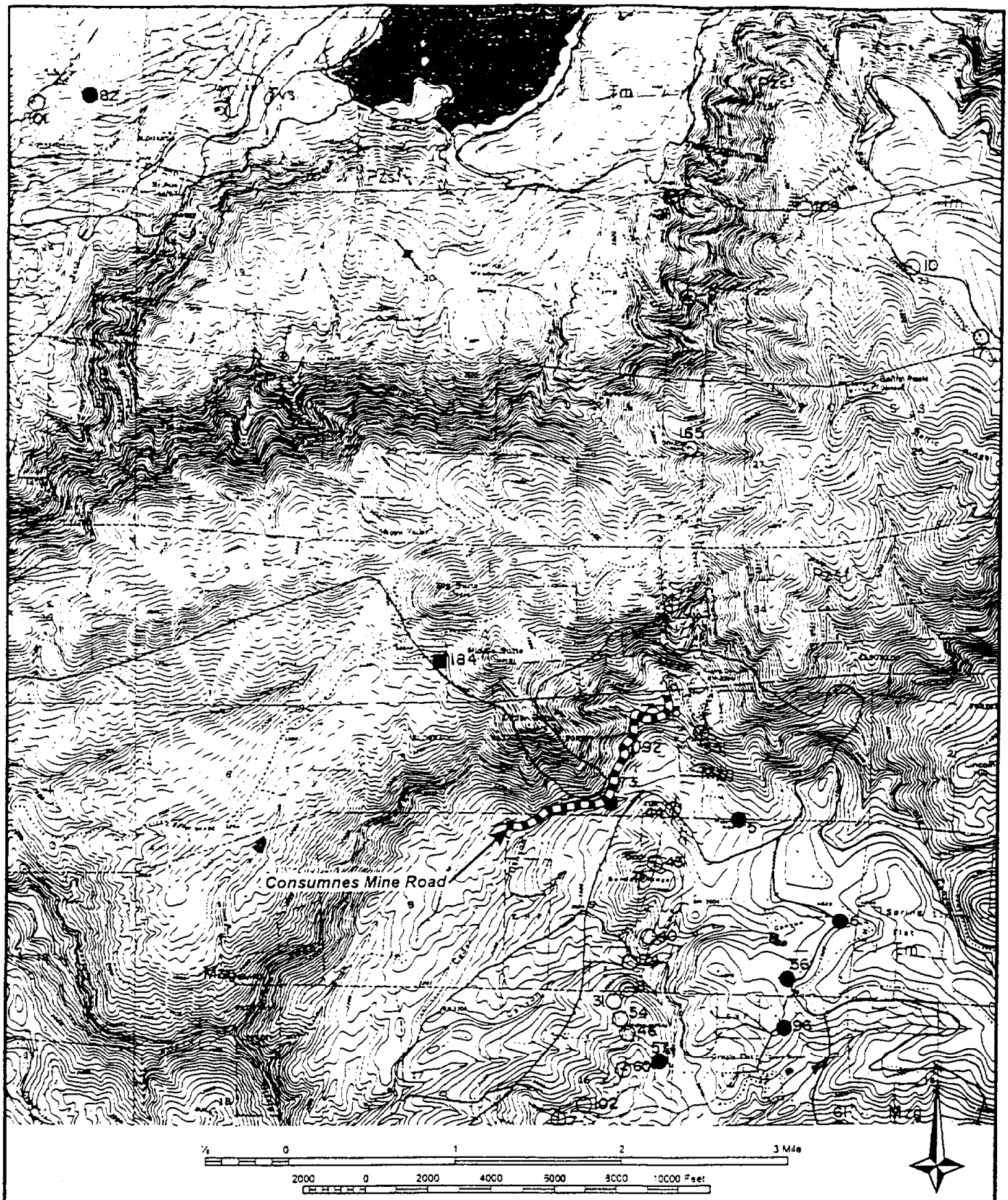
FIGURE 1



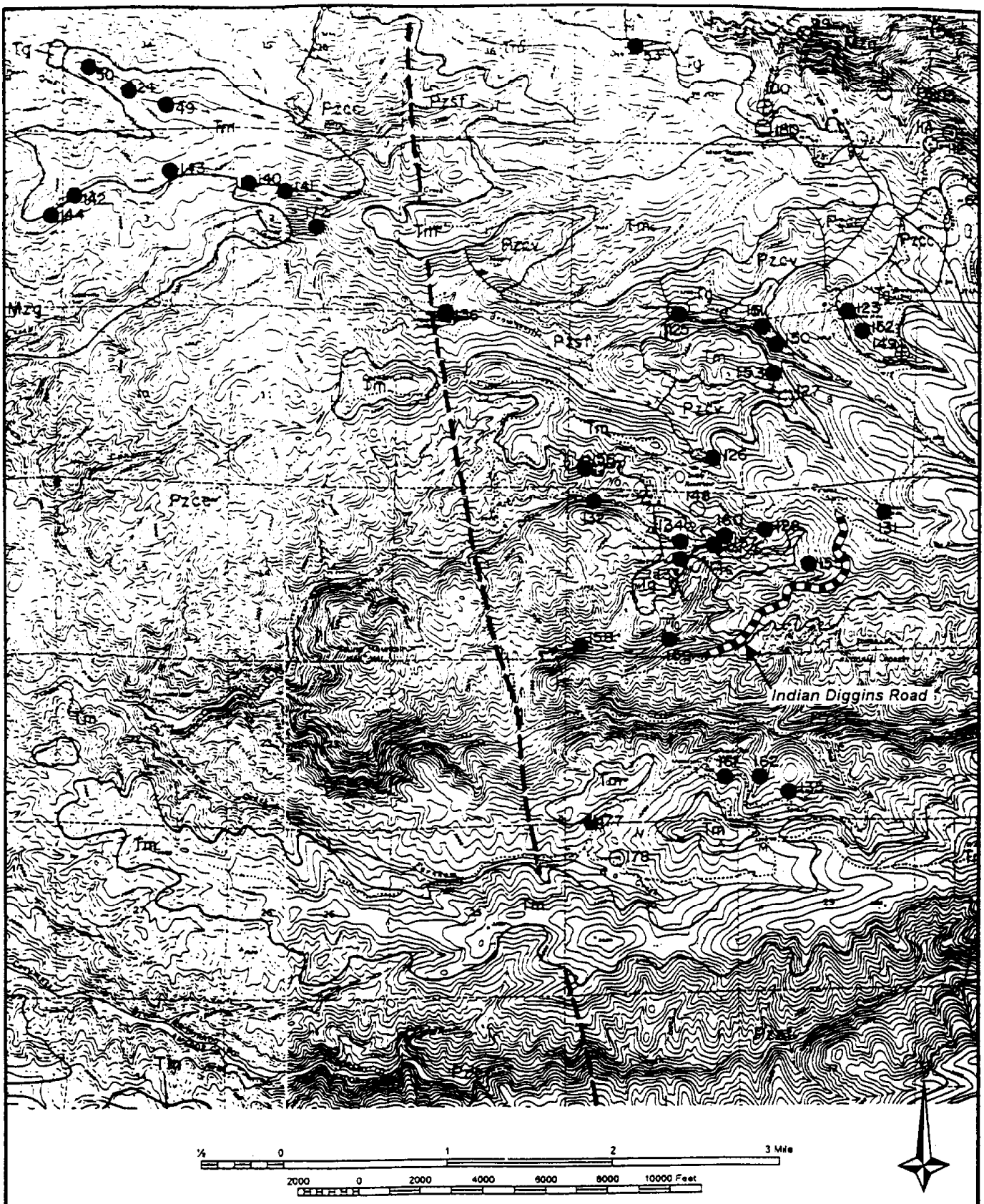
YOUNGDAHL & ASSOCIATES, INC. GEOTECHNICAL, ENVIRONMENTAL & CONSTRUCTION LAB	Project No.: 99292	UNPAVED ROADS GEOLOGIC RECONNAISSANCE	FIGURE 7
	September 1999	Bear Creek Road - Sections 19 & 30 El Dorado County, California	



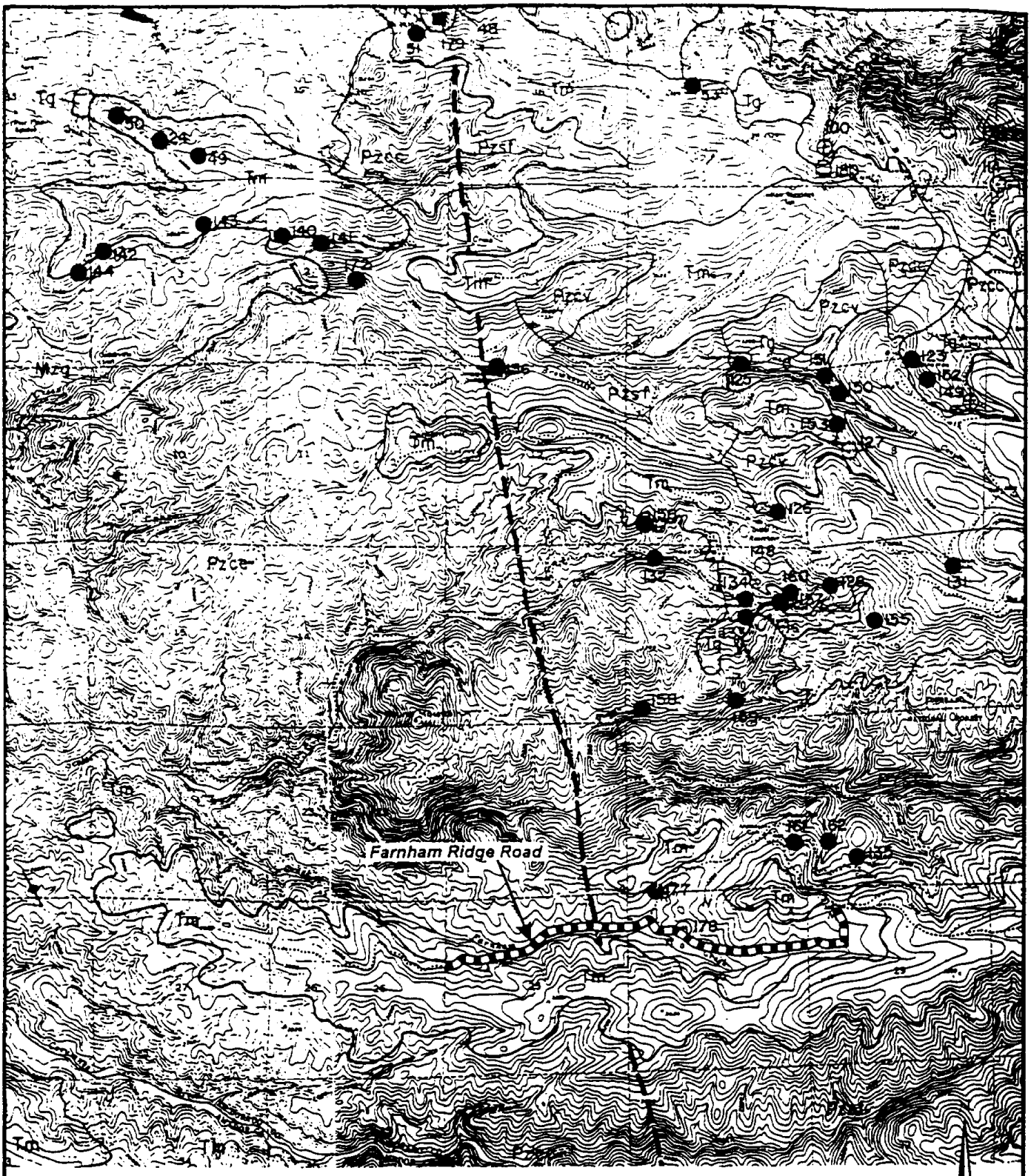
YOUNGDAHL & ASSOCIATES, INC. GEOTECHNICAL, ENVIRONMENTAL & CONSTRUCTION LAB	Project No : 99292	UNPAVED ROADS GEOLOGIC RECONNAISSANCE	FIGURE 2
	September 1999	Goose Flat Road - Section 15 El Dorado County, California	



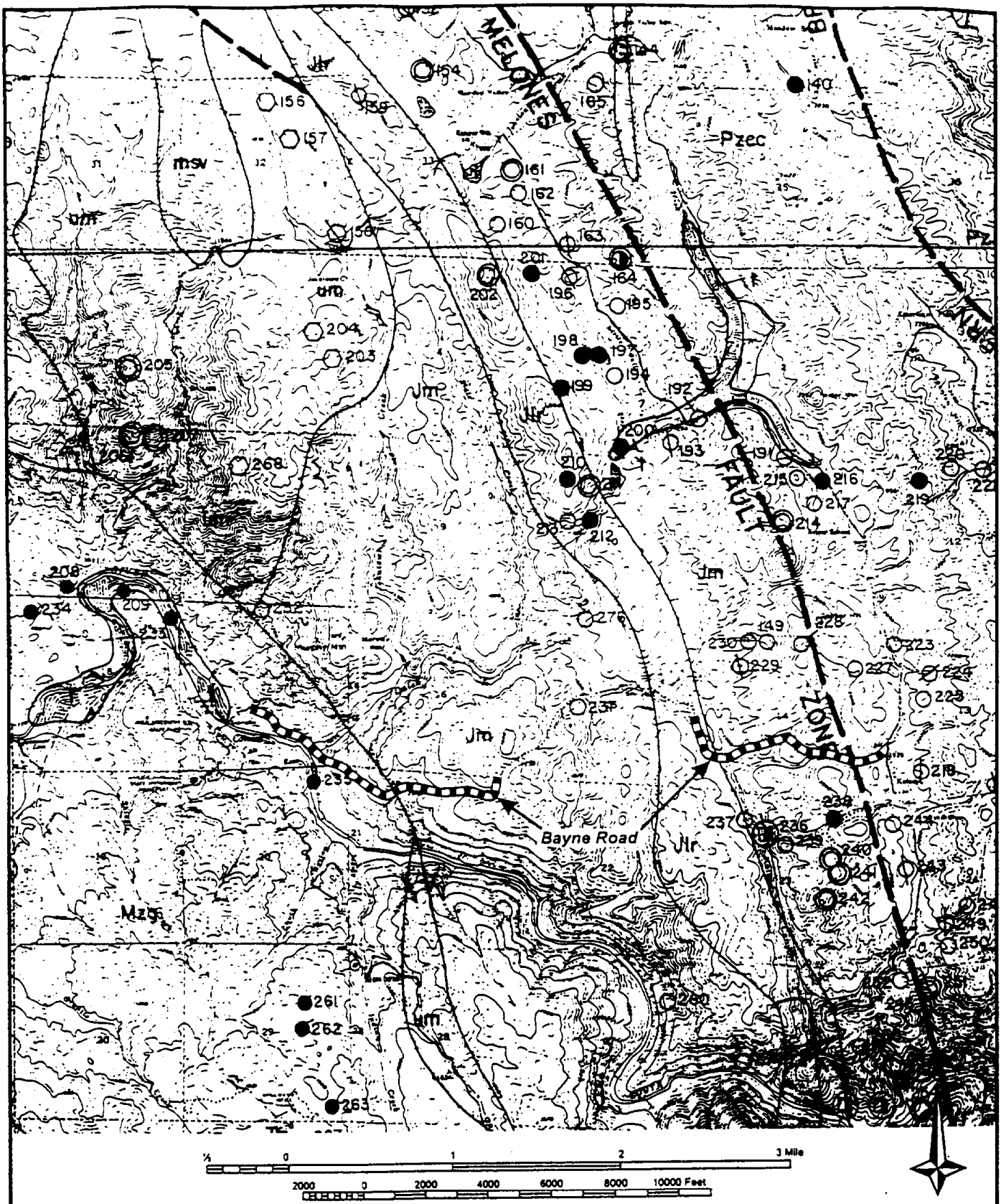
YOUNGDAHL & ASSOCIATES, INC. GEOTECHNICAL, ENVIRONMENTAL & CONSTRUCTION LAB	Project No.: 99292	UNPAVED ROADS GEOLOGIC RECONNAISSANCE	FIGURE
	September 1999	Cosumnes Mine Road - Sections 4 & 9 El Dorado County, California	3



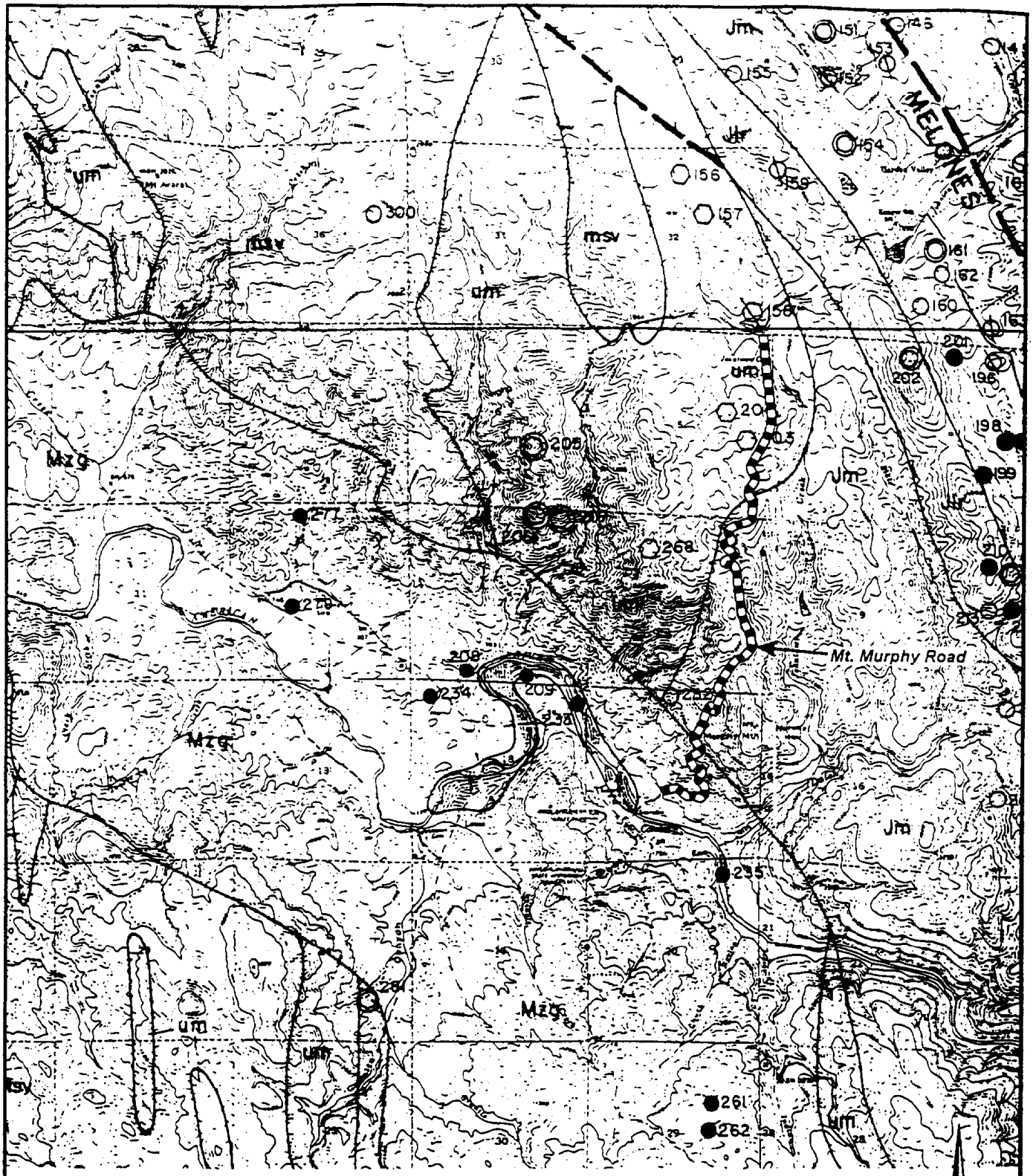
YOUNGDAHL & ASSOCIATES, INC. GEOTECHNICAL, ENVIRONMENTAL & CONSTRUCTION LAB	Project No.: 99292 September 1999	**UNPAVED ROADS GEOLOGIC RECONNAISSANCE** **Indian Diggins Road - Sections 17 & 18** El Dorado County, California	**FIGURE 4**



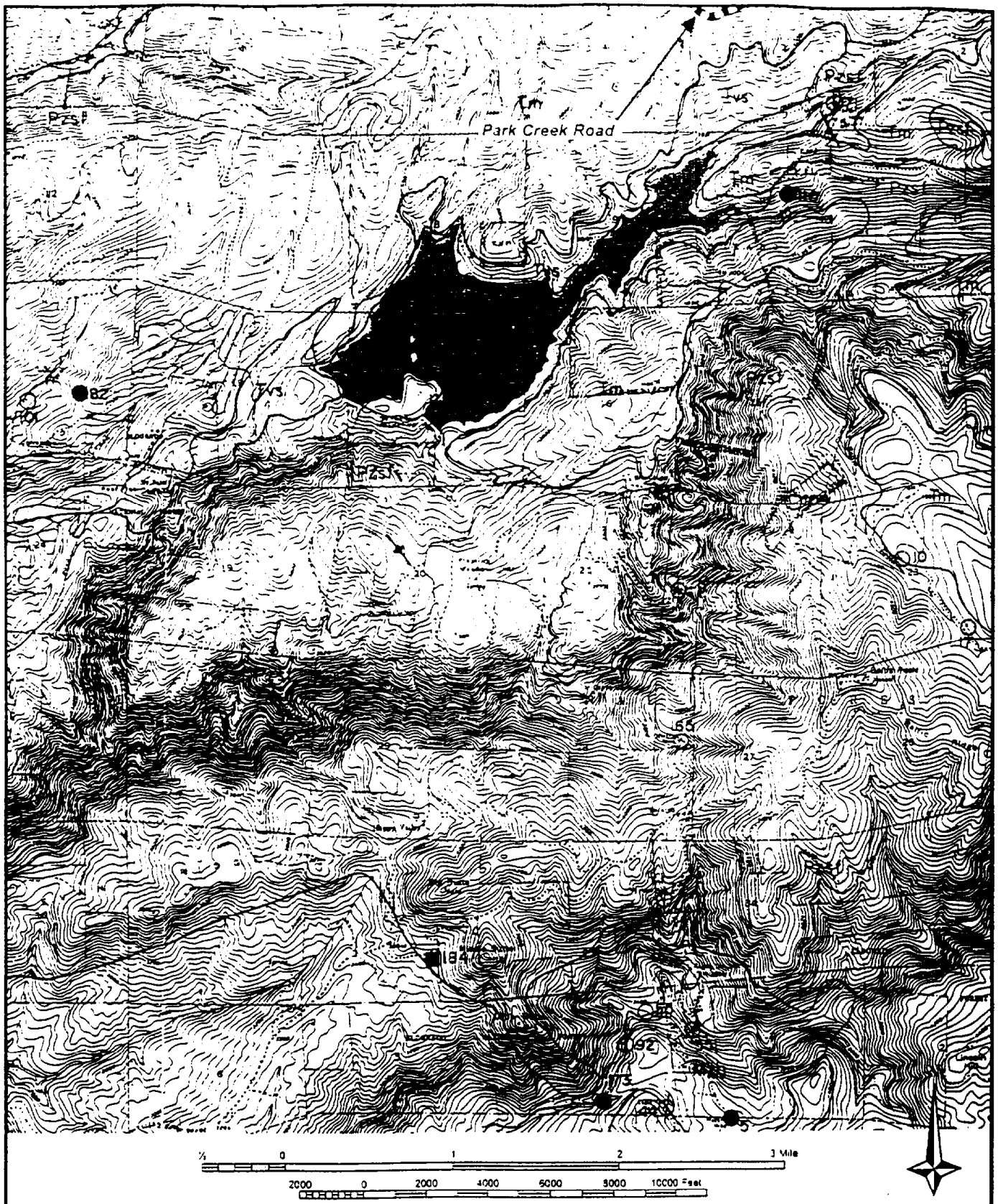
YOUNGDAHL & ASSOCIATES, INC. GEOTECHNICAL, ENVIRONMENTAL & CONSTRUCTION LAB	Project No.: 99292	UNPAVED ROADS GEOLOGIC RECONNAISSANCE	FIGURE 5
	September 1999	Farnham Ridge Road - Sections 25, 30 & 29 El Dorado County, California	



YOUNGDAHL & ASSOCIATES, INC. GEOTECHNICAL, ENVIRONMENTAL & CONSTRUCTION LAB	Project No.: 99292	**UNPAVED ROADS GEOLOGIC RECONNAISSANCE**	FIGURE 8
	September 1999	**Bayne Road - Sections 14, 17 & 21** El Dorado County, California	



YOUNGDAHL & ASSOCIATES, INC. GEOTECHNICAL, ENVIRONMENTAL & CONSTRUCTION LAB	Project No.: 99292	UNPAVED ROADS GEOLOGIC RECONNAISSANCE	FIGURE 9
	September 1999	Mt. Murphy Road - Sections 5, 8 & 17 El Dorado County, California	



YOUNGDAHL & ASSOCIATES, INC. GEOTECHNICAL, ENVIRONMENTAL & CONSTRUCTION LAB	Project No.: 99292 September 1999	UNPAVED ROADS GEOLOGIC RECONNAISSANCE Park Creek Road - Section 3 El Dorado County, California	FIGURE 10

MINERAL DEPOSITS

- Chromite
- Copper
- Gold, Lode
- Gold, Placer
- Manganese
- Tungsten
- Limestone
- Slate
- Clay
- Silica
- Iron

MAP SYMBOLS

- Geologic Contact
- Fault
- Shear Zone
- Strike & Dip Of Foliation
- Mine & Prospect Location
- Quartz Vein
- Orientation Of Deposit
- Mine Index Number

CENOZOIC	t	Dredge Tailings
	Q	Alluvium
	Qal	Quaternary Alluvium
	Tl	Alluvial Sand, Silt, & Conglomerate
	Tm	Mehrten Formation
	Tvd	Rhyodacite Domes
	Tvs	Valley Springs Formation
	Tg	Auriferous Gravels (Tertiary river channel deposits)
	Ti	Ione Formation
MESOZOIC	Kc	Chico Formation
	Jm	Mariposa Formation
	Jmb	Brower Creek Volcanics
	Jlr	Logtown Ridge Formation
	Mzg	Mesozoic Granitic Intrusive Rocks
	Mzd	Mesozoic Dioritic Intrusive Rocks
	Jch	Copper Hill Volcanics (Mesozoic Volcanic Island Arc Terrane)
	Jss	Salt Springs Slate
	Jgo	Gopher Ridge Volcanics
	,msv	Metasedimentary Rocks (Melange Zone)
	ms	Metasedimentry Rocks (Melange Zone)
	ls	Limestone (Melange Zone)
	mv	Metavolcanic Rocks (Melange Zone)
	gb	Gabbro (Melange Zone)
	um	Ultramafic Rocks (Melange Zone)
	mvs	Undifferentiated Metavolcanic & Metasedimentary Rock (Melange Zone)
	Pzmz	Metamorphic Rocks
PALEOZOIC	Pzcc	Calaveras Complex (Metasedimentary Rocks - argillite & chert)
	Pzls	Calaveras Complex (Metasiltstone & Lenses of Carbonate Rock)
	Pzcv	Calaveras Complex (Metavolcanic Rocks)
	Pzct	Calaveras Complex (Talc)
	Pzsf	Shoofly Complex

YOUNGDAHL & ASSOCIATES, INC.
GEOTECHNICAL, ENVIRONMENTAL & CONSTRUCTION LAB

Project No.: 99292

UNPAVED ROADS GEOLOGIC RECONNAISSANCE
Explanation & Legend For Maps
El Dorado County, California

Photo 1: South Shingle Road - Start of unpaved section on east end.

Photo 2: South Shingle Road - Typical aggregate road surface.

YOUNGDAHL & ASSOCIATES, INC. GEOTECHNICAL, ENVIRONMENTAL & CONSTRUCTION LAB	Project No.: 99292 September 1999 E-2-B-31	UNPAVED ROADS GEOLOGIC RECONNAISSANCE PHOTOS South Shingle Road - Section 16 El Dorado County, California	FIGURE 12

Photo 3: Goose Flat Road - North end of road.

Photo 4: Goose Flat Road - Limestone Quarry.

YOUNGDAHL & ASSOCIATES, INC. GEOTECHNICAL, ENVIRONMENTAL & CONSTRUCTION SERVICES	Project No.: 99292 September 1999	UNPAVED ROADS GEOLOGIC RECONNAISSANCE PHOTOS Goose Flat Road - Section 15 El Dorado County, California	FIGURE 13

Photo 5: Cosumnes Mine Road - Start of unpaved road.

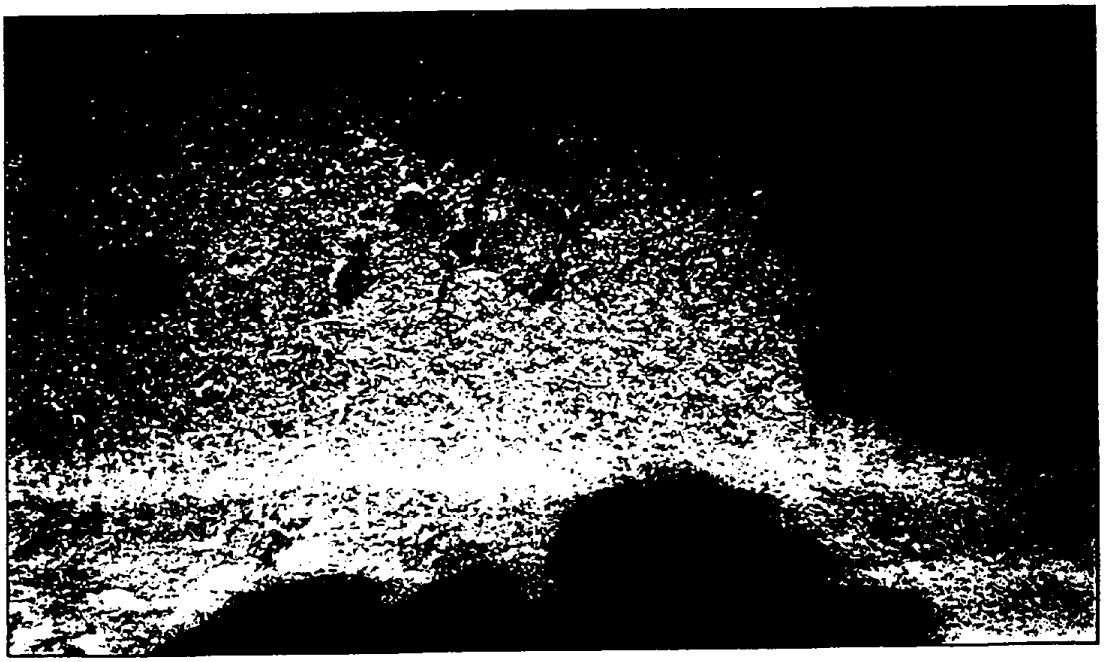


Photo 6: Cosumnes Mine Road - Typical exposure of granediorite.

YOUNGDAHL & ASSOCIATES, INC. GEOTECHNICAL, ENVIRONMENTAL & CONSTRUCTION LAB	Project No.: 99292 September 1999	UNPAVED ROADS GEOLOGIC RECONNAISSANCE PHOTOS Cosumnes Mine Road - Sections 4 & 9 El Dorado County, California	FIGURE 14

Photo 7: Indian Diggins Road - Start of road at intersection with Omo Ranch Road.

Photo 8: Indian Diggins Road - Typical exposure of Mehrten Mudflow Rocks.

YOUNGDAHL & ASSOCIATES, INC. GEOTECHNICAL, ENVIRONMENTAL & CONSTRUCTION LAB	Project No.: 99292 September 1999 E-2-B-34	UNPAVED ROADS GEOLOGIC RECONNAISSANCE PHOTOS Indian Diggins Road - Sections 17 & 18 El Dorado County, California	FIGURE 15

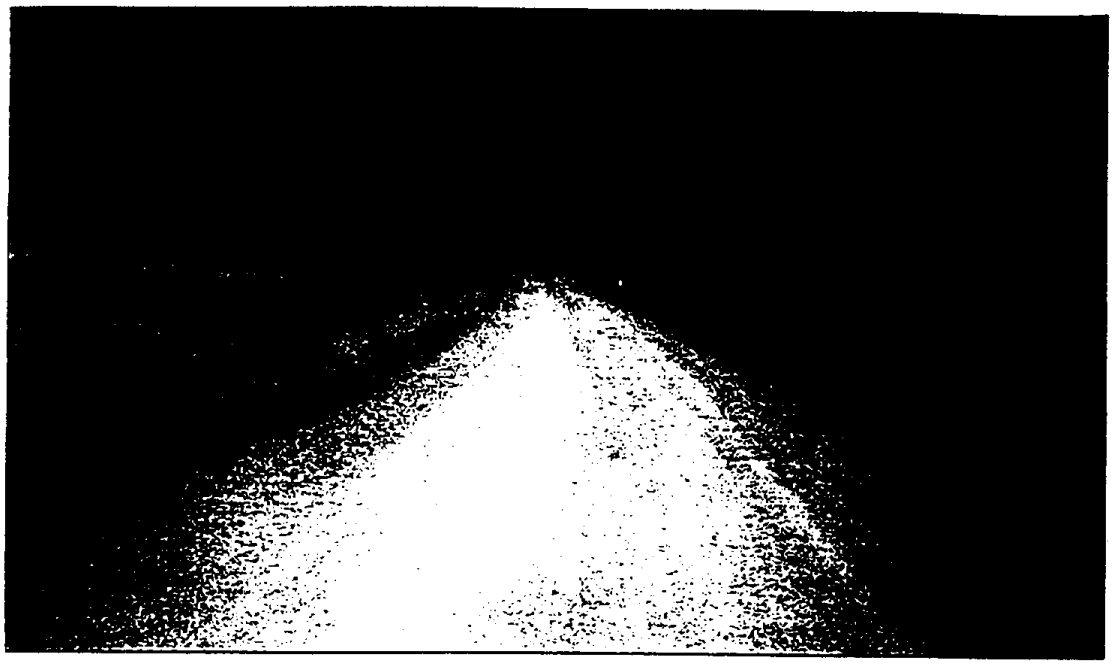


Photo 9: Farnham Ridge Road - Typical easterly view.

Photo 10: Farnham Ridge Road - Exposure of intrusive rocks.

YOUNGDAHL & ASSOCIATES, INC. GEOTECHNICAL, ENVIRONMENTAL & CONSTRUCTION LAB	Project No.: 99292 September 1999	UNPAVED ROADS GEOLOGIC RECONNAISSANCE PHOTOS Farnham Ridge Road - Section 25, 30 & 29 El Dorado County, California	FIGURE 16

Photo 11: Breedlove Road - Top of road (looking south).

Photo 12: Breedlove Road - Bridge crossing (looking south).

YOUNGDAHL & ASSOCIATES, INC. GEOTECHNICAL, ENVIRONMENTAL & CONSTRUCTION	Project No.: 99292 September 1999 E-2-B-36	UNPAVED ROADS GEOLOGIC RECONNAISSANCE PHOTOS Breedlove Road - Section 30 El Dorado County, California	FIGURE 17

Photo 13: Bayne Road - Lower portion of unsurfaced portion.

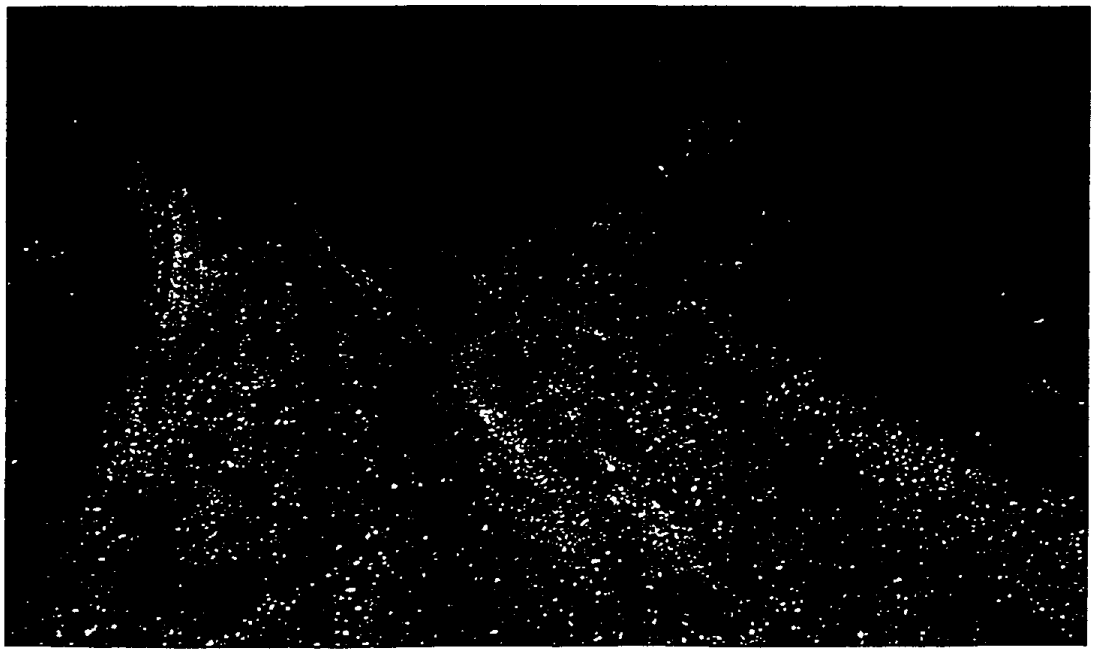


Photo 14: Bayne Road - Small area of serpentine aggregate.

YOUNGDAHL & ASSOCIATES, INC.	Project No.: 99292	UNPAVED ROADS GEOLOGIC RECONNAISSANCE PHOTOS Bayne Road - Sections 14, 17 & 21 El Dorado County, California	FIGURE 18
	September 1999		

Photo 15: Mt. Murphy Road - Top of unsurfaced portion.

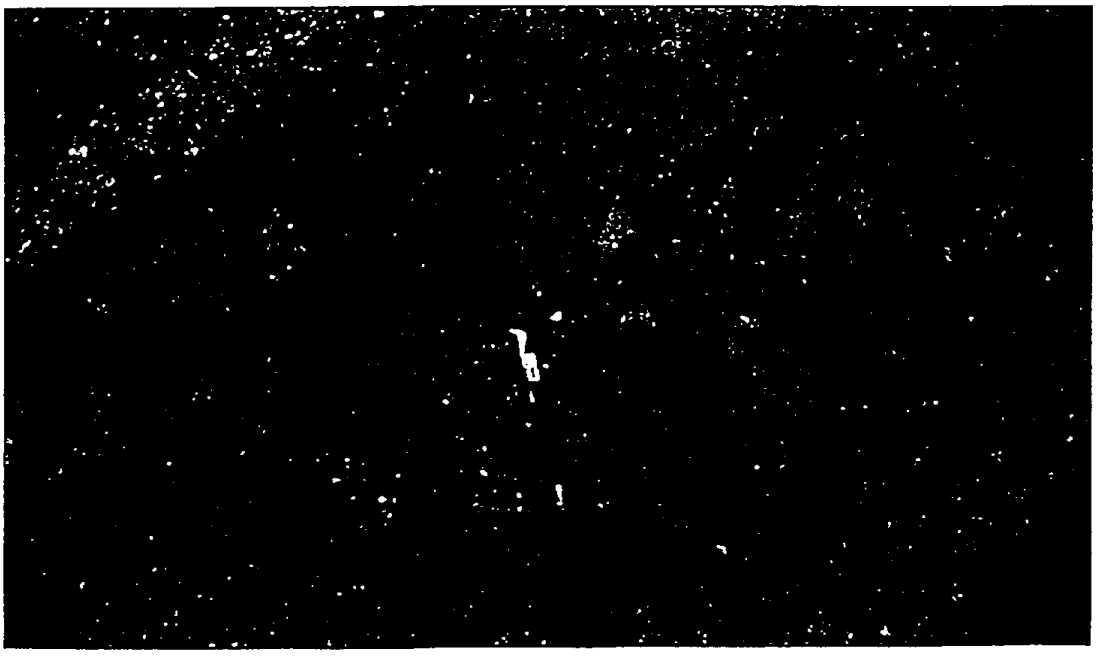


Photo 16: Mt. Murphy Road - Serpentine rock in base of road.

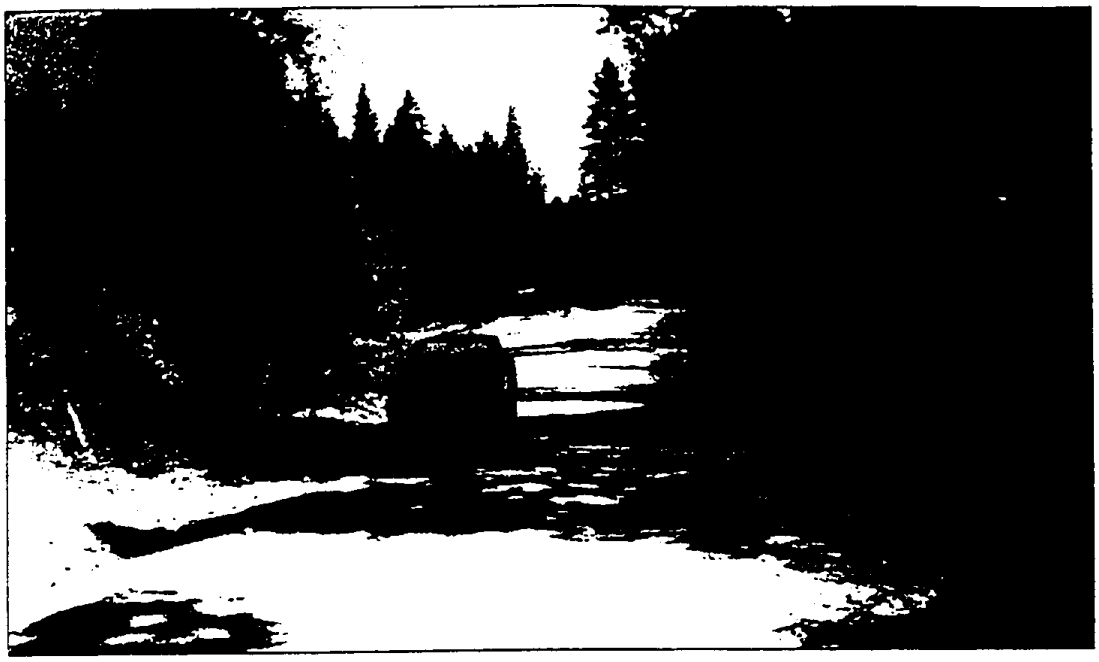


Photo 17: Park Creek Road - Western end of reconnaissance area.

Photo 18: Park Creek Road - Typical exposure of Mehrten Mudflow.

YOUNGDAHL & ASSOCIATES, INC. GEOTECHNICAL, ENVIRONMENTAL & CONSTRUCTION LAB	Project No.: 99292	UNPAVED ROADS GEOLOGIC RECONNAISSANCE PHOTOS	FIGURE 20
	September 1999	Park Creek Road - Section 3 El Dorado County, California	