APPENDIX A

INITIAL STUDY AND NOTICE OF PREPARATION

Notice of Preparation

To: _____
(Agency)

SUBJECT: **Notice of Preparation for a Draft Environmental Impact Report**

Lead Agency: Mono County Planning Department **Consulting Firm:**

Agency Name Planning Department Firm Name None at this time

Street Address P.O. Box 347 Street Address _____

City/State/Zip Mammoth Lakes, CA 93546 City/State/Zip _____

Contact Gerry LeFrancois

email: monocounty@qnet.com

The Mono County Planning Department will be the Lead Agency and will prepare a combined Specific Plan and Environmental Impact Report for the project identified below. We need to know the views of your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency may need to use the EIR prepared by our agency when considering your permit or other approval for the project.

The project description, location, and the potential environmental effects are contained in the attached materials.

Due to the time limits mandated by State Law, your response must be sent at the earliest possible date but *not later than 30 days* after receipt of this notice (comments will be due by June 25, 1999).

Please send your response to Gerry LeFrancois, Senior Planner at the address shown above. We will need the name for a contact person in your agency.

Project Title: Morgan Industrial Park Specific Plan / EIR

Project Location: Mammoth Lakes (3 miles south of the intersection of US 395 and SR 203) Mono
City (nearest) County

Project Description: (brief)
The Morgan Industrial Park is proposed on a 35.9 acre parcel located on the west side of U.S. 395 approximately three miles south of the Mammoth Lakes turnoff (Highway 203). The Plan calls for subdividing the property into approximately 37 lots which will be used for industrial type purposes. The lots may range in size from 1/2 acre to 2 acres. The project may be phased with Phase I consisting of lots 1-24and Phase II consisting of lots 25-37. Proposed improvements include a community water system, individual septic systems, drainage, utility, and street improvements. A Specific Plan will be prepared for the project to establish development standards and future uses for the property. See attached for additional information.

Date 5/25/99 Signature _____
Gerry LeFrancois
Title Senior Planner

Telephone (760) 924-5450

Reference: California Administrative Code, Title 14, (CEQA Guidelines) Sections 15082(a), 15103, 15375.

PROJECT IMPACTS

The Draft EIR will consider, at a minimum, the following potential environmental impacts:

1) Adverse impacts on wildlife species by introducing additional human presence into the area.
2) Air quality impacts by generating additional dust and air emissions from heavy equipment.
3) Visual impacts created by new development. The project may result in the construction of new structures in the existing gravel pit area which may impact views from U.S. 395, a State recognized scenic highway corridor.
4) An increase in vehicular traffic to and from Highway 395 and the level of human activity in the area which will cause a corresponding increase in the ambient noise level.
5) Potential impacts caused by ground water usage and the contamination of groundwater.

Additional Project Information:

- The project is being proposed as a Specific Plan,
- A General Plan Amendment to the Mono County General Plan will be required,
- A Tract Map is required for the subdivision of the 35 lots,
- A Reclamation Plan is required as the site is an old borrow pit (formerly Sierra Materials) and was never reclaimed by the former property owner, and
- The project is within the planning area of the Mammoth Lakes Airport Land Use Plan.

The current uses on the site include a concrete batch plant and a dog kennel. Two power lines traverse the project site. The majority of the site is excavate to a depth of 10 to 15 feet below grade. The project proposes to excavate and remove an additional 150,000 cubic yards of material from the northwestern portion of the site.

A scoping meeting open to the public has been tentatively scheduled for 1:30 p.m., June 11, 1999, at Mono County Offices, 437 Old Mammoth Road, Suite P, Mammoth Lakes, CA 93546. To verify the date and time, please contact Gerry LeFrancois, project planner at (760) 924-5450 ext. 232.

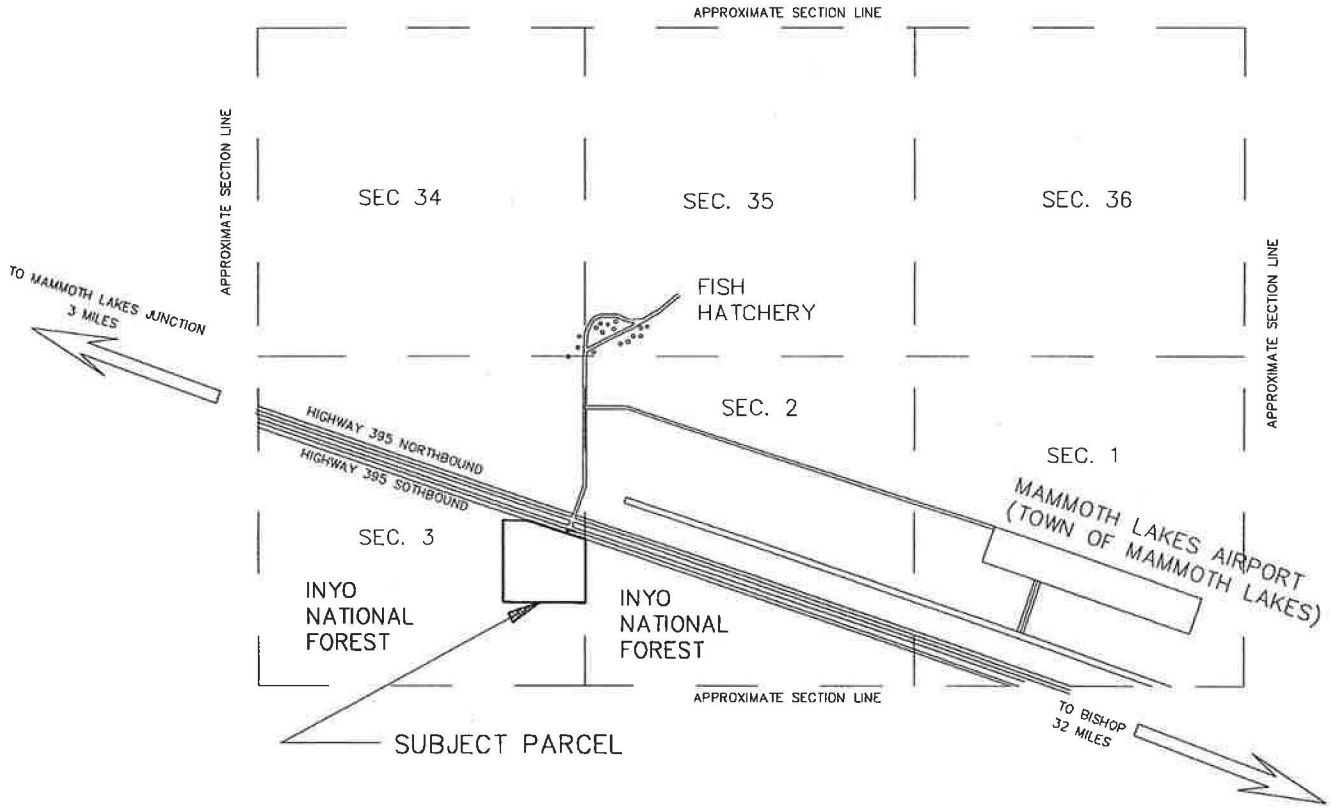
MORGAN INDUSTRIAL PARK
TENTATIVE TRACT MAP
NUMBER 36-159

OWNERS/SUBDIVIDERS:

MARZANO & SONS
P.O. BOX 178
JUNE LAKE, CA 93529
(619) 648-7455

SURVEYOR/PREPARER:

BEAR ENGINEERING
P.O. BOX 657
46 SINCLAIR STREET
BRIDGEPORT, CA 93517
(619) 932-7077



NO SCALE

INDEX:

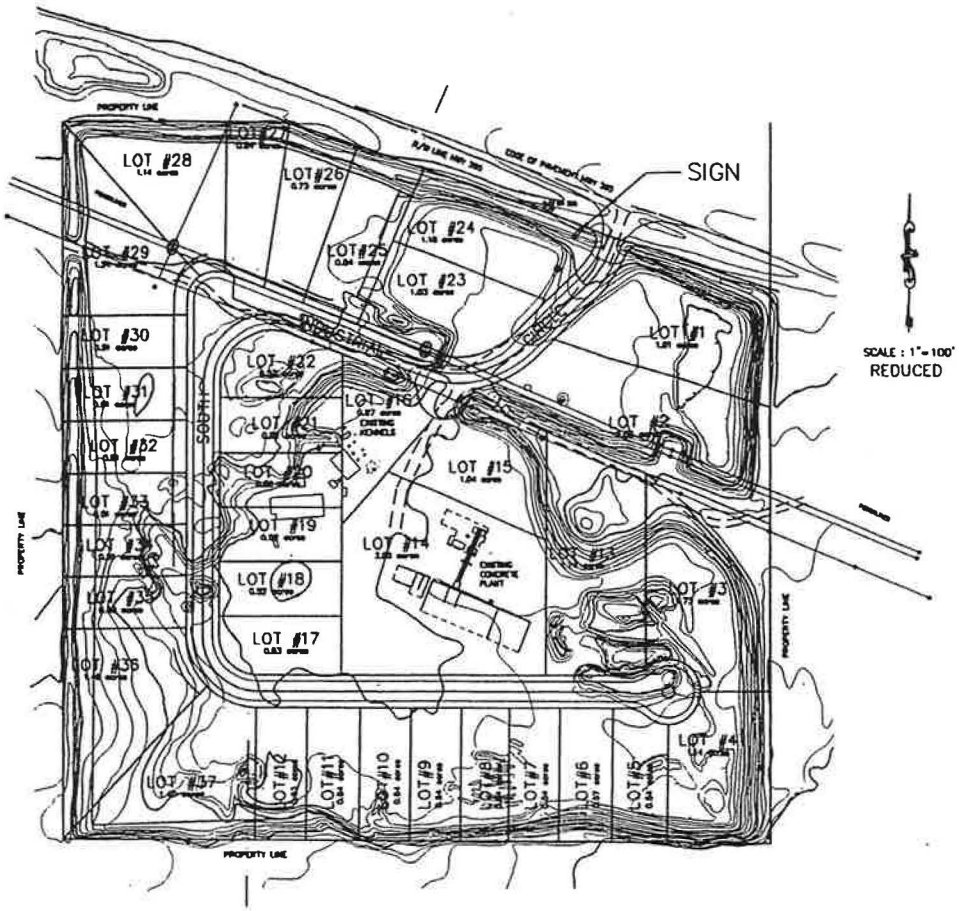
VICINITY MAP
NO SCALE

A	REV LAYERS, REV PAGE NO, REV INDEX	BEAR	7/9/00
REV.	DESCRIPTION	BY	DATE
FOR APPROVAL:	TO SHOP:	TO FIELD:	
R & R APPROVAL:		AS BUILT:	

BEAR Engineering
Civil Engineering & Surveying
(619) 932-7077
PO. Box 657
46 Sinclair St., Ste. 3
Bridgeport, CA 93517

JOB NAME:	MORGAN IND. PARK	DRAWN BY: wgm	CHECKED BY:
LOCATION:	PORTION OF SECTION 3 T4S, R28E, MDB&M APN# 37-130-04	SCALE: none	
CONTRACTOR:		DATE: 1/9/97	
DESCRIPTION:		JOB NUMBER	SHEET 1 OF 6
			MIPVIN.DWG

LOT DETAILS		LOT SIZE IN ACRES		
PHASE	# OF LOTS	MIN.	AVG.	MAX.
PHASE 1	24	0.52	0.94	2.80
PHASE 2	13	0.50	0.81	1.46
TOTAL PROJECT	37	0.50	0.89	2.80



SCALE : 1"=100'
REDUCED

NOTES
CONTOUR INTERVAL:
MAJOR CONTOURS 10'
MINOR CONTOURS 2'

EXISTING EASEMENTS

A RIGHT OF WAY FOR DITCHES AND CANALS CONSTRUCTED BY AUTHORITY OF THE UNITED STATES (USP 148/284).

THE RIGHT OF ITSELF, ITS PERMITTEES OR LICENSEES TO ENTER UPON, OCCUPY AND USE, ANY PART OR ALL OF THAT PORTION OF LAND LYING WITHIN 80 FEET OF THE CENTERLINE OF THE TRANSMISSION RIGHT OF WAY OF THE NEVADA-CALIFORNIA ELECTRIC CORPORATION, POWER PROJECT NO. 1388.

RIGHT OF WAY SELECTED MARCH 7, 1914 SERIAL R-2327, BY THE PACIFIC POWER COMPANY FOR TRANSMISSION LINE INTERSECTING THE NE 1/4 OF THE SE 1/4 OF SECTION 3 WHICH WAS APPROVED JANUARY 7, 1918 UNDER THE ACT OF FEBRUARY 15, 1901.

PHASE II (SEE SHEET 4)

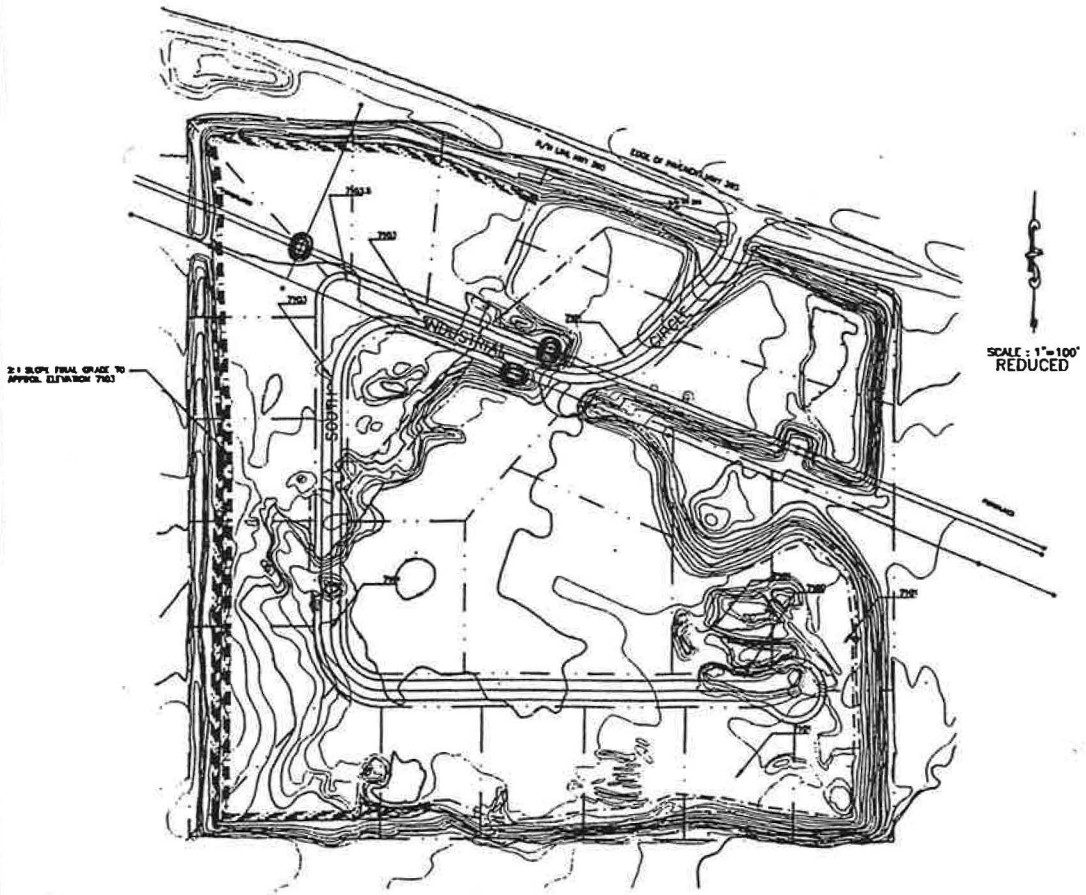
PHASE I (SEE SHEET 3)

PROJECT PHASING

REV	DESCRIPTION	BY	DATE
FOR APPROVAL	TO SHOP	TO FIELD	
R & R APPROVAL		AS BUILT	

BEAR Engineering
Civil Engineering & Surveying
(780) 932-7077
P.O. Box 657
46 Sinclair St., Ste. 3
Bridgeport, CA 93517

JOB NAME:	MORGAN IND. PARK	DRAWN BY wgm	CHECKED BY
LOCATION:	PORTION OF SECTION 3 T4S, R28E, MDB&M APN# 37-130-04	SCALE: 1"=100'	
CONTRACTOR		DATE: 3/19/99	
DESCRIPTION		JOB NUMBER	SHEET 2 OF 6
			MIPPROJ2.DWG



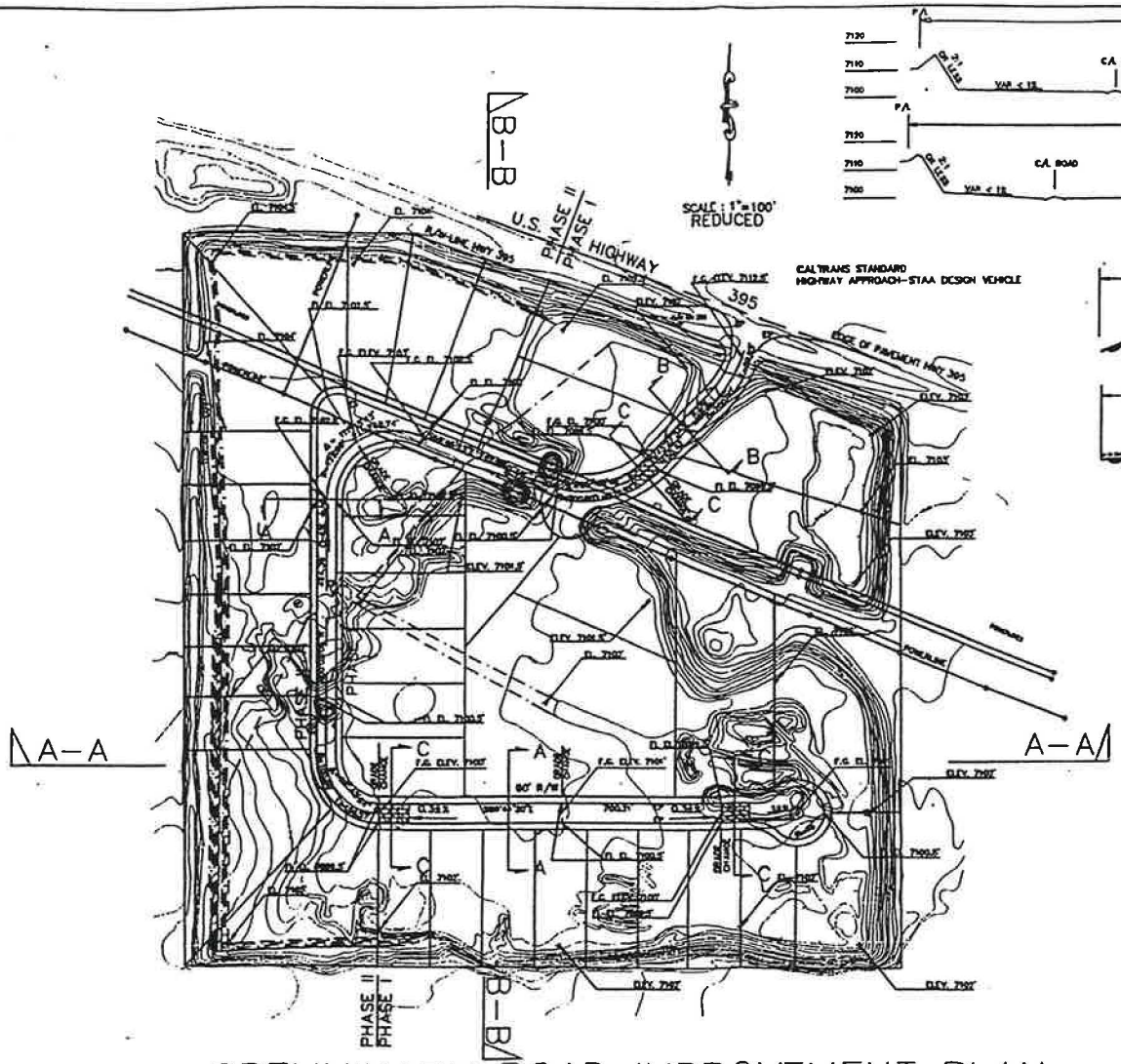
PROPOSED FINAL GRADING PLAN

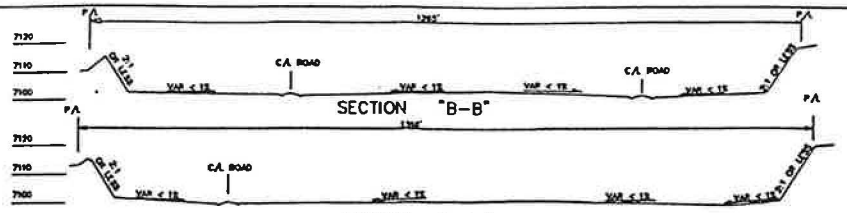
REV.	DESCRIPTION	BY	DATE
FOR APPROVAL:	TO SHOP:	TO FIELD:	
R & R APPROVAL:		AS BUILT:	

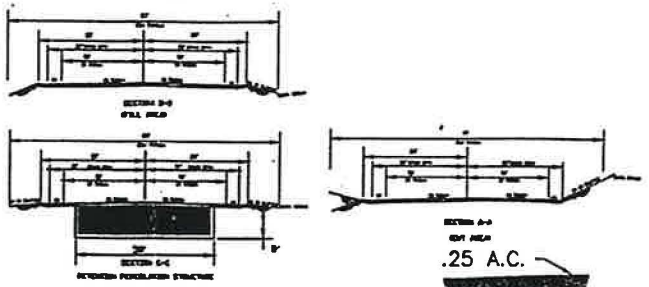
BEAR Engineering
Civil Engineering & Surveying

(760) 932-7077
P.O. Box 857
46 Sinclair St., Ste. 3
Bridgeport, CA 93517

JOB NAME: MORGAN IND. PARK		DRAWN BY: wgm	CHECKED BY:
LOCATION: PORTION OF SECTION 3 T4S, R28E, MDB&M APN# 37-130-04		SCALE: 1"=100'	
CONTRACTOR:		DATE: 3/19/99	
DESCRIPTION:		JOB NUMBER	SHEET 6 OF 6
			MIPFGP2.DWG







TYPICAL ROAD CROSS SECTIONS

ROAD SECTION SHALL BE CLASS AC MIN AND 4" OF CL-2 AGGREGATE BASE AS NECESSARY TO ACCOMMODATE A T.I. OF 6.5 MIN.

ALTERNATE PAVED DITCH SECTION PER MONO COUNTY ROADSIDE DRAINAGE ALTERNATIVES PLATE NO. 13

DETAIL A
TYPICAL ALL SECTIONS

NOTES:

1. PROPOSED RETENTION PERCOLATION STRUCTURES (OIL AND GREASE PRETREATMENT) SHALL BE DESIGNED TO MEET THE 20 YEAR, 1" OR 1 HOUR STORM EVENT AS REQUIRED BY THE CRWQCB.
2. EXPOSED SOIL SURFACES WILL BE STABILIZED AND REVEGETATED IN ACCORDANCE WITH THE RECLAMATION REVEGETATION PLAN.
3. CONTOUR INTERVALS
   MAJOR CONTOURS: 10'
   MINOR CONTOURS: 2'
   PROPOSED FINISH CONTOUR ———
4. A FIFTEEN (15) FOOT SIDE SNOW STORAGE EASEMENT WILL BE PROVIDED ON ALL LOTS ALONG THE ROADWAY RIGHT OF WAY LINE.
5. ALL SLOPES SHALL BE ≥1 OR FLATTER. MAXIMUM HEIGHT OF SLOPES SHALL BE TWENTY (20) FEET.
6. THE RECLAMATION PLAN WHICH IS INCLUDED IN THE APPLICATION PACKAGE WITH THIS PLAN PROVIDES FOR EROSION PROTECTION SLOPE STABILITY.
7. QUANTITIES
   EXCAVATION: 150,000 C.Y.
   FILL: 150,000 C.Y.
8. RETENTION PERCOLATION STRUCTURE:

PRELIMINARY ROAD IMPROVEMENT PLAN
PRELIMINARY GRADING PLAN

BY	DESCRIPTION	BY	DATE
A	ADD MISC SECTIONS, NOTES, F.G. ELEVATIONS & CONTOURS	BEAR	8/9/99
FOR APPROVAL	TO SHOP	TO FIELD	
R & R APPROVAL		AS BUILT	

BEAR Engineering
Civil Engineering & Surveying
(760) 932-7077
P.O. Box 657
46 Sinclair St., Ste. 3
Bridgeport, CA 93517

JOB NAME	MORGAN IND. PARK	DRAWN BY wgm	CHECKED BY
LOCATION	PORTION OF SECTION 3 T4S, R28E, MDB&M APN# 37-130-04	SCALE 1"=100'	
CONTRACTOR		DATE 3/19/99	
JOB NUMBER		SHEET 5 OF 6	
			M1PROAD2.DWG

APPENDIX B

WRITTEN COMMENTS ON THE INITIAL STUDY AND NOTICE OF PREPARATION

California Regional Water Quality Control Board
Lahontan Region

Winston H. Hickox
Secretary for Environmental Protection

Internet Address: http://www.mscomm.com/~rwqcb6
2501 Lake Tahoe Boulevard, South Lake Tahoe, California 96150
Phone (530) 542-5400 • FAX (530) 544-2271

Gray Davis
Governor

June 24, 1999

RECEIVED
JUN 28 1999
MONO COUNTY PLANNING DEPT.
SOUTH COUNTY

Gerry LeFrancois
Mono County Planning Department
P.O. Box 347
Mammoth Lakes, CA 93546

Dear Mr. LeFrancois:

MORGAN INDUSTRIAL PARK PROJECT, COMMENTS ON NOTICE OF PREPARATION FOR ENVIRONMENTAL IMPACT REPORT, SCH# 97032100, MONO COUNTY

Staff of the California Regional Water Quality Control Board, Lahontan Region (RWQCB) have reviewed the Notice of Preparation for the above-referenced environmental impact report (EIR). The Morgan Industrial Park is proposed on a 35.9-acre parcel (APN 37-130-04) located on the west side of U.S. 395 approximately three miles south of the Mammoth Lakes turnoff (Hwy. 203). The proposal includes subdividing the property into approximately 37 lots (1/2 to 2 acres each) to be used for "industrial type" purposes. The proposal also includes development of a community water system, individual septic systems, drainage, utility, and roadway improvements.

State law assigns responsibility for protection of water quality within the Lahontan watershed basin to the RWQCB. The RWQCB implements and enforces the federal Clean Water Act, the Porter-Cologne Water Quality Control Act (California Water Code Section 13000 et seq.) and the *Water Quality Control Plan for the Lahontan Region* ("Basin Plan"). Activities that may be regulated as discharges by the RWQCB are not limited to the pumping or pouring of effluent through a pipe, ditch, or other point source. Deposits of material that may reach waters of the State via infiltration, erosion, and/or surface runoff are also covered. We submit these comments as a responsible agency under the California Environmental Quality Act (CEQA). Your EIR should adequately address the following issues:

1. The proposed construction and use of individual wastewater treatment systems ("septic systems") may adversely affect water quality. The direct, indirect, and cumulative effects of the proposed wastewater treatment systems must be thoroughly evaluated. Cumulative effects are a significant concern in this case because down-gradient water bodies (e.g., Crowley Reservoir) are listed under Section 303(d) of the federal Clean Water Act as impaired due to accelerated eutrophication. Because of the concerns regarding cumulative nutrient loads in this watershed, the EIR should carefully evaluate the potential for connecting this development to a community sewer system in lieu of using individual disposal systems.

2. The EIR should specify all information needed to evaluate the proposed wastewater system according to the Basin Plan's criteria for siting individual waste disposal systems (e.g., wastewater flows, occupancy rates, distances to surface and ground water, percolation rates, slope, presence/absence of impervious layers). It is important to note that the RWQCB will prohibit the discharge of wastes from land developments which will result in violation of water quality objectives, will impair present or future beneficial uses of water, or will cause pollution, nuisance, or contamination, or will unreasonably degrade the quality of any waters of the State. It is not adequate in this case to simply demonstrate compliance with the minimum siting criteria. Our determination regarding the proposed discharge from septic systems by this new development will be based largely on the EIR's response to concerns regarding cumulative effects stated in comment #1 above.

3. The EIR should specify the types of wastes to be generated and disposed of on site. Because the proposed use of the subdivided lots is "industrial type" use, wastes other than domestic wastes will likely be generated. The EIR should specify the types of wastes that may be generated (including, but not limited to, paints, solvents, metals, petroleum products, etc.) and discuss the fate of all such wastes. The project description should contain clear and enforceable mitigation measures regarding the fate of wastes that may pose a threat to water quality.

4. The EIR should contain, within the project description, a clear and enforceable plan for disposal of septic tank sludge, adequate for disposal of sludge at complete build-out of the development.

5. Significant impacts to water quality can result from failure to implement adequate measures to control storm drainage and erosion. The EIR should contain, within the project description, clear and enforceable plans and measures for the control of storm runoff, from initial construction up to the complete build-out of the proposed development. (See the Basin Plan's "Land Development" section for more information.) Please note that as the project site is greater than five acres in area, it will likely be subject to the provisions of the National Pollutant Discharge Elimination System (NPDES) General Storm Water Permit for Construction Activities. In addition, the site may be subject to the provisions of the NPDES General Storm Water Permit for Industrial Activities.

6. Significant impacts to water quality can result from the disposal of solid waste. The EIR should include a plan which conforms to the regional or county master plan and contains adequate provisions for solid waste disposal at complete build-out of the proposed development.

Please incorporate these comments into your EIR, and provide a copy to me at the letterhead address. We look forward to working with you as you plan your project to

protect water quality. Please call Diana Henrioulle-Henry at (530) 542-5437 if you have any questions regarding this letter.

Sincerely,

Ranjit S. Gill

Ranjit S. Gill, Ph.D.
Chief, Southern Watersheds Unit

cc: State Clearinghouse

DHH/sht:morgan.doc
[26/Morgan Industrial Park Project]

DEPARTMENT OF CONSERVATION
801 K Street, MS 24-02
Sacramento, CA 95814
(916) 445-8733 Phone
(916) 324-0948 Fax
(916) 324-2555 TDD

RECEIVED
JUN 28 1999
MONO COUNTY PLANNING DEPT.
SOUTH COUNTY

June 21, 1999

Mr. Gerry LeFrancois
Planning Department
Mono County
Post Office Box 347
Mammoth Lakes, CA 93546

Subject: Geology and Seismology Comments on the Notice of Preparation (NOP) for the Morgan Industrial Park Specific Plan Update

Dear Mr. LeFrancois:

The California Department of Conservation's Division of Mines and Geology (Division) has reviewed the geologic setting and hazards section of the NOP, referenced above. The Division is responsible for mapping, analyzing and distributing information to local government agencies and the general public on geologic hazards. A senior engineering geologist within the Division has prepared the following comments for your consideration.

The Draft Environmental Impact Report (DEIR) should include a full consideration of the site's geologic hazards. There are known active faults on three sides of this site. (Movement of these faults resulted in ground rupture in 1980.) The closest active fault is about one-half mile distant. The attached fault map was extracted from Alquist-Priolo fault maps that were previously sent to the County, and shows that the closest of these faults is located only about one-half mile distant. Therefore, we recommend that the Specific Plan consider the implications of the high potential for earthquake ground motion at this site with respect to the proposed project. Specifically, the projected ground motion for this site, underlain by soft alluvium, should be calculated by a consulting engineering geologist and included in the DEIR. Similarly, the potential for seismically induced liquefaction should be addressed in the DEIR.

Thank you for the opportunity to review and comment on the NOP. If you have questions on our comments please, or require technical assistance or information,

contact Division Senior Engineering Geologist Robert H. Sydnor at 916-323-4399. You may also e-mail him at *RSydnor@consrv.ca.gov*.

Sincerely,

Jason Marshall
Assistant Director

Enclosure

cc: Robert H. Sydnor, Senior Geologist
Division of Mines and Geology

DEPARTMENT OF TRANSPORTATION
500 SOUTH MAIN STREET
BISHOP, CALIFORNIA 93514
PHONE (760) 872-0690
FAX (760) 872-0678

RECEIVED
JUN 23 1999
MONO COUNTY PLANNING DEPT.
SOUTH COUNTY

June 20, 1999

Gerry Le Francois
Mono County Planning Department
P.O. Box 347
Mammoth Lakes , CA 93546

NOP Morgan Industrial Park Specific Plan

Thank you for the opportunity to review and comment on the Notice of Preparation for the Morgan Industrial Park Specific Plan. We have the following comments to offer at this time;

An encroachment permit will be required for any work with in the State highway right of way.

The plan shows some intersection widening. A minimum design will be the standard public road intersection as shown in the Highway Design Manual.

Traffic data should be provided to evaluate the potential need for turn lanes as well as acceleration /deceleration lanes.

If you have any questions, please contact me at (760) 872-0690 or e-mail me at tom_dayak@dot.ca.gov

Sincerely,

Thomas B. Dayak

THOMAS B. DAYAK
IGR/CEQA Reviews

TD/typist/M395-22.5

THE TOWN OF MAMMOTH LAKES CALIFORNIA

COMMUNITY DEVELOPMENT

P. O. Box 1609 Mammoth Lakes, CA 93546
(760) 934-8989 Ext. 225 Fax (760) 934-8608

June 22, 1999

RECEIVED
JUN 23 1999
MONO COUNTY PLANNING DEPT.
SOUTH COUNTY

Gerry LeFrancois
Mono County Planning Department
P. O. Box 347
Mammoth Lakes, CA 93546

Subject: Morgan Industrial Park

Dear Mr. LeFrancois,

Thank you for considering comments from the Town of Mammoth Lakes on the subject environmental review.

The Town of Mammoth Lakes completed a Supplemental EIR on the development at the Mammoth Airport two years ago. This environmental process identified environmental effects of that project and forms, in part, the basis for these comments.

Issues of concern include:

1. Water usage and possible impacts on other ground water users, especially, the Hot Creek Fish Hatchery springs.
2. Threatened and endangered species – At least one rare plant is found in the general vicinity and is known to colonize disturbed sites. A botanical study should be conducted.
3. Air quality – Fugitive dust could be a problem. Mitigation to assure that dust is controlled is needed.
4. Removal and disposal of 150,000 cu. yd. of gravel, dirt, and rock needs to be addressed.
5. Water Quality – The project is in a hole and discharges to surface waters seem virtually impossible. However, the project proposes using septic systems for sewage treatment and disposal and drywells for stormwater treatment and disposal. Because of the shallow depth of the water table and the proximity of the potable water well, the design and possible interaction of these two disposal systems needs to be evaluated in detail. The stormwater system should include oil and grease separators.
6. Traffic – The concern here is with the type(s) of vehicles using the property and possible conflicts with traffic on 395 and the Hot Creek Fish Hatchery Rd. A cumulative analysis is needed to look at current and projected traffic levels with the airport development at full build out.
7. Noise – The possible uses and their noise levels should be identified and evaluated.

8. Visual quality – This is the most serious concern of the Town. The Development at the airport was determined to have a significant impact that could not be mitigated to a level of insignificance. Overriding considerations were required. The visual impacts of the project will be in addition to those of the airport and appear to be cumulatively significant. This needs to be evaluated.

   The graphics presented at the meeting were most valuable and showed clearly a strategy which could reduce the visual impact of the project. There were some issues which were not clearly shown, however. As you approach the park from the west, the road is elevated relative to the berm allowing travelers to see into the floor of the pit. Immediately adjacent to the project, the roadway is elevated above the natural grade. This reduces the effectiveness of the berm as a screening device. Cross sections need to include surveyed elevations for the road and the berm. Plans should also include approximate finished grades after the 150,000 cu. yd. of dirt has been removed. All visual simulations should be based upon this information.

Thank you again for the opportunity to comment. We look forward to reviewing the Draft EIR when it is circulated.

Sincerely,

Bill Taylor

William T. Taylor
Senior Planner

SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL™ Company

County of Mono
Planning Department
P.O. Box 347
Mammoth Lakes, CA 93546

June 22, 1999

Attention: Gerry LeFrancois, Senior Planner

Subject: Morgan Industrial Park/Tent. Tr. 36-159
Across From Mammoth Lakes Airport

Our review of the subject subdivision map reveals that the proposed development will interfere with easement rights held by Southern California Edison within the subdivision boundaries.

Until such time as arrangements have been made with the developer to eliminate this interference, the development of the subdivision will unreasonably interfere with the complete and free exercise of Edison's rights and facilities.

If you have any questions or require additional information in connection with the subject subdivision, please call me at (760) 951-3270.

Dale L. Reed
Right of Way Agent

RECEIVED
JUN 2[illegible]
MONO COUNTY [illegible]
SOUTH COUNTY [illegible]

RECEIVED
JUN 23 1999
MONO COUNTY PLANNING DEPT.
SOUTH COUNTY

cc: Lisa Salinas-SCE
R. Ziegler

12353 Hesperia Road
Victorville, CA 92392

Preserving the Eastern Sierra Tradition of Environmental Responsibility
Working to preserve the spectacular natural beauty of the Eastern Sierra Nevada
and to keep HWY 395 in Mono County a scenic corridor now and in the future

Post Office Box 2428
Mammoth Lakes, CA 93546
PHONE: 924-8475 / FAX: 924-8475 / E-MAIL:

ADVISORY BOARD: Phyllis Benham Janet Carle John Dittli COORDINATOR: ElizabethTenney
Claude Fiddler Gregory Reis Gail Lonne

RECEIVED
JUN 25 1999
MONO COUNTY PLANNING DEPT.
SOUTH COUNTY

June 24, 1999

Gerry LeFrancois, Senior Planner
Mono County Planning Department
P.O. Box 347
Mammoth Lakes, CA 93546

Dear Mr. LeFrancois:

This letter replaces our letter of June 9, 1999 commenting on the "Morgan Industrial Park Specific Plan / EIR". Information presented regarding Mr. Morgan's proposal at the June 11, 1999 Draft EIR Scoping Meeting caused significant changes in our position, thus, a new letter.

The following comments represent the collective concerns of the 230 active members of Preserving the Eastern Sierra Tradition of Environmental Responsibility. P.E.S.T.E.R. is a local organization whose members are dedicated to preserving the 395 Scenic Corridor. We believe it is Mono County's obligation to future generations as well as in the County's long-term economic interest to preserve the scenic values of this corridor. Any development that detracts from the spectacular unspoiled viewsheds of the Eastern Sierra should be discouraged. We consider an industrial park an example of such an inappropriate development. While we are not opposed to industrial parks, a necessity of modern life, we think a better location should be found for this project. For Mono County to amend its General Plan to permit an industrial park on the Marzano gravel pit site is a very distant third choice, and then only with major substantial mitigation.

To preserve the 395 scenic corridor we see only three acceptable alternatives:

1) Find a buyer for Mr. Morgan's property, either a private entity or Mono County using grant money, and turn the property into wetlands/open space.
2) Negotiate an expeditious land exchange with the Forest Service or DWP for a more suitable parcel so that Mr. Morgan's property can then revert to open space.
3) Mitigate the visual impact of the proposed project to the point of near-invisibility.

BUYING THE PROPERTY

With the threat to the 395 Scenic Corridor publicized, a private entity might come forward and offer to buy out Mr. Morgan, or if the County were to acquire the parcel with grant funding, it could be reclaimed to make an ideal natural park. Such a park could also provide more wetlands. We understand Laurel Pond, used for

reclaimed water from Mammoth's sewage treatment plant, is leaking. If that treated water were diverted to the existing gravel pit (after sealing the bottom) and the area landscaped, it would be a wonderful park for area residents and welcome picnic stop for travellers as well as provide much-needed wetlands mitigation in Mono County. The Trust for Public Land (415-495-5660), American Land Conservancy (Minden office, 775-782-6608), the Land Trust Alliance in Washington, D.C. (, or The Nature Conservancy in Arlington, VA (may all be sources of funding

The Trust for Public Land's Environmental Enhancement Mitigation Grants through Caltrans, which are used to preserve scenic viewsheds, have amounted to $500,000 per grant recently, according to Richard Kizer, Caltrans Landscape Architect--Bishop Office. If the County wants to pursue this option, it would have to move quickly, because the deadline for the current grant cycle falls in July. If an EEMG application is approved, we understand funding disbursement occurs one year after application.

LAND EXCHANGE

We of P.E.S.T.E.R. think it's not too late to vigorously pursue a land exchange. If all of us who have a stake in preserving the scenic gateway to Mammoth were to meet with Inyo National Forest Supervisor Jeff Bailey and strongly urge him to consider an expeditious land exchange, a proposal consistent with one of the current objectives of the Forest Service (preserving open space), we might be able to come up with an acceptable alternative location for an industrial park. Since the June 11, 1999 EIR scoping meeting P.E.S.T.E.R. has been working hard to facilitate such a meeting.

Our mission statement explains why we have taken the initiative in attempting to resolve this problem. However, preserving the 395 Scenic Corridor and thus the Eastern Sierra's spectacular natural beauty is also the key to Mammoth and Mono County's long-term economic prosperity.

VISUAL IMPACT: THE IMPORTANCE OF MITIGATING THE PROPOSED PROJECT TO THE POINT OF NEAR-INVISIBILITY

Scenic Highway Status

The Marzano gravel pit and batch plant is in the foreground of one of the most spectacular views in the Eastern Sierra: the panoramic vista of Mammoth Mountain and the Minarets, the gateway to Mammoth Lakes. It is also located on the only stretch of HWY 395 designated in 1971 as "Official State Scenic Highway". The Board of Supervisors has applied for official state scenic highway status for most of the rest of 395 in Mono County, and that application is currently being processed. HWY 395 is also an identified CURES "Scenic Byway" in Mono County. An industrial park is not consistent with these designations and could jeopardize them.

Loss of Federal Highway Funding

Mono County might stand to lose Federal highway funding if an industrial park were to intrude in the 395 Scenic Corridor. In 1998 Congress passed TEA 21, a transportation bill, that replaces ISTEA money and adds more funds, we have learned from Richard Kizer of Caltrans. There are special funds designated in this bill to be used only on official scenic highways. The section of U. S. 395 from Milepost 18 at Long Valley Resort to 1.1 miles north of HWY 203 at Milepost 26.9 was designated an Official State Scenic Highway on November 9, 1971. This designation is renewed every five years and is

current. Development along an Official State Scenic Highway is permitted so long as it doesn't conflict with scenic values. Caltrans conducts reviews in the field every two years to certify designated sections still meet Scenic Highway requirements. If inappropriate development or development not adequately mitigated were to occur, the designated section would be removed from official scenic highway status, thereby jeopardizing the earmarked TEA 21 funding.

Economic Impact of Degradation of the Scenic Corridor

Scenic Highways and Byways are so indicated on maps and tourist literature. If those designations are removed because of intrusive and inappropriate development, Mono County could anticipate a significant loss of revenue from potential tourists not already familiar with the area.

Measuring Economic Impact

Except for the affluent segment of our visitor base who will be able to afford airfare, it takes considerable effort to reach Mono County and Mammoth Lakes. Why will visitors make the effort to come if the spectacular natural beauty they now enjoy is gone? In our travels, we have found no recreation area with the uniquely unspoiled vistas we enjoy in Mono County. What will happen to Mono County's competitive advantage if those vistas are destroyed one by one? Other recreation areas with which we in Mono County are competing for the visitor's dollar (for example, Squaw Valley at Tahoe, Breckenridge and Steamboat Springs in Colorado, Park City and Deer Valley in Utah and even Whistler in British Columbia) don't welcome their visitors with industrial facilities.

It would be highly instructive to survey a cross-section of similar recreation areas with respect to their population base within a radius of 300 miles and annual TOT for the last five years, then compare that to the "tone" conveyed by the gateway/entrance to each community in the survey.

SCOPE OF THE DRAFT EIR FOR THE MORGAN INDUSTRIAL PARK

I. AESTHETICS

In our experience, industrial parks, other than high-tech ones in Silicon Valley, are by their very nature cluttered and messy. Office, shop and warehouse buildings, numerous vehicles, large and noisy heavy equipment, concrete trucks, stockpiled inventory, piles of lumber and other materials, hoppers, dumpsters, freight trucks making deliveries, etc. are all an essential part of what it takes to support the construction business. While an industrial park is a necessary part of growth and development, such a facility doesn't belong at the gateway to Mammoth Lakes or Mono County, whose economies rely almost exclusively on tourist-based income, any more than an also-necessary-but-not-attractive sanitary landfill facility or sewage treatment plant does. The spectacular scenery of Mammoth Lakes and its surroundings is a non-renewable resource. If we allow that resource, by permitting inappropriate development, to be destroyed, it's gone forever.

If, because no other solution can be worked out, this industrial park goes forward, we believe it is essential its visual impact be mitigated to such an extent that it is nearly invisible from Highway 395 as well as hiking trails in the John Muir Wilderness and ski runs on Mammoth Mountain. It should not intrude in the Scenic Corridor.

Buildings in the park should not be visible from the highway. At the June 11 scoping meeting Consultant Jane Escoto said the planned park would only be visible for 39 seconds from the highway going in one direction and 37 seconds in the other. That's nearly ¾ of a mile at 65mph and is an unacceptable detraction from the Scenic Corridor. We have re-studied the site and question the assumptions in her elevation illustrations of how much of the park would be visible from the highway. The pavement is about three feet above the grade to which, we understand, she was referring in her illustrations. On one section coming from the west on 395, it is possible to see over the existing berm to the bottom of the pit.

Rather than try to conjecture what the proposed industrial park may look like from blueprints and elevations, we of P.E.S.T.E.R. would like the County to avail itself of the computer technology expertise companies such as EDAW in Sacramento have to produce visual simulations of various project alternatives. These simulations, against the backdrop of the Sierra Nevada, would give a far more accurate assessment of the visual impact of completed project alternatives on the Scenic Corridor and the viewshed than blueprints and artist's renderings.

Structures and Equipment

Surrounding the park with a contoured landscaped berm is not enough. We would suggest the buildings be situated, if feasible with the water table, completely below grade. (See "WATER QUALITY" for comments on the multiple septic tanks proposal.) They should be low-profile and of an attractive unified design, not the typical metal storage units/mini-warehouse construction. They should be constructed of non-reflective materials and painted in natural colors that blend in with the surroundings. Roofing materials should be non-reflective and blend in with surroundings. Signs should be small and of consistent design and placement. There should be no signs except for a Caltrans sign on 395 pointing to the park. The sign/directory listing the businesses in the park should be at the entrance but inside the berm. All equipment including heavy trucks and construction vehicles and materials should be enclosed in buildings or thoroughly screened.

Berm

The berm around the park, unlike the ramped earth mound that exists currently on the perimeter, should be undulating, multiple level and contoured so that it has a natural appearance for passers-by on the highway. Consultant Escoto said that "when you stand on the shoulder of the road, you can see the contours." We believe that misses the point. If a natural contoured appearance is not perceived by passing motorists, then it's not "contoured".

The berm should be high enough to completely screen the park. It should be landscaped with large boulders, tall native trees such as Jeffrey pine as accents, red-twig (Redosier) dogwood, Artemesia, willow, abundant wildflowers, and bunch grasses such as fescues. The landscaping should be attractive on its own and not simply a "green screen" of plants that are non-native to Long Valley such as Arizona cypress or pinon pine. The landscaping should be in randomly placed groves at different levels on the berm to draw attention away from the geometric space the berm is screening. An electric fence should be run at the base of the berm to keep livestock and deer off.

Light pollution

A significant viewshed in the Eastern Sierra often overlooked is the spectacular night-time sky. P.E.S.T.E.R. regrets that sources of light pollution are steadily increasing in Mono County preventing amateur stargazers and visitors from appreciating the awesome celestial vistas above the Sierra peaks. The diffuse and non-down-directed lights at Mammoth Lakes Industrial Park and Mammoth Lakes Airport are turning our night-time Sierra skies into Riverside North.

Security lighting, which this project would require, does not have to preclude being able to see the stars. Anyone who has driven past the Lancaster Auto Mall after dark has noted that the light from halogen down-directed lights reflecting off the shiny cars is bright to the point of glare, yet the stars above are visible (at least in that immediate area--other businesses in Lancaster are not so enlightened).The lighting for this project should be down-directed, no higher than 10 feet off the ground (otherwise the down-directed requirement is defeated) and the very minimum required.

III AIR QUALITY

Air pollution

The dust and exhaust emissions from equipment operation and vehicles at the project site and increased traffic will substantially degrade our clean air in the Eastern Sierra. The proposed project's impact on air quality should be assessed.

IV. BIOLOGICAL RESOURCES

Wildlife disturbance

Deer migration, nesting sites and small mammals may be adversely affected by the noise, light, human and equipment activity this project will generate. The potential impact on wildlife needs to be studied

V. GEOLOGY AND SOILS

The project's location is a very seismically active area that poses many soil contamination hazards because of the storage and transportation of industrial chemicals and fuel. This impact needs to be assessed.

VII HAZARDS AND HAZARDOUS MATERIALS

The project's location is a very seismically active area that poses many contamination hazards because of the storage and transportation of industrial chemicals, fuel and other hazardous materials This impact needs to be assessed.

Its proximity to the airport may present a safety hazard because of the stored chemicals..

VIII. HYDROLOGY AND WATER QUALITY

We question that the construction of 37 separate septic tanks and leach fields will not have a negative impact on groundwater quality with the water table at 20 feet, particularly in such a seismically active area.

Also, because of the necessity for mitigating the visual impact in the scenic corridor by situating the buildings as low as possible as well as increasing the height of the berm, further excavation of the existing pit would be necessary. Leach field depth

requirements should not be the overriding consideration here in deciding how low the grade for construction should be to offset visual impact

A better solution for preserving water quality, in our view, is to link all units to the Mammoth Lakes Wastewater Treatment facility.

IX. LAND USE AND PLANNING

We are troubled by apparent cross-purposes in that this parcel, while zoned "industrial", is only designated for "mining--resource extraction" and that it will take an amendment to the County General Plan to permit an industrial park use instead. At the same time this site is within the General Plan's recognized "Scenic Corridor" and along side an "Official State Scenic Highway" segment. Prior to the second submission of the industrial park proposal the Board of Supervisors applied for "Official State Scenic Highway" status for most of U.S.395 in Mono County. These are major inconsistencies, that should be examined closely. Prior recognition of the "Scenic Corridor" and "Official State Scenic Highway" status since 1971 should hold sway in our opinion.

X. NOISE

The potential impact of the noise this facility would generate on wildlife and John Muir Wilderness users should be assessed.

XIII. PUBLIC SERVICES

Fire Protection Impact

The impact on the manpower needs and water requirements of the volunteer fire department of Mammoth Lakes for this somewhat distant facility using multiple types of hazardous equipment and chemicals should be assessed.

XIV. TRANSPORTATION/TRAFFIC

Safety concerns

The traffic safety hazard of heavy-laden trucks pulling slowly across the southbound lanes to reach the center divider in order to turn north for Mammoth Lakes is considerable especially under winter conditions of ice, fog and blowing snow. Trucks slowing to make the turn into the proposed project also present a hazard. Since HWY 395 is a controlled access highway in that section, we question whether requiring additional turning lane distance would be adequate for the traffic this facility would generate. An interchange with on and off ramps may be required to insure safe travel. This should be assessed.

XVI. UTILITIES AND SERVICE SYSTEMS

The water use, sewage treatment plant use and solid waste/hazardous waste disposal requirements this project would entail need to be assessed.

XVII. MANDATORY FINDINGS OF SIGNIFICANCE

"Cumulatively Considerable" Impact

We believe this project proposal, because of the precedent it would set for inappropriate development in the HWY 395 Scenic Corridor, may cause considerable cumulative impact.

"Cumulatively Considerable" Impact (cont.)

The Town of Mammoth Lakes is undergoing a massive influx of development projects that have driven property values beyond the reach of working families. A large resort development has already been approved at the Airport. We predict there will be increasing pressure to expand urban boundaries to accommodate the perceived needs of a growing community rather than utilizing wise and creative planning for how to meet those needs within the current boundaries. If inappropriate development were already in existence or approved within the 395 Scenic Corridor, it would open the door to the negotiation of land trades with the Forest Service and DWP for further development that would sprawl all the way to the Airport and Crowley Lake.

We appreciate your consideration of our concerns. On behalf of Preserving the Eastern Sierra Tradition of Environmental Responsibility, I remain

Very truly yours,

Elizabeth Tenney

Elizabeth Tenney

copy

RECEIVED
JUN 17 1999
MONO COUNTY PLANNING DEPT
SOUTH COUNTY

Scott Burns, Planning Director
P. O. Box 347
Mammoth Lakes, CA. 93546

Route 1, Box 88
Crowley Lake, CA. 93546
June 14, 1999

Dear Scott:

I am writing in reference to the Marzano and Sons proposed industrial park across from the Mammoth Lakes Airport. I like most other residents of southern Mono County am opposed to the development at this site. Because of the properties location within the viewshed of escarpment of the eastern Sierra's all efforts should be made to aid Mr. Morgan in either finding an alternative site for his proposed industrial park, or in acquiring the property outright by Mono County and/or the U. S. Forest Service.

I read where Mr. Morgan does not care to wait for five to seven years for a land trade to be completed with the Forest Service. This is understandable. However, the Forest Service could "fast track" a land exchange in less than two years if enough political pressure were brought to bear. It may involve Mr. Morgan paying for the cost of appraisals and environmental assessments exams for the properties being traded. However, it is possible. I have seen it done.

An alternative solution would be to approach Harriet Burgess of the Land Trust Alliance, as well as the Trust for Public Land. These organizations could work out an acquisition of the 35.9 acres almost overnight. At that point they could complete the exchange with the Forest Service, and at a later date sale the property they acquired from the Forest Service to Marzano & Sons. Marzano and Sons would have been compensated, so that the pressure would be off to immediately build another industrial park.

The Caltrans gravel pit on National Forest land just east of the airport along Highway 395, or the gravel pit behind and just north of the airport would either be better locations for an industrial park. However, the second gravel extraction site might be too close to the water table to be considered.

Another possible way to raise acquisition money might be to approach the State. Caltrans has money set aside to purchase scenic viewsheds. It is almost certain that the 35.9 acres would qualify. There are other organizations that acquire private lands to foreclose development on critical properties. In is unlikely though that the 35.9 acres would meet the purchase guidelines of an organization such as the Nature Conservancy, since their primary focus seems to be the protection of endangered plant and animal species. However, each organization should be contacted for their thoughts on how best to protect the viewshed.

Aside from my thoughts on how to acquire the 35.9 acres, the site has some other serious drawbacks that should preclude development. For instance, the tract is an old gravel pit, whereby the surface level lies very close to the water table. Industrial spills of any sort, including diesel fuel, or gasoline would quickly leach into the ground water.

Secondly, unless an overpass is built to accommodate the traffic a new industrial park would generate traffic accidents and become a regular feature of the site. Caltrans overview of what is needed to accommodate persons traveling Highway 395 should be elicited.

Because of the strong winds that are a common occurrence across this flat, ample measures should be taken to reduce air pollution from the businesses that would locate here. However, probably more importantly is the problem caused by dust and larger particulates that would be generated from winds that have been clocked at over 100 mph at the airport. These strong winds are frequent here, and should be considered a major pollution factor.

The damage to the viewshed has already been mentioned. The Highway 395 traveler will get one aspect of the damage, while the travelers to the John Muir Wilderness, who are looking for and expecting natural vistas, are another consideration. Light pollution should also be addressed.

The cumulative affect of Mr. Morgan's proposal, along with other projects planned or under way along the east side are rapidly changing the rural quality of life and the unparalleled beauty of the eastern Sierra's. The reasons for visiting Mono County are rapidly being lost.

Thank you for your consideration of my comments.

Sincerely,

Randy Witters

Randy Witters

RECEIVED
JUN 25 1999
MONO COUNTY PLANNING DEPT.
SOUTH COUNTY

Mono County Planning Department
Re: Morgan Industrial Park
Attn. Gerry Le Francois

June 25, 1999

Dear Mr. Le Francois,

I am writing in reference to the Morgan Industrial Park Specific Plan/EIR being prepared by your office. As an officer of the Bristlecone Chapter of the California Native Plant Society, I am concerned about the potential use of non-native plants for mitigation and landscaping. Because the proposed location of this Industrial Park is surrounded by relatively undisturbed vegetation, I am concerned about the possibility of invasive weeds escaping the site. Also, native plants that are used should be propagated from local sources so that the local genetic pool of native plants is not contaminated.

For both aesthetic and biological reasons, I urge you to require the use of local native plant material in all landscaping plans. Seeds and cuttings should be collected from the surrounding areas and grown out in a nursery before planting on site.

Thank you for your attention to the use of local native plants in this project and others.

Sincerely,

Karen Ferrell-Ingram

Karen Ferrell-Ingram
140 Willow Road
Swall Meadows, CA 93514

RECEIVED
JUN 25 1999
MONO COUNTY PLANNING DEPT.
SOUTH COUNTY

P.O. Box 906
Mammoth Lakes, CA 93546

Gerry LeFrancois
Mono County Planning
P.O. Box 3329
Mammoth Lakes, CA 93546

June 25, 1999

Dear Mr. LeFrancois:

I am writing in opposition to the proposed Morgan Industrial Park or any further industrial development along U.S. 395 northwest of the Mammoth Lakes airport. Expanded industrialization of an area near the entrance to Mammoth Lakes works at cross purposes with the area's best tourist draw – its unique scenic beauty.

Sincerely,

C.D. Ritter

c: Elizabeth Tenney

6/25/99

FAX:-(760)-924-5458

TO: MONO Co. PLANNING DEPT.

ATTN: MR. GERRY LeFRANCOIS

RECEIVED
JUN 25 1999
MONO COUNTY PLANNING DEPT.
SOUTH COUNTY

Re:- MORGAN INDUSTRIAL PARK SPECIFIC PLAN/EIR

FROM: JOHN F. PETERSON (future resident Lapendell, & current landowner in Lapendell & also Mono County. Also a Sierra Club member, hiker, bird watcher, climber, skier in the Sierras for close to 40 yrs now!)
192 C. 22ND ST.
COSTA MESA, CALIF.
92627

COMMENTS:

1.) Regardless of whether or not Mr. Morgan would be required to "submerge" or bury his development, there will still remain, I assume, a visual impact from above, i.e., from gliders, balloons, hang gliders, & from the mountainous terrain surrounding the sight! Also, the increased traffic to & fro from Benton & elsewhere constitutes, in addition to the other negative factors, A FORM OF USUAL IMPACT ITSELF!

2.) Once any form of development is allowed along 395 in the EASTERN SIERRAS, IT will ultimately, and inevitably lead to further such blight on the landscape! i.e. More people, more human activity, more vehicles & their unavoidable pollution!

3.) I will be anxious to read the EIR & related publications! & say lets keep his mantra- WHAT DOES HE WANT IN $'S FOR THIS LAND?!

SMono

From: JANWORK1@aol.com
To: somono@qnet.com
Subject: Industrial park comment- Gerry LeFrancois
Date: Thursday, June 24, 1999 8:52 PM

Dear Gerry, Mono Co Palnning Dept. Just another comment on the proposed 395 industrial park. Please do everything in the power of the county to minimize the impact of an additional industrial park. It should be invisible from th highway but you will never be able to shield it from the air. A relocation to the geothermal site would be great but who can afford it??
Robert Atlee
Swall Meadows, CA

Bryce & Wilma Wheeler
PO Box 3802
Mammoth Lakes, CA 93546
(760) 934-3764

RECEIVED
JUN 24 1999
MONO COUNTY PLANNING DEPT.
SOUTH COUNTY

June 24, 1999

Gerry LeFrancois, Senior Planner
Mono County Planning Department
PO Box 347
Mammoth Lakes, CA 93546

Re: Morgan Industrial Park Specific Plan/EIR

Dear Mr. LeFrancois:

We are concerned about this proposed development along the Scenic Corridor of Highway 395. We think that such development could set a precedent for more inappropriate development along the scenic corridor. There are few, if any, other highways in the state that one can drive and enjoy such spectacular scenery. We must not develop away our unique environment.

Of course, economics always part an important part. We think it will not be economically beneficial to the citizens of Mono County to have this industrial park on this proposed site since tourist dollars are the main source of income here. Our greatest asset here is our spectacular scenery and healthy natural environment. Development on this site would be a minus, not a plus.

From the planning prospective and to avoid sprawl, it is best to have new development alongside other development rather than put it in an undeveloped area. We ask the sprawl potential be considered. Keep development in concentrated areas leaving most of the county undeveloped. The proposed site of the Morgan industrial park is undeveloped. It is in the viewshed of the beautiful Sierra Nevada and the White Mountains. It is visible from Highway 395 and to incoming aircraft.

Night time lighting at this site should be addressed. If not carefully planned and executed, such lighting could be a substantial new source of light and/or glare affecting the views from Highway 395 and more importantly from other areas in and outside of town. Such lighting could possible affect day and night views. Since this potential site is not currently

zoned "industrial," a change in zoning would have to occur. This proposed development has a "potentially significant impact" affecting aesthetics and land-use and planning.

A big concern with the proposed site that was not mentioned at the scoping hearing is the safety and health of the tenants and workers at this site. The industrial lots on the site which will be sold to individuals and businesses are located below the ground level of the surrounding land. Essentially, the lots are in a hole or pit. The potential for an explosion or a fire from a spark or electrical ignition of heavy gases such as propane and gasoline, which settle at lowest levels, is a continuous hazard. For example, after many incidents of explosion and/or fires caused by water heaters, it has been made mandatory that such water heaters located in a garage be placed at least 18 inches above the floor of the garage to prevent or to reduce hazards caused by ignition of volatile gases or substances. We do not know just which hazardous materials might be at this site. However, the proposed development could have a "potentially significant impact" with respect to hazards and hazardous materials.

In addition, in this industrial park with motor vehicles and much other industrial equipment in use, the air pollution which the occupants would be exposed to would certainly be a health hazard. The pollutants would be concentrated in a low level. Adequate ventilation to disperse pollutants would be a problem. The vehicle exhaust from Highway 395 could pose another source of pollutants. Both carbon dioxide and radon from natural sources can displace oxygen and create hazards for the occupants of sites below ground-level. This development could have a "potentially significant impact" on air quality at this site.

We believe that the development of an industrial park at the proposed site could have many "potentially significant impacts" and request that these be considered and, if at all possible, another site with less impact be selected.

Sincerely,

Bryce Wheeler

Wilma Wheeler

RECEIVED
JUN 25 1999
MONO COUNTY PLANNING DEPT.
SOUTH COUNTY

Brian Knox
P.O. Box 8751
Mammoth, CA 93546
760.935.4298

May 21, 1999

Gerry LeFrancois, Senior Planner
Mono County Planning Department
P.O. Box 347
Mammoth Lakes, CA 93546

RE: Morgan Industrial Park Specific Plan/ EIR

Dear Mr. LeFrancios:

I appreciate the opportunity to have my comments recorded, regarding the proposed development to the west of Hwy. 395, just south of the Convict Lake Road.

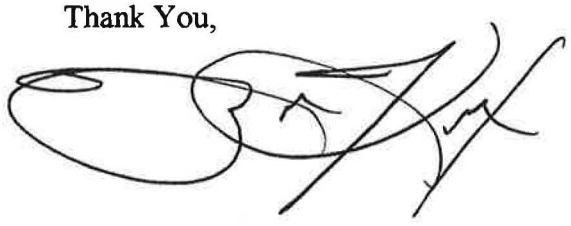
As I stated at the June 11, 1999 Scoping meeting, I echo the sentiments expressed by PESTER in their entirety. Very evidently, the light, air and water pollution, wildlife disturbance, traffic safety concerns, and visual impacts alone are enough to warrant serious review of the proposal, and real -not superficial- mitigation. I believe that the most appropriate solution is a concerted effort by the developer and the Forest Service to facilitate a land exchange for property near the existing development at the Geothermal Plant site. As the developer, Mr. Morgan, stated, he too believes this to be a fair solution.

My more personal concern is the potential for a huge increase in commercial signage along a beautiful stretch of 395 designated since 1971 as a State Scenic Highway. Will we, as concerned citizens, be expected to fight the thirty-plus lot owners within the Industrial Park individually when they determine their businesses will benefit by erecting their own signs along the frontage to 395?

Moreover, I was concerned by the developer's efforts to convince those of us in attendance that mitigating the visual impacts alone would solve the problem. Far from it. Major development is not like bad TV: we cannot just "turn it off" if we don't like it. It will be there every day for us to observe, for as long as we live here. (and longer) Also, the precedent it sets for future development is undeniable. Any urbanization of that area is dubious in terms of being genuinely necessary, and unwarranted in light of what it will clearly lead to. I agree with design consultant Jane Escoto: "What you know is there will bother you more than what you see."

Please, Mr. LeFrancois, give sincere consideration to the concerns expressed by those of us who truly care about the long-term character of the place we have chosen to live.

Thank You,



6/24/99

RECEIVED
JUN 24 1999
MONO COUNTY PLANNING DEPT.
SOUTH COUNTY

Mr. Gerry le Francois
P.O. Box 347,
Mammoth Lakes. Ca 93546

DEAR MR. le Francois:

This letter concerns The Proposed Industrial Park on 395- I am concerned about the possible cumulative effect that the development would have on the vistas and land use to the South of Route 395, the Scenic corridor to Mammoth and Northern Mono County- This area is not only important to preserve for our incoming visitors, but is part and parcel of permanent residents back or front yard; one which we treasure- - fear That no matter what planting etc. might be Mandated, That The disturbance, added traffic, and other factors, would unalterably change the complexion of The area-

I am not competent to analize The hydrology or geology, but according to comments at The scoping meeting and from your handout) these issues must be investigated as well as zoning-

I would urge The Planning Dept. to find an alternate site for The development and would hope That Mr. Morgan might be able to delay the project until all other land trades have been exhausted- (what about The F.S. excavation behind The airport-?) or The Geothermal Plant area? —

Thank you for Reading & considering my proposals and concerns-

Sincerely,

Phyllis S. Barham
P.O. Box 1823
Mammoth Lakes. CA 93546

Subject: U.S. 395 Industrial Park
Date: Wed, 23 Jun 1999 20:56:27 -0700
From: "Gary Walker" <walkerco@gte.net>
To: <monocounty@qnet.com>

RECEIVED
JUN 24 1999
MONO COUNTY PLANNING DEPT.
SOUTH COUNTY

Attention: Gerry LeFrancois

I read with great interest the proposal by Rob Morgan to develop a new Industrial Park along Hwy. 395.

From the article in the Mammoth Times I wasn't sure if light pollution is being addressed. Night light pollution is a real concern along a "Scenic Byway". Also, address the increased traffic from that side of Hwy. 395.

I would like more information on where the land exchange "behind" the geothermal plant would be. Could you please send me township, range and section(s).

I agree we need to be mindful of our urban sprawl and would like to see Mr. Morgan pursue a land exchange either behind the geothermal plant or possibly at the Forest Service gravel pit behind the airport.

If we allow Mr. Morgan to develop on the private land that he owns we will ruin forever the scenic beauty of Eastern Sierra Escarpment.

Please put development with development. Please pursue the land exchange at either location I mentioned above.

Sincerely,

/s/*Tamara Walker*
Tamara Walker

Date: June 22, 1999
To: Gerry Le Francois
From: John Beck
Subject: Morgan Industrial Park

JKB

The Public Works Department has concerns about the location of storm water retention basins under the roadways. A drainage study and proposed drainage improvement plan is required. The drainage study and improvement plans are to be prepared and signed by a State of California, Registered Civil Engineer. The grades shown on the "Preliminary Road Improvement Plan" shall be a minimum of 1%.

SMono

From: Carle <carle@qnet.com>
To: somono@qnet.com
Subject: Industrial Park comments to G. LaFrancois
Date: Wednesday, June 23, 1999 10:36 AM

Additional thoughts for EIR scoping: Please consider not only the visual impacts from Hwy. 395, but also from all the surrounding peaks and hills where hikers and mountain bikers will be enjoying the views that include the industrial park.

Noise, light and dust pollution are major concerns.

Also safety issues: it seems like an interchange exit ramp might be necessary to control traffic flow in and out of the industrial park.

Thank you,

Janet Carle
Mono City/Mammoth

RECEIVED
JUN 23 1999
MONO COUNTY PLANNING DEPT.
SOUTH COUNTY

I would encourage Mono County to give plenty of attention to the possibility of a land trade as advocated by PESTER on June 15. This would relocate the industrial park to a more appropriate location.

Mono County is entrusted with protecting the health, safety, and welfare of the citizens of Mono County. Approving projects that aid sprawl and don't cluster development in appropriate areas does not promote our welfare. I am sure you will work to avoid such inappropriate development.

The developer must move quickly because he is a speculator--trying to make money off undeveloped land. Property is owned "at risk", and his development is subject to his responsibility to society--Mono County residents--and that responsibility may require him to wait longer for a land trade that results in a project benefiting our welfare, than he would wait if he were only to maximize his profit. He is not entitled to anything more--he will make the money, while Mono County will be left with the impacts. We are depending upon the County to look after our welfare in the face of poor proposals, and do what is best for its citizens.

There are three specific things that I have time to mention that I would like to make sure the EIR analyzes: light pollution, volcanic hazard, and water use/drainage.

The Eastern Sierra has some of the best nighttime skies for stargazing anywhere. EVERY project that includes nighttime lighting diminishes this important part of our heritage. Light pollution has been shown to cause adverse impacts to certain plants, animals, insects, and birds. Down directed, low intensity lighting should be the only lighting considered where lighting is absolutely necessary. Motion-sensing lights should be used where vandalism is a concern.

Every new development between Long Valley and Mono Lake slightly diminishes our safety in the event of a volcanic eruption. A small population is compatible with an area of high geologic hazard. More people living here (indirectly encouraged by providing jobs at an industrial park) increases the amount of people exposed to geologic hazards, and decreases the efficiency of evacuation in the event of an eruption. To what extent will this project cumulatively contribute to this potential problem? Are other locations more appropriate for efficient evacuation?

How much water will the project use? Will recycled wastewater be used in industrial processes, which will require double plumbing of the development? If geothermal heat is used to save energy, especially if the alternative site near the geothermal plant is chosen, will this require triple plumbing? It seems that despite initially higher costs, triple plumbing in this manner would save money and energy and water in the long run. Where will water come from, and where will the sewage go? What types of safeguards will be required to isolate toxics that are used in industrial processes? How will drainage be handled? Will drainage (potentially toxic from oil and other chemicals it flows through) be held onsite, or treated onsite before being released to the ground or open water drainages?

Thank you for considering these issues and alternatives in the EIR.

Sincerely,
Greg Reis
P.O. Box 41
Lee Vining
647-6393

RECEIVED
JUN 23 1999
MONO COUNTY PLANNING DEPT.
SOUTH COUNTY

HotBot - Search smarter.
http://www.hotbot.com

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JUN 16 1999
MONO COUNTY PLANNING DEPT.
SOUTH COUNTY

To: Mono County Planning Dept.

Dear Mr Gerry LeFrancois,

Im writing out of very deep concern in regards to the proposed Industrial Park along the Hwy 395 corridor.

I urge the developer and the planning dept to find ~~the~~ an alternative location or reject the building as proposed outright.

Hwy 395 is one of the most beautiful and economically important aspects of the Eastern Sierra. Open space, Mountain Vistas and Environmental relief from the Cities is why the majority of people visiting and living here come for.

Im worried of the presendent set by this developement and the possible pollution, water use, cultural resource damage and dark sky intrusion of an Industrial Park.

Please let me know what the Dept. plans to do on this issue

Signed,

Michael Boone
1025 E. Mono Lake Dr
Lee Vining, CA

JOHN AND PAT EATON
RT 1, BOX 189A
CROWLEY LAKE, CA 93546
Fax: 760 935-4577

RECEIVED
JUN 2 3 1999
MONO COUNTY PLANNING DEPT.
SOUTH COUNTY

June 21, 1999

Jerry leFrancois
Senior Planner, Mono County
Mammoth Lakes, CA 93546
Fax: 760 924-5458

Dear Jerry:

We have read Elizabeth Tenney's letter to you in regard to Marzano & Sons' industrial development of their thirty eight acre parcel along US 395 near the Mammoth Airport. We generally support the concerns that Elizabeth raises. However, we oppose the location that P.E.S.T.E.R. has selected. Further, this is a highly inappropriate site for affordable housing. Actually, it may be possible to construct an industrial park on the Marzano property. Certain uses in the present industrial park might have to be excluded, or at least effectively screened.

Of the sites which Elizabeth suggests, we would support preliminary study of 1) the old elementary school or 2) either of the sites north or east of the airport. Certainly, we are opposed to any site located within the Town's boundaries, or any site that is likely to be annexed by the Town in the future. Crowley Lake, in its ongoing planning process, is trying to settle on an industrial site. Although the Marzano property is not, obviously, anyone's choice, it would at least insure that the County receives tax revenues that it sorely needs. And, there may be economic and social benefits to Crowley residents in having light industrial/commercial sites in the Valley rather than up town.

This sounds like a substantial and generally useful project. If it can be shown that a trade would provide a better site, then all of us would need to apply all possible pressure to bring it about. An attractive and harmoniously constructed outcome, wherever the location, will be of benefit for everyone including Mr. Morgan.

Thank you for your consideration.

Sincerely,

John and Pat Eaton

John and Pat Eaton

June 21, 1999

To: Jerry le Francois

From: Pat Eaton

Dear Jerry,

Here is our letter regarding the Marzano industrial park.

Do you think you could put the Marzano project on the RPAC agenda for discussion? Perhaps you might know, in approximate terms, possible tax benefits to the County?

Also, safety and noise issues at the airport?

Many thanks.

JOHN & PAT EATON
RT 1, BOX 189A
CROWLEY LAKE, CA 93546
Fax 760 935 4377

RECEIVED
JUN 25 1999
MONO COUNTY PLANNING DEPT
SOUTH COUNTY
RECEIVED
JUN 2 - 1999

June 25, 1999

Jerry leFrancois
Senior Planner, Monot County
Fax 924-5458

Re: Marzano Industrial Park Project

Dear Jerry:

This letter is an addendum to our letter to you of June 21 regarding the above project.

In general, we would like to see light industrial/commercial use in this project. For example, along with operations such as cabinet making, welding, sign making, heat ducting, small auto repair, there might be manufacture of various crafts and even artists' studios. All of these uses could be contained ***inside*** the unit.

Visual impact:

Project should, in our view, be constructed with an architectural theme – woodsy with wood (or masonite) siding, log porticos. If Butler-type metal buildings are used, accents could be stone and/or logs. However, a single theme should guide all construction – and a single basic building material used.

Two or three colors to be selected by unit buyers should blend with colors of vegetation, mountains.

Differing heights should be preplanned and grouped in specific areas so that roof heights are not hit or miss, scattered over the park.

Batch plant should not be visible from US395. Also, it should be screened from the rest of the park.

Outside storage of equipment belonging to unit owner should be shedded, and if necessary to hide from 395, side screened. Operations that require outside storage might be located in a specific section and thus more easily disguised.

Because of visual impact of certain operations, there are types of industrial and commercial uses which should be excluded from the park. An example is firewood preparation/storage.

Plantings inside the park should resemble the natural vegetation outside the park.

Signing of this park should be within County guidelines.

At all points in the planning and construction of this project, proponent and County should share responsibility to maintain highest visual standards. No eyesore feature is acceptable.

Hydrology

Green belt approach should be discouraged, not only from an aesthetic point of view, but to reduce draw on water supply.

Transportation/traffic

On US 395, there should be turn lanes north and south in order to assure safe ingress and egress.

Truck access to batch plant should be confined, once within park entrance, to the edges of the park.

Lighting

All lights should be shielded and directed downward.

Service systems

Would it be possible that, as part of the park's sewage treatment system, some enhancement could occur to Laurel Ponds in order to replace the treated water now to be diverted to the Intrawest golf course?

Thank you for your consideration.

John and Pat Eaton

RECEIVED
JUN 16 1999
MONO COUNTY PLANNING DEPT.
SOUTH COUNTY

June 15, 1999

Mr. Gerry LeFrancois, Senior Planner
Mono County Planning Dept.
POB 347
Mammoth Lakes, CA 93546

Re: Morgan Industrial Park Specific Plan/EIR

Dear Mr. LeFrancois:

As a former Mono County resident, I am writing to express opposition to the industrial park proposed for an area near the Mammoth Airport. This project would destroy the pristine viewshed from Hwy. 395, as well as potentially impact the viewshed from other nearby sites such the Hot Creek Fish Hatchery. I strongly urge the proponents to pursue a land exchange with the Forest Service, or sell the parcel to an appropriate land trust agency.

In general, I am opposed to satellite development anywhere in Mono County. Development should be centered near existing structures to reduce impacts to scenic values and wildlife. Clustered development also reduces infrastructure costs. Therefore, the project should not be relocated to the geothermal plant where pristine lands would no doubt have to impacted. The abandoned sheriff's substation is an equally inappropriate site because it is next to an extremely sensitive riparian corridor. The most suitable site for this type of project is near the town of Mammoth and west of Highway 395. However, the Camp O' Neill or abandoned Hot Creek grammar school sites may be suitable, but it is difficult to evaluate this proposal (by P.E.S.T.E.R.) without more information.

For the last ten years, I have spent most of my vacation time in Mono County. My enthusiasm for making the long drive from the Bay Area is rapidly waning as the County becomes cluttered with trapezes, large hotels and conference centers, and industrial parks. Please preserve the phenomonal scenic values of the Eastern Sierra.

Sincerely,

Emilie Strauss

Emilie Strauss
1606 Hearst Ave.
Berkeley, CA 94703

RECEIVED
JUN 16 1999
MONO COUNTY PLANNING DEPT.
SOUTH COUNTY

June 12, 1999

Gerry LeFrancois
Mono County Planning Department
Post Office Box 347
Mammoth Lakes, CA 93546

Dear Mr. LeFrancois,

I want to express my grave concern and opposition to the coming development in the Hot Creek/Crowley Lake area of Mono County. One of the things that makes this area so special is the isolation and vast beauty of the sierras with the infinite undeveloped vistas stretching across the basin. The proposed industrial park across from Mammoth airport will be an eyesore and a blight upon this dramatic wilderness. In addition, the light pollution from the development will detract even further from Mammoths already bright skies. As a professional astrophysicist I am VERY familiar with the effects of light pollution.

Finally, I will predict that development of this sort will ultimately reduce tourism in the area. As a former California resident and frequent visitor to the Eastern Sierras I would definitely be deterred by any development that causes light, noise, and visual pollution in this area. I can recall many an evening recently (January 1999) which I spent contemplating the beauty of the stars rising above the silvery snow-capped sierras in the silent splendor of the Hot Creek area. Please do not permit this construction! Many viable alternatives exist-such as obtaining a grant from the Trust for Public Land or the Nature Conservacy to preserve this parcel. Please feel free to contact me at the address below if you would like to discuss this matter further.

Sincerely,
Elisha Polomski

Elisha Polomski

Astronomy Department
University of Florida/NASA
Gainesville, FL 32611-2055
352-392-9540

June 16, 1999

RECEIVED
JUN 16 1999
MONO COUNTY PLANNING DEPT.
SOUTH COUNTY

Mr. Gerry Le Francois, Senior Planner
Mono County Planning Dept.
P.O Box 347
Mammoth Lakes, CA 93546

Dear Mr. LeFrancois:

I am concerned that the proposed industrial park to be built in the gravel pit along #395 across from the airport threatens the scenic quality of our region and sets a bad precedent for development along the #395 Scenic Corridor. I strongly recommend an expeditious property trade that would be both fair to the owner and protect our scenic resources. The best trade would be for property adjacent to the geothermal plant near #203 and #395 which would be convenient to the town of Mammoth and if appropriately sited, constructed and landscaped would not detract from the Long Valley views.

If the industrial park is built in the gravel pit as proposed, I would like special attention to be paid to the lighting. Our dark skies are precious. Many visitors to our area enjoy the night skies when they leave the metropolitan areas and come to the Eastern Sierra. Bright lights keep us from seeing the mountains in moonlight and the stars. The proposed industrial park should have minimal and down-directed lighting and the grading and landscaping should shield the lights from the highway and from hikers in the John Muir Wilderness.

Thank you for considering these thoughts.

Sincerely,

Sherryl Taylor

Sherryl Taylor
P.O. Box 1638
Mammoth Lakes, CA 93546

K. M. Morey
P.O. Box 3664
Mammoth Lakes, CA 93546
(760) 934-2890 voice and fax
KMSquared@qnet.com

RECEIVED
JUN 11 1999
MONO COUNTY PLANNING DEPT.
SOUTH COUNTY

Mono County Planning Commission

11 June 1999

Good afternoon, Commissioners:

Please ensure that Mr. Morgan finds a more suitable place for his proposed industrial park than the present location in the 395 viewshed. I don't just ask this; I beg it of you! Get with him, help him, work hard with him to find a land swap—because this development *must not* be in the scenic corridor.

Mr. Morgan is a businessman. He's not running a charity. His project will benefit the community, but that's secondary to the requirement that a successful business must show a profit. That's perfectly legal and in many respects praiseworthy—it's how our capitalistic system works.

It's *not*, however, a good criterion for Mono County to use as a basis for a decision that will forever change the landscape that belongs to all of us. Mono County wants what it hopes will be increased tax revenues from this project, and that's legitimate, too, but don't let that be your principal criterion. I accept that this project will go forward in some place at some time soon. But Mr. Morgan and Mono County need to find a location where their goals can be realized *without* accelerating the destruction of the Eastern Sierra landscape that all of us treasure. Mr. Morgan may pledge to screen and landscape the area on 395 in order to conceal his project, but we already see his version of "landscaping" at the present site: a few dead junipers on an ungraded, uncontoured berm that make the area look all the more blighted.

Before you leave Mammoth today, please drive down Minaret Boulevard and check out our Commercial Park. It's a useful spot but hardly a beauty spot, and everyone I know is glad that visitors can't see it. With all due respect, the industrial park is dreary and unsightly. Nobody *meant* for this to happen, but it did! While doing my bit for the Town Clean-up Day there in the industrial park, I was forcefully struck by how much this dreariest part of town looks like metropolitan Southern California, like a patch of urban blight. Is this what we want in the 395 corridor?

I was born and raised in Southern California, a place once heralded as a paradise. When I was a kid, there was still open space and real countryside. By the time I had grown up, Southern California had, through one bad decision after another, metamorphosed into a stewing hell of paved-over ugliness. We Southern Californians had destroyed our paradise through greed and carelessness. We *paved paradise and put in a parking lot*, as the song says. The transformation was so rapid, so complete, and so ghastly that it spawned the term "to californicate," which loosely means to screw up your own living space so badly that it's unlivable. Thanks to our terrible example, the entire country is learning this lesson: don't foul your own nest, don't "californicate."

Please, please, don't "californicate" the Eastern Sierra! If you have lived up here for a long time, you may not realize how quickly one *small* bad decision can lead to or aggravate another *little* bad decision, cascading to "californicate" an entire region into a hellhole of ramshackle storefronts, dreary industrial parks, and sprawling housing projects. If you haven't seen "californication" lately, I suggest a visit to, say, Firestone Blvd. in Southgate or Lincoln Ave. in Anaheim. You won't dare to walk there! Drive across the Los Angeles Basin on Imperial or Artesia Blvd. and think as you go, *This could be Mono County—if I allow it*. Southern Californians flee their alien, unlivable cities in increasing numbers. And where do they visit? Places with light, space, quiet, clean air, and great natural landscapes—like the Eastern Sierra. These people are your biggest source of visitors. They're big contributors to the real-estate industry. They *won't* come to see another Southern California.

Do you truly want in-your-face urban-type blight on the 395 scenic corridor? Do you really look forward to the day this awesome landscape is paved over? Do you genuinely wish that some day this area will have such a severe smog problem that it will be a novelty to see the mountains? Do you think it can't happen here? Think again!

Thank you for your time and attention.

Very truly yours,

K. M. Morey

RECEIVED
JUN 11 1999
MONO COUNTY PLANNING DEPT.
SOUTH COUNTY

Rt. 1 Box 82
Mammoth Lakes, CA
93546

June 11, 1999

Dear Gerry,

An industrial park in the 395 Scenic Corridor is inappropriate. As you know, CURES, made up of many agencies, towns, and citizens of the Eastern Sierra, has worked long and hard in order to bring abdut the establishment of the Scenic Corridor. To ignore the obvious large possibility of a blight on the spectacular viewshed is inexcusable. Mono County's economic sustainability depends on the preservation of this natural beauty which is the main reason our visitors come.

Sincerely, Elizabeth Good

RECEIVED
JUN 11 1999
MONO COUNTY PLANNING DEPT.
SOUTH COUNTY

Gerry LaFrancois
Senior Planner
Mono County Planning Dept.

June 11, 1999

re: Morgan Industrial Park Proposal/ EIR

1) The viewshed of the gateway to Mammoth Lakes area should not be negatively affected by the visual impacts that an industrial park would create. Our viewshed is part of our economic base , and once it is compromised , it is gone forever.

2) The people have already spoken in previous scoping meetings . The consensus was to look for alternative sites for the industrial park in less visually sensitive areas. If the timeframe is a problem for the owner, agencies should attempt to facilitate a land exchange in a more timely manner. There are sites that are far more preferable for this type of development.

3) Deer migration routes, air pollution , light pollution , noise pollution and safety issues should be looked at in the EIR.

Please be responsible and consider alternatives to forever impairing the viewshed on a scenic highway through one of the last remnants of a relatively wild California landscape.

Thank you,

Janet Carle

Janet Carle
PO Box 3234
Mammoth Lakes, CA 93541
924-8204

APPENDIX C

GEOTECHNICAL ANALYSIS

by Sierra Geotechnical Services, Inc.

SIERRA GEOTECHNICAL SERVICES INC.

P.O. BOX 5024, MAMMOTH LAKES, CA 93546 • (760) 934-3992 • FAX (760) 934-5619

REGIONAL AND SITE SPECIFIC

GEOLOGY AND HYDROLOGY

OF THE PROPOSED

SIERRA BUSINESS PARK

LONG VALLEY CALDERA
MONO COUNTY, CALIFORNIA

July 12, 2000
W.O. 3.01863

Prepared By:
SIERRA GEOTECHNICAL SERVICES, INC.
P.O. BOX 5024
MAMMOTH LAKES, CA 93546
(760) 934-3992

REGISTERED PROFESSIONAL ENGINEER
THOMAS A. PLATZ
No. C 41039
Exp. 3/31/03
CIVIL
STATE OF CALIFORNIA

Thomas A. Platz, President
R.P.E. C-41039

REGISTERED GEOLOGIST
H. DEAN DOUGHERTY, III
No.6497
Exp. 8/31/00
STATE OF CALIFORNIA

H. Dean Dougherty, III
R.G. No. 6497

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1.0. REGIONAL AND SITE SPECIFIC GEOLOGY

1.1. REGIONAL GEOLOGIC SETTING

The project site is located on the boundary between the Sierra Nevada province and the Basin and Range province (Figure 1). More specifically, the site is located at the southwestern edge of the Long Valley caldera, which straddles the boundary coincident with the eastern Sierra Nevada frontal fault system. Active faults along this system are the Wheeler Crest (WCF), Hilton Creek (HCF), Laurel-Convict (LCF), Hartley Springs (HSF), Mono Lake (MLF), and Silver Lake (SLF) faults, all with displacement down to the east (Figure 2). Basement rock in the Mammoth Lakes area is predominantly Mesozoic granitic rocks of the Sierra Nevada batholith and Paleozoic metasedimentary and Mesozoic metavolcanic rocks of the Mount Morrison, Gull Lake, and Ritter Ridge roof pendant formations. The Sierra Nevada batholith is a series of plutonic intrusions that displaced overlying ancient sedimentary sea floor rocks (roof pendants) during the Jurassic and Cretaceous Periods of the Mesozoic Era. A regional geologic map relative to the proposed Sierra Business Park is provided as Figures 5a and 5b.

1.2. REGIONAL VOLCANISM

Volcanism associated with Mammoth Lakes area began approximately 3.6 million years ago with the widespread eruption of low-viscosity (mafic) lavas, erosional remnants of which are found over a 1,500-mi^2 area around the caldera (Bailey et al., 1976, Bailey and Koeppen, 1977; Bailey, 1989). Slightly more viscous (silicic) lava flows erupted approximately 3.0 to 2.5 million years ago near the northern rim of the caldera that represented the initial onset of the large, shallow Long Valley magma chamber (Bailey, 1987). Between approximately 2.1 to 0.8 million years ago the first eruptions of more silicic lavas from the new magma chamber formed Glass Mountain (Metz and Mahood, 1985). At 0.73 million years ago, a catastrophic rupturing of the magma chamber roof triggered an expulsion of about 250 mi^3 of magma and ash fall that was deposited downwind as far east as Kansas and Nebraska (Figure 3) known as the Bishop Tuff (Gilbert, 1938; Dalrymple et al., 1965; Hildreth, 1979; Izett, 1982; Bailey, 1989). This partial emptying of the magma chamber caused a collapse of its remnant roof material resulting in the current 10-mile wide by 20-mile long by 2-mile deep oval depression

known as the Long Valley caldera (Figure 4). A resurgent dome (Smith and Bailey, 1962, 1968) formed within 100,000 years after collapse of the magma chamber (Bailey et al., 1976; Bailey, 1987and 1989). Rhyolite lavas later erupted along faults around the periphery of the dome between approximately 500,000 and 100,000 years ago to form some of the more notable volcanoes such as Mammoth Knolls and Doe Ridge. Volcanic eruptions on the southwestern rim of the caldera associated with an apparently different magma system occurred between 200,000 and 50,000 years ago with at least 12 eruptions to build the volcano Mammoth Mountain (Bailey, 1989). Mammoth Mountain is at the southernmost end of the Mono-Inyo Craters volcanic chain and fracture zone that intersects the western rim of the Long Valley caldera and extends northward to Mono Lake. The most recent volcanic eruptions and phreatic explosions along this relatively young system occurred between 720 and 530 years ago along the Inyo Craters fracture zone located just northwest of the Town of Mammoth Lakes (Mayo et al., 1936; Rinehart and Huber, 1965; Wood, 1977; Miller, 1985; Sieh and Bursik, 1986). Historic non-eruptive volcanic activity occurred during the 1980 Mammoth Lakes earthquake sequence (Sherburne, 1980) and during the 1989 Mammoth Mountain earthquake sequence (Sorey et al., 1999). Figures 5a and 5b illustrate the geology of the area regional to the subject site.

The Mono Lake volcanoes (Black Point, Negit, and Paoha) are just 6 to 7 km northeast of the Property. Black Point erupted nearly 13,000 years BP, Negit first erupted 1,600 years BP and flowed as recently as 270 years BP (Chesterman, 1971). Paoha, the youngest, erupted only 300 years ago. The North Mono eruption event of Sieh and Bursik (1986) is constrained to a period between A.D. 1325 and 1365, which resulted in the formation of Panum Dome, Cratered Dome, Upper Dome and North Coulee. These volcanoes are located between 15 to 23 miles northwest of the subject site.

1.3. REGIONAL FAULTING

Faults considered significant potential sources for major earthquakes that are likely to seismically impact the subject Property are discussed in this section. Several Recent faults (surface rupture less than 11,000 years ago) and historic faults (surface rupture

less than 200 years ago) are located within the caldera and along the eastern Sierran escarpment. The California Division of Mines and Geology (CDMG) have placed all of the following faults within Alquist-Priolo Earthquake Fault Zones. Upon review of the latest known CDMG fault publications by Bryant (1984), Davis (1982), and Hart (1999), there are no zoned faults located across the subject site. The nearest zoned fault is located approximately 2.6 mi to the northeast (Figure 6).

At least four major active or potentially active faults are located within a 25-mile radius of the subject site. The two closest of these are the Hilton Creek and Hartley Springs faults. No known mapped faults traverse the subject Property.

1.3.1. Hilton Creek fault: The northernmost extent of the Hilton Creek fault is located approximately 4.3 km northeast of the subject Property. The fault mostly lies to the south of the southern rim of the Long Valley caldera, but projects into the caldera along its northern reach, giving it a total length of about 22 to 29 km (dePolo et al., 1993; CDMG, 1996). It is predominantly a right-lateral oblique with down-to-the-east movement. Several investigators (Rinehart and Ross, 1964; Bailey et al., 1976; Clark et al., 1984; and Berry, 1994) have calculated slip rates on the fault ranging between 0.6 to 2 mm/yr based on faulted Quaternary glacial deposits. The 1997 Uniform Building Code™ (UBC) values for slip rate and maximum magnitude earthquake are 2.5 mm/yr and M_{max} = 6.7, respectively, with a recurrence interval is estimated at 386 years.

1.3.2. Hartley Springs fault: The southernmost extent of the Hartley Springs fault is located 12.5 km west of the subject Property. The zone is approximately 25 km long, strikes N15°W to N60°E, and has normal, down-to-the-east displacement. Much of the zone is distributive in nature with associated volcanic domes and graben structures. Most of the fault zone is located north of the Long Valley caldera rim boundary, however a continuation southward into the caldera is suggested by its alignment with the Inyo Craters volcanic chain. Calculated Pleistocene slip rates on various segments within the fault zone range between .15 mm/yr. (Clark, et al., 1984) to .9 mm/yr (Bursik and Sieh, 1989). Holocene displacement is reported by Jennings (1992, 1994). The slip rate is given by the UBC at .5 mm/yr with recurrence interval of

1584 years. The expected maximum magnitude earthquake is M_{max} = 6.6 (CDMG and SEAOC, 1998).

1.3.3. Silver Lake fault: The southernmost extent of the Silver Lake fault is located approximately 24 km northwest of the subject Property. The zone extends 31 km north-northwest from the western rim boundary of the Long Valley caldera at Deadman Creek up to Mount Warren in the Mono Basin. Although the Silver Lake fault zone has significant overall offset, studies by Bryant (1984) and Bursik (1989) suggest that it has had no Quaternary or Holocene movement. Jennings (1994), however, suggests that there is evidence for Late Quaternary displacement. The slip rate calculated for movement prior to the Quaternary is 2 mm/yr (Bursik and Sieh, 1989). The Silver Lake fault zone is not quantified or listed in the 1997 UBC; however, BSK & Associates (1994) estimates that the fault may be capable of generating a 7.5 magnitude earthquake.

1.3.4. Mono Lake or Lee Vining fault: The southernmost extent of the Mono Lake fault is located about 33 km northwest of the subject site. Also known as the Lee Vining fault (Bailey, 1989), the Mono Lake fault extends for 26 km at N60°E along the west side of Mono Lake, directly underneath the community of Lee Vining. Review of published geological maps of the regional geology (Bailey, 1989, Kistler, 1966, and Rhinehart and Ross, 1964) suggests that the Mono Lake fault may be the northern extension of the Hartley Springs fault. The 1997 UBC reports that the fault has a slip rate of 2.50 mm/yr, an M_{max} of 6.6, and a recurrence interval of 305 years.

1.3.5. Laurel-Convict fault: The northernmost reach of the Laurel-Convict fault is located approximately 5.3 km southwest of the subject Property. The fault lies entirely south of the Long Valley caldera, however it may be the southern extension of faulting that extends through the Casa Diablo geothermal area of the caldera's resurgent dome. The Casa Diablo faults were mapped by Bailey and Koeppen (1977), by Taylor and Bryant (1982) following ground rupture produced by the May, 1980 Mammoth Lakes earthquake sequence, and again by Bailey (1989). The Safety Element of the General Plan of the Town of Mammoth Lakes specifies the Laurel-

Convict fault as one of six active faults that affect the area. However, Jennings (1994) reports that this fault has evidence for pre-Quaternary displacement only, which suggests that it is not an active fault. Upon review of the 1997 Uniform Building Code, the Laurel-Convict fault is not listed, however, BSK & Associates (1994) report that fault may be capable of a 6.8 magnitude earthquake.

1.3.6. Round Valley/Wheeler Crest fault: The northernmost reach of the Round Valley/Wheeler Crest fault is located approximately 12.8 km southeast of the subject Property. The fault is a major range front fault forming one of the largest abrupt scarps (2 km high) along the eastern Sierra Nevada. It is about 42 km long striking N15°W to N60°E with normal movement, east side down. Clark et al. (1984) has calculated a slip rate of 1 mm/yr based on offset Tioga-age glacial deposits. The UBC values for slip rate and maximum magnitude earthquake are 1 mm/yr and M_{max} = 6.8, respectively. The recurrence interval is estimated at 941 years.

1.3.7. Owens Valley fault: Along the southwest edge of Owens Valley is the Owens Valley fault zone, which includes the Owens Valley fault, extending nearly continuously from Owens Lake to just north of Big Pine with an average strike of N. 20° W. At its northernmost extent at Keough's Hot Springs, the fault is about 60 km southeast from the subject site. The most recent surface rupture event observed on the Owens Valley fault zone occurred on March 26, 1872. This rupture accompanied one of the three largest earthquakes in California's history, estimated at a Richter magnitude of approximately M_L = 8 (Oakeshott, et. al., 1972; Beanland and Clark, 1994). Surface rupture resulting from that event was mapped at 100±10 kilometers. Average right-lateral offset is estimated at about 6 meters with a maximum of about 10 meters at Lone Pine (Beanland and Clark, 1994). The earthquake generated a seiche on Owens Lake, and it triggered massive avalanches and landslides throughout the Sierra Nevada.

Beanland and Clark (1994) estimate the average net slip rate of the Owens Valley fault zone at 2±1 mm/yr. Also, based on correlation with calculated recurrence dates on other faults in the Owens Valley fault zone, such as the Lone Pine fault (Lubetkin and

Clark, 1988) and the Fish Springs fault (Martel et al., 1987), Beanland and Clark tentatively estimate a recurrence interval on the Owens Valley fault of 3,300 to 5,000 years. The 1997 UBC reports a slip rate of 1.50 mm/yr, an M_{max} of 7.6, and a recurrence interval of 4,000 years. The northern most extent of the Owens Valley fault zone is located approximately just north of Big Pine, but appears to project northward through the center of northern Owens Valley and be continuous with the Fish Slough fault zone on the Bishop Tuff Volcanic Tableland.

1.3.8. Volcanic Tableland/Fish Slough faults: Faulting on the Volcanic Tableland in northern Owens Valley presents a long-term record of surface rupture along what is probably the northern extension of the Owens Valley fault zone (Pinter, 1992). Faulting is pervasive across the Volcanic Tableland with scarps up to tens of meters high with predominant trends between N 10-20° W, and they are steep dipping at 60±10° with normal offset. The tableland records at least 40 to 100 earthquake events with magnitudes equal to the 1872 Lone Pine earthquake and a recurrence interval of not more than 7,600 to 18,500 years, and it suggests that average magnitude (M = 7.2) earthquakes have occurred at least 257 times since the last 764,000 years for a recurrence interval of not more than 3,000 years (Pinter, 1995). The 3,000-year earthquake recurrence interval estimate is consistent with faulting of a Holocene-age Owens River terrace located just south of the Volcanic Tableland. The river terrace is located immediately north of the subject site and demonstrates one or more surface-rupturing events in the last 7,000 to 10,000 years. The largest continuous fault (18 to 30 km) trending north across the tableland is the Fish Slough fault, which forms the east boundary of Fish Slough, a wetlands ecosystem. The slip rate for the Fish Slough fault is estimated at .16 mm per year (de Polo et al., 1993). The 1997 UBC reports a 0.2-mm/yr-slip rate, a 6.6 M_{max} earthquake, and a 3809-year recurrence interval. At its closest point, the Fish Slough fault is about 47 km southeast from the subject site.

1.3.9. White Mountain fault: Along the eastern boundary of the northern Owens Valley is the central section of the active White Mountain fault, which extends from the Milner Canyon alluvial fan southward to the Waucoba Embayment (de Polo,

1987). The central section contains the ground fracturing associated with the M_S = 6.2 July 1986 Chalfant Valley earthquake (de Polo, 1987; Smith and Priestly, 1988). Ground rupture demonstrated 4 inches of right lateral oblique offset over a length of 8 to 9.4 miles measured from Silver Canyon north to Sacramento Canyon (de Polo, 1987; Lienkaemper et al., 1987). The fault zone is approximately 100-meters wide and trends along and slightly west of the mountain front in alluvial fan deposits. At its closest point, the White Mountain fault zone is located approximately 53 km east of the subject site. According to the 1997 UBC, the fault is about 105 km in total length, has a slip rate of 1.00 mm/yr, has an M_{max} of 7.1, and has a recurrence interval of about1224 years.

1.3.10. Long Valley caldera faults: Within the center of Long Valley caldera are numerous active faults associated with the Quaternary activity of the resurgent dome. Taylor and Bryant (1990) hypothesize that the Hilton Creek and the Silver Lake faults are continuous through the caldera, and in effect are behaving as the Sierra Nevada frontal fault system. The numerous faults within the caldera appear to have a left-stepping en echelon pattern. The 1997 UBC does not list these faults, however, BSK & Associates (1994) reports that that may be capable of producing a magnitude 7.0 earthquake. The closest caldera fault is about 2.0 km northeast of the subject site.

1.4. REGIONAL GLACIATION

Glaciation occurred in the region prior to, during and after the Long Valley caldera event with deposition of till deposits from the Sherwin sequence (600,000 years ago), the Casa Diablo sequence (130,000 years ago), the Tahoe sequence (60,000 years ago), the Tenaya sequence (45,000 years ago), and the Tioga sequence (up to 20,000 years ago). The caldera had been filled by the large Pleistocene Long Valley Lake up until about 50,000 years ago (Mayo, 1934). During this time, the resurgent dome stood as an island that received iceberg-rafted erratic debris from glaciation in the adjacent Sierra Nevada. Evidence of glaciation from these glacial sequences occurred in nearly all the major canyons regionally, including Mammoth Creek, Sherwin Creek, Laurel Canyon, Convict Creek, and McGee Creek (Kesselli, 1941; Rinehart and Ross, 1964; Sharp and Birman, 1963; Curry, 1969, 1971; Sharp 1969; Lipshie, 1974; Gillespie,

1982). The oldest currently recognized glacial deposit is the McGee Till dated at about 2 to 3 million years old exposed on the south rim of Long Valley caldera on west flank of McGee Mountain (Blackwelder, 1931; Putnam, 1962).

1.5. REGIONAL SEISMICITY

Several moderate and major earthquakes have occurred within a north-trending seismic belt known as the Central Nevada and Eastern California seismic belt (dePolo et al., 1999). This belt is coincident with in part with the Mono Basin-Long Valley-Owens Valley regions. All of the major earthquakes that have occurred in this belt have produced surface ruptures that extend over tens of kilometers in length with ground motions widely felt across the western United States. Within this belt, however is a gap, termed the White Mountain Seismic Gap (WMSG), of relatively low seismicity during historical time. The gap occurs between the 1872 Owens earthquake (M = 8.3) event near Independence and the 1932 Cedar Mountain earthquake (M = 7.2) in western Nevada. Even though seismicity within this gap has accelerated following the 1978 Swall Meadows earthquake (M = 5.7), it is likely that at least two earthquakes of magnitudes greater than 7.0 will be required to bring the gap into equilibrium with the remainder of the seismic belt (dePolo, 1993).

1.5.1. Historical Earthquakes: A list of earthquakes of Richter magnitude M_L = 5.0 and greater that have occurred within the WMSG originating near the subject site are listed below in Table 1:

TABLE 1 – Catalogue of Historical Earthquakes near Mammoth Lakes, CA

Date:	Mag.:	Location:	Fault:
*1. 3/26/1872	8.3	Independence/Lone Pine	Owens Valley
2. 5/6/1910	5.6	Bishop	Owens Valley
3. 9/30/1889	5.6	Sierra Nevada	Round Valley
4. 8/17/1896	5.9	Lone Pine/Independence	Owens Valley
5. 1/5/1912	5.5	Bishop	Owens Valley
6. 9/18/1927	6.0	Hilton Creek	Hilton Creek
7. 11/28/1929	5.5	Independence	Owens Valley
8. 2/3/1933	5.0	Sierra Nevada	Round Valley

9. 5/10/1936	5.0	Hammil/Chalfant Valleys	White Mountain
10. 12/3/1938	5.7	Round Valley	Wheeler Crest
11. 9/14/1941	6.0	Tom's Place	Wheeler Crest
12. 12/28/1951	5.2	Casa Diablo	Volcanic Tableland
13. 8/4/1959	5.2	Tungsten Hills, Bishop	Coyote Warp
14. 6/5/1960	5.2	Hilton Creek	Hilton Creek
15. 12/26/1961	5.2	Casa Diablo	Volcanic Tableland
16. 2/2/1961	5.3	Pine Creek	Wheeler Crest
17. 10/4/78	5.7	Swall Meadows	Wheeler Crest
*18. 5-12/1980	6.1/6.1/5.1/6.2/5.2/5.3	Mammoth Lakes	Hilton Creek
19. 9/30/1981	6.0	Mammoth Lakes	Hilton Creek
20. 9/24/82	5.3/5.0	Mammoth Lakes	Hilton Creek
21. 1/7/1983	5.4	Mammoth Lakes	Hilton Creek
22. 6-11/1984	6.2/5.5	Round Valley	Wheeler Crest
23. 1-3/1985	5.6/5.0	Round Valley	Wheeler Crest
*24. 7/21-31/86	5.6/6.6/5.8	Chalfant Valley	Fish Slough
25. 6/9/1998	5.2	Crowley Lake	Hilton Creek
26. 7/15/1998	5.1	Crowley Lake	Hilton Creek
27. 5.15.1999	5.6	Crowley Lake	Hilton Creek

Of the above earthquake events and sequences, the three historical earthquakes nearest the subject site that caused surface rupture (Jennings, 1994) were the 1986 Chalfant Valley earthquakes, the 1980 Mammoth Lakes earthquakes, and the 1872 Lone Pine earthquakes. These events are designated with an asterisk on Table 1.

Figure 7 illustrates the epicenter locations for all earthquakes that occurred in the Long Valley caldera region for the year 1998. Upon review of the literature, no seismically induced landslides from the May 1980 Mammoth Lakes earthquake sequence were mapped near or across the subject site (Harp et al., 1984).

2.0. SITE-SPECIFIC GEOLOGY

2.1. SITE SOILS

The subject Property is underlain by remnants of older Quaternary alluvium derived principally from the Laurel Creek and Convict Creek glaciers that were active during the Pleistocene Epoch (Blackwelder, 1931, *in* Bailey, 1989). The older alluvium is extensively terraced with surfaces about ten to twenty feet above the base level of surrounding younger alluvium (Lipshie, 1974). The alluvial deposits consist of poorly

sorted gravel with abundant cobbles. These deposits are generally moderately dense with very low cohesion. Review of soil profile logs prepared by Bear Engineering dated April 21, 1997, indicated site soils that consist of a brown to gray silty sand and gravel that grades coarser with depth with clasts of purple volcanic rock up to three feet in diameter. Fractured purple volcanic bedrock was encountered at eight to ten feet from the existing ground surface in three of the sixteen profile holes excavated across the Property. Based on the soils encountered, the soil profile type for the site is an S_C (Table J - 1997 UBC), a very dense soil and soft rock. A geologic map of the Property is enclosed as Figure 5a.

No landslides, rock falls, or debris avalanches are known to exist or to have been mapped on the subject site.

2.2. SITE BEDROCK

Located immediately to the west is an outcrop of 0.2 million-year-old trachybasalt, which reportedly poured from eruptions on the Inyo Craters fissure system located at the west rim of the caldera adjacent to Mammoth Mountain and flowed east around the south flank of the resurgent dome (Bailey, 1987 and 1989). Older quaternary alluvium now conceals the original areal limits of the basalt flow, however the profile holes by Bear Engineering have confirmed the presence of presumably the same 'purple volcanic' basalt at depth. Examination of the County of Mono Water Well Driller's Report completed by Kile's Well Drilling & Pump Service on 10/26/1979 for the only on-site water well (USGS Monitoring Well No. SQ-3J; County Well No. 26-79-53) indicates a soil profile that correlates nicely with the trench profiles. The driller's report also notes that 'basalt' was present down to the total well depth of 127 feet.

2.3. SITE HYDROGEOLOGY

The groundwater basin surrounding the subject site is geologically complex. Several groundwater systems are presumed to exist in-and-between the numerous geologic structures that comprise the Long Valley caldera. Considering the geology of the subject site, the underlying groundwater is found in the mantle of alluvium that overlies the layers of basalt at depth. Deeper confined to semi-confined aquifers are presumed

to exist where basalt flows are interbedded with alluvium, glacial outwash debris, and other basalt flows.

2.3.1. Aquifer Characteristics: Review of the regional geologic map by Bailey (1989) indicates that the geology beneath the subject site and beneath Laurel Pond is very similar. Review of the drilling log of the onsite water well SQ-3J compared to the drilling logs of the four monitoring wells on Laurel Pond confirm that the subsurface geology is also similar. The drilling logs indicate that the average upper 16 to 23 feet of the aquifer is composed of sand, sandy gravel and cobbles, which is underlain by layers of basalt flows down to the depths drilled. Drilling logs of Well SQ-3J and of the four monitoring wells (MW-1 thru MW-4) on Laurel Pond are provided in Appendix B.

A thorough summary of the aquifer characteristics beneath Laurel Pond was prepared by Kleinfelder (1981), which was later summarized by Schmidt (1996). Pump tests were performed on the four monitoring wells in Laurel Pond, which yielded the following: an estimated transmissivity between 1,000 gallons/day/ft (gpd/ft) and 35,000 (gpd/ft), an average hydraulic conductivity of 2,400 gallons/day/square-foot (gpd/ft^2), an average hydraulic gradient of 30 feet per mile, an estimated effective porosity of 0.30, and an average groundwater flow of 2,200 feet per year. Although pump test data for the existing onsite water well was not available at the time of preparation of this report, it is presumed that the aquifer underlying Laurel Pond is the same one that underlies the subject site. This conclusion is based solely on the similarity of the lithologies encountered during drilling of the wells and the continuity of surficial geology between the two sites.

It is believed that the volcanic rock that underlies unconsolidated sediments at the site may store substantial quantities of extractable water (Wildermuth, 1996; Chris Farrar, USGS - personal communication). It is sufficiently documented that fractured volcanic rock penetrated by several MCWD production wells yield substantial quantities of high quality water (Schmidt, 1996; Wildermuth, 1996). The proposed production well will likely draw from all aquifers that exist between 50 and 200 feet below the ground surface. The well-drillers log for the existing onsite 125-foot deep water well (Appendix

A) reported an estimated yield of 200 gpm from a screened interval between 27-125 feet. Aquifers within this range may be exhibiting a combination of unconfined, semi-confined or confined characteristics (Wildermuth, 1996).

Overall, it is reasonable to assume that water quantities sufficient to supply the proposed project can be obtained with a properly constructed well. Pump tests performed on the monitoring wells near Laurel Pond only 2,000 feet away yielded transmissivities between 1,000 and 35,000 (gpd/ft) and an average hydraulic conductivity of 2,400 gpd/ft^2. The transmissivity calculated from the pump test data on the nearby airport well is approximately 66,000 gpd/ft. Therefore, considering the abundant recharge to the aquifer coupled with the above-calculated transmissivities nearby, it is conceivable that there is available water far exceeding the water demands for the proposed business park.

2.3.2. Groundwater: Depth to groundwater beneath the project was first recorded on upon completion of the existing on-site water well at 20 feet below ground surface (bgs). Beginning on July of 1984 this well (USGS Well No. SQ-3J) has been monitored by the USGS up to the present date for depth to water, with an average depth measuring about 18 feet bgs (Howle, 2000). A copy of this data is provided in Appendix A. Most of the water wells drilled outside project area were completed in the unconfined aquifer in unconsolidated sediments underlying the area. Data collected from these wells indicate that the direction of groundwater flow is northeast (Coe, 1973; Farrar et al., 1985). Schmidt (1996) interpolated the direction of groundwater flow in the region based on depth to water measurements obtained by the MCWD on September 1, 1996, from four monitoring wells around Laurel Pond and from which indicated a northeasterly flow of groundwater from near Laurel Pond directly towards the proposed industrial park and on to Mammoth Airport. Of the water wells tested by the MCWD, well SQ-3J on the proposed business park is the nearest well at about 2,000 feet to the northeast.

Four monitoring wells surrounding the fluctuating shoreline of Laurel Pond, indicate that groundwater levels typically range between 5 and 25 feet below the ground surface.

This indicates that factors other than pond water percolation also affect depth to water in the area. Since groundwater levels are normally well below the pond levels, Laurel Pond is considered to be a source of groundwater recharge.

Groundwater quality for the region was summarized by Schmidt (1996), who determined that the analyte chloride is the best trace indicator to determine the impacts of effluent percolation and the quality of groundwater for downgradient sites. Typical chloride concentrations upgradient of Laurel Pond were at 2 to 4 mg/l, while typical downgradient concentrations were between 6 and 23 mg/l. Other constituents including nitrogen forms indicated little influence of effluent recharge on groundwater quality. Review of groundwater quality data provided by the MCWD since the September 1, 1996 sampling and through to the present (Appendix C) are consistent with Schmidt's observation and show that chloride levels in the downgradient monitoring wells ranged between 8 and 32 mg/l while levels in the upgradient wells ranged between 2 and 8 mg/l. All other constituents, including nitrogen forms and colliform, showed little, if any, change between the downgradient and upgradient wells. Therefore, because of the high quality of the effluent entering Laurel Pond and the small changes in groundwater quality found in the monitoring wells immediately downgradient of pond, the percolation of effluent should not cause a noticeable change in the groundwater quality at the nearest points of groundwater use. This is a conclusion that is also supported by Schmidt (1996). The nearest point of groundwater use in this scenario would be from the proposed production well on the subject site.

Schmidt (1996) presented groundwater elevation data near Laurel Pond as calculated from water level measurements made in the monitoring wells surrounding the pond in 1991 through 1996. Schmidt observed that "the water-level elevations indicate that groundwater levels are normally well below the pond, and thus Laurel Pond is a potential source of groundwater recharge most of the time." It is therefore considered that the effects of pumping of the proposed production well located directly down gradient at about 2,000 feet from Laurel Pond will not impact water levels of the pond. Wildermuth (1996) demonstrated that groundwater extraction of up to 2,385 acre-feet in

1992 in the Mammoth basin area did not measurably impact flows in Hot Creek even during the severe drought of the recent past. In addition, Wildermuth estimated the potential impact of several phases of increased consumptive use of water, which was conservatively assumed to be directly tributary to the Hot Creek headsprings. It was determined that, with cumulative increased consumptive use of up to 1,395 cubic feet per second (cfs), impact to headsprings flows would not be significant. In fact, it was considered likely that no measurable impact to flow from the springs would be manifest. It should be clear that if an estimation of impact similar to that of the Wildermuth study were applied to groundwater extraction for the proposed project, the affect on Hot Creek headspring flows, including those of the Hot Creek fish hatchery, would likewise be insignificant. Overall it is our opinion, based on the scope of the project relative to groundwater use and review of an available groundwater data, that the project will have no significant impact to the sensitive environments in the Mammoth Creek/Hot Creek watershed.

2.3.3. Groundwater Sampling: On May 16, 2000, fluid-level measurements were made at seven sites surrounding the subject site. The sites sampled included Hot Creek Fish Hatchery AB Supply, CD Supply, and Hot II Head Springs, Airport Well No. 1, onsite water well SQ-3J, MCWD monitoring well MW-1 (LP), and Laurel Spring (Figure 12). The first three sites are all potential down-gradient sites, and the latter two are up-gradient sites. Samples were collected from each site using dedicated bailers without filtration. The sample bottles contained appropriate preservative, as necessary, which was added by the project analytical laboratory, BC Laboratories, Inc. No duplicate samples were collected.

The samples were stored in ice chests with ice until final delivery to the analytical lab. The samples were shipped by Federal Express to BC Laboratories, Inc. in Bakersfield, California. BC Laboratories, Inc. is certified to perform the necessary analyses.

The water samples were analyzed for the following:

Analyte	Requested Method
Calcium	EPA 6010
Magnesium	EPA 6010
Sodium	EPA 6010
Potassium	EPA 6010
Hydroxide	EPA 310.1
Carbonate	EPA 310.1
Bicarbonate	EPA 310.1
Sulfate	EPA 300.0
Chloride	EPA 300.0
Nitrate/Nitrite as NO_3	EPA 353.2
pH	EPA 9040
Electrical Conductivity	EPA 9050
Total Dissolved Solids	EPA 160.1
Ammonia as N	EPA 350.1

The laboratory report from BC Laboratories, Inc. discusses in complete detail the analysis of each sample and is attached herein in Appendix C. Plate 1 (Appendix C) tabulates the results of the analyses, and Figure 12 shows the locations of each sampling site with respect to the proposed business park. As expected, chloride levels are relatively high from water in Laurel Pond monitoring well MW-1 and non-detect in Laurel Spring. Chloride levels are at 2.6 mg/l at the subject site.

2.3.4. Impacts to Downgradient Sites: Wildermuth (1996) showed that the average annual flow in Hot Creek since 1950 has been 14,720 acre-feet per year (afy) with a minimum flow of 3,041 afy. We have argued above that the proposed industrial park project will likely have no significant effect on the Hot Creek headspring flows. However, even if the full projected water demand for the proposed industrial park of 0.0062 afy (511 gpm – Section 4.2.6) were extracted directly from the headsprings it would only amount to less than 1/100,000th of 2% (2.03×10^{-6}) of the minimum annual flow in Hot Creek experienced over the last 50 years. Furthermore, the proposed project is over 2 miles away from the headsprings of Hot Creek and 0.8 miles from the headsprings of the Hot Creek Fish Hatchery. In addition, the unconfined aquifer will

receive over 80% of that extracted water as recharge from the proposed on-site sewage leach fields, stormwater infiltration, and landscape irrigation. We expect no noticeable effect on Hot Creek or its associated downstream resources even in years of below-average precipitation. The cumulative effect of the nearby Airport project on Hot Creek spring flows should be much less than 10% of the annual flows (Airport EIR, 1999). We anticipate no contribution to that cumulative effect from this project. Given the relatively low water supply requirements for this project, and the information available regarding the aquifer, we are confident that the proposed system will provide adequate supply.

3.0. POTENTIAL GEOLOGIC HAZARDS

3.1. Seismic Hazards

The site is located within 5.0 km of two known active faults according to the "Maps of Known Active Fault Near-Source Zones in California and Adjacent Portions of Nevada" used in conjunction with the 1997 Uniform Building Code™ (CDMG, 1999). The faults are the Hilton Creek fault and the Hartley Springs fault, both Type "B" faults. The Hilton Creek fault has a maximum magnitude earthquake M_{max} =6.7 and a slip rate of 2.5 mm/yr, and the Hartley Springs fault has an M_{max} =6.6 and a slip rate of 0.5 mm/yr.

3.1.1. Ground Shaking: The subject site, as with most of southern California, has been subjected to earthquake-induced ground shaking in the past and can be expected to experience it in the future. The degree to which the ground beneath the subject site will shake depends on many factors, including the strain energy released during a seismic event, the proximity of the site to earthquake fault rupture surface, and the geologic conditions between the site and the earthquake focus. The strain energy released is a function of an earthquake's magnitude, which for the subject site is estimated between M_{max} =6.6 and M_{max} =6.7 for the Hartley Springs and Hilton Creek faults, respectively. The proximity of the site to the fault can be estimated by measuring the site distance to the fault, which in this case is within 5 km for either fault. The geologic conditions between the site and the earthquake focus are determined by field investigations and geologic mapping. The geology, or soil profile type for the site is

estimated to range between Soil Class C and Soil Class D based on the 1997 UBC. These soil types are typical of the Mammoth Lakes area and characterize glacial till and alluvium with interbedded basalt flow layers, however a site-specific investigation of the site geology should be evaluated by geotechnical drilling and/or by a geophysical seismic line study. Such investigations will provide more reliable data for use in a probabilistic seismic hazard evaluation of ground motion as required by the 1997 UBC. According to the 1997 UBC, any residential and commercial construction site must conduct such an evaluation using a design-basis earthquake with a ground motion that has a 10% chance of being exceeded in 50 years and a statistical return period of 475 years.

The Town of Mammoth Lakes in conjunction with the CDMG (Cramer and Sydnor, 1999) calculated peak ground accelerations of 0.42g (42% of the pull of earth's gravity) for a design-basis earthquake for the Mammoth Lakes area. Parameters similar to those mentioned above for the subject site were utilized. It is anticipated that a similar value of acceleration will be calculated for the site, but that should be determined at the grading and structural design phase of the project. A probabilistic analysis was not within the scope of this report herein. At that time, a detailed probabilistic seismic hazard analysis should be performed in accordance with both the 1997 UBC and 1998 CBC.

3.1.2. Liquefaction: As a general rule, a site may be susceptible to liquefaction if the following four conditions occur:

1. A high potential for seismic activity;
2. Groundwater levels are within 50 feet of the ground surface;
3. Native soils are cohesionless with 20% or less clay material;
4. Relative densities of native soils are less than 70% of their maximum density.

The subject site meets conditions 1 and 2. Therefore, the liquefaction potential in the site soils is probably low. A liquefaction analysis for the site was not within the scope of this report herein.

3.2. Geothermal Hazards

An active geothermal environment has affected the geology immediately north of the subject site. Hydrothermal alteration, weathering, and erosion have broken chemically and mechanically broken down some of the volcanic rocks exposed along the faults within and around the resurgent dome. By evidence of the Mammoth Lakes earthquake sequence of 1980 (Sherburne, 1980) and responses to shallow changes in the hydrothermal system at depth (Mortensen et al., 1985), the continued rising of the dome has apparently deformed, tilted, and folded the young sediments that have accumulated along its flanks.

Development of the geothermal resources at Casa Diablo involves the production of 40-megawatt binary-electric generation by utilizing geothermal water temperatures at 170 degrees Celsius (Sorey et al., 1995). After 13 years of geothermal development at Casa Diablo, topographic and hydrologic changes have been detected. While the resurgent dome has risen 0.72 meters, the Casa Diablo area rose only 0.38 meters, which suggests relative subsidence of 0.34 meters (Sorey and Farrar, 1998). Other significant changes include declines in hot-springs discharge and increases in fumarolic discharge.

Other related geothermal hazards include magmatic gas emissions, such as carbon dioxide, helium, radon and other potentially dangerous gases from vents near Mammoth Mountain and at Casa Diablo. Gas sampling at the former site has shown that anomalously high CO_2 readings support the current tree-kill areas recently found at the western rim of the caldera (Sorey et al., 1998). Later, Sorey and others (1999) related the sudden onset of gas emissions to the Mammoth Lakes 1989 sequence of earthquakes directly beneath Mammoth Mountain, which occurred during a new injection of magma that reached to within 2 kilometers of the ground surface. They postulate that a pressurized gas reservoir exists beneath Mammoth Mountain (Figure 9), and that ongoing volcanic unrest and seismic activity could suddenly trigger fatal gravity-driven flows of denser-than-air CO_2 in to the Mammoth Lakes area.

3.3. Volcanic Hazards

The Mammoth Lakes area is surrounded by territory having shown evidence of volcanic activity during the Quaternary and Holocene epochs. At least nineteen episodes of volcanism during the past 3,000 years have been determined by radiocarbon dating methods (Kilbourne, Chesterman, and Wood, 1980). The most significant potential sources of volcanic activity are the Mono-Inyo Craters and the resurgent dome within the Long Valley caldera. Basaltic, rhyolitic, and phreatic volcanism can be anticipated throughout the region. Basaltic eruptions tend to be least violent while rhyolitic and phreatic eruptions can be very explosive and associated with large volumes of ejecta that can travel great distances.

The most common types of volcanic hazards that can be expected from a volcanically active area include the following:

1. Debris avalanches: Flowing or sliding, wet, or dry mixture of soil and rock debris that moves away from a volcano at high speeds;
2. Pyroclastic flows: Mass of hot, dry rock fragments mixed with hot gases that move away from a volcano at high speeds;
3. Directed blasts: A hot, low density mixture of rock debris, ash, and gases that move away from an exploding volcano at high speeds;
4. Pyroclastic surges: Turbulent, low-density cloud of hot rock debris and gases that moves over the ground surface away from a volcano at high speeds (also known as a nuee ardant);
5. Lava flows: Streams of molten rock that erupts relatively nonexplosively from a volcano and moves slowly down slope;
6. Lava domes: A steep-sided mass of viscous lava that extrudes from a volcanic vent at slow speeds;
7. Debris flows: A flowing mixture of water-saturated debris (often from melted snow) that moves down slope at high speeds under the force of gravity;
8. Tephra falls: Materials of all sizes and types that are erupted from a volcano and deposited from the air; and
9. Poisonous gas emissions: Volcanic gases including radon and carbon dioxide that escape from an opening in the ground called a fumarole.

According to Miller (1989), the subject Property, and for that matter the entire Town of Mammoth Lakes, are located within volcanic-hazard zones for all the above hazards (Figures 10a and 10b). Unlike earthquakes, most volcanoes provide various types of warnings before eruptions begin. Phreatic or phreatomagmatic eruptions (steam-

blasts), however, like those of the Inyo Crater chain, can occur with little or no warning as superheated water flashes to steam when magma comes into contact with groundwater. The most common precursors to eruptions come in the form of earthquakes, steaming or fumarolic activity. The more subtle precursory changes are monitored by geophysical and geodetic instruments to measure ground swelling, changes in slope, and changes in elevation.

The Mono-Lake-Long Valley region is currently being monitored by several agencies and institutions to detect signs of any magmatic unrest and approaching eruptions. Future eruptions in the Mammoth Lakes area are certain to occur like those in the past, but they can be neither reliably predicted nor prevented at this time.

4.0. REGIONAL AND SITE SPECIFIC HYDROLOGY

4.1. HYDROLOGIC SETTING

The proposed Sierra Business Park is located within the Mammoth Basin, a regional hydrogeologic internal drainage area encompassing a total topographically defined area of about 71 square miles (Figure 11). The Mammoth Basin straddles the southwestern ring fracture boundary of the Long Valley caldera such that about 20 square miles of it lay outside the caldera. Mammoth Creek, Sherwin Creek, Laurel Creek, and Hot Creek are some of the major drainages within Mammoth Basin that flow adjacent to the subject site.

4.1.1. Mammoth Creek: Mammoth Creek flows northeast approximately 6,000 feet to the northwest of the subject site. It drains the west-central part of the Mammoth Basin and flows generally in an easterly direction. Mammoth Creek changes its name to Hot Creek at the Hot Creek Fish Hatchery about 0.8 miles due north of the subject site. Average flows in Mammoth Creek have been measured to be about 16,000 acre-feet per year (afy) ranging between 3,000 afy to 40,000 afy since 1932 (Wildermuth, 1996).

4.1.2. Sherwin Creek: Sherwin Creek flows due north and becomes tributary to Mammoth Creek at a site approximately 3.8 miles west of the subject site. Sherwin Creek contributes an estimated annual discharge of 2,900 afy to Mammoth Creek (Wildermuth, 1996).

4.1.3. Laurel Creek and Laurel Pond: Laurel Creek has an annual discharge estimated to be about 3,500 afy (DWR, 1973). Laurel Creek flows north across the Long Valley caldera boundary and then east to terminate at Laurel Pond located approximately 1,500 feet south of the subject site. Laurel Pond is situated in a shallow depression along the southern ring fracture of the Long Valley caldera between a surface basalt flow to the northwest and glacial moraines to the southeast. The measured average depth Laurel Pond ranges between 3 to 6 feet deep and the observed areal extent has ranged between 45 to 85 acres (Bauer, 1998). Laurel Spring, located immediately southwest of Laurel Pond on the southern rim of Long Valley caldera, is a cold water system that contributes a discharge of approximately 1.25 cubic feet per second to Laurel Pond.

Based on a water budget estimate was prepared for Laurel Pond by Schmidt (1996), the average contribution to the Laurel Pond system, including reclaimed sewage effluent, Laurel Springs, Laurel Creek, and precipitation, totals about 1,600 afy. Losses due to infiltration and evaporation total about 1,400 afy, which yields a residual of 200 afy to support the pond storage volume.

4.1.4. Hot Creek: Hot Creek originates at the Hot Creek Fish Hatchery and flows northeast to the eastern end of the Mammoth Basin to become tributary to the Owens River. Average annual discharge for Hot Creek is about 4,720 afy (Wildermuth, 1996).

4.1.5. Precipitation: Precipitation studies published by the California Department of Water Resources (Coe, 1973) indicated that the average annual precipitation for the Mammoth Basin ranges between 60 inches in the western mountainous area and about 10 inches in the extreme eastern margin in the basin. The average annual precipitation at the subject site is interpolated to be about 12 inches per

year from that same study. An average precipitation of 19 inches per year has been determined based on records for the SNARL and Mammoth Ranger stations as discussed in Bauer (1998).

4.2. WATER DEMAND AND SUPPLY

4.2.1. Projected Sewage Flow Demand: Sewage flows generated by industrial and commercial uses are usually proportional to water consumption, except where irrigation is significant. Typically, commercial and industrial sewage flows are approximately 70% of total domestic water consumption. It is anticipated that normal design factors for industrial and commercial development sewage flows can be utilized for the project. Therefore, the average estimated employee water usage for an office employee was utilized. Estimated average daily sewage flows for the project, at buildout, are presented in Table 2.

Table 2. Estimate of Sewage Demand. Estimate is based on final buildout of the industrial park.

Population Category	Estimated Incremental Sewage Flow	Average Daily Sewage Flow (Gallons per day, gpd)
Offices	37 1-acre parcels w/ 10 employees @ 20 gpd	7,400
Total Estimated Daily Sewage Flow		**7,400**

Sewage flows were estimated using Table K-3 of the 1997 UPC.

4.2.2. Projected Average Daily Water Demand:

The proper design and planning of water supply and distribution systems requires careful consideration of water use conditions. In general, it is necessary to differentiate between three separate water demand categories: average daily demand, maximum daily demand, and peak hourly flow rate. Since all of the parcels will be used for industrial/small non-retail business purposes, the expected water demands are similar. Also, water demand will likely occur at the same time during the day creating hourly

flows similar to the recommendations for sizing a building water supply system provided in the 1997 Uniform Plumbing Code (UPC).

The proposed business park is anticipated to have a cross section of businesses very similar to those that exist at the Mammoth Gateway Business Park located in Mammoth Lakes, particularly with the concrete batch plant operation. The Mammoth Gateway Business Park is reported to have an average daily water demand of 257 gpd/acre with a maximum daily demand of 659 gpd/acre (MCWD, personal communication). Additionally, it is anticipated that normal design factors for industrial and commercial development water consumption can be utilized for the project. Therefore, the average estimated employee water usage for an office employee was utilized. Projected water demands for the proposed development are summarized in Table 3.

Table 3. Estimated Water Demands.

Type of Occupancy	Estimated Daily Water Requirements	Average Daily Demand (gpd)[2]	Maximum Daily Demand (gpd)[3]	Peak Hourly Flow Rate (gpm)[4]
Offices[1]	Sewage demand[1]	7,400	14,800	100
	Misc. irrigation and concrete batch plant demands	6,100	12,200	100
Totals		**13,500**	**27,000**	**100**

gpd = gallons per day
gpm = gallons per minute

[1] Table K-3, *Estimated Waste/Sewage Flow Rates*, of the 1997 Uniform Plumbing Code (UPC).
[2] From Table 2 – Estimate of Sewage Demand of Section 4.2.1.
[3] The Maximum Daily Demand is typically 1.5 to 2.0 times higher than the average daily demand.
[4] Peak hourly flows estimated per the 1997 UPC, Appendix A – Chart A-2.

The maximum daily demand of 27,000 gpd is a conservative estimate when compared to actual maximum daily demands for existing Mammoth Gateway Business Park, which at 659 gpd/acre is the equivalent of 24,383 gpd for the proposed Sierra Business Park.

4.2.3. Projected Maximum Daily Water Demand: The maximum daily demand reflects the peak water consumption anticipated throughout the year. In resort areas, this demand usually occurs on a weekend day of peak population. With the exception of basic employees, the maximum daily demand is usually at least twice the average daily demand. The water system maximum daily demand, added to fire flow requirements, determines the minimum flow capacity required for the development.

4.2.4. Projected Peak Hourly Water Demand: Typically, the hourly rate of water usage during a day is not uniform. The nature of an industrial park/commercial development use results in substantial hourly variations in flow rates throughout any given day that must be delivered by the water system. The peak hourly flow rate is based on the total number of fixture units at buildout and is used to determine the size of the pressure tank for the water system. About 390 fixture units are estimated (10.5 fixture units/parcel multiplied by 37 parcels). Values for peak hourly flow rate were estimated at approximately 10.7 times the average daily demand (per 1997 UPC Appendix A – Chart A-2).

4.2.5. Required Fire Flow Demand: Fire protection requirements are the dominant factor in the design of the proposed water supply and transmission facilities. In discussions with the Long Valley Fire Protection District (LVFPD) it was indicated that a standard fire flow expected from the department would be 1,000 gpm sustainable for two hours. However, the LVFPD also indicated that if fire safety features were employed in the development, specifically fire sprinklers installed in buildings, the LVFPD Board of Directors would consider a reduction in the required fire flow of 1/2 half or more. Fire sprinklers have been proposed, and it is expected that a fire flow demand of 500 gpm is sufficient for the fire sprinkler system in the building involved with the fire, sustainable for 2 hours at a minimum pressure of 20 psi, is acceptable to the LVFPD Board of Directors. An alternate power source, such as a diesel generator, will be required to safeguard against power failure when the water supply system is in demand.

4.2.6. Proposed Water Supply Facilities: The maximum daily demand of 27,000 gpd (20 gpm) must be *added* to the mandated fire flow demand (500 gpm) in order to determine the minimum flow rate of the water supply system for the required 2-hour demand period. Therefore, the system must be able to sustain a flow rate of approximately 520 gpm for any given 2-hour period.

Additional research into aquifer properties in the region was conducted by contacting the U.S. Geological Society (USGS), which monitors several water wells in the area. USGS personnel observed a minimal drawdown tend (similar to the existing airport well located less than 2 miles to the northeast) in these other nearby wells, suggesting a relatively large source of recharge available to the aquifer. Therefore, extraction of the necessary water quantities estimated for the development at buildout should have no significant impact on water levels in the area. It is expected that one 18-inch well, completed to a depth of at least 200 feet, will satisfy the flow requirements for the proposed development. Onsite water storage may be necessary if the proposed production well cannot produce water at the required total flow demands. A pressure tank system, sized in consideration of the peak hourly flow rate, may be installed with the wells if well capacity cannot meet the required fire flow demands.

4.2.7. Proposed Water Distribution System: The basic components of the system should consist of the proposed water well, distribution piping with the appropriate valves, fittings and other appropriate appurtenances, fire hydrants, and service connections. An approximate total of 2,200 feet of 6-inch diameter water line, 8 fire hydrants spaced every 300 feet, and 500 feet of 1-inch diameter service line will be required throughout the proposed industrial park at buildout. A hydropneumatic pressure tank may be added to the system if well capacity cannot meet the required fire flow demands. The fire sprinkler systems will be designed on a building-by-building basis per the requirements of the LVFPD.

4.2.8. Proposed Production Well: Because the existing water well is substandard with respect to current County standards, a new production well is proposed for the Sierra Business Park. The primary reason for a new well is to provide

adequate fire flow as required by the Long Valley Fire Protection District. Methods for handling and disposal of well drilling fluids and test water will be developed and approved by the Mono County Environmental Health Department and the LRWQCB prior to drilling or testing water wells on the site. The proposed production well should be at least 200 feet deep, be perforated between depths of 50 and 200 feet, and yield at least 520 gpm. Upon completion, a pump test will need to be performed on the well in order to determine drawdown measurements, a pump rate, and transmissivity of the aquifer. Since the storage capacity of an aquifer cannot be calculated from a single well test, the existing onsite water well should be utilized as a monitoring well during the pump test of the new well.

The existing onsite well is located on proposed Lot 20 in the southeast corner. The new production well will be developed within the north central portion of Lot 15. When completed, the two wells will be approximately 322 feet apart.

4.2.9. Proposed On-site Sewage Disposal: The proposed industrial park is 1.4 miles south of and approximately 35 feet up gradient from the Hot Creek headsprings. It is possible that some amount of this water is derived from the unconfined aquifer underlying the subject site, however it has been demonstrated by Schmidt (1996) that the direction of groundwater flow is northeast from the subject site and not north toward the Hot Creek fish hatcheries headsprings. The aquifer beneath the subject site will receive an estimated 80% of the extracted water primarily as recharge from the proposed on-site sewage leach fields, from stormdrain infiltration, and from landscape irrigation.

The proposed on-site sewage systems for each parcel should be designed at the grading plan phase of the project according to prevailing sewage treatment practices and to the satisfaction of the Lahontan Regional Water Quality Control Board (LRWQCB). The LRWQCB has jurisdiction over the design and placement of the sewage treatment system.

A review of eighteen percolation tests performed by Bear Engineering was made in order to determine the terminal percolation rates for the site. The rates ranged from approximately 12 minutes/inch to 80 minutes/inch, with an average of 39 minutes/inch. The average percolation rate equates to an application rate of 0.5 gal/sq.ft./day as calculated using the U.S. Public Health Services *Manual of Septic Tank Practice*.

Given the average depth to water of approximately 20 feet from ground surface and the percolation rates observed, it is recommended that onsite sewage disposal systems be utilized for the development. Onsite sewage disposal systems consists of septic tanks and leach trenches. This type of system utilizes the soil underneath the trenches for treatment of the effluent. The soil type is a gravelly sand and cobble deposit. A sewage load estimate of 127 gpd (7,400 gpd divided by 37 parcels) should be considered to assess the type and size of an appropriate sewage disposal system for each parcel. Location of each leach field shall be placed no closer than 100 feet from the existing onsite water well on proposed Lot 20 and the proposed production well on Lot 15.

4.2.10. Proposed Onsite Storm Water Retention: Three retention percolation structures with oil and grease pretreatment separators are proposed to control storm water runoff on the industrial park as required by the LRWQCB. Each structure will be located within the proposed roadways at low points, and they are designed to meet the twenty year, one inch per hour storm event, also required by the LRWQCB. Maximum depth of retention structures is five feet below the ground surface.

Considering the average eighteen-foot depth to groundwater beneath the subject site, at least 13 feet of additional percolation depth is available below the retention structure before encountering the water table. It should be noted that groundwater levels fluctuate seasonally, and that the highest recorded depth to water measured in the onsite water well SG-3J was 10.43 feet on August 15, 1995. This is a season when groundwater is relatively high, but also a season when runoff concerns due to precipitation are relatively minor.

The retention structure nearest the proposed production well is on the northern access road at 141 feet away and downgradient hydrologically. The nearest upgradient retention structures are 585 feet and 460 feet from the well. All these distances exceed the LRWQCB wellhead protection setback requirements for drinking water wells.

5.0. CONCLUSIONS AND RECOMMENDATIONS

The following is a summary of our conclusions, professional opinions and recommendations based on the data reviewed:

1. Based on review of available data and geologic analysis, it is our opinion that the development of the proposed Sierra Business Park is suited and safe for the use intended from a geologic and hydrologic standpoint standpoint, provided the following are incorporated during planning and construction.
2. The site does not lie within a State of California Alquist-Priolo Earthquake Fault Zone.
3. No mapped active or potentially active faults are known to exist or have been mapped by others within the limits of the subject site.
4. Evidence of primary surface rupture was not observed on the subject site following the 1980 Mammoth Lakes earthquake sequence.
5. Review of aerial photographs did not indicate faulting across the subject site.
6. No indication of faulting was observed during reconnaissance of the subject site.
7. The primary geologic hazard to the Property will be from severe ground shaking originating from nearby faults zones.
8. Vertical accelerations are estimated to be approximately 2/3 of the horizontal acceleration for faults in the Basin and Range Province.
9. Based on review of the 1997 UBC, the site is located within 5.0 km of the Hilton Creek and Hartley Springs fault zones. Both are classified as Type 'B' faults that have been assigned a maximum magnitude earthquake of M_{max}=6.7 and a slip rate of 2.5 mm/yr and of M_{max}=6.6 and a slip rate of 0.5 mm/yr, respectively.
10. The potential for all types of volcanic hazards on the subject site is considered very high.
11. The soil profile type for the site is an S_C (Table J - 1997 UBC), a very dense soil and soft rock.

12. The potential for slope instability, landslides, liquefaction, are considered low to non-existent due to the relatively flat ground surface on the subject site, its distant proximity to a water source, its moderately dense and granular soils (estimated Soil profile type S_C).

13. All proposed structures should be designed in accordance with at least minimum building code standards for Seismic Zone 4 as described in the California Building Code.

14. A performance of a probabilistic seismic hazard analysis for the subject site was not within the scope of this report. In order to comply with both the 1997 UBC and 1998 CBC, it is recommended that a detailed probabilistic seismic hazard analysis be performed based on site-specific criteria for the subject site for a design-basis earthquake with a ground motion that has a 10% chance of being exceeded in 50 years and a statistical return period of 475 years.

15. The Town of Mammoth Lakes in conjunction with the CDMG calculated peak ground accelerations of 0.42g for a design-basis earthquake for the Mammoth Lakes area located just over 4 miles to the west of the subject site.

16. Vertical ground accelerations are estimated to be approximately 2/3 of the horizontal acceleration during a seismic event.

17. Construction should allow for all plumbing and utility services to be extended to buildings with flexible connections and convenient shutoffs.

18. Depth to groundwater beneath the project was first recorded on upon completion of the existing on-site water well SQ-3J at 20 feet below ground surface. Average depth to groundwater based on USGS monitoring of well SQ-3J is 18 feet.

19. The percolation of effluent in Laurel Pond should not cause a noticeable change in the groundwater quality at the nearest points of groundwater use, which in this case will be the Sierra Business Park.

20. The aquifer(s) underlying the subject site is estimated to have transmissivities between 1,000 gallons/day/ft (gpd/ft) and 35,000 (gpd/ft) with an average hydraulic

conductivity of 2,400 gallons/day/square-foot (gpd/ft^2), an average hydraulic gradient of 30 feet per mile, an estimated effective porosity of 0.30, and an average groundwater flow rate of 2,200 feet per year.

21. Estimated average daily sewage flows for the project at buildout are at 7,400 gpd. The estimated maximum daily sewage flows are 14,800 gpd. The peak hourly sewage demand is 100 gpm.

22. Estimated total average water demands, including sewage flows, for the project at buildout are 13,500 gpd. The estimated maximum daily water demands are 27,000 gpd.

23. The fire flow demand for subject site as determined by the LVFPD is 500 gpm for 2 hours, with a condition that fire sprinkler systems be installed in each building.

24. The proposed production well should be at least 18 inches in diameter, a minimum of 200 feet deep, be perforated between depths of 50 and the bottom, and yield at least 520 gpm to satisfy the estimated maximum water demands.

25. Onsite water storage may be necessary if the proposed production well cannot produce water at the required maximum water demands.

26. It is recommended that a pump test be performed on the proposed production well in order to determine drawdown measurements, a pump rate, hydraulic conductivity, storage capacity, and transmissivity of the aquifer.

27. Since the storage capacity of an aquifer cannot be calculated from a single well test, the existing onsite water well SQ-3J should be utilized as a monitoring well during the pump test of the new production well.

28. Given the average depth to water of approximately 18 feet from ground surface and the observed average percolation rate of 39 minutes per inch, onsite sewage disposal systems can be utilized for the proposed development.

29. The average percolation rate equates to an application rate of 0.5 gal/sq.ft./day as calculated using the U.S. Public Health Services *Manual of Septic Tank Practice*.

30. On-site sewage systems for each parcel should be designed at the building construction plan phase of the project in accordance with prevailing sewage treatment practices and to the satisfaction of the LRWQCB.

31. Considering the average eighteen-foot depth to groundwater beneath the subject site, proposed storm water retention structures can be utilized for the proposed development.

32. The minimum horizontal setback between the proposed production well and any sewage disposal field and/or stormwater retention basin is 100 feet.

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FIGURES

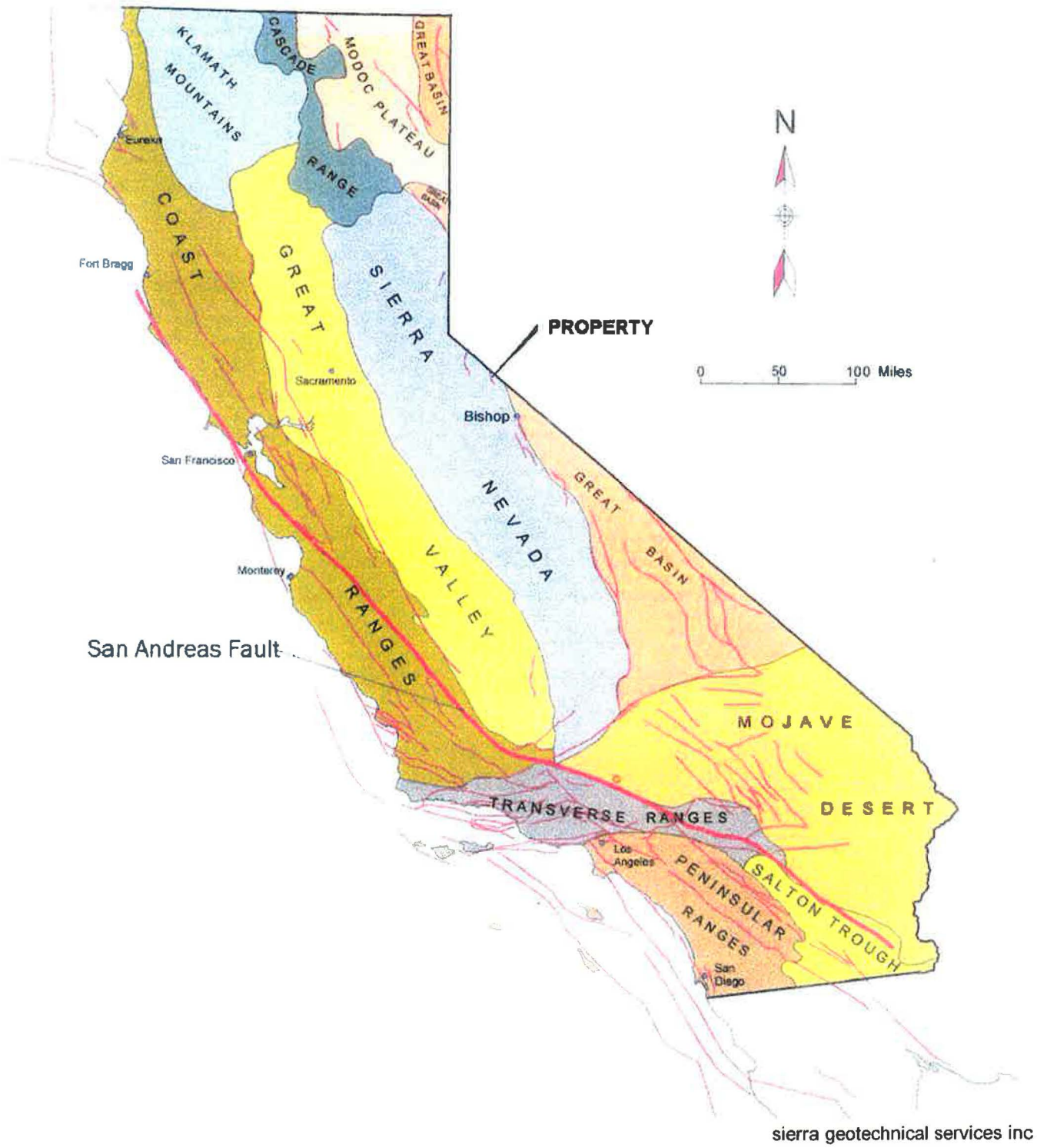

Figure 1 – Map showing geomorphic provinces of California with major active and potentially active faults (from Jennings, 1994; Blake, 1995; CDMG Note 36).

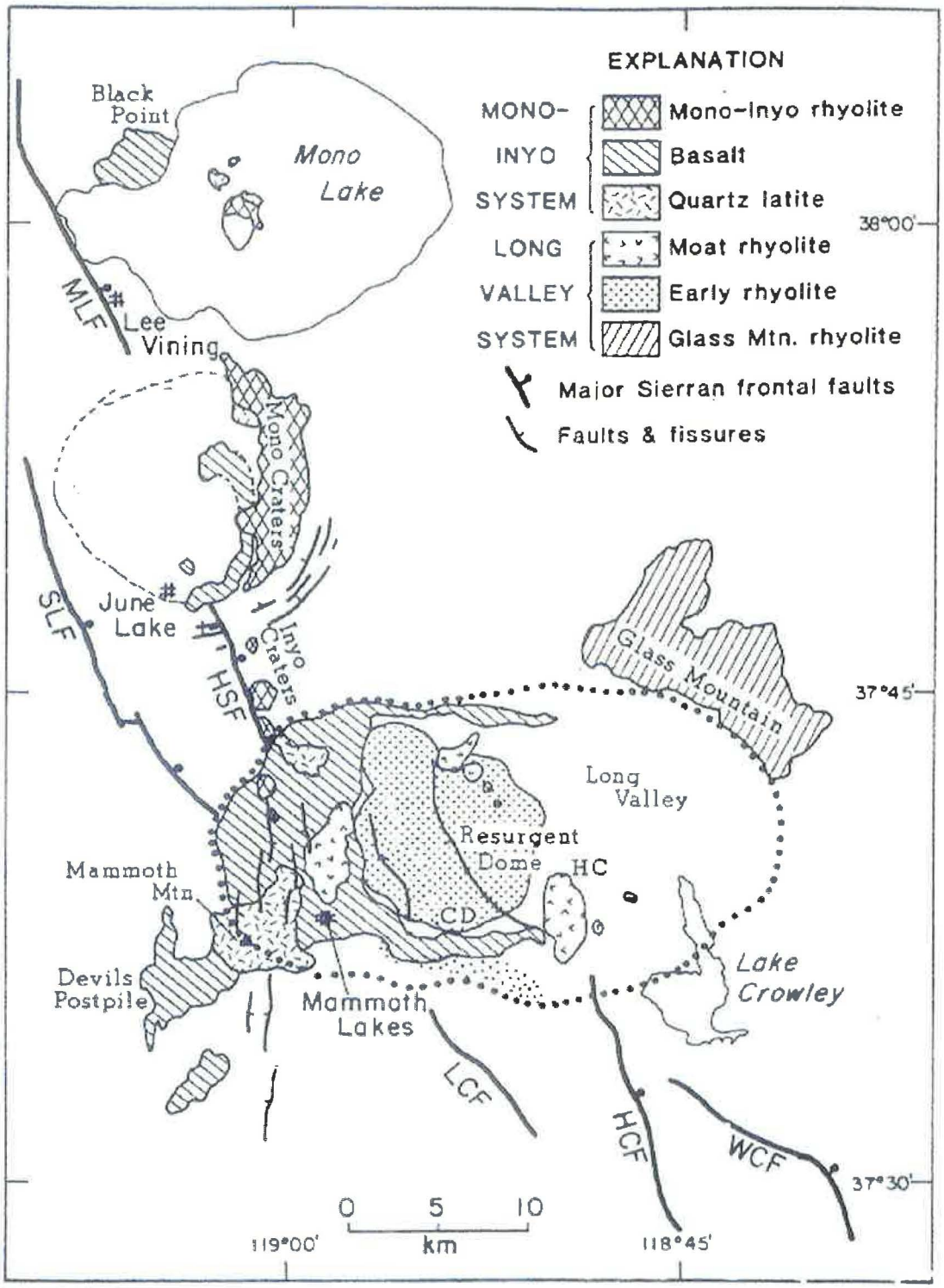

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Figure 2 – Map showing distribution of active faults regional to Mono Basin and Long Valley caldera (↑ North; from Hill et al, 1985).

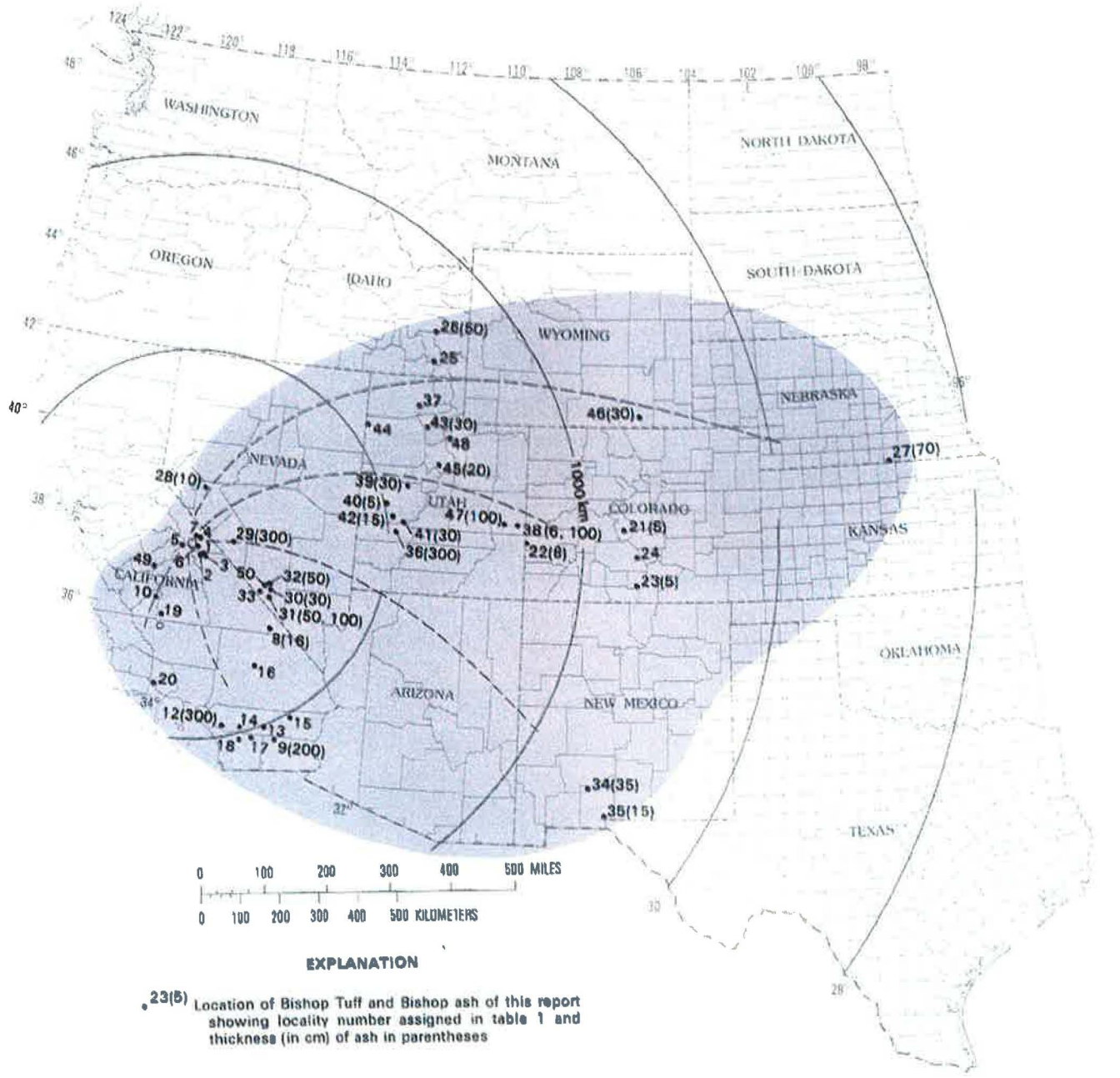

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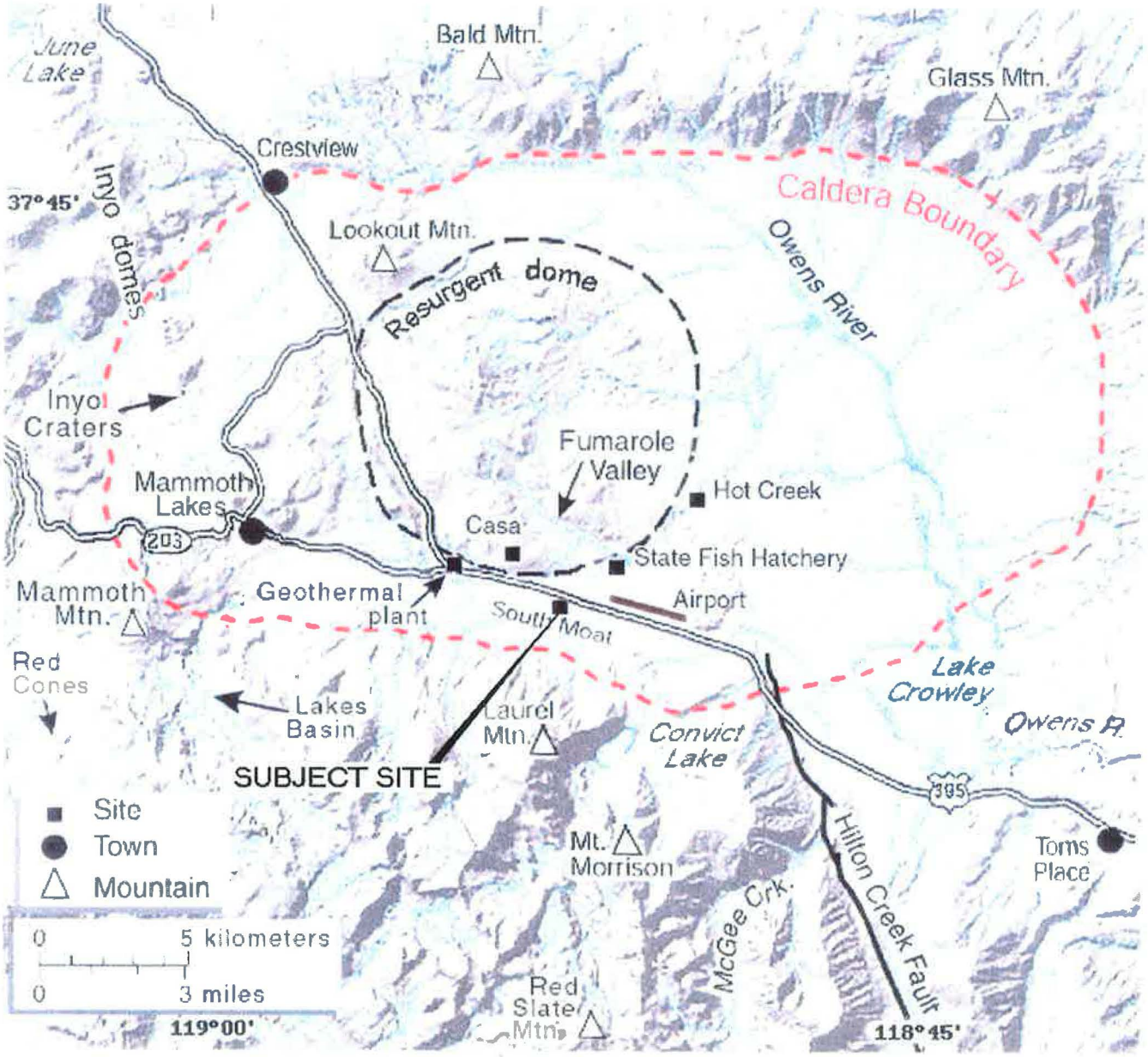
Figure 3 – Map showing distribution of Bishop Tuff and ash beds (Izett et al, 1988).



sierra geotechnical services inc

Figure 4 – Map showing topographic relief of the Long Valley caldera with the resurgent dome (USGS website).

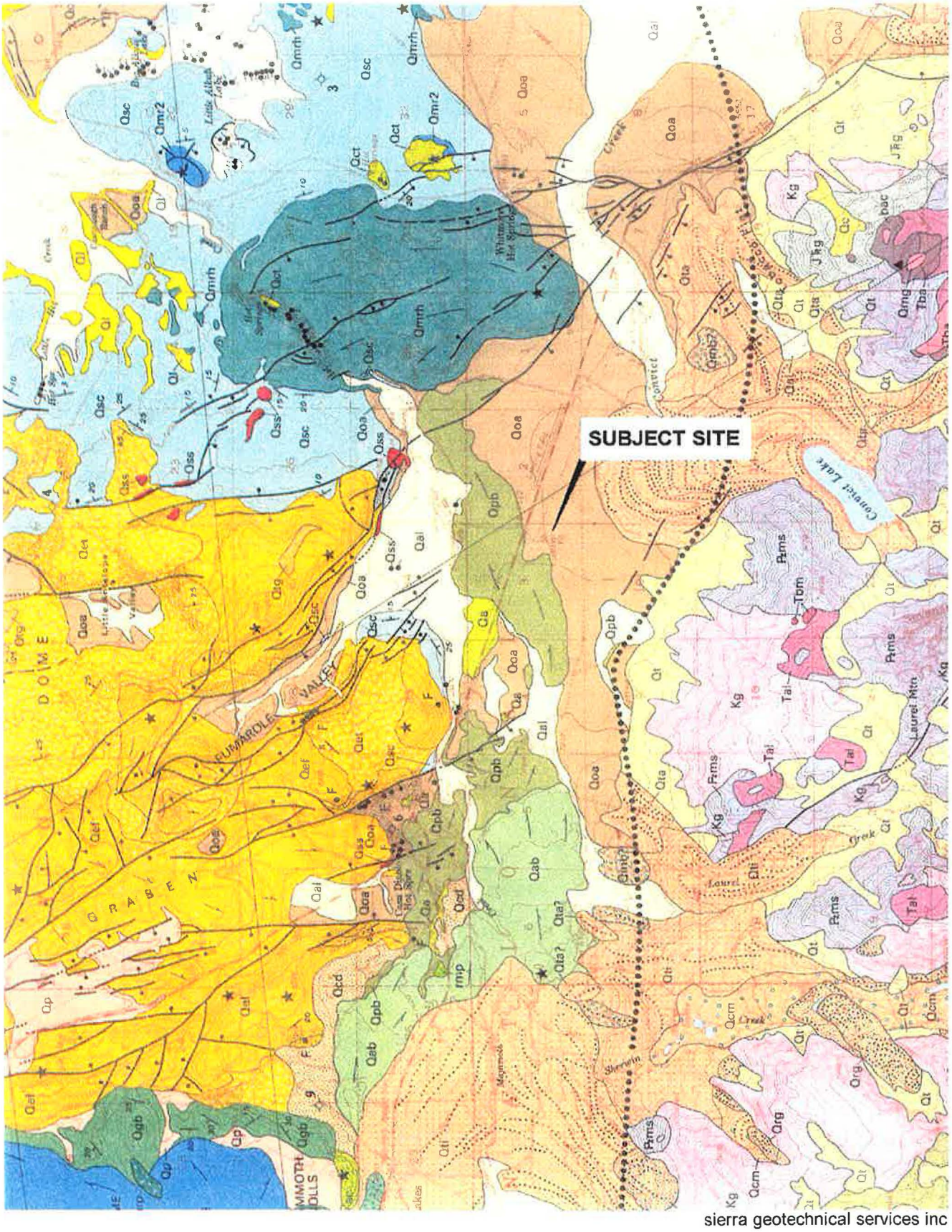


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Figure 5a – Geologic map of the Long Valley caldera region (Bailey, 1989).

DESCRIPTION OF MAP UNITS

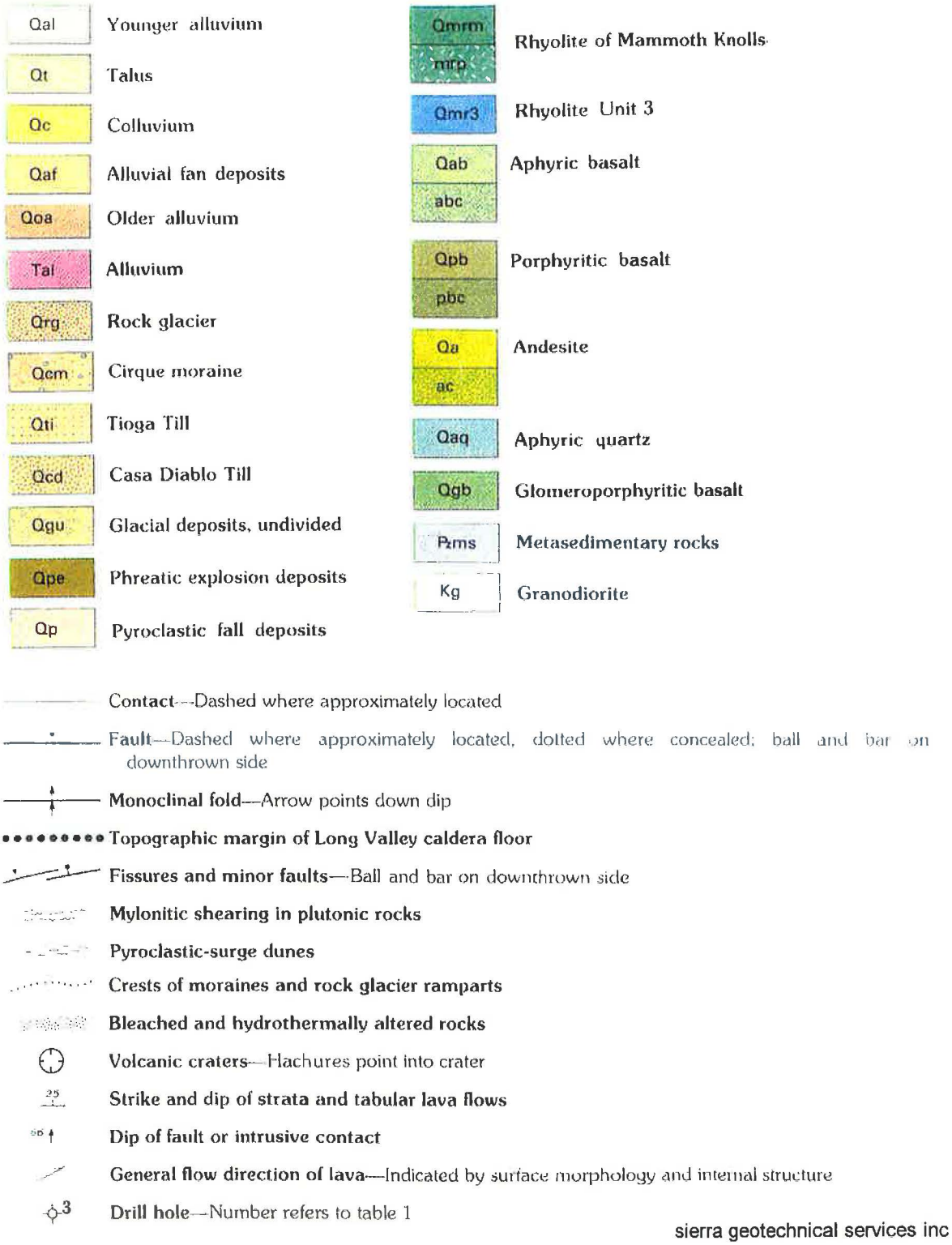

Figure 5b – Legend to Geologic Map (Figure 5a) of the Long Valley caldera region (Bailey, 1989).

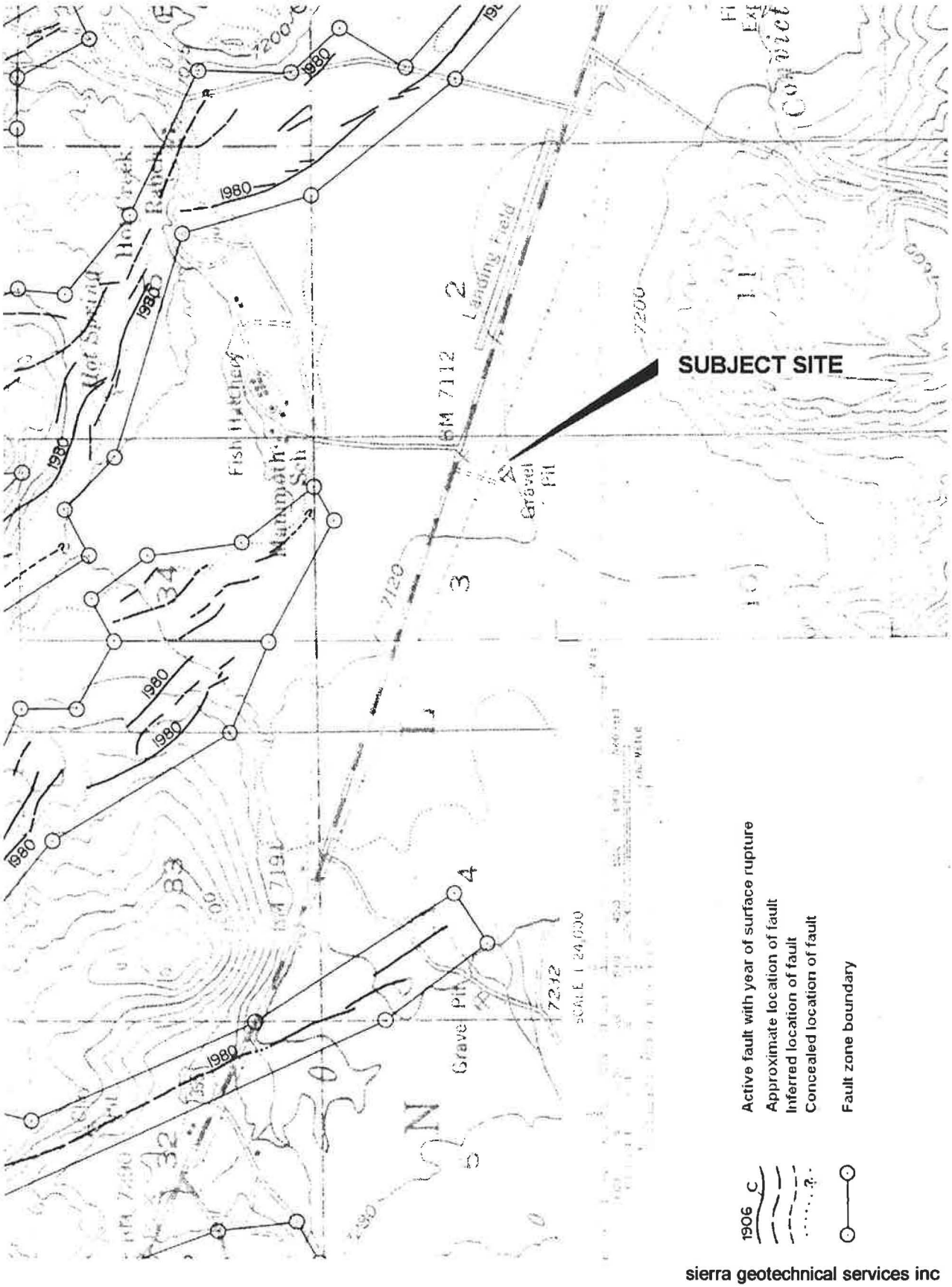

Figure 6 – Map showing Alquist-Priolo Earthquake Fault Zones relative to the subject site (Based on NW ¼, NE ¼, and SE ¼ Mt. Morrison quadrangles; Davis, 1982).

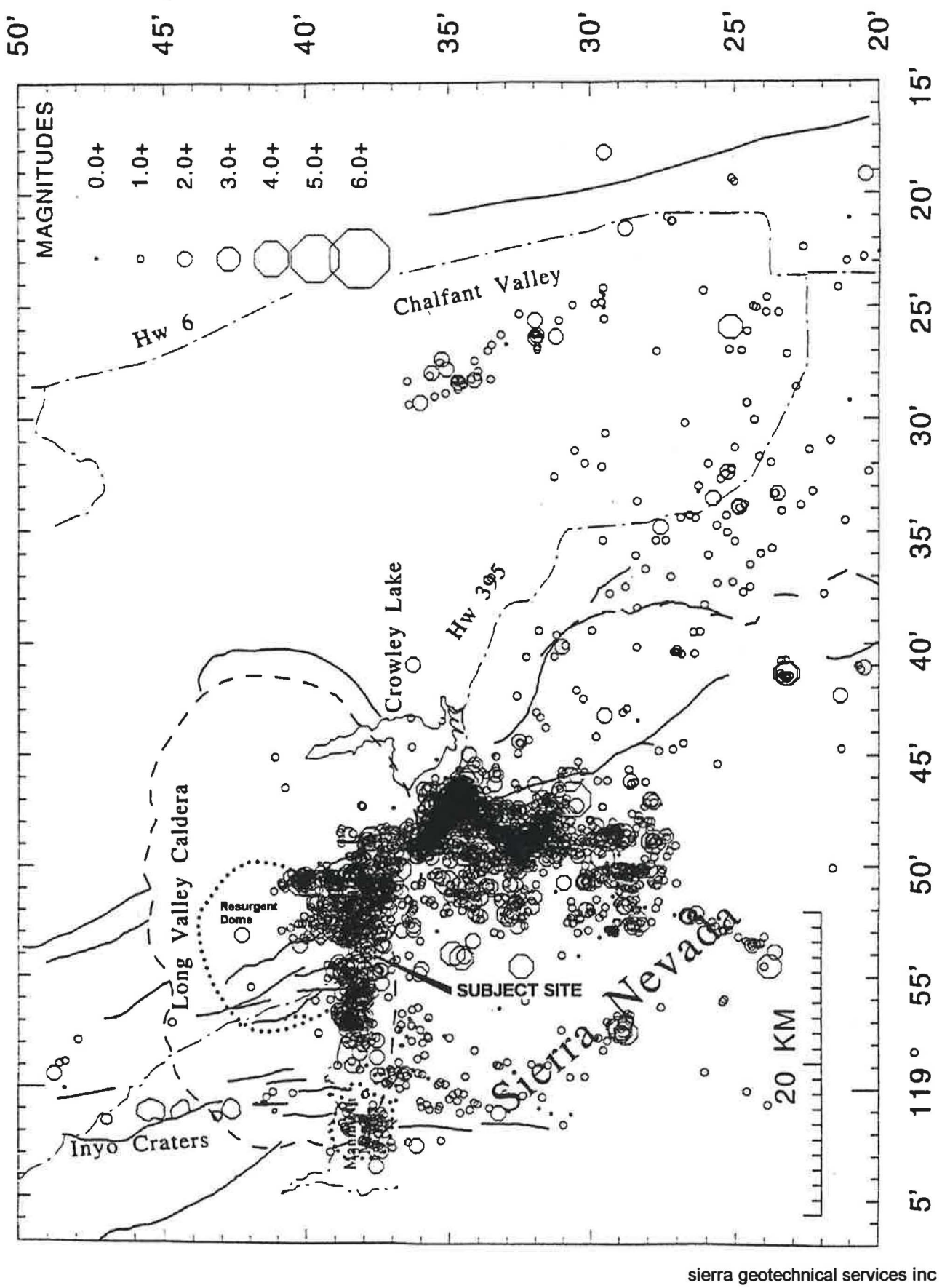

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Figure 7 – Map showing 1998 earthquake epicenters for Long Valley (USGS website).

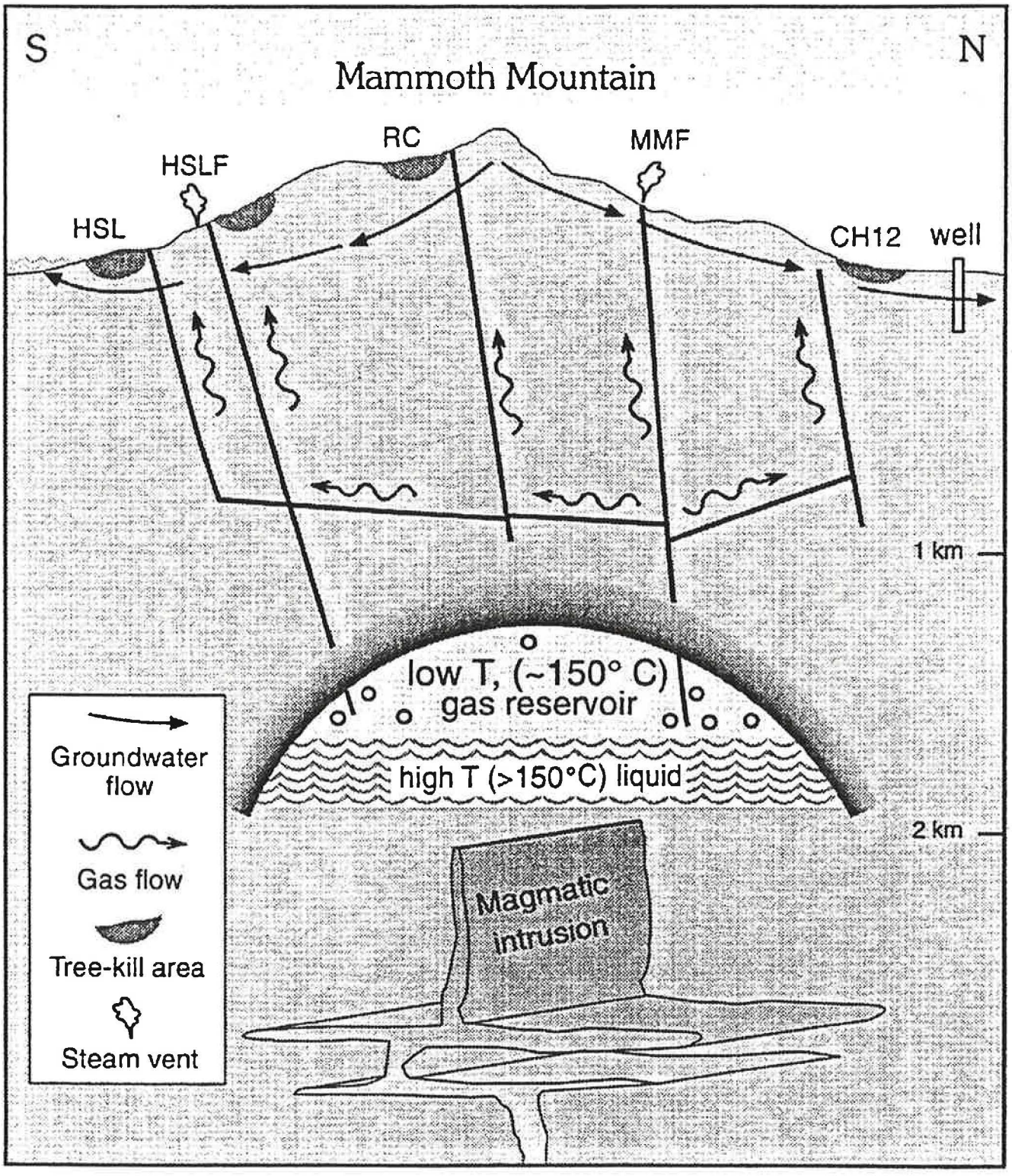

Figure 9 – Schematic cross section showing hypothesized gas reservoir beneath Mammoth Mountain (Sorey, et al, 1999).

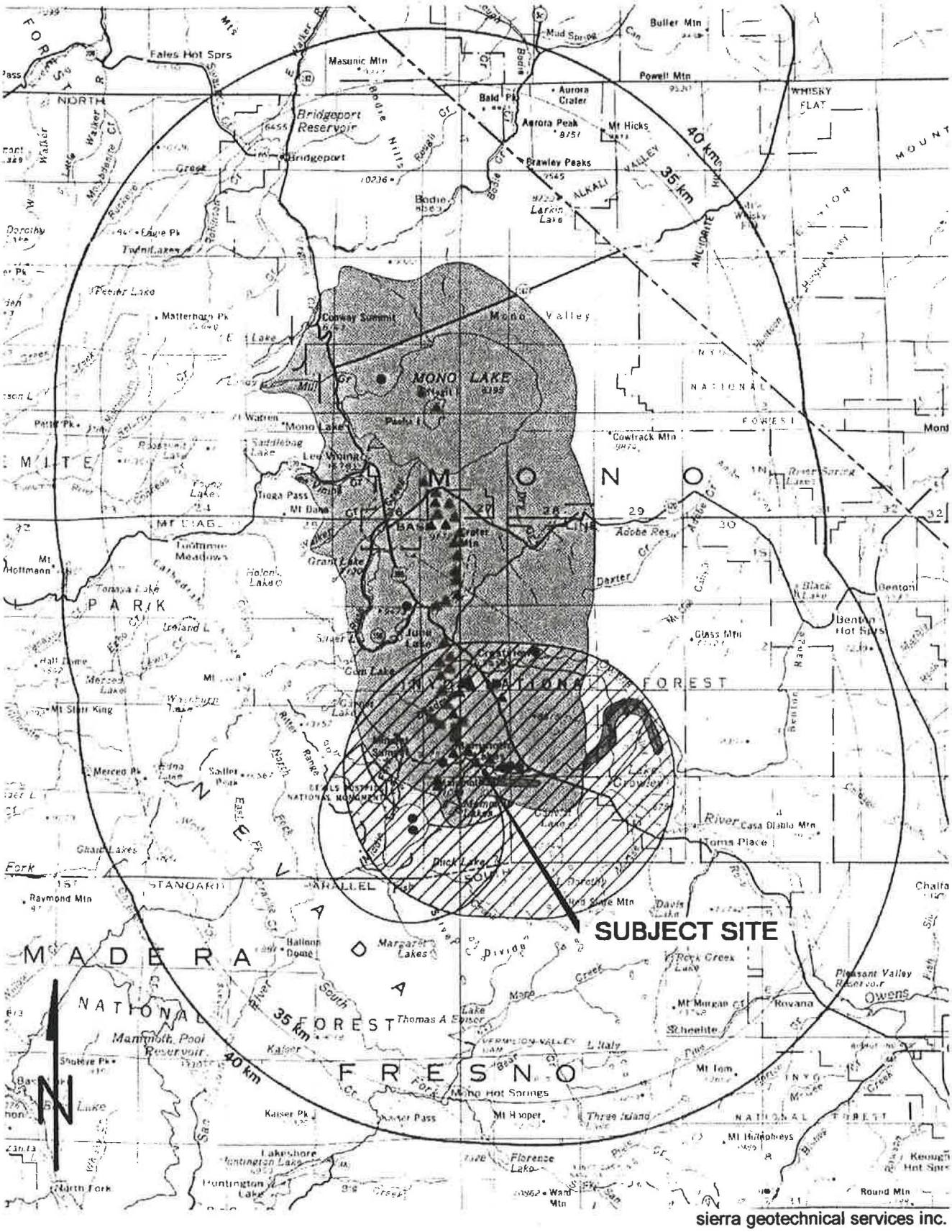

Figure 10a – Volcanic Hazard Zones (Miller, 1989).

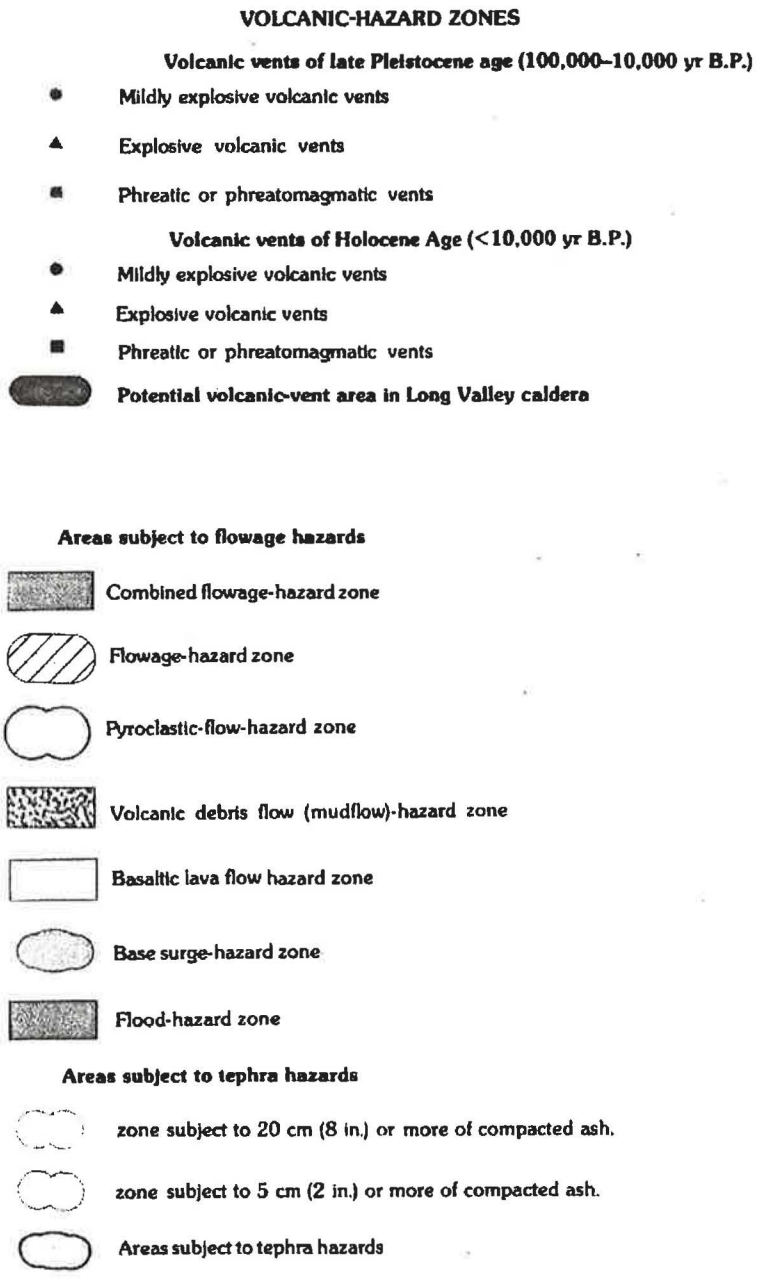

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Figure 10b – Legend for Figure 10a Volcanic Hazard Zones (Miller, 1989).

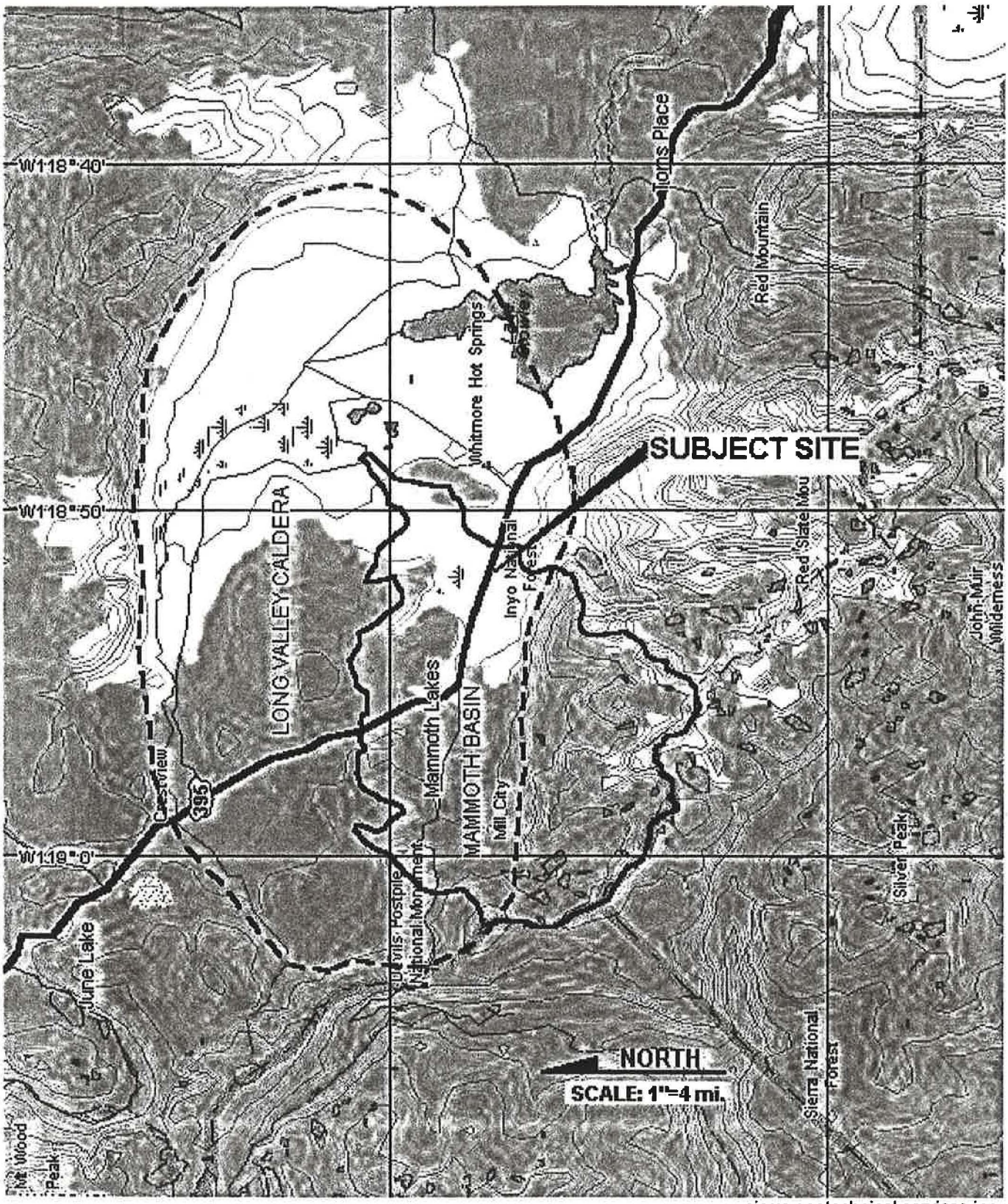

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Figure 11 – Map of hydrologic boundaries of the Mammoth Basin.

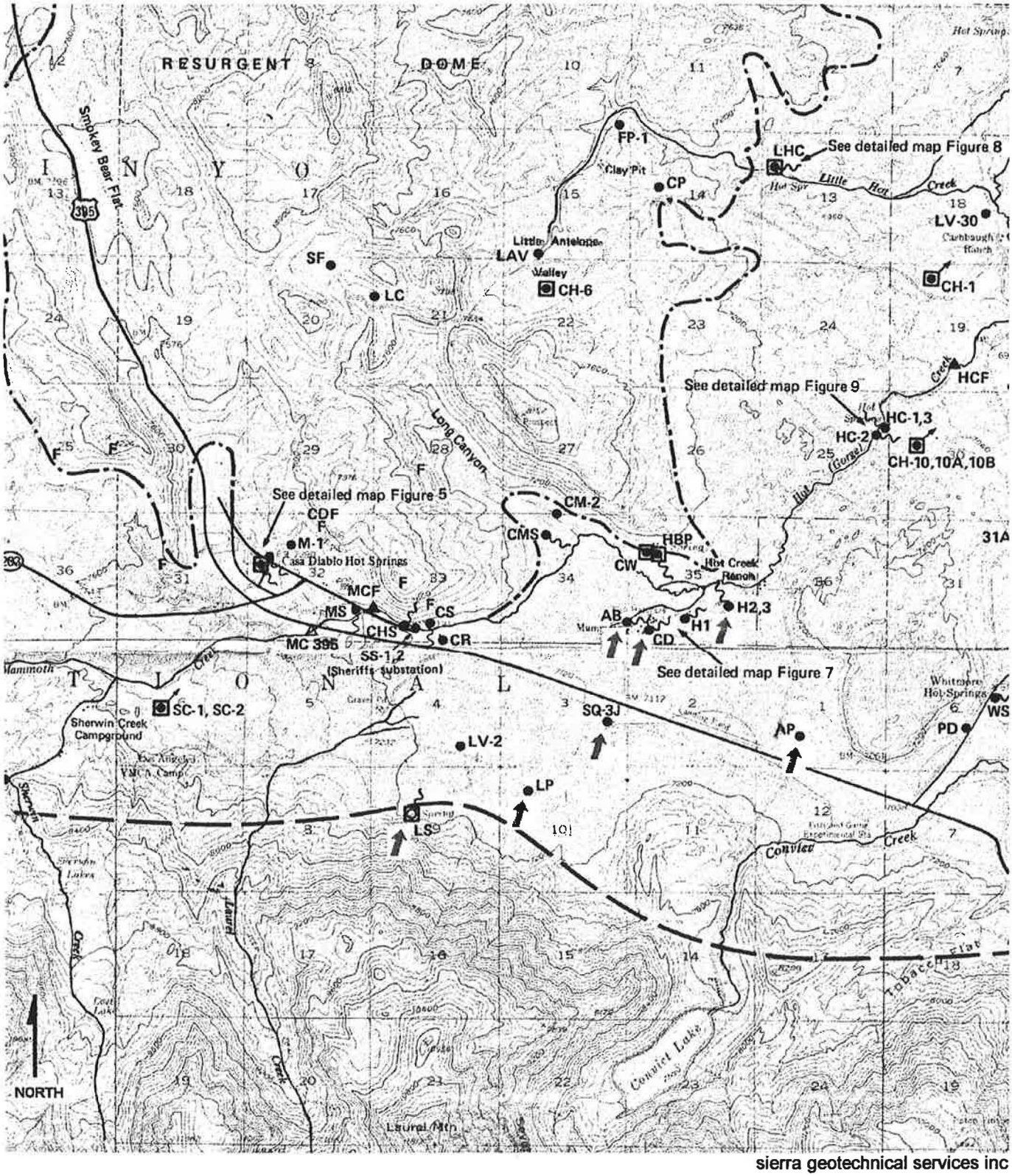

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Figure 12 – Map showing locations of groundwater sampling sites (from Farrar et al., 1985).

APPENDIX A
USGS GROUNDWATER DATA – WELLSQ-3J

USGS Depth to Groundwater Data - Well SQ-3J

(Provided by USGS on 2/15/200)

PAGE 1

WATER-LEVEL DATE	WATER LEVEL (FEET)
07-17-1984	21.25
09-02-1984	12.90
03-21-1985	15.80
10-20-1985	16.01
06-08-1986	10.55
08-31-1986	11.19
11-16-1986	14.79
04-21-1987	16.09
08-30-1987	16.58
12-18-1987	18.04
03-01-1988	18.18
04-21-1988	18.39
07-27-1988	17.00
04-25-1989	19.09
08-08-1989	18.59
09-20-1989	19.55
10-18-1989	19.84
11-22-1989	19.95
12-19-1989	20.19
01-08-1990	20.38
02-21-1990	20.55
03-20-1990	20.41
04-24-1990	20.24
05-23-1990	19.90
06-12-1990	19.70
07-16-1990	19.50
08-27-1990	19.92
09-24-1990	20.53
10-15-1990	20.78
11-15-1990	21.12
12-17-1990	21.48
01-15-1991	21.42
02-14-1991	21.42
03-19-1991	21.32
04-10-1991	21.07
05-13-1991	21.10
06-19-1991	18.08
07-17-1991	17.92
08-21-1991	18.66

08-27-1991 18.84

WATER-LEVEL DATE	WATER LEVEL (FEET)
09-17-1991	20.81
10-21-1991	20.48
11-20-1991	20.95
12-11-1991	21.18
01-15-1992	21.45
02-21-1992	21.58
03-10-1992	21.79
04-08-1992	21.65
05-14-1992	21.56
06-08-1992	19.96
07-21-1992	20.76
09-16-1992	21.72
10-05-1992	21.93
11-19-1992	22.17
12-16-1992	22.34
01-13-1993	21.80
03-04-1993	21.63
03-23-1993	21.54
04-14-1993	20.28
05-14-1993	19.90
06-16-1993	17.22
07-20-1993	15.18
08-26-1993	15.48
09-07-1993	16.35
10-14-1993	18.53
11-10-1993	19.64
12-16-1993	20.54
01-11-1994	20.75
02-15-1994	21.46
03-09-1994	21.32
04-07-1994	21.65
05-16-1994	21.23
06-09-1994	19.94
07-12-1994	19.60
08-08-1994	20.87
09-12-1994	21.68
10-13-1994	21.81
11-08-1994	21.95
12-13-1994	22.17
02-23-1995	22.13

WATER-LEVEL DATE	WATER LEVEL (FEET)
03-23-1995	20.96
04-13-1995	19.92
05-17-1995	18.65
06-15-1995	15.72
07-13-1995	12.29
07-19-1995	11.65
08-01-1995	10.94
08-15-1995	10.43
09-12-1995	11.80
10-17-1995	14.78
11-07-1995	15.68
11-09-1995	15.68
12-14-1995	17.39
01-25-1996	18.31
02-14-1996	18.56
03-12-1996	18.59
04-22-1996	18.40
05-14-1996	16.65
05-16-1996	16.61
06-04-1996	15.95
06-17-1996	14.31
07-15-1996	13.65
07-18-1996	13.52
08-19-1996	13.40
09-16-1996	15.52
10-18-1996	16.43
11-15-1996	17.07
11-19-1996	17.15
12-18-1996	17.76
01-13-1997	16.29
02-19-1997	16.69
03-17-1997	17.12
04-14-1997	17.60
05-12-1997	16.73
06-16-1997	15.28
07-13-1997	14.27
08-20-1997	14.53
09-10-1997	15.30
10-15-1997	16.85
11-18-1997	17.65

WATER-LEVEL DATE	WATER LEVEL (FEET)
12-16-1997	17.80
01-13-1998	17.60
02-10-1998	17.45
03-18-1998	17.96
04-13-1998	17.37
05-12-1998	16.87
06-23-1998	15.03
07-14-1998	12.35
08-17-1998	11.9
09-15-1998	12.4
10-14-1998	13.95
11-11-1998	15.00
12-16-1998	16.13
01-12-1999	16.67
02-16-1999	17.15
03-15-1999	17.40
04-12-1999	17.83
05-10-1999	18.03
06-17-1999	15.52
07-13-1999	14.40
08-19-1999	14.65
09-21-1999	15.90
10-12-1999	16.33
11-27-1999	17.65

APPENDIX B
WELL DRILLERS' LOGS

Mono County
Department

State Well No.
County Well No 26-79-53
USGS Well No. SQ-35

COUNTY OF MONO
WATER WELL DRILLERS REPORT

(1) OWNER:
Name Sierra Materials
Address P.O. Box 978
Mammoth Lakes Ca.

(2) LOCATION OF WELL:
County Mono Owner's number, if any
Township, Range, and Section NE¼ of SE¼ of Sec. 3 - T4S R28E
Distance from cities, roads, railroads, etc. Hwy 395

(3) TYPE OF WORK *(check)*:
New Well X Deepening ☐ Reconditioning ☐ Destroying ☐
If destruction, describe material and procedure in Item 11.

(4) PROPOSED USE *(check)*:
Domestic ☒ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

(5) EQUIPMENT:
Rotary Air ☒
Cable ☐
Other ☐

(6) CASING INSTALLED:
STEEL: OTHER
SINGLE ☐ DOUBLE ☐ Plastic

From ft.	To ft.	Diam.	Gage or Wall
0	127	8	160

If gravel packed

Diameter of Bore	From ft.	To ft.

Size of shoe or well ring:
Size of gravel:
Describe joint

(7) PERFORATIONS OR SCREEN:
Type of perforation or name of screen

From ft.	To ft.	Perf. per row	Rows per ft.	Size in. x in.
27	127			6 x 18

(8) CONSTRUCTION:
Was a surface sanitary seal provided? Yes ☒ No. ☐ To what depth 20 ft.
Were any strata sealed against pollution? Yes ☐ No ☐ If yes, note depth of strata
From ft. to ft.
From ft. to ft.
Method of sealing Cement grout

(9) WATER LEVELS:
Depth at which water was first found, if known ft.
Standing level before perforating, if known ft.
Standing level after perforating and developing 20 ft.

(10) WELL TESTS: air lift
Was pump test made? Yes ☒ No ☐ If yes, by whom? us
Yield: 200 gal./min. with ft. drawdown after hrs.
Temperature of water Was a chemical analysis made? Yes ☐ No ☒
Was electric log made of well? Yes ☐ No ☒ If yes, attach copy

(11) WELL LOG:
Total depth 125 ft. Depth of completed well ft.
Formation: *Describe by color, character, size of material, and structure*

ft. to	ft.	
0	4	Large Gravel
4	10	Large Boulder & Course Sand
10	35	Andesite Hard
35	90	~~Broken~~ Basalt
90	115	Broken Basalt
115	125	Hard Basalt

Work started 10-8 1979 Completed 10-26 1979

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
NAME Lile's Well Drilling & Pump Service
(Person, firm, or corporation) (Typed or printed)
Address 9500 Central Avenue
Orangevale, Ca. 95662
[Signed] Russell Lile
(Well Driller)
License No. 196723 Dated 12-7-79, 1979

mw-1

Boring #1

Begin 10-5-80
End 10-5-80
Log by H. Eagle

Forest Service Pond
Mammoth County Water District
Consultant - Bob Fox
Drilling by Kirschnman Water Well Drilling Co.
Inyokern - Karl Kirschnman driller
Speedstar SS 15II

Depth	Litho Log	Drilling Info.
	Logged from cuttings	9 7/8 Tricone. Hydrogel and Flintkote Type S Lime.
0 - 8'	Not logged. Surface material is gravelly sand	
8 - 16'	Sandy gravel: dark red volcanics. Drills as though in coarse gravel and cobbles.	Drills rough and moderately slow. Thick mud.
16 - 21'	Basalt flow: dark brown volcanic fragments with some quartz and feldspar. Drills progressively harder. Increasing amounts of fresh, dark gray basalt (?) fragments. Probably a basalt flow.	Drills smoother and harder. Very hard drilling from 19'.
21 - 25' Total Depth 25'	Sand: Medium to coarse sand composed of angular volcanic fragments. Probably alluvial sand.	Drill faster and rougher. Installed 6 5/8 OD/6 1/4 ID steel casing. Blank 0-3½' slotted (1/8"x2½" slots - six rows) 3½' - 25' (approx.) 1½' stickup.

Gravel packed 5' - 25'. Cement seal 0 - 5'. Fluid level 12½' RP-OG 10-5-80

MW-2

Boring #2
Begin 11-5-80
End 11-5-80
Log by H. Eagle

Forest Service Pond
Mammoth County Water District
Consultant - Bob Fox
Drilling by Kirschnman Water Well Drilling Co.
Inyokern - Karl Kirschuman driller
Speedstar SS 15II

Depth	Litho Log	Drilling Info.
	Logged from cuttings	9 7/8" Tricone. Hydrogel and Flintkote Type S Lime.
0 - 4'	Silty, gravelly sand: Light gray volcanic fragments, angular to subangular.	Drills rough and slow as on coarse gravel.
4 - 12'	Silty clay: Green-gray clay, low to moderately plastic. Some fine to medium grained sand composed of igneous grains in upper portion.	Drills fast and smooth.
12 - 25' Total Depth 25'	Sand: Light gray, fine to medium grained, granitic and volcanic grains, subangular to subrounded. Uniform 15 - 25' - Picking up some light green clay balls with sand.	Installed 6 5/8 OD/6¼ ID steel casing. Blank 0-3'. Slotted (1/8"x2½", six rows) 3-23' (approx.) 2' stickup.

Gravel packed 5 - 23' approx. Cement seal 0 - 5'.
Water level 12' RP-OG 11-6-80 a.m.

MW-3

Boring #3
Begin 11-6-80
End
Log by H. Eagle

Forest Service Pond
Mammoth County Water District
Consultant - Bob Fox
Drilling by Kirschnman Water Well Drilling Co.
Inyokern - Karl Kirschnman driller
Speedstar SS 15II

Depth	Litho Log	Drilling Info.
	Logged from cuttings	9 7/8" Tricone. Hydrogel and Flintkote Type S Lime.
0 - 4'	Sandy gravel-Gravelly sand: Light gray, fine to medium, subangular to subrounded granitic and volcanic grains. 25% dark minerals.	Drills smooth and moderately fast. Using thick mud.
4 - 10'	Sand: Yellow-brown, coarse granitic and volcanic grains. Dark minerals increase to 30%. 15% dark gray, angular volcanic fragments.	Smooth and moderately fast.
10 - 23' Total Depth 23'	Gravelly sand: Dark gray, 50% dark minerals and basalt fragments, subangular to subrounded.	Moderately fast with a little chatter. Installed 6 5/8 OD/6¼ ID steel casing. Blank 0-3. Slotted (1/8"x2½", six rows) 3-23' (approx.). 1' stickup.

Gravel packed 5 - 23'. Cement 0 - 5'. Depths approx.
Water level 6' RP-OG.
Well made approx. 30 gal/min.

MW-4

Boring #4
Begin 11-6-80
End 11-6-80
Log by H. Eagle

Forest Service Pond
Mammoth County Water District
Consultant - Bob Fox
Drilling by Kirschnman Water Well Drilling Co.
Inyokern - Karl Kirschnman driller
Speedstar SS 15II

Depth	Litho Log	Drilling Info.
	Logged from cuttings	9 7/8" Tricone. Hydrogel and Flintkote Type S Lime.
0 - 3'	Sandy gravel-Gravelly sand: Light gray, fine to medium, subangular to subrounded granitic and volcanic grains. 25% dark minerals.	Drills smooth and fast. Thick mud.
3 - 5'	Clay: Green-gray, moderately plastic.	
5 - 13'	Gravelly sand: Dark gray, granitic and volcanic grains. 30% dark minerals. Occasional red-brown clay balls.	Drills slow and rough as in cobbles.
13 - 23' Total Depth 23'	Basalt: Dark gray with some red-brown weathered in upper foot. Remainder of interval dark gray, coarse basalt fragments. At 17', slight pinkish cast to basalt fragments. At 19', 0.2' softer tan zone.	Drills very hard and slow. Installed 6 5/8"OD/6¼ ID steel casing. Blank 0-3, slotted (1/8"x2½", six rows) 3-23' 1' stickup.

Well made approx. 15 gal/min.
Water level 8' RP-OG. 10-7-80 a.m.

APPENDIX C
ANALYTICAL RESULTS, PLATE 1, and PLATE 2

BC Laboratories, Inc.

WATER ANALYSIS
(GENERAL CHEMISTRY)

SIERRA GEOTECHNICAL SERVICES, INC.
569 OLD MAMMOTH ROAD
MAMMOTH LAKES, CA 93546
Attn: DEAN DOUGHERTY 619-934-3992

Date Reported: 06/12/2000
Date Received: 05/17/2000
Laboratory No.: 00-05901-1

Project Number: 3.01863
Sampling Location: MORGAN INDUSTRIAL PK.
Sample ID: MCWD MW-1 LAUREL POND
Sampling Date/Time: 05/16/2000 @ 09:30
Sample Collected By: DEAN

Constituents	Results	Units	P.Q.L.	Method	
Calcium	15.	mg/L	0.050	EPA-6010	
Magnesium	5.8	mg/L	0.050	EPA-6010	
Sodium	16.	mg/L	0.50	EPA-6010	
Potassium	3.5	mg/L	1.0	EPA-6010	
Hydroxide	None Detected	mg/L	0.8	EPA-310.1	
Carbonate	None Detected	mg/L	2.6	EPA-310.1	
Bicarbonate	89.	mg/L	2.6	EPA-310.1	
Sulfate	9.5	mg/L	1.0	EPA-300.0	
Chloride	8.2	mg/L	0.5	EPA-300.0	
Nitrate/Nitrite as NO3	1.6	mg/L	0.4	EPA-353.2	
pH	7.45	pH Units	-.	EPA-9040	
Electrical Conductivity @ 25 C	190.	umhos/cm	1.	EPA-9050	
Total Dissolved Solids @ 180 C	153.	mg/L	10.	EPA-160.1	
Ammonia as N	0.02	mg/L	0.02	EPA-350.1	*04

P.Q.L. = Practical Quantitation Limit (refers to the least amount of analyte quantifiable based on sample size used and analytical technique employed).

Flag Explanations:
*04 = Sample specific matrix spike recovery(s) are not within QC limits. Accuracy verified through the LCS.
California D.O.H.S. Cert. #1186

M. Atencio

Marna Atencio
Department Supervisor

results listed in this report are for the exclusive use of the submitting party, BC Laboratories, Inc. assumes no responsibility for report alteration, detachment or third party interpretation

BC Laboratories, Inc.

WATER ANALYSIS
(GENERAL CHEMISTRY)

SIERRA GEOTECHNICAL SERVICES, INC.
569 OLD MAMMOTH ROAD
MAMMOTH LAKES, CA 93546
Attn: DEAN DOUGHERTY 619-934-3992

Date Reported: 06/12/2000
Date Received: 05/17/2000
Laboratory No.: 00-05901-2

Project Number: 3.01863
Sampling Location: MORGAN INDUSTRIAL PK.
Sample ID: LAUREL SPRING HEAD
Sampling Date/Time: 05/16/2000 @ 10:00
Sample Collected By: DEAN

Constituents	Results	Units	P.Q.L.	Method	
Calcium	17.	mg/L	0.050	EPA-6010	
Magnesium	0.6	mg/L	0.050	EPA-6010	
Sodium	5.7	mg/L	0.50	EPA-6010	
Potassium	1.3	mg/L	1.0	EPA-6010	
Hydroxide	None Detected	mg/L	0.8	EPA-310.1	
Carbonate	2.9	mg/L	2.6	EPA-310.1	
Bicarbonate	39.	mg/L	2.6	EPA-310.1	
Sulfate	15.	mg/L	1.0	EPA-300.0	
Chloride	None Detected	mg/L	0.5	EPA-300.0	
Nitrate/Nitrite as NO3	0.74	mg/L	0.4	EPA-353.2	
pH	8.44	pH Units	-.	EPA-9040	
Electrical Conductivity @ 25 C	111.	umhos/cm	1.	EPA-9050	
Total Dissolved Solids @ 180 C	90.7	mg/L	10.	EPA-160.1	
Ammonia as N	0.02	mg/L	0.02	EPA-350.1	*04

P.Q.L. = Practical Quantitation Limit (refers to the least amount of analyte quantifiable based on sample size used and analytical technique employed).

Flag Explanations:
*04 = Sample specific matrix spike recovery(s) are not within QC limits. Accuracy verified through the LCS.

California D.O.H.S. Cert. #1186

M. Atencio

Marna Atencio
Department Supervisor

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BC Laboratories, Inc.

WATER ANALYSIS
(GENERAL CHEMISTRY)

SIERRA GEOTECHNICAL SERVICES, INC.
569 OLD MAMMOTH ROAD
MAMMOTH LAKES, CA 93546
Attn: DEAN DOUGHERTY 619-934-3992

Date Reported: 06/12/2000
Date Received: 05/17/2000
Laboratory No.: 00-05901-3

Project Number: 3.01863
Sampling Location: MORGAN INDUSTRIAL PK.
Sample ID: HOT CREEK HATCHERY CD SUPPLY
Sampling Date/Time: 05/16/2000 @ 11:10
Sample Collected By: DEAN

Constituents	Results	Units	P.Q.L.	Method	
Calcium	16.	mg/L	0.050	EPA-6010	
Magnesium	12.	mg/L	0.050	EPA-6010	
Sodium	24.	mg/L	0.50	EPA-6010	
Potassium	5.2	mg/L	1.0	EPA-6010	
Hydroxide	None Detected	mg/L	0.8	EPA-310.1	
Carbonate	None Detected	mg/L	2.6	EPA-310.1	
Bicarbonate	155.	mg/L	2.6	EPA-310.1	
Sulfate	8.4	mg/L	1.0	EPA-300.0	
Chloride	2.9	mg/L	0.5	EPA-300.0	
Nitrate/Nitrite as NO3	1.6	mg/L	0.4	EPA-353.2	
pH	7.00	pH Units	-.	EPA-9040	
Electrical Conductivity @ 25 C	254.	umhos/cm	1.	EPA-9050	
Total Dissolved Solids @ 180 C	201.	mg/L	10.	EPA-160.1	
Ammonia as N	None Detected	mg/L	0.02	EPA-350.1	*04

P.Q.L. = Practical Quantitation Limit (refers to the least amount of analyte quantifiable based on sample size used and analytical technique employed).

Flag Explanations:
*04 = Sample specific matrix spike recovery(s) are not within QC limits. Accuracy verified through the LCS.

California D.O.H.S. Cert. #1186

M. Atencio

Marna Atencio
Department Supervisor

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BC Laboratories, Inc.

WATER ANALYSIS
(GENERAL CHEMISTRY)

SIERRA GEOTECHNICAL SERVICES, INC.
569 OLD MAMMOTH ROAD
MAMMOTH LAKES, CA 93546
Attn: DEAN DOUGHERTY 619-934-3992

Date Reported: 06/12/2000
Date Received: 05/17/2000
Laboratory No.: 00-05901-4

Project Number: 3.01863
Sampling Location: MORGAN INDUSTRIAL PK.
Sample ID: HOT CREEK HATCHERY AB SPRING HEAD
Sampling Date/Time: 05/16/2000 @ 11:30
Sample Collected By: DEAN

Constituents	Results	Units	P.Q.L.	Method	
Calcium	13.	mg/L	0.050	EPA-6010	
Magnesium	9.1	mg/L	0.050	EPA-6010	
Sodium	22.	mg/L	0.50	EPA-6010	
Potassium	5.0	mg/L	1.0	EPA-6010	
Hydroxide	None Detected	mg/L	0.8	EPA-310.1	
Carbonate	None Detected	mg/L	2.6	EPA-310.1	
Bicarbonate	121.	mg/L	2.6	EPA-310.1	
Sulfate	7.7	mg/L	1.0	EPA-300.0	
Chloride	4.8	mg/L	0.5	EPA-300.0	
Nitrate/Nitrite as NO3	1.5	mg/L	0.4	EPA-353.2	
pH	6.97	pH Units	-.	EPA-9040	
Electrical Conductivity @ 25 C	220.	umhos/cm	1.	EPA-9050	
Total Dissolved Solids @ 180 C	179.	mg/L	10.	EPA-160.1	
Ammonia as N	None Detected	mg/L	0.02	EPA-350.1	*04

P.Q.L. = Practical Quantitation Limit (refers to the least amount of analyte quantifiable based on sample size used and analytical technique employed).

Flag Explanations:
*04 = Sample specific matrix spike recovery(s) are not within QC limits. Accuracy verified through the LCS.
California D.O.H.S. Cert. #1186

M. Atencio

Marna Atencio
Department Supervisor

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BC Laboratories, Inc.

WATER ANALYSIS
(GENERAL CHEMISTRY)

SIERRA GEOTECHNICAL SERVICES, INC.
569 OLD MAMMOTH ROAD
MAMMOTH LAKES, CA 93546
Attn: DEAN DOUGHERTY 619-934-3992

Date Reported: 06/12/2000
Date Received: 05/17/2000
Laboratory No.: 00-05901-5

Project Number: 3.01863
Sampling Location: MORGAN INDUSTRIAL PK.
Sample ID: HOT CREEK HATCHERY HOT 2 SPRING HEAD
Sampling Date/Time: 05/16/2000 @ 12:00
Sample Collected By: DEAN

Constituents	Results	Units	P.Q.L.	Method	
Calcium	18.	mg/L	0.050	EPA-6010	
Magnesium	6.8	mg/L	0.050	EPA-6010	
Sodium	17.	mg/L	0.50	EPA-6010	
Potassium	3.7	mg/L	1.0	EPA-6010	
Hydroxide	None Detected	mg/L	0.8	EPA-310.1	
Carbonate	None Detected	mg/L	2.6	EPA-310.1	
Bicarbonate	104.	mg/L	2.6	EPA-310.1	
Sulfate	9.1	mg/L	1.0	EPA-300.0	
Chloride	6.1	mg/L	0.5	EPA-300.0	
Nitrate/Nitrite as NO3	1.2	mg/L	0.4	EPA-353.2	
pH	7.13	pH Units	-.	EPA-9040	
Electrical Conductivity @ 25 C	203.	umhos/cm	1.	EPA-9050	
Total Dissolved Solids @ 180 C	150.	mg/L	10.	EPA-160.1	
Ammonia as N	None Detected	mg/L	0.02	EPA-350.1	*04

P.Q.L. = Practical Quantitation Limit (refers to the least amount of analyte quantifiable based on sample size used and analytical technique employed).
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BC Laboratories, Inc.

WATER ANALYSIS
(GENERAL CHEMISTRY)

SIERRA GEOTECHNICAL SERVICES, INC.
569 OLD MAMMOTH ROAD
MAMMOTH LAKES, CA 93546
Attn: DEAN DOUGHERTY 619-934-3992

Date Reported: 06/12/2000
Date Received: 05/17/2000
Laboratory No.: 00-05901-6

Project Number: 3.01863
Sampling Location: MORGAN INDUSTRIAL PK.
Sample ID: AIRPORT WELL NO.1 (OLD WELL)
Sampling Date/Time: 05/16/2000 @ 12:10
Sample Collected By: DEAN

Constituents	Results	Units	P.Q.L.	Method
Calcium	37.	mg/L	0.050	EPA-6010
Magnesium	5.8	mg/L	0.050	EPA-6010
Sodium	11.	mg/L	0.50	EPA-6010
Potassium	3.3	mg/L	1.0	EPA-6010
Hydroxide	None Detected	mg/L	0.8	EPA-310.1
Carbonate	None Detected	mg/L	2.6	EPA-310.1
Bicarbonate	146.	mg/L	2.6	EPA-310.1
Sulfate	11.	mg/L	1.0	EPA-300.0
Chloride	3.9	mg/L	0.5	EPA-300.0
Nitrate/Nitrite as NO3	3.4	mg/L	0.4	EPA-353.2
pH	7.95	pH Units	-.	EPA-9040
Electrical Conductivity @ 25 C	252.	umhos/cm	1.	EPA-9050
Total Dissolved Solids @ 180 C	184.	mg/L	10.	EPA-160.1
Ammonia as N	None Detected	mg/L	0.02	EPA-350.1

P.Q.L. = Practical Quantitation Limit (refers to the least amount of analyte quantifiable based on sample size used and analytical technique employed).
California D.O.H.S. Cert. #1186

M. Atencio

Marna Atencio
Department Supervisor

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BC Laboratories, Inc.

WATER ANALYSIS
(GENERAL CHEMISTRY)

SIERRA GEOTECHNICAL SERVICES, INC.
569 OLD MAMMOTH ROAD
MAMMOTH LAKES, CA 93546
Attn: DEAN DOUGHERTY 619-934-3992

Date Reported: 06/12/2000
Date Received: 05/17/2000
Laboratory No.: 00-05901-7

Project Number: 3.01863
Sampling Location: MORGAN INDUSTRIAL PK.
Sample ID: SQ-3J MARZANO WELL
Sampling Date/Time: 05/16/2000 @ 12:25
Sample Collected By: DEAN

Constituents	Results	Units	P.Q.L.	Method	
Calcium	14.	mg/L	0.050	EPA-6010	
Magnesium	11.	mg/L	0.050	EPA-6010	
Sodium	22.	mg/L	0.50	EPA-6010	
Potassium	4.9	mg/L	1.0	EPA-6010	
Hydroxide	None Detected	mg/L	0.8	EPA-310.1	
Carbonate	None Detected	mg/L	2.6	EPA-310.1	
Bicarbonate	138.	mg/L	2.6	EPA-310.1	
Sulfate	8.1	mg/L	1.0	EPA-300.0	
Chloride	2.8	mg/L	0.5	EPA-300.0	
Nitrate/Nitrite as NO3	1.3	mg/L	0.4	EPA-353.2	
pH	7.17	pH Units	-.	EPA-9040	
Electrical Conductivity @ 25 C	233.	umhos/cm	1.	EPA-9050	
Total Dissolved Solids @ 180 C	187.	mg/L	10.	EPA-160.1	
Ammonia as N	None Detected	mg/L	0.02	EPA-350.1	*04

P.Q.L. = Practical Quantitation Limit (refers to the least amount of analyte quantifiable based on sample size used and analytical technique employed).

Flag Explanations:
*04 = Sample specific matrix spike recovery(s) are not within QC limits. Accuracy verified through the LCS.

California D.O.H.S. Cert. #1186

Marna Atencio
Department Supervisor

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CHAIN OF CUSTODY

BC LABORATORIES, INC. 4100 Atlas Court - Bakersfield, CA 93308 (805) 327-4911 - FAX (805) 327-1918

Name: SGSI	Project: Morgan Industrial Pk
Address: 569 Old Mammoth Lakes Road	Project #: 3.01863
City: Mammoth Lakes State: CA Zip: 93546	Sampler Name: DEAN
Attn: DEAN DOUGHERTY Phone: 760-934-3992	Submission # 00-05901

Lab #	Sample Description	Date & Time Sampled	Gen. Min. (non-drinking)	Nitrate / Nitrite	Ammonia as N	DW - Drinking Water GW - Ground Water WW - Waste Water S - Soil O - Oil SL - Sludge M - Miscellaneous	Turn Around Time Requested	Number and Container Type
-1	MCWD MW-1 Laurel Pond	5/16/2000 @ 9:30a	✓	✓	✓	GW	2 wks	2
-2	Laurel Spring Head	5/16/2000 @ 10:00a	✓	✓	✓	↓	↓	2
-3	Hot Creek Hatchery CD Supply	5/16/2000 @ 11:10a	✓	✓	✓			2
-4	Hot Creek Hatchery AB Spring Head	5/16/2000 @ 11:30a	✓	✓	✓			2
-5	Hot Creek Hatchery Hat 2 Spring Head	5/16/2000 @ 12:00p	✓	✓	✓			2
-6	Airport Well No. 1 (old Well)	5/16/2000 @ 12:10p	✓	✓	✓			2
-7	SQ-3J Marzano Well	5/16/2000 @ 12:25p	✓	✓	✓			2
								14 Total

CHK BY DISTRIBUTION SUB-OUT

Billing Information:

Name: Sierra Geotechnical Services, Inc.
Address: PO Box 5024
City Mammoth Lakes State CA Zip 93546
Attention: Kathy Buss
PO # 3.01863 (Supplemental)

BC Lab. Field Service

Time : Miles:
Equipment: Flat Rate

Report Drinking Water on State Form ? Y / (N)
Send Copy to State of Calif. Y / (N)

Comments:

Relinquished by: (Signature)	Received by: (Signature)	Date: Time:
	J. Dawson	5/17/00 1145
Relinquished by: (Signature)	Received by: (Signature)	Date: Time:
Relinquished by: (Signature)	Received by: (Signature)	Date: Time:
Relinquished by: (Signature)	Received by: (Signature)	Date: Time:

Revised 5/97....Sample Disposal by BC Labs may be billed at $5.00 / sample for non-aqueous Samples:

APPENDIX D

BIOLOGICAL ASSESSMENT

by Michael Brandman Associates

DRAFT
BIOLOGICAL ASSESSMENT
SIERRA BUSINESS PARK
MAMMOTH LAKES, CALIFORNIA

Prepared for:

Bauer Environmental Services
15901 Red Hill Avenue
Tustin, California 92780
(714) 258-8055

Contact: Sandra Bauer

Prepared by:

Michael Brandman Associates
15901 Red Hill Avenue, Suite 200
Tustin, California 92780
(714) 258-8100

Contact: Gregg Miller, Senior Scientist

July 7, 2000

TABLE OF CONTENTS

LIST OF EXHIBITS

SECTION 1
INTRODUCTION

This report describes the existing biological resources, potential project impacts and mitigation measures for the proposed development of Sierra Business Park. Sierra Business Park (hereafter referred to as the site or project site) is located near the Town of Mammoth Lakes, in Mono County, California (Exhibit 1). The property is 36 acres in size and a mixed use business/industrial development is planned for the site. The site is located immediately south of Highway 395, and approximately one-quarter mile west of the Mammoth Lakes/Yosemite Airport (Exhibit 2). The project site is depicted on the U.S. Geological Survey (USGS) topographic map Whitmore Hot Springs, California, Range 28 East, Township 4 South, Section 3 (dated 1994). The site is on a broad plain at the base of the Sierra Nevada Mountains.

This report contains the results of a biological survey of the proposed development area conducted by Michael Brandman Associates (MBA). The biological resources section of this report includes the general existing biological character of the site in terms of plant communities, plant species, wildlife, and wildlife habitats. This report also provides an assessment of the sensitive resources in the vicinity of the site, and analyzes the biological significance of the site in view of federal, state, and local laws and policies. Impacts to sensitive biological resources are evaluated and mitigation measures are recommended, if necessary, to lessen these impacts.

SECTION 2
METHODS

Data regarding biological resources on the project site were obtained through a literature review that included documentation of biological resources on sites in the project vicinity, and applicable reference materials; and a general field reconnaissance. The primary objective of the field survey, conducted on April 5, 2000, was to assess the existing conditions of the onsite biological and jurisdictional resources.

LITERATURE REVIEW

Documentation pertinent to the general and sensitive biological resources in the vicinity of the project site was reviewed. Information reviewed included: (1) the Federal Register listing package for each federally listed endangered or threatened species potentially occurring on site; (2) literature pertaining to habitat requirements of special status species potentially occurring on the site; (3) California Natural Diversity Data Base (CNDDB) (RareFind2) information regarding Federal and State special status species potentially occurring on the site; (4) U.S. Fish and Wildlife Service (USFWS) (1999), (5) the California Native Plant Society (CNPS) (1994-1999), (6) the Biological Study of the area conducted by Timothy Taylor (Taylor 1995), and (7) other environmental and biological reports done for the site and other projects in the vicinity of the site.

Sensitive biological resources present, or potentially present, onsite were identified through a literature review using the following resources: U.S. Fish and Wildlife Service (USFWS) (1999), California Department of Fish and Game (CDFG) (1988a, 1988b, 1988c, 2000a, 2000b), California Natural Diversity Data Base (CNDDB) (CDFG 2000c), and the California Native Plant Society (Skinner and Pavlik 1994 and CNPS 1994-1999). Information on biological resources located in the vicinity of the Sierra Business Park was obtained from field guides and other literature pertinent to the project area.

Prior to beginning the survey of the project site, the U.S. Geological Survey (USGS) Whitmore Hot Springs Quadrangle topographic map was examined to determine areas of potential biological resources and U.S. Army Corps of Engineers (USACE) and CDFG jurisdiction.

FIELD RECONNAISSANCE

Field work focused on three primary objectives: (1) assess vegetation communities on and in the vicinity of the site, (2) general plant and wildlife assessment, and (3) special status plant and wildlife species assessment. During the field survey, all plant and wildlife species were recorded. The field surveys were conducted by MBA Senior Scientist Gregg B. Miller on April 5, 2000. Plant communities were assessed in the field and were identified using Sawyer Keeler-Wolf (1995) and Holland (1986).

Flora

All plant species encountered during the field survey were identified and recorded. Scientific nomenclature and common names of plants used in this report follow Hickman (1993). Where not available in Hickman, common names were taken from Munz (1974), Abrams (1923 and 1944), or Abrams and Ferris (1951 and 1960).

Fauna

Wildlife species detected during field surveys by sight, calls, tracks, scat, or other sign were recorded. In addition to species actually observed, expected wildlife use of the site was determined according to known habitat preferences of regional wildlife species and knowledge of their relative distributions in the area.

Scientific nomenclature and common names for vertebrate species referred to in this report followed Stebbins (1985) for reptiles and amphibians, American Ornithologists' Union (1983, with supplements in 1985, 1987, 1989, and 1991) for birds, and Jones et al. (1986) for mammals.

USACE And CDFG Jurisdictional Assessment

During the survey, the site was assessed for wetland and jurisdictional areas that are subject to USACE jurisdiction, pursuant to Section 404 of the Clean Water Act, and/or CDFG jurisdiction, pursuant to Division 2, Chapter 6, Section 1603 of the Fish and Game Code of California.

SECTION 3
EXISTING CONDITIONS

The site is currently an unvegetated borrow site used for gravel mining. In addition to gravel mining equipment the site contains a few buildings used for dog kennels.

TOPOGRAPHY AND SOILS

Topographically, the project site is characterized by a large excavation in terrain that gently slopes downward from west to east. The excavation is approximately 30 to 50 feet deep with a low berm at the top of the excavation. The floor of the site is level. The site substrate is composed of bare gravel and rocks. There are no soils on the project site, as the site has been previously mined for gravel.

VEGETATION COMMUNITIES

There is almost no vegetation on the site, as the site has been previously mined for gravel. There are a few ruderal weedy species scattered on the top of the berm surrounding the site. The sparse vegetation along the berm largely consists of non-native grasses and small forbs.

To the east, west, and south of the site there is an extensive big sagebrush community. This community is dominated by big sagebrush, *Artemisia tridentata*, bitterbrush, *Purshia tridentata*, and rabbitbrush, *Chrysothamnus* spp. Other plants include snowberry, *Symphoricarpos* spp., black bush, *Coleogyne ramosissima*, and desert peach, *Prunus andersonii*. The sagebrush is generally 1 to 3 feet tall with a canopy cover of about 75% in a moderately open stand. The stand has been grazed by cattle and sheep. There are sections of barbwire fence along the berm at the edge of the site, and additional fencing is currently being installed to exclude cattle from the site.

WILDLIFE

No wildlife species were observed on the site during the site survey. Very little wildlife is expected to occur on the 36 acre site due to the complete lack of vegetation and water. Common species tolerant of human activity may occasionally move across the site or briefly pause on the site.. Species that may occasionally use the site include common raven, *Corvus corax*, and coyote, *Canis latrans*. No native bird species are expected to nest on the project site.

The surrounding offsite big sagebrush community is expected to support a variety of wildlife. Common species expected to occur in the sagebrush include: red-tailed hawk, *Buteo jamaicensis*, sage grouse, *Centrocercus urophasianus*, common raven, dark-eyed junco, *Junco hyemalis*, song sparrow, *Melospiza melodia*, coyote, mule deer, *Odocoileus hemionus*, beechey ground squirrel, *Spermophilus beecheyi*, and black-tailed jackrabbit, *Lepus californicus.*

Wildlife movement areas are considered to function as links between large areas of native habitat. Movement areas permit animals to travel between these areas, whether the travel is brief, such as an hour, or several generations in duration. The general region at the base of the Sierra Mountains is used as a movement area for mule deer to move from summer grounds in the Sierra's to winter grounds at lower elevations. Deer of the Round Valley herd (also known as the Sherwin Grade herd) move through the region of the site in their seasonal migrations from higher elevation summer areas to lower elevation winter areas around Round Valley, approximately 25 miles southeast of the site. Deer movement through the area around the site is not strongly constrained by topography, habitat conditions or other natural conditions. There is a wide expanse of gently sloping terrain between the base of the Sierra's and the project site.

SENSITIVE BIOLOGICAL RESOURCES

The following resources are discussed in this section: (1) habitat areas that are unique, of relatively limited distribution, or of particular value to wildlife; and (2) plant and animal species present onsite or in the project vicinity that are given special recognition by federal, state, or local conservation agencies and organizations because of declining, limited, or threatened populations, which are the results, in most cases, of habitat reduction.

Sensitive habitats are vegetation communities that support concentrations of special status plant or wildlife species, are of relatively limited distribution, or are of particular value to wildlife (CNDDB 1998). Jurisdictional wetlands and streams are also considered sensitive habitats. Sensitive habitats

are not afforded legal protection unless they support protected species, except for wetland habitats which cannot be filled without authorization from the USACE and CDFG.

Special status species are native species that have been accorded special legal or management protection because of the concern for their continued existence. There are several different categories of protection at both federal and state levels, depending on the magnitude of threat to continued existence and existing knowledge of population levels.

A federally endangered species is one facing extinction throughout all or a significant portion of its geographic range. A federally threatened species is one likely to become endangered within the foreseeable future throughout all or a significant portion of its range. The presence of any federally threatened or endangered species in a project area generally imposes severe constraints on development, particularly if development would result in "take" of the species or its habitat. The term "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in such conduct. Harm in this sense can include any disturbance to habitats used by the species during any portion of its life history.

Proposed species are those officially proposed by U.S. Fish and Wildlife Service (USFWS) for addition to the federal threatened and endangered species list. Because proposed species may soon be listed as threatened or endangered, these species could become listed prior to or during implementation of a proposed development project.

Species of Special Concern is a designation used by USFWS and CDFG for declining wildlife species. This designation does not provide legal protection, but signifies that these species are recognized as sensitive by USFWS and CDFG. The State of California considers an endangered species one whose prospects of survival and reproduction are in immediate jeopardy, and a threatened species one present in such small numbers throughout its range that it is likely to become an endangered species in the near future in the absence of special protection or management, and a rare species is one present in such small numbers throughout its range that it may become endangered if its present environment worsens. Rare species only applies to California native plants. State threatened and endangered species are fully protected against take, as defined above.

Species that are California Fully Protected include those protected by special legislation for various reasons, such as the golden eagle, *Aquila chrysaetos,* and white-tailed kite, *Elanus leucurus*.

As one of the agencies primarily responsible for administering and enforcing the California Endangered Species Act, CDFG exercises considerable influence over sites inhabited by state listed threatened or endangered species. CDFG is also authorized to provide comprehensive habitat management including, but not limited to, protection of endangered species through natural community conservation plans.

The California Native Plant Society is a local resource conservation organization that has developed an inventory of California's sensitive plant species (Skinner and Pavlik 1994). This inventory is the summary of information on the distribution, rarity, and endangerment of California's vascular plants. This rare plant inventory is comprised of four lists. CNPS presumes that List 1A plant species are extinct in California because they have not been seen in the wild for many years. CNPS considers List 1B plants as rare, threatened or endangered throughout their range. List 2 plant species are considered rare, threatened or endangered in California, but more common in other states. Plant species on lists 1A, 1B, and 2 meet CDFG criteria for endangered, threatened or rare listing. Plant species for which CNPS needs additional information are included on List 3. List 4 plant species are those of limited distribution in California whose susceptibility to threat appears low at this time.

Sensitive Habitats

No sensitive habitats occur on the site. No sensitive habitats were identified in the immediate vicinity of the project site.

Special Status Plants

No special status plants were observed during the survey. Due to the almost complete lack of vegetation on the site no special status plants are expected to occur on the site.

Three special status plant species potentially occur within the project region: Mono milk vetch, *Astragalus monoensis*, Long Valley milk vetch, *Astragalus johannis-howellii,* and Mono Lake lupine, *Lupinus duranii,*

Mono milk vetch is a CNPS list 1B species. Mono milk vetch is a perennial herb that occurs on pumice flats. There are 19 known occurrences of Mono milk vetch in Mono County. There are no known occurrences of Mono milk vetch within 5 miles of the site. There is no habitat for Mono milk vetch on the site, it is not expected to occur on site.

Long Valley milk vetch is a CNPS list 1B species. Long Valley milk vetch is a perennial herb that occurs in swales near current or former hot spring activity. There are several known occurrences of Long Valley milk vetch approximately 5 miles east of the site. There is no habitat for Long Valley milk vetch on the site, it is not expected to occur on site.

Mono Lake lupine is a perennial herb that occurs on pumice flats. There are 30 known occurrences of Mono Lake lupine in Mono County. All occurrences are associated with pumice flats. There are no known occurrences of Mono Lake lupine within 5 miles of the site. There is no habitat for Mono Lake lupine on the site, it is not expected to occur on site.

Special Status Wildlife

No special status wildlife species were observed on the site. Due to the lack of vegetation on the site no special status animals are expected to occur on the site.

Three special status wildlife species Owens Tui chub, *Gila bicolor snyderi*, sage grouse, *Centrocercus urophasianus*, and western white-tailed hare, *Lepus townsendii townsendii*, either occur or may occur in the region of the project site.

Owens Tui chub is a federal and state listed endangered species. Adult chubs are approximately 8 inches long, olive colored above and creamy below. The Owens Tui chub inhabits slow moving weedy waters of the Owens River basin. Habitat loss, water diversions and introduced predators have contributed to the chub's decline. There is no water and thus no habitat for the chub on the project site. The Owens Tui chub is not expected to occur on site. The Owens Tui chub is known to occur at the Hot Creek Fish Hatchery, run by CDFG, approximately one-half mile north of the site.

Sage grouse are a California species of special concern. They are year-long, nonmigratory residents of the sagebrush-dominated plant communities. They are well adapted to this plant community, which provides all of the grouse's life history needs. Sage grouse prefer a mosaic of sagebrush, perennial grass or wet meadow, and water. Adults feed on sagebrush during the winter and on forbs and insects during the summer.

Sage grouse have a lek breeding system. Many males gather at traditional display grounds (leks) and perform courtship displays to attract females. Adult males begin assembling on the leks in mid-March and establish small display territories. These traditional leks are located on patches of bare or sparsely vegetated ground surrounded by sagebrush stands of moderate canopy density. The strutting period typically extends from mid-March to mid-May. Hens usually attend for a few days before copulating with a central male and then leave the lek for the season. The females perform all nest and brood-related activities. Fairly open stands of sagebrush are needed for nesting.

The location of sage grouse nests in relation to leks has been a topic of discussion regarding permitting of various development activities in the vicinity of leks. The Western States Sage Grouse Committee established a series of guidelines regarding vegetation manipulation of sage grouse habitat (Braun et al. 1977). One of these addresses the protection of nesting habitat and assumes that the area within 1.8 miles (3 km) of a lek is important for nesting. These guidelines were developed from studies that found 59 to 87 percent of nests to be within 1.8 miles of leks.

There are no sage grouse leks on the project site. There are three know leks in the region of the site. One lek is located approximately two (2) miles northeast of the site (Perloff pers. comm.), the second is located approximately two (2) miles northwest of the site ((Taylor 1995), the third is located approximately one-half mile south of the site (Russi pers. comm.). Female sage grouse are known to nest in the sagebrush community in the vicinity of the site (Russi pers. comm.).

The western white-tailed hare is a California Species of Special Concern. The hare is found in sagebrush vegetation at higher elevations. The site is within the southern end of the hare's geographic range. Although the hare has not been reported in the region, the hare could occur in the big sagebrush offsite. The western white-tailed hare is not expected to occur on the site as there is little vegetation.

JURISDICTIONAL AREAS

USACE Jurisdiction

Pursuant to §404 of the Clean Water Act, USACE regulates the discharge of dredged and/or fill material into waters of the U.S.. The term "waters of the United States" is defined at 33 CFR Part 328 as: (1) all navigable waters (including all waters subject to the ebb and flow of the tide); (2) all interstate waters and wetlands; (3) all other waters, such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce; (4) all impoundments of waters mentioned above; (5) all tributaries to waters mentioned above; (6) the territorial seas; and (7) all wetlands adjacent to waters mentioned above.

CDFG Jurisdiction

Pursuant to Division 2, Chapter 6, Sections 1600-1603 of the California Fish and Game Code, CDFG regulates all diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake which supports fish or wildlife resources. There are some significant differences between USACE and CDFG jurisdictions. The CDFG uses less well-defined and more ecologically based criteria in their jurisdiction determinations. For a watercourse to be considered under CDFG jurisdiction, it must have a terminus, banks, and channel through which water can flow, at least periodically. Historic court cases have further extended CDFG jurisdiction to include watercourses that seemingly disappear, but re-emerge elsewhere. Under the CDFG definition, a watercourse need not exhibit evidence of an OHWM to be claimed as jurisdiction. There are no areas of USACE or CDFG jurisdiction on the site.

SECTION 4
PROJECT IMPACTS

THRESHOLDS OF SIGNIFICANCE

Significance thresholds for impacts to biological resources were derived from a review of the California Environmental Quality Act (CEQA) guidelines (Bass et al 1996), important California biological management guidelines established by state and local agencies, and local/regional plans and ordinances. CEQA guidelines Section 15382 state that a project has a significant effect on biological resources within the project site or immediately surrounding region if the project:

- Substantially affects a rare or endangered species of plant or animal or the habitat of such species.
- Interferes substantially with the movement of any resident or migratory fish or wildlife species.
- Substantially diminishes habitat for fish, wildlife, or plants.

Section 15065(a) of the CEQA guidelines states that a project may have a significant effect on the environment when "the project has the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, [or] reduce the number or restrict the range of an endangered, rare, or threatened species."

Substantial impacts would be those that diminish, or result in the loss of, an important biological resource, or those that would obviously conflict with local, state, or federal resource conservation plans, goals, or regulations. Impacts are sometimes locally important but not significant according to CEQA because, although they would result in an adverse alteration of existing conditions, they would not substantially diminish, or result in the permanent loss of, an important resource on a populationwide, or regionwide, basis. Because of the sensitive nature and decline of wetland habitats throughout California, the removal, filling, dredging, or drainage (directly or indirectly) to wetland or riparian areas would be considered a significant impact. Additionally the following biological resources were evaluated with respect to significance of potential impacts.

- Federally- or state-listed endangered or threatened species of plants or wildlife.
- Streambeds, wetlands, and their associated vegetation.
- Habitats suitable to support a federally- or state-listed endangered or threatened species of plant or wildlife.
- Species designated as candidates for federal listing.
- Habitat, or other wetlands, considered sensitive by regulatory agencies or resource conservation organizations.
- Other species or issues of special concern to agencies.
- The species, subspecies or variety is limited in distribution in the County or region, and endemic (limited to a specific area) to the region.
- The species population is the extreme of its range or is disjunct from its known range.
- Species whose habitat requirements make them susceptible to local extinctions as a consequence of development, the introduction of barriers to movement, and/or accompanying increases in human activity.
- Populations of particular species which exhibit unusual adaptations or are quality examples of the species.

- Taxa that are considered sensitive by recognized monitoring groups (i.e., California Native Plan Society, California Department of Fish and Game, etc.).

All native breeding birds, whether or not they are considered sensitive by resource agencies, are protected by the Migratory Bird Treaty Act. Impacts to breeding birds are considered significant.

VEGETATION IMPACTS

No direct or indirect impacts to vegetation are expected from development of the project.

WILDLIFE IMPACTS

No direct impacts to wildlife or wildlife habitat are expected from development of the project.

Indirect impacts to wildlife could occur and include: (1) increased vehicular traffic and a corresponding increase in road kills and noise; (2) an increase in human intrusion, including off-road vehicles into the habitat; (3) an increase in predatory and feral pets into the area; (4) an increase in litter, pollutants, dust, oil, and other human debris into the area; and (5) an increase in night lighting. Night lighting is generally detrimental to animals in adjacent habitats because of disruption of light-dark daily rhythms and reduction in the ability of nocturnal species to avoid predators. These impacts by themselves are not expected to reduce general wildlife populations below self-sustaining levels in the region and are, therefore, not significant.

Development of the project is not expected to significantly change the current conditions for deer movement through the area. As noted above the site is highly disturbed and previous reports have indicated that no direct loss of mule habitat is expected from development of the site (Taylor 1995). A large expanse of relatively flat sagebrush habitat under U.S. Forest Service ownership surrounds the site, and provides an uninterrupted area for deer to migrate through the area.

SENSITIVE BIOLOGICAL RESOURCES IMPACTS

Sensitive Habitat Impacts

No sensitive habitats will be impacted by development of the project.

Special Status Plant Impacts

No direct or indirect impacts to special status plants are expected from development of the project.

Special Status Wildlife Impacts

No direct impacts to special status wildlife are expected from development of the project.

There is no surface hydrologic connection between the site and Hot Creek. No water used on the site during construction or operation of facilities is expected to flow offsite. Thus no impacts to Owens Tui chub are expected.

No impacts to sage grouse leks are expected from development of the project. Although the site is within one half mile of a known lek and thus within the 1.8 mile zone recommended for protection of nesting habitat, construction and operation of site facilities will be restricted to the site, which contains

no nesting habitat and is substantially below surface grade. No offsite impacts to nesting sage grouse or nesting habitat are expected from site development or operation.

Sage grouse are not expected to be indirectly impacted by development of the project. Activities will be restricted to the site which is below grade.

No impacts to white-tailed hare or its habitat are expected.

JURISDICTIONAL IMPACTS

No direct or indirect impacts to USACE or CDFG jurisdictional areas are expected from development of the project.

CUMULATIVE IMPACTS

Potential cumulative impacts on biological resources are primarily related to both the regional and local loss of existing plant communities and habitat they afford wildlife. Contribution to the cumulative loss of vegetation, habitats, and wildlife populations existing in the project area from the proposed project is expected to be less than significant. A large expanse of undeveloped sagebrush habitat under U.S. Forest Service ownership surrounds the site, and is not expected to be developed in the near future.

SECTION 5
MITIGATION MEASURES

Mitigation measures are designed to mitigate significant impacts to a level of less than significant, if possible. Those impacts that cannot be mitigated to a level of less than significant are identified as unavoidable significant impacts.

Recommended mitigation generally follows a three-tiered approach: *avoidance*-This is the most effective type of mitigation, wherein important habitat or other resources are avoided through project design; *protection*-These are measures that allow the remaining habitat to continue to function in as close to the existing state as possible; and *habitat replacement*-Replacement of sensitive habitat types lost by the development of the project.

Although no significant impacts to biological resources are expected from development of the site, the following mitigations are recommended:

- Native plant species typical of big sagebrush communities and adapted to the region will be used for any plantings along the berm surrounding the site, and
- Night lighting will be minimized, directed interior to the site, and directed away from surrounding habitat

Recommended native plant species for plantings include big sagebrush, bitterbrush, and desert peach.

5.6 SIGNIFICANT IMPACTS FOLLOWING MITIGATION

There will be no significant impacts after mitigation measures are completed.

SECTION 6
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APPENDIX E

TRAFFIC IMPACT ANALYSIS

by Traffic Safety Engineers

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Prepared by: Traffic Safety Engineers
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Orange, CA 92867

Traffic Impact Study

For

MORGAN INDUSTRIAL PARK SPECIFIC PLAN
Tentative Tract Map No. 36-159
West side of Highway 395,
directly across from
Hot Creek Hatchery Road
Town of Mammoth Lakes

May, 2000

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1. PROJECT STUDY SCOPE AND DESCRIPTION

The scope of this traffic study includes a review of the existing traffic and roadway conditions, forecast of project traffic, an assessment of traffic impacts due to the project, and recommendation of mitigating measures, if any, to improve traffic flow and circulation.

The proposed Morgan Industrial Park Specific Plan project site is to be located at on the west side of Highway 395 directly opposite the Mammoth Lakes/Yosemite Airport. The project site comprises approximately 36 acres of land. It is mostly a vacant lot except for the existing concrete batch plant. The project site proposes to be developed into a light industrial park. The existing concrete batch plant will remain as part of the development. Access to the project site will be via the existing entrance on Highway 395. The project proposes to upgrade this entrance to the latest Caltrans Standards.

2. EXISTING TRAFFIC CONDITIONS

Highway 395 will be the major roadway serving the project site. It is a divided four-lane State Highway, carrying approximately 5,500 Vehicles per day during regular season. However, traffic volume increases to 9,000 vehicles per day during peak season (in February). A left-turn lane presently exists on Highway 395 for southbound traffic left-turning onto Hot Creek Fish Hatchery Road. Hot Creek Fish Hatchery Road is located directly across from the project site's entrance driveway.

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3. PROJECT TRAFFIC IMPACTS

A. Project Trip Generation

Project trip generation forecasts on an A.M. peak traffic hour, P.M. peak traffic hour and a daily basis for the proposed project are summarized in the following tables. Table A shows the project trip generation for the project site to be developed as an "Industrial Park". Table B shows the project trip generation for the project site to be developed as a "Business Park". The types of site uses defined for "Industrial Park" and "Business Park" by the Institute of Transportation Engineers are described in Exhibit "A".

TABLE A (Industrial Park Development)

Site Use	A.M. Peak Hour			P.M. Peak Hour			Daily Traffic
	Inbound	Outbound	Total	Inbound	Outbound	Total	
Generation Rate: Industrial Park (Trips/Acre)	8.5	1.7	10.2	2.2	8.2	10.4	65.9
Traffic Generated: Industrial Park (36 Acres)	306	61	367	79	295	374	2,372
Less existing 2.8 - acre concrete plant	-24	-5	-29	-6	-23	-29	-185
Net Project Traffic	282	56	338	73	272	345	2,187

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TABLE B (Business Park Development)

Site Use	A.M. Peak Hour			P.M. Peak Hour			Daily Traffic
	Inbound	Outbound	Total	Inbound	Outbound	Total	
Generation Rate: Business Park (Trips/Acre)	16.41	2.90	19.31	3.37	13.47	16.84	151.3
Traffic Generated: Business Park (36 Acres)	591	104	695	121	485	606	5,446
Less existing 2.8-acre concrete plant	-46	-8	-54	-9	-38	-47	-424
Net Project Traffic	545	96	641	112	447	559	5,022

Source of Generation Rates: Trip Generation, 6th Edition, ITE, Land Use Codes (130) Industrial Park and (770) Business Park

As indicated in the above tables, "Business Park" development generates almost twice the volume of trips as compared to "Industrial Park" development for the project site.

B. Traffic Distribution and Assignment

The directional orientation of the additional traffic that would be generated by the proposed project was estimated based on:

i. Existing intersection traffic turning movement volume counts.

ii. Configuration of the surrounding street networks and traffic circulation patterns.

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From these combined data sources, it was estimated that 70% of the project trips would be originated from the north, and 30% from the south. In order to quantify the resultant traffic impacts on the surrounding street systems, project traffic volumes were distributed and assigned as turning movements at the project entrance with Highway 395 (see Figure 1 and 2).

C. Traffic Impact Analysis

The preceding sections have estimated the vehicle trips from the proposed development. This section will investigate the extent to which the project traffic will impact Highway 395. In order to analyze the ability of Highway 395 to accommodate the project traffic, the street capacity analysis technique was utilized. The analysis of street capacity is a sound traffic engineering tool to ascertain how many traffic lanes should be provided to adequately handle traffic demands.

Another term "Level of Service" is used in conjunction with street capacity analysis studies. Since the traffic flow on a street is of a dynamic nature and changes from minute to minute, the "Level of Service" becomes a good tool to interpret many traffic phenomena which may have lacked an adequate explanation before. Level of Service is a relative measure of driver satisfaction. There are six "Levels of Service", ranging from A (free-flow; volume-to-capacity ratio less than 0.60) to F (traffic jam; volume to capacity ratio value in excess of 1.0). Level of Service D (volume-to-capacity ratio of 0.81 to 0.90) is traditionally considered the acceptable threshold level for urban peak traffic hour conditions. Level of Service E (volume-to-capacity ratio of 0.91 to 1.00) is the maximum traffic volume a facility can accommodate before a traffic jam occurs.

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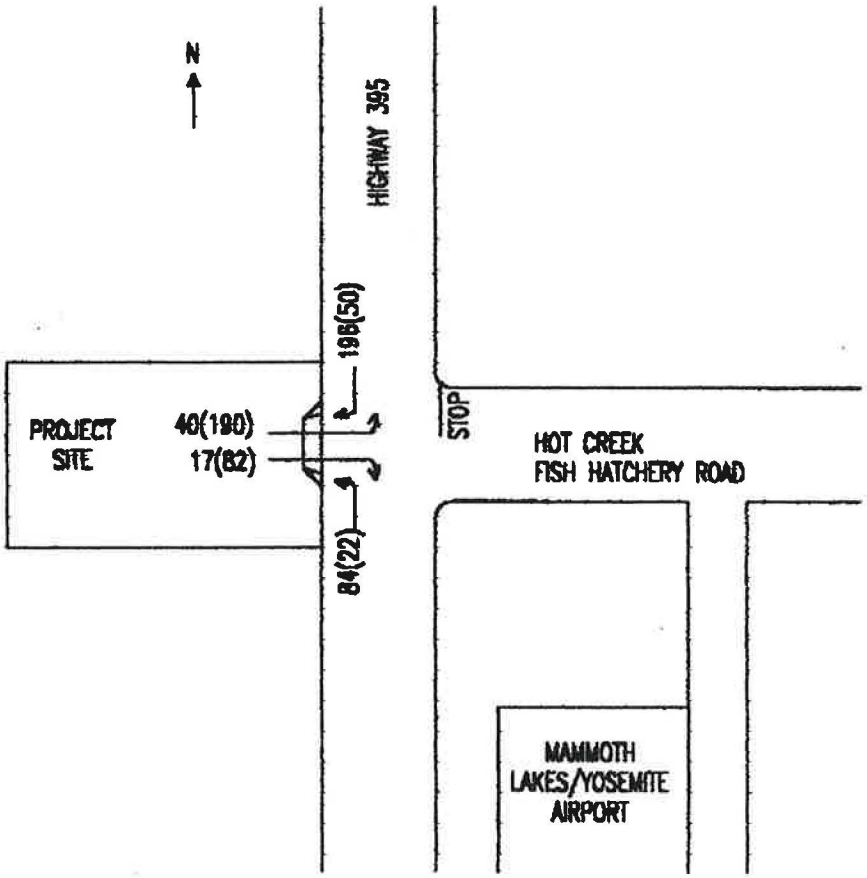

LEGEND

XX(XX)

P.M. PEAK TRAFFIC HOUR VOLUME

A.M. PEAK TRAFFIC HOUR VOLUME

FIGURE 1
PEAK HOUR PROJECT TRAFFIC ASSIGNMENTS
(PROJECT SITE IS TO BE DEVELOPED AS AN "INDUSTRIAL PARK")

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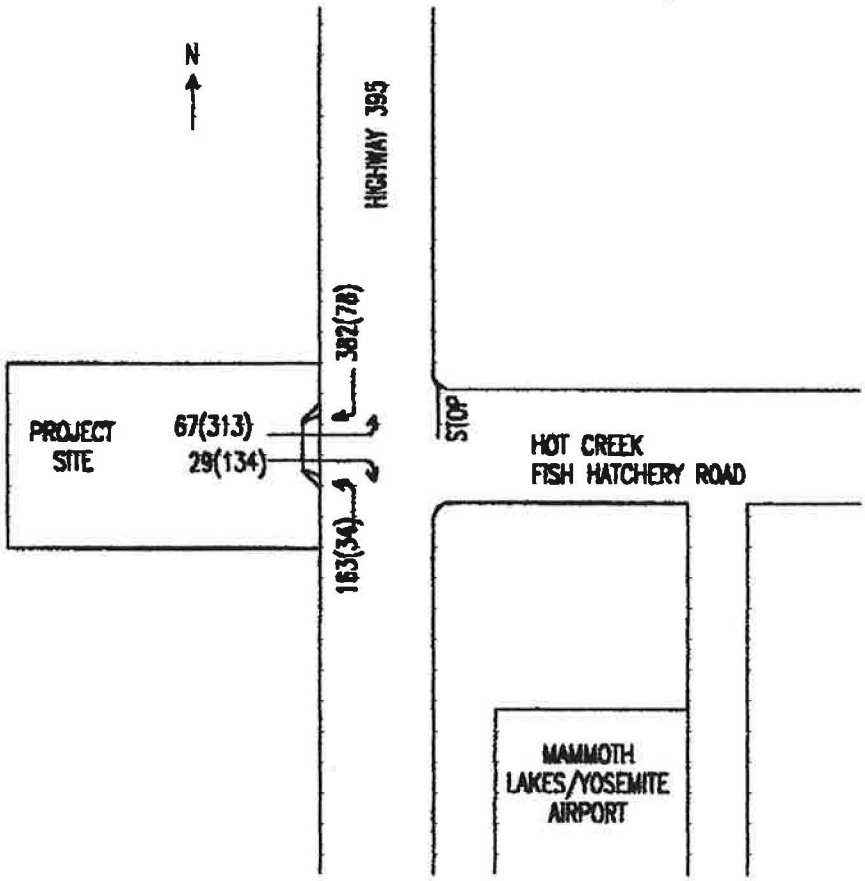

LEGEND

XX(XX)

P.M. PEAK TRAFFIC HOUR VOLUME

A.M. PEAK TRAFFIC HOUR VOLUME

FIGURE 2
PEAK HOUR PROJECT TRAFFIC ASSIGNMENTS
(PROJECT SITE IS TO BE DEVELOPED AS AN "BUSINESS PARK")

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Outlined below, are detailed volume-to-capacity and level of service calculations for existing traffic and existing traffic plus project traffic and cumulative buildout traffic from the Mammoth Lakes/Yosemite Airport Expansion Plan on Highway 395:

Existing Traffic (*)				Existing Traffic plus Project Traffic based on project site to be developed as an "Industrial Park" Plus Cumulative Buildout Traffic from the Mammoth Lakes/Yosemite Airport Expansion Plan				Existing Traffic plus Project Traffic based on project site to be developed as a "Business Park" Plus Cumulative Buildout Traffic from the Mammoth Lakes/Yosemite Airport Expansion Plan			
Peak Hour Traffic volume	Hourly-Designed Capacity	Volume-Capacity Ratio	Level of Service	Peak Hour Traffic volume	Hourly-Designed Capacity	Volume-Capacity Ratio	Volume-Capacity Ratio	Peak Hour Traffic volume	Hourly-Designed Capacity	Volume-Capacity Ratio	Volume-Capacity Ratio
900	4,000	0.23	A	1,605	4,000	0.40	A	1,901	4,000	0.48	A

(*) Traffic volume counts were obtained from Caltrans, District 9.

4. CONCLUSIONS AND RECOMMENDATIONS

Analysis of traffic generated by the proposed Morgan Industrial Park Specific Plan Project indicates that Highway 395 will continue to continue to maintain a good "A" level of service with the additional project traffic either based on an "Industrial Park" use or a "Business Park" use, as well as cumulative buildout traffic from the Mammoth Lakes/Yosemite Airport Expansion Plan.

In order to accommodate the anticipated 84 northbound vehicles left-turning onto the project site, a 200-foot left-turn storage lane with a 200-foot deceleration lane on Highway 395 is recommended. Similarly, to accommodate the projected 196 southbound vehicles right-turning onto the project site, a 300-foot right-turn storage lane with a 200-foot deceleration lane on Highway 395 is recommended. These proposed traffic turn lane configurations are shown in Figure 3.

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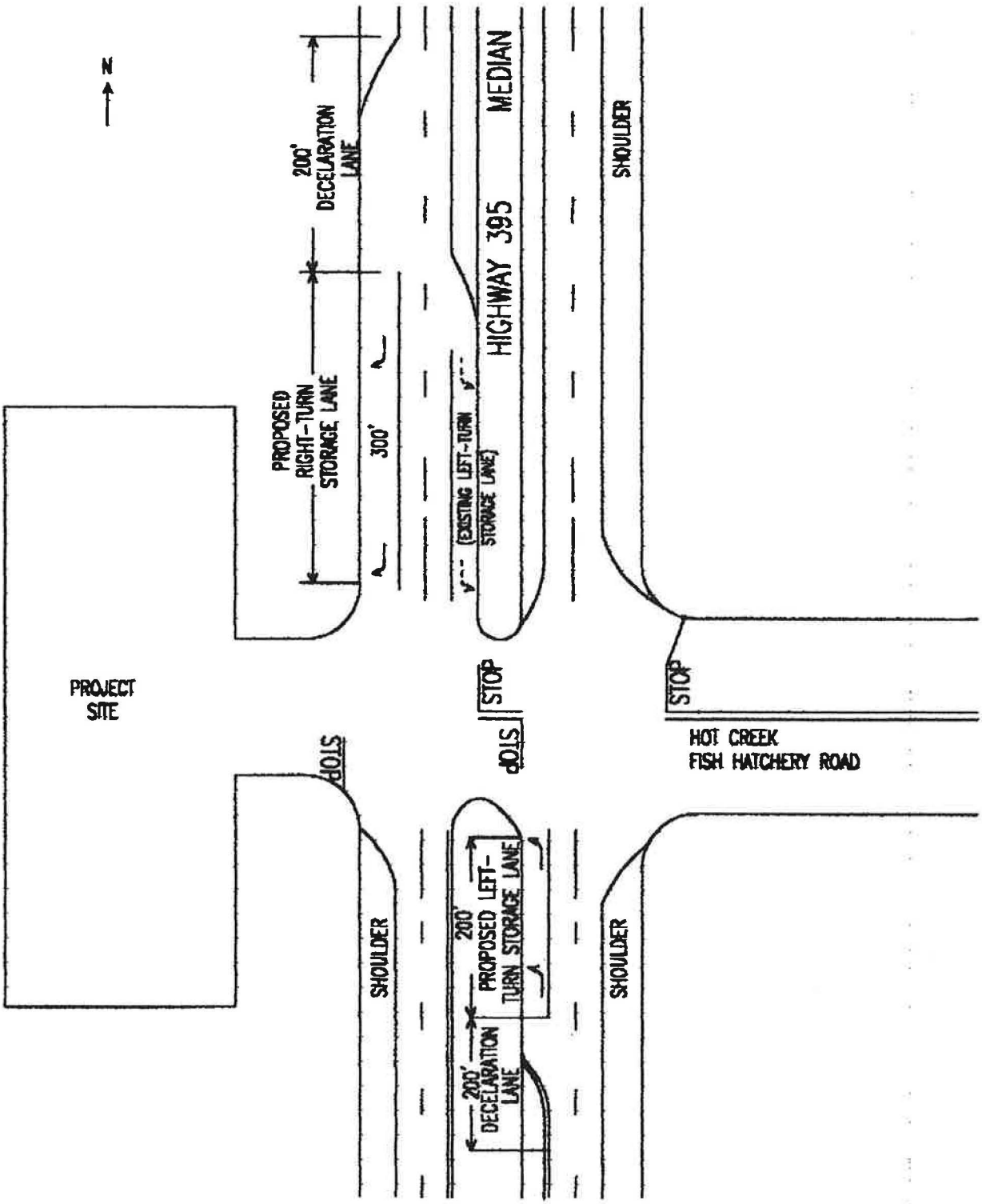

FIGURE 3
PROPOSED INTERSECTION TRAFFIC TURN LANE CONFIGURATIONS

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Exhibit "A"

Land Use: 130
Industrial Park

Description

Industrial parks are areas containing a number of industrial or related facilities. They are characterized by a mix of manufacturing, service, and warehouse facilities with a wide variation in the proportion of each type of use from one location to another. Many industrial parks contain highly diversified facilities — some with a large number of small businesses and others with one or two dominant industries. General light industrial (land use 110), general heavy industrial (land use 120), and manufacturing (land use 140) are related uses.

Additional Data

Average weekday transit trip ends
— 0.03 per employee
— 0.05 per 1,000 square feet gross floor area
— 0.69 per acre

Truck trips accounted for 1 to 22 percent of the weekday traffic at the sites surveyed. The average for all sites that were surveyed was approximately 8 percent.

Vehicle occupancy ranged from 1.2 to 1.8 persons per automobile on an average weekday. The average for all sites that were surveyed was 1.37.

The peak hour of the generator typically coincides with the peak hour of the adjacent street traffic. Facilities with employees on shift work may peak at other hours.

The sites were surveyed in the late 1960s, the early 1970s, and the mid-1980s throughout the United States.

Source Numbers

3, 7, 10, 14, 68, 74, 85, 91, 100, 146, 162, 184, 251, 277, 422

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Land Use: 770
Business Park

Description

Business parks consist of a group of flex-type or incubator one- or two-story buildings served by a common roadway system. The tenant space is flexible and lends itself to a variety of uses; the rear side of the building is usually served by a garage door. Tenants may be start-up companies or small mature companies that require a variety of space. The space may include offices, retail and wholesale stores; restaurants; recreational areas; and warehousing, manufacturing, light industrial, or scientific research functions. The average mix is 20 to 30 percent office/commercial and 70 to 80 percent industrial/warehousing. General office building (land use 710), corporate headquarters building (land use 714), single tenant office building (land use 715), office park (land use 750), and research and development center (land use 760) are related uses.

Additional Data

The studies were conducted from the 1980s to the 1990s at sites throughout the United States, with many conducted in the San Diego and Atlanta metropolitan areas.

Trip Characteristics

The trip generation for the A.M. and P.M. peak hours of the generator typically coincide with the peak hours of the adjacent street traffic; therefore, only one A.M. peak hour and one P.M. peak hour, which represent both the peak hour of the generator and the peak hour of the adjacent street traffic, are shown for business parks.

Source Numbers

155, 211, 212, 213, 216, 407, 423

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APPENDIX F

AIR QUALITY IMPACT ANALYSIS

by Giroux and Associates

Giroux & Associates
Environmental Consultants

AIR QUALITY IMPACT ANALYSIS

MORGAN INDUSTRIAL PARK SPECIFIC PLAN

MAMMOTH LAKES, CALIFORNIA

Prepared for:

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Date:

June 9, 2000

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METEOROLOGY/AIR QUALITY SETTING

The proposed project lies within the Great Basin Air Basin in California. Climatic conditions of the air basin are dominated by the interaction of the prevailing west to east motion of weather patterns with the north/south alignment of the Sierra Nevada. The air basin is in a severe "rainshadow" that creates very low precipitation levels throughout the region. Precipitation in Bishop averages 5.6 inches per year. Precipitation increases north of Bishop with increasing elevation and averages approximately 10 inches per year in the Mammoth Area.

The dry climate and strongly funneled winds in the Owens Valley lead to occasionally severe dust storms, particularly in the southern portion of the air basin. Such dust storms sometimes create levels of respirable particulate matter (called "PM-10") that exceed state and federal PM-10 levels by a wide margin. In addition to high particulate pollution during strong wind events, cold air pooling within side canyons of the Sierras such as at Mammoth leads to very strong winter inversion conditions that trap air pollution in valley bottoms. Wood smoke from residential use of fireplaces and/or stoves may create a thick layer of haze on cold nights and early mornings that often causes PM-10 standards to be exceeded at Mammoth.

Limited measurements of gaseous air pollution in the air basin have shown that the types of air pollutants found in more developed areas of California do not occur in significant levels in the Owens Valley/Great Basin. Although the strong winter inversions and poor vehicular operating conditions during cold weather lead to elevated levels of carbon monoxide in the Mammoth area, they are typically not at levels that exceed clean air standards.

The Great Basin Unified Air Pollution Control District (GBUAPCD) conducts air quality measurements at several Mono County locations. The nearest air monitoring station to the project site is in Mammoth Lakes. Table 1 summarizes the last three years of published data from this site (final 1999 data are not yet available). For all pollutants monitored, only the state standard for particulates (PM-10) is exceeded. Because high particulate levels in Mammoth Lakes are often a local winter phenomenon associated with wood smoke, PM-10 levels near the project site may be lower. If any clean air standards are exceeded at the project site, such violations are infrequent and not severe.

TABLE 1

MAMMOTH VILLAGE AIR QUALITY MONITORING SUMMARY

Ozone	1996	1997	1998
1-Hour >0.09 ppm	0	0*	0
1-Hour >0.12 ppm	0	0*	0
8-Hour >0.08 ppm	0	0*	0
Max. 1-Hour Conc. (ppm)	0.09	0.09*	0.08
Carbon Monoxide			
1-Hour > 20. ppm	0	0°	0
8-Hour > 9. ppm	0	0°	0
Max. 1-Hour Conc. (ppm)	6.	8.°	7.
Max. 8-Hour Conc. (ppm)	3.0	3.6°	3.0
Particulate Matter			
24-Hour > 50 $\mu g/m^3$	3/51	6/59	3/37
24-Hour >150 $\mu g/m^3$	0/51	0/59	0/37
Max. 24-Hour Conc. ($\mu g/m^3$)	74.	112.	106.

* = No data, September - December, 1997

° = No data, January - September, 1997

Source: California Air Resources Board, 1999.

AIR QUALITY IMPACTS

Potential project-related impacts will derive primarily from traffic generated by the project. The project traffic study forecasts an increase of 2,187 daily trips for project site use as an industrial park. A business park would be a greater intensity land use. Business park uses would add emissions from 5,022 daily trips to the regional airshed.

Project construction would temporarily generate dust and heavy equipment exhaust. Such emissions are similar to those generated from historical site use as a sand and gravel quarry and as a batching operation for asphaltic and Portland cement concrete. The extent of such emissions are controlled by the size of the disturbance area during construction. Rapid site development would create a short period of substantial construction activity dust and exhaust. Slower, phased site development would cause lesser daily emissions, but spread them out over a longer period of time.

Mono County, and/or the GBUAPCD, have not established numerical significance thresholds for air quality impacts. Impacts are significant if they cause clean air standards to be exceeded, or if they substantially worsen an existing violation. Impacts deriving from automobile exhaust occur when precursor tailpipe emissions are converted to more unhealthful pollutants. This process may take many hours. By the time this conversion is completed, the contribution from any individual project will have been diluted to undetectable levels miles away from the emissions source.

Because such "secondary" impacts can not be evaluated relative to ambient clean air standards, many air quality jurisdictions have developed surrogate indicators of potential impact significance. Most commonly, the volume of material emitted is used as a significance criterion even though there is no effective mechanism to convert the emissions into actual air quality. The closest air quality management district (AQMD) that has adopted numerical emissions-based significance thresholds is the Mojave Desert AQMD. Air quality issues in large portions of the Mojave Desert Air Basin (MDAB) are similar to those in the Great Basin. Use of the MDAB significance thresholds is thus recommended for this project as a reasonable evaluation criterion. The MDAB thresholds are as follows:

Carbon Monoxide (CO)	-	548 pounds/day
Nitrogen Oxides (NO_x)	-	137 pounds/day
Reactive Organic Gases (ROG)	-	137 pounds/day
Particulate Matter (PM-10)	-	82 pounds/day

CONSTRUCTION IMPACTS

Phase I will entail final grading of 22.6 acres to create 24 lots. A total of 50,000 cubic yards will be removed during one month of activity. Dust emissions during grading will depend upon the daily disturbance area which will involve only a fraction of the total Phase I site. For purposes of analysis, a daily disturbance footprint of 5 acres was assumed. A total of 10,000 Brake-Horsepower Hours (BHP-HR) were assumed to be required for on-site equipment and off-site truck hauling.

Daily dust emissions when "normal" dust control (daily watering) is used are 26.4 pounds per acre disturbed (South Coast AQMD, 1993). Normal dust control is the presumed level of control attained with compliance with GBUAPCD Rule 401 (Fugitive Dust). With the use of best available control measures (BACMs) for dust control, daily PM-10 emissions can be reduced to 10.2 pounds per acre. Minor mitigation (10 percent reduction) can be achieved for on- and off-road equipment through keeping equipment in good tune.
Daily construction activity emissions during Phase I construction are as follows:

Without Mitigation:

	EMISSIONS (pounds/day)			
	CO	NOx	ROG	PM-10
Grading Dust	---	---	---	132
Equipment Exhaust	19	86	6	3
TOTAL	19	86	6	135*

With Mitigation:

	EMISSIONS (pounds/day)			
	CO	NOx	ROG	PM-10
Grading Dust	---	---	---	51
Equipment Exhaust	17	77	5	3
TOTAL	17	77	5	54
Significance Thresholds	548	137	137	82
Exceeded (w/Mitigation)	No	No	No	No

* = May exceed threshold if enhanced dust control is not used.

Identified significance thresholds will not be exceeded if accelerated dust control measures are used. A menu of candidate "enhanced" dust control measures beyond GBUAPCD Rule 401 requirements is included in the appendix. With a lesser disturbance footprint during Phase 2 construction, potential air quality impacts would be less than in Phase 1.

Operational Activity Impacts

If the project site is built out as an office park, a total of 5,022 "new" daily trips would be generated. Light industrial uses would be less trip-intensive. A total of 2,187 daily trips are forecast for a 36-acre industrial park in the project traffic study. Mobile-source emissions associated with the two development alternatives were calculated using the California Air Resources Board (ARB) computer model called URB7G. URB7G combines trip characteristics (fleet mix, travel distance, hot/cold starts, and air temperature) with the California-specific EMFAC7G emissions sub-model to generate a daily, project-related pollution burden. Results of this calculation are shown in Table 2 for an assumed 2005 full project buildout.

Neither development alternative would cause the significance threshold to be exceeded. Although the office park alternative generates substantially more traffic, its daily emissions burden is not dramatically greater because industrial commuting traffic has a much higher percentage of pollution-inefficient "cold start" traffic. Given that emissions-based thresholds would not be exceeded, and given that the project would meet a need for development space within the growing Mammoth area such that the same emissions would result from development on another parcel, regional air quality impacts are less than significant.

Microscale air quality (primarily CO), may be adversely affected if there is considerable congestion, and if large numbers of vehicles are operating in the cold-start mode. The proposed project would most substantially affect the US-395/Hot Creek Fish Hatchery Road intersection. This intersection, however, operates at a Level of Service of "A", and would continue to do so under either development alternative. For the business park use, 447 vehicles would depart through this intersection in the peak hour, and 112 vehicles would enter. The localized CO contribution from this level of traffic was calculated using a screening procedure based upon the Caltrans CALINE4 computer model. Local peak hour CO concentrations of 2.0 ppm are predicted to be added to any regional CO levels. Maximum one-hour CO levels within the town of Mammoth Lakes are 6-8 ppm. Along U.S. 395, they are likely lower. Any combination of background levels plus the local contribution would be well below the most stringent one-hour standard of 20 ppm. Microscale air quality impacts are less than significant.

TABLE 2

PROJECT-RELATED MOBILE SOURCE EMISSIONS
(lbs/day)

	POLLUTANT			
Land Use:	CO	NO	ROG	PM-10
Office Park	448	112	50	43
Industrial Park	326	90	34	37
Significance Threshold	548	137	137	82
Threshold Exceeded (?)	No	No	No	No

Source: URB7G Computer Model; Output Attached

MITIGATION

Phase 1 construction activities were shown to possibly cause PM-10 significance thresholds to be exceeded unless accelerated dust control measures are implemented. Construction equipment exhaust emissions were shown to have an adverse, but less than significant impact.

Recommended construction activity mitigation includes:

Dust Control - Limit the simultaneous disturbance area to less than the total project Phase 1 site or use enhanced dust control measures. The menu of enhanced dust control measures includes the following:

- Water all active construction areas at least twice daily.
- Cover all haul trucks or maintain at least two feet of freeboard.
- Pave or apply water four times daily to all unpaved parking or staging areas.
- Sweep or wash any site access points within 30 minutes of any visible dirt deposition on any public roadway.
- Cover or water twice daily any on-site stockpiles of debris, dirt or other dusty material.
- Suspend all operations on any unpaved surface if winds exceed 25 mph.
- Hydroseed or otherwise stabilize any cleared area which is to remain inactive for more than 96 hours after clearing is completed.

Operational activity emissions will not exceed identified significance thresholds for either development alternative. No impact mitigation is required. However, because of the sensitivity of the airshed to all air pollution, any reasonable and feasible measures for trip reduction or alternatives to fossil-fueled vehicles should be pursued at both a project and a regional level.

APPENDIX

URB7G COMPUTER MODEL OUTPUT

- Business Park Alternative
- Industrial Park Alternative

URBEMIS 7G: Version 3.2

File Name: Buspark.URB
Project Name: Business Park
Project Location: Mountain Counties and Rural Counties

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2005 Temperature (F): 85 Season: Summer

EMFAC Version: EMFAC7G (10/96)

Summary of Land Uses:

Unit Type	Trip Rate	Size	Total Trips
Office park	139.50 trips / Acres	36.00	5,022.00

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Duty Autos	75.00	1.16	98.58	0.26
Light Duty Trucks	10.00	0.13	99.54	0.33
Medium Duty Trucks	3.00	1.44	98.56	
Lite-Heavy Duty Trucks	1.00	19.56	40.00	40.44
Med.-Heavy Duty Trucks	1.00	19.56	40.00	40.44
Heavy-Heavy Trucks	5.00			100.00
Urban Buses	2.00			100.00
Motorcycles	3.00	100.00 % all fuels		

UNMITIGATED EMISSIONS

	ROG	NOx	CO	PM10
Office park	49.52	111.92	448.26	43.46
	ROG	NOx	CO	PM10
TOTAL EMISSIONS (lbs/day)	49.52	111.92	448.26	43.46

URBEMIS 7G: Version 3.2

File Name: Indpark.URB
Project Name: Industrial Park
Project Location: Mountain Counties and Rural Counties

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2005 Temperature (F): 85 Season: Summer

EMFAC Version: EMFAC7G (10/96)

Summary of Land Uses:

Unit Type	Trip Rate	Size	Total Trips
General light industry	60.75 trips / acres	36.00	2,187.00

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Duty Autos	75.00	1.16	98.58	0.26
Light Duty Trucks	10.00	0.13	99.54	0.33
Medium Duty Trucks	3.00	1.44	98.56	
Lite-Heavy Duty Trucks	1.00	19.56	40.00	40.44
Med.-Heavy Duty Trucks	1.00	19.56	40.00	40.44
Heavy-Heavy Trucks	5.00			100.00
Urban Buses	2.00			100.00
Motorcycles	3.00	100.00 % all fuels		

UNMITIGATED EMISSIONS

	ROG	NOx	CO	PM10
General light industry	34.30	90.64	326.07	36.95
	ROG	NOx	CO	PM10
TOTAL EMISSIONS (lbs/day)	34.30	90.64	326.07	36.95

APPENDIX G

MONO COUNTY BOARD OF SUPERVISORS
MINUTE ORDER 99-345

OFFICE OF THE BOARD OF SUPERVISORS
COUNTY OF MONO
P.O. BOX 715, BRIDGEPORT, CA 93517
(760) 932-5215

Renn Nolan
Clerk of the Board

Roberta Reed
Deputy

MINUTE ORDER
99-345

TO: Community Development Director

FROM: Board of Supervisors

SUBJECT: Marzano & Sons Industrial Park

At the regular meeting of the Mono County Board of Supervisors of

November 2 1999, it was:

Moved by Supervisor Joann Ronci, seconded by Supervisor Ed Inwood and unanimously carried to approve the request of the project proponent of the Marzano and Sons Industrial Park to acknowledge that the issue of land trade feasibility has been adequately explored and the applicant will not be asked to repeat similar inquiries and cooperate in exploring this issue any further. Absent: Supervisor Rowan.

Cc: County Administrative Officer
County Counsel
Planning Commission
Stephen Kappos, Esq.

The foregoing instrument is a full, true and correct copy of this original on file in this office.

Attest November 17, 1999
Renn Nolan, Clerk of the Board of Supervisors
in and for the County of Mono, State of California
Roberta K. Reed
Signature

Directed to: Community Development Director
Response date: N/A

MO No: 99-345
Agenda No. 9a

APPENDIX H

CALTRANS EXAMPLES OF VISUAL INTRUSIONS ALONG SCENIC CORRIDORS

CALIFORNIA DEPARTMENT OF TRANSPORTATION
EXAMPLES OF VISUAL INTRUSIONS
ALONG SCENIC CORRIDORS[50]

BUILDINGS: Residential Development, Commercial Development, Industrial Development

MINOR: Widely dispersed buildings. Natural landscape dominates. Wide setbacks and buildings screened from street. Exterior colors and materials are compatible with environment. Buildings have cultural or historical significance.

MODERATE: Increased number of buildings, but these are complementary to the landscape. Smaller setbacks & lack of street screening. Buildings do not degrade or obstruct scenic view.

MAJOR: Dense, continuous development. Highly reflective surfaces. Buildings poorly maintained. Visible blight. Development along ridgelines. Buildings degrade or obstruct scenic view.

UNSIGHTLY LAND USES: Dumps, Quarries, Concrete Plants, Tank Farms, Auto Dismantling

MINOR: Screened from view so that facility is not visible from the highway.

MODERATE: Not screened and visible but programmed/funded for removal and restoration.

MAJOR: Not screened and visible by motorists. Will not be removed or modified. Scenic view is degraded.

STRIP MALLS

MODERATE: Neat and well landscaped. Single story. Blend with surroundings.

MAJOR: Not harmonious with surroundings. Poorly maintained or vacant. Blighted. Development degrades or obstructs scenic view.

PARKING LOTS

MINOR: Screened from view, vehicles & pavement not visible from highway.

MODERATE: Neat and well landscaped. Blend with surroundings.

MAJOR: Not screened or landscaped. Scenic view is degraded.

OFF-SITE ADVERTISING STRUCTURES

MAJOR: Billboards degrade or obstruct scenic view.

NOISE BARRIERS

MODERATE: Noise barriers are well landscaped and complement the natural landscape. Noise barriers do not degrade or obstruct scenic view.

MAJOR: Noise barriers obstruct scenic view.

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[50] Source: California Department of Transportation, Guidelines for the Official Designation of Scenic Highways, March 1996.

POWER LINES

MINOR: Not easily visible from road.

MODERATE: Visible, but compatible with surroundings.

MAJOR: Poles and lines dominate view. Scenic view is degraded.

AGRICULTURE: Structures, Equipment, Crops

MINOR: Blends in and complements scenic view. Indicative of regional culture.

MODERATE: Not in harmony with surroundings. Competes with natural landscape for visual dominance.

MAJOR: Incompatible with and dominates natural landscape. Structures, equipment or crops degrade scenic view.

EXOTIC VEGETATION

MINOR: Used as screening & landscaping. Blends in and complements scenic view.

MODERATE: Competes with native vegetation for visual dominance.

MAJOR: Incompatible with and dominates natural landscape. Scenic view is degraded.

CLEARCUTTING

MODERATE: Trees bordering highway remain so that clearcutting is not evident.

MAJOR: Clearcutting or deforestation is evident. Scenic view is degraded.

EROSION

MINOR: Minor Soil Erosion.

MODERATE: Slopes beginning to erode. Not stabilized.

MAJOR: Large slope failures and no vegetation. Scenic view is degraded.

GRADING

MINOR: Grading blends with adjacent landforms and topography.

MODERATE: Some changes, but restoration is taking place.

MAJOR: Extensive cut and fill. Scarred hillsides and landscape. Canyons filled in. Scenic view is degraded.

ROAD DESIGN

MINOR: Blends in and complements scenic view. Street structures are suitable for location and compatible with surroundings.

MODERATE: Cut and fill is visible, but has vegetative cover.

APPENDIX I

NUTRIENT IMPACTS FROM WASTEWATER DISPOSAL

By Wildermuth Environmental, Inc.

WE, INC.

Wildermuth Environmental, Inc.
415 North El Camino Real Suite A
San Clemente, California 92672
Tel. 949/498-9294
Fax. 949/498-1712

June 27, 2000
July 12, 2000 Revised

Bauer Planning and Environmental Services, Inc
Attention: Sandra Bauer
15901 Red Hill Avenue
Tustin, CA 92780

Subject: Analysis of Nutrient Impacts from Onsite Wastewater Disposal at the Proposed Sierra Business Park.

Dear Ms. Bauer:

Per your authorization, Wildermuth Environmental, Inc., conducted an analysis of the fate of dissolved inorganic nitrogen and phosphorus from onsite wastewater disposal at the proposed Sierra Business Park (hereafter the *project*).

Objective

The objective of this report is to characterize the inorganic nitrogen and phosphorus loads to groundwater under the project site and subsequently to surface waters including springs, creeks, and Lake Crowley, due to the wastewater being discharged to on-site (septic tank) disposal systems at the project. The Regional Board has expressed a concern that the proposed wastewater discharge may add unacceptable nutrient loading to the watershed that may contribute to eutrophication that is occurring in Lake Crowley. Lake Crowley has been listed on the State's 303(d) list as impaired due to nutrients.

Groundwater Flow System

The project lies within the eastern (downstream) portion of the Mammoth Basin watershed (Figure 1). The Mammoth Basin occupies a topographically diverse area on the eastern flank of the Sierra Nevada Mountain Range – from flat to undulating in the Mammoth valley to sharp and craggy in the western mountainous elevations. In addition, the watershed straddles the southern boundary of the Long Valley Caldera, a depressed basin formed by collapse following a voluminous volcanic eruption some 730,000 years ago. The main tributary draining the Mammoth Basin is Mammoth Creek, which converges with Hot Creek near the Hot Creek Fish Hatchery.

The groundwater basin that underlies the Mammoth Basin watershed is composed of a complex interbedded assemblage of Quaternary sediments (glacial, lake and alluvial deposits) and

fractured Quaternary to Tertiary igneous rocks (lava flows, breccias, tuffs). The Quaternary sediments are slightly to moderately consolidated, consist of clay to boulder size fragments and provide locally good groundwater sources and storage. Secondary porosity in the igneous rocks, along with the inter-bedded Quaternary sediments, provide significant aquifers in the central part of the Mammoth Basin. These rocks range in depth to more than 3,000 feet.

Boundaries of the groundwater basin have not been specifically defined due to the complex hydrogeologic conditions of the basin. However, the main portion of the groundwater basin underlies the central part of the Mammoth Basin watershed. Previous studies in the project vicinity have implied that the Mammoth Basin groundwater regime is a part of the Long Valley Caldera groundwater system. It is doubtful, however, that a single system prevails throughout the caldera and/or the Mammoth Basin considering the complex geology, hydrology and hydrogeology of the area.

Sources of recharge to the groundwater basin include infiltration of stream flow in Mammoth Creek, Hot Creek and other tributaries overlying the basin, subsurface inflow from up gradient and adjacent areas, and infiltration of direct precipitation and irrigation returns. Figure 1 shows groundwater elevations in the vicinity of the proposed Sierra Business Park. These elevations indicate that hydraulic gradients and, hence, regional groundwater flow directions are from the west and southwest to the east and northeast – essentially following the surface water flow directions of Mammoth and Hot Creeks. Groundwater discharge from the Mammoth Basin primarily consists of subsurface outflow under and parallel to Hot Creek, surface water discharge at cold springs and hot springs, and groundwater production.

Figure 2 is a detailed map of the area surrounding the proposed Sierra Business Park. A local area of up gradient recharge is Laurel Pond, which receives treated wastewater discharge from Mammoth Community Water District. Groundwater flows from areas of recharge in the southwest, under the project, to areas of discharge in the northeast (Sierra, 2000). A well located on the project site indicates depth to groundwater was approximately 18 feet below ground surface during April 2000. A groundwater barrier to the east of the project likely prohibits the eastward flow of groundwater to aquifers underlying the Convict Lake watershed, as evidenced by a "dry well" that was recently drilled just north of the Mono County Airport (D. Dougherty, pers. comm., 2000). Shallow groundwater traveling beneath the project may discharge as surface water at the head springs near Hot Creek Fish Hatchery.

Wastewater Characterization

The project consists of 37 lots on 36.7 acres of land. The lot sizes are projected to range between 0.5 to 2.8 acres with an average parcel size of 0.89 acres. Each lot will have its own septic tank system. For planning purposes, we assumed a range in wastewater generation rates from 250 to 500 gallons per day (gpd) which correspond to a range in maximum daily rates for the project from about 9,300 to 18,500 gpd. Only domestic wastewater will be allowed to be discharged into the onsite system. Typical effluent quality from septic tank systems include (Septic Tank System Effects on Groundwater Quality, Cantor and Knox, 1985):

Suspended Solids	75 mg/L
BOD5	140 mg/L
COD	300 mg/L
Total nitrogen	40 mg/L
Total phosphorus	15 mg/L

Nitrogen enters the septic tank system primarily as ammonia and organic nitrogen and leaves the system as ammonia and nitrate. Generally, some of the ammonia will be adsorbed onto soils under the septic tank with the remainder nitrified before the effluent reaches the water table. Because of the coarse soils, shallow depth to water, and type of aquifer system, it is not clear that significant adsorption will occur before the effluent reaches the water table and becomes saturated flow. The septic tank systems that will be used in the project will use a "sand box" subsystem. Based on a review of septic tanks that use "sand box" subsystems, the projected total inorganic nitrogen concentration in the discharge from the septic system to groundwater will be 30 mg/L (personal communication with Sandra Bauer, July 2000). To be conservative we assumed that there would be no nitrogen loss in the effluent discharged from the septic tank system; that is, there are no nitrogen losses assumed in either the soil or aquifer.

Most of the phosphorus that enters a septic tank is in organic form. Processes within the tank convert organic phosphorus to mostly soluble inorganic orthophosphate. Phosphorus can be readily adsorbed onto soil under the septic tank system and can be chemically controlled in the septic tank through the addition of aluminum sulfate, lime and ferric chloride. Based on research described in Cantor and Knox (1985), we assumed that phosphorus concentration in septic tank effluent would be 2 mg/L (see page 74 in Cantor and Knox).

Nutrient Impacts on Hot Creek near the Flume

Effluent discharged from the septic tank systems will reach the groundwater table and enter the regional groundwater flow system. The regional groundwater flow system in the Mammoth Basin discharges all or in part through the Hot Creek Gorge (see Figure 1) prior to joining the Owens River and discharging into Crowley Lake. The analysis presented herein estimates the change in dissolved inorganic nitrogen and phosphorus concentrations in the surface water discharge of Hot Creek assuming that all the wastewater discharged by the project eventually ends up in the surface water discharge at the gorge. The nitrogen and phosphorus impact analysis for the Hot Creek Gorge is being used as a surrogate for an analysis of the nitrogen and phosphorus impacts on Crowley Lake. The presumption being that if nitrogen and phosphorus concentrations are below limiting values for eutrophication and the project related nitrogen and phosphorus increments are negligible, then the project nutrient impacts are assumed negligible.

Surface water discharge and water quality data were collected for all surface water discharge locations that are monitored by the USGS and the Los Angeles Department of Water and Power in the Lake Crowley watershed. A time history of daily discharge, total nitrogen and total phosphorus was developed for gaging station 10265150 commonly referred to as *Hot Creek near the Flume* which is located in the Hot Creek Gorge. The period of record used in this analysis ran from 1965 to 1997. Table 1 lists the monthly distribution of flows for this time history. Surface discharge is greatest during the late spring and early summer corresponding to the snowmelt period, and lowest in the winter where precipitation falls as snow and temperatures are lowest. Figure 3 is a time history plot of average monthly surface water discharge for Hot Creek near the Flume. For the most part the average monthly discharge ranges between 30 to 60 cubic feet per

second (cfs). Table 2a lists the average, minimum and maximum nitrogen concentrations observed in this time history by month for pre-project conditions. Table 3a is a similar presentation for phosphorus. Figures 4 and 5 illustrate the nitrogen and phosphorus time histories used in this analysis. In this period there were 194 nitrogen and 178 phosphorus determinations. The nitrogen time history illustrated in Figure 4 suggests that there was a sudden increase in nitrogen concentration in Hot Creek after 1977 with the nitrogen concentration increasing from 100 to 200 percent. The phosphorus concentration time history appears random over time and does not have a concentration shift similar to that which was observed for nitrogen. In both cases most of the observed nitrogen and phosphorus data exceed the limiting concentrations for eutrophication of 0.1 and 0.01 mg/L for dissolved inorganic nitrogen and phosphorus (Reynolds, 1992), respectively.

The projected increase in nitrogen and phosphorus concentration in Hot Creek near the Flume due to the project was estimated by computing the mass of nitrogen in the septic tank effluent and adding it to the mass in the discharge in Hot Creek and recomputing the concentration. Mathematically:

$$C' = [\,(Q_{HC} - Q_{SBP}) * C_{HC} + Q_{SBP} * C_{SBP}\,] / Q_{HC}$$

Where:

- C' is the concentration at Hot Creek near the Flume with the project (mg/L)
- Q_{HC} is the discharge at Hot Creek near the Flume without the project (cfs)
- Q_{SBP} is the discharge from the septic systems at project (cfs)
- C_{HC} is the concentration at Hot Creek near the Flume without the project (mg/L)
- C_{SBP} is the concentration of the effluent from the project (mg/L)

Tables 2a and 2b contain the projected increases in nitrogen due to the project, and Tables 3a and 3b contain the projected increases in phosphorus due to the project, for average daily wastewater discharges of 250 and 500 gpd/parcel, respectively. The limiting concentration for nitrogen with respect to eutrophication is 0.1 mg/L. Historically, nitrogen concentrations were below the 0.1 mg/L limit prior to 1978 and have been generally higher than 0.1 since then (see Figure 4). The average nitrogen concentration over the 1965 to 1997 time history is 0.145. The increase in nitrogen projected for the project (Table 2a) with a wastewater discharge of 250 gpd/parcel averages about 0.008 mg/L (8 percent) and ranges from a high of 0.013 (25 percent) to a low of 0.005 (2 percent). The increase in nitrogen projected for the project (Table 2b) with a wastewater discharge of 500 gpd/parcel averages about 0.017 mg/L (15 percent) and ranges from a high of 0.025 (50 percent) to a low of 0.009 (5 percent). In summary, most of the recent post 1977 and pre project nitrogen concentrations for Hot Creek exceed the limiting concentration for nitrogen and the addition of the project will cause the nitrogen concentration to increase slightly.

The limiting concentration for phosphorus with respect to eutrophication is 0.01 mg/L. Historically most phosphorus observations exceeded 0.01 mg/L (see Figure 5). The increase in phosphorus projected for the project (Table 3a) with a wastewater discharge of 250 gpd/parcel averages about 0.0005 mg/L (0.3 percent) and ranges from a high of 0.0007 (0.3 percent) to a low of 0.0002 (0.2 percent). The increase in phosphorus projected for the project (Table 3b) with a wastewater discharge of 500 gpd/parcel averages about 0.001 mg/L (0.5 percent) and ranges from a high of 0.0015 (0.6 percent) to a low of 0.0005 (0.4 percent). In summary, all the pre project

phosphorous concentrations for Hot Creek exceed the limiting concentration for phosphorous and the addition of the project will cause the nitrogen concentration to increase slightly.

It should be noted that the method detection limit for nitrogen (nitrate commonly 0.14 mg-N/L but possibly 0.01 mg-N/L) is generally greater than projected increases in nitrogen, that is, the nitrogen impacts projected herein will not likely be measurable with current technology. The method detection limit for phosphorous (orthophosphate 0.01 mg-P/L) is greater than the projected increases phosphorous and the phosphorous impacts projected herein are not measurable with current technology.

Near-Field Impacts

The effluent from septic tanks systems at the project site will seep to the water table and form a layer on top of the groundwater moving under the project. Wells down gradient from and in the plume emanating from the project will produce varying amounts of wastewater depending on local aquifer properties, production rates and the depth of perforations. Monitoring wells perforated only near the water table will contain more wastewater than production wells that have longer perforated intervals and are perforated deeper. The production wells proposed for the project could be as deep as 150 to 200 feet (Sierra Geotechnical, 2000).

The increase in nitrogen and phosphorus concentration at a hypothetical production well located down gradient of the project and in the wastewater plume can be estimated in a similar manor to that used for Hot Creek. Recall that the maximum effluent discharge from the septic tank systems is about 18,500 gpd with a dissolved inorganic nitrogen and phosphorus concentration of 30 and 2 mg/L, respectively. Darcy's Equation can be used to estimate the volumetric flow rates through cross-sectional areas of saturated sediments:

$$Q = K * I * A$$

Where,

- Q is the volumetric flow rate through cross-sectional area A (gpd)
- K is the hydraulic conductivity of the aquifer matrix (gpd/ ft^2)
- I is the hydraulic gradient (ft/ft)
- A is the cross-sectional area (ft^2)

A value of 2,400 gpd/ft^2 for *hydraulic conductivity* (K) was estimated from data of pump tests performed on the monitoring wells surrounding Laurel Pond. A value of 30 feet per mile (0.57%) for the *hydraulic gradient* (I) was taken from Sierra (2000). A value of 342,000 ft^2 for cross-sectional area (A) was measured by multiplying the diagonal distance across the Business Park site perpendicular to flow direction (1,900 feet) times an assumed saturated thickness of 180 feet (comparable to the proposed new production well at the project site). Using Darcy's equation, the estimated groundwater discharge under the project site is:

$$Q = K * I * A$$
$$Q = 2400 * 0.0057 * 342000$$
$$Q = 4{,}679{,}000 \text{ gpd}$$

If we assume that the dissolved inorganic nitrogen and phosphorus concentrations in native groundwater are zero then the maximum impact of the wastewater disposal at the project site on nearby down gradient production wells can be estimated as:

Increase in nitrogen concentration = 18,500* 30 / 4,679,000 = 0.12 mg/L

Increase in phosphorus concentration = 18,500* 2 / 4,679,000 = 0.008 mg/L

Thus if a new production well is constructed down gradient and in the plume emanating from the project then the maximum nitrogen and phosphorus concentration increase due to the project is given above. Drinking water uses down gradient of the project should not be impaired by nitrogen due to wastewater discharge from the project.

Note that the nitrogen and phosphorus concentrations obtained from future monitoring wells in the wastewater plume emanating from the project and perforated near the water table will be higher than that which will be observed in production wells due to the difference in perforations.

It has been a pleasure to be of service to you and the County on this investigation. Please call (949.498.9294) or email (mjw@wildh2o.com) me if you have any questions regarding our work.

Very truly yours,

Wildermuth Environmental, Inc.

Mark J. Wildermuth, P.E.
President/Principal Engineer

Encl.

Data and Reports Used in the Preparation of this Report

Sierra Technical Services, Inc. 2000. Regional and Site Specific Geology and Hydrology of the Proposed Sierra Business Park, Long Valley Caldera, Mono County, California. W.O. 3.01863. June 26, 2000.

Mark J. Wildermuth Water Resource Engineer. 1996. Hydrologic Impacts of the Snowcreek Golf Course Expansion on the AB and CD Headwater Springs. Prepared for Dempsey Construction. September 1996.

Farrar, C.D., Sorey, M.L., Rojstaczer, S.A., Janik, C.J., Winnett, T.L., and Clark, M.D. 1987. Hydrologic and Geochemical Monitoring in Long Valley Caldera, Mono County, California, 1985: USGS Water-Resources Investigations Report 87-4090

Bauer Environmental Services, 1998. Draft Environmental Impact Report and Environmental Assessment, Mammoth Community Water District Proposed Reclaimed Water Project, SCH #95121029. May 1998.

Canter, L.W., Knox, R.C., 1985. Septic Tank System Effects on Ground Water Quality. Lewis Publishers, 1986.

Surface water discharge, surface water quality, groundwater elevation and groundwater quality data from the USGS, as requested June 2000.

Surface water discharge and surface water quality collected by the Los Angeles Department of Water and Power and provided by the Lahonton Regional Water Quality Control Board June 2000.

Recycled water discharge, Laurel Pond elevation, monitoring well levels and groundwater quality data from the Mammoth Community Water District, as requested June 2000.

Reynolds, C.S., 1992, 'Eutrophication and the Management of Planktonic Algae; What Vollenweider Couldn't Tell Us, in D.W. Sutcliffe and J.G. Jones (eds) *Eutrophication: Research and Application to Water Supply*, Freshwater Biological Association, Amblefied, United Kingdom.

Table 1
Monthly Distribution of Surface Water Discharge
Hot Creek near the Flume
(cfs)

Month	Average Monthly Discharge	Minimum Monthly Discharge	Maximum Monthly Discharge
January	48.8	31.5	94.7
February	45.7	28.8	68.2
March	48.9	34.1	75.7
April	52.4	34.8	78.4
May	81.2	30.2	193.9
June	116.8	41.5	272.0
July	97.8	36.9	217.4
August	68.5	34.0	155.1
September	58.2	32.6	107.1
October	53.9	31.8	98.2
November	50.8	32.1	87.4
December	48.5	29.6	78.3

Table 2a
Total Nitrogen Increase in Surface Water Discharge
Hot Creek near the Flume
With a N-Load 30 mg/L
and a Discharge Rate of 250 gpd/parcel
(mg/L)

Month	No Project Condition			With Project Condition			Concentration Increase Due to Project			Percent Concentration Increase Due to Project		
	Average	Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum
January	0.156	0.056	0.300	0.166	0.068	0.308	0.010	0.012	0.008	6.4%	21.9%	2.8%
February	0.051	0.051	0.051	0.064	0.064	0.064	0.013	0.013	0.013	24.8%	24.8%	24.8%
March	0.127	0.036	0.300	0.136	0.045	0.307	0.009	0.009	0.007	7.1%	25.6%	2.5%
April	0.167	0.010	0.700	0.175	0.019	0.707	0.008	0.009	0.007	5.1%	88.2%	1.0%
May	0.149	0.015	0.800	0.155	0.028	0.805	0.006	0.012	0.005	4.0%	80.5%	0.6%
June	0.076	0.005	0.200	0.081	0.008	0.204	0.005	0.003	0.004	5.9%	50.7%	2.0%
July	0.208	0.005	1.800	0.215	0.007	1.802	0.007	0.002	0.002	3.2%	40.0%	0.1%
August	0.133	0.010	0.500	0.141	0.021	0.504	0.008	0.011	0.004	5.7%	109.6%	0.9%
September	0.090	0.005	0.370	0.098	0.014	0.377	0.008	0.009	0.007	9.3%	178.9%	1.8%
October	0.084	0.020	0.220	0.093	0.029	0.227	0.008	0.009	0.007	9.8%	44.6%	3.0%
November	0.379	0.010	3.900	0.388	0.019	3.906	0.009	0.009	0.006	2.3%	85.5%	0.1%
December	0.114	0.020	0.300	0.124	0.033	0.310	0.010	0.013	0.010	8.5%	66.5%	3.2%
Average	0.145	0.020	0.787	0.153	0.030	0.793	0.008	0.009	0.007	7.7%	68.1%	3.6%
Min	0.051	0.005	0.051	0.064	0.007	0.064	0.005	0.002	0.002	2.3%	21.9%	0.1%
Max	0.379	0.056	3.900	0.388	0.068	3.906	0.013	0.013	0.013	24.8%	178.9%	24.8%

Table 2b
Total Nitrogen Increase in Surface Water Discharge
Hot Creek near the Flume
With a N-Load 30 mg/L
and a Discharge Rate of 500 gpd/parcel
(mg/L)

Month	No Project Condition			With Project Condition			Concentration Increase Due to Project			Percent Concentration Increase Due to Project		
	Average	Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum
January	0.156	0.056	0.300	0.176	0.081	0.317	0.020	0.025	0.017	12.8%	43.7%	5.6%
February	0.051	0.051	0.051	0.076	0.076	0.076	0.025	0.025	0.025	49.7%	49.7%	49.7%
March	0.127	0.036	0.300	0.145	0.054	0.315	0.018	0.018	0.015	14.1%	51.3%	4.9%
April	0.167	0.010	0.700	0.183	0.028	0.714	0.017	0.018	0.014	10.2%	176.5%	2.0%
May	0.149	0.015	0.800	0.161	0.035	0.809	0.012	0.020	0.009	7.9%	127.7%	1.2%
June	0.076	0.005	0.200	0.085	0.010	0.208	0.009	0.005	0.008	11.8%	101.5%	4.0%
July	0.208	0.005	1.800	0.222	0.009	1.805	0.013	0.004	0.005	6.3%	79.9%	0.3%
August	0.133	0.010	0.500	0.148	0.033	0.509	0.015	0.022	0.009	11.5%	219.2%	1.8%
September	0.090	0.005	0.370	0.107	0.023	0.383	0.017	0.018	0.013	18.7%	357.7%	3.6%
October	0.084	0.020	0.220	0.101	0.039	0.233	0.016	0.018	0.013	19.5%	89.3%	6.0%
November	0.379	0.010	3.900	0.397	0.028	3.911	0.017	0.017	0.011	4.6%	171.1%	0.3%
December	0.114	0.020	0.300	0.134	0.047	0.319	0.019	0.027	0.019	17.0%	133.1%	6.4%
Average	0.145	0.020	0.787	0.161	0.038	0.800	0.017	0.018	0.013	15.3%	133.4%	7.1%
Min	0.051	0.005	0.051	0.076	0.009	0.076	0.009	0.004	0.005	4.6%	43.7%	0.3%
Max	0.379	0.056	3.900	0.397	0.081	3.911	0.025	0.027	0.025	49.7%	357.7%	49.7%

Table 3a
Total Phosphorus Increase in Surface Water Discharge
Hot Creek near the Flume
With a P-Load 2 mg/L
and a Discharge Rate of 250 gpd/parcel
(mg/L)

Month	No Project Condition			With Project Condition			Concentration Increase Due to Project			Percent Concentration Increase Due to Project		
	Average	Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum
January	0.2040	0.1569	0.2451	0.2046	0.1574	0.2458	0.0006	0.0006	0.0007	0.3%	0.4%	0.3%
February	0.2745	0.2745	0.2745	0.2752	0.2752	0.2752	0.0007	0.0007	0.0007	0.3%	0.3%	0.3%
March	0.2139	0.1307	0.2800	0.2144	0.1312	0.2806	0.0005	0.0004	0.0006	0.3%	0.3%	0.2%
April	0.1890	0.1367	0.3800	0.1895	0.1370	0.3804	0.0005	0.0003	0.0004	0.3%	0.2%	0.1%
May	0.1533	0.0300	0.2550	0.1537	0.0303	0.2557	0.0004	0.0003	0.0007	0.2%	0.9%	0.3%
June	0.1245	0.0588	0.2941	0.1247	0.0590	0.2945	0.0002	0.0002	0.0004	0.2%	0.3%	0.1%
July	0.1596	0.0490	0.2941	0.1600	0.0492	0.2948	0.0004	0.0001	0.0007	0.2%	0.3%	0.2%
August	0.1941	0.1300	0.2745	0.1945	0.1302	0.2751	0.0004	0.0002	0.0006	0.2%	0.1%	0.2%
September	0.1977	0.1100	0.3268	0.1982	0.1103	0.3274	0.0005	0.0003	0.0006	0.3%	0.3%	0.2%
October	0.1730	0.0817	0.2614	0.1735	0.0822	0.2621	0.0005	0.0005	0.0006	0.3%	0.6%	0.2%
November	0.1766	0.0098	0.5100	0.1771	0.0105	0.5102	0.0005	0.0007	0.0002	0.3%	6.8%	0.0%
December	0.2551	0.1503	0.6400	0.2557	0.1508	0.6403	0.0005	0.0004	0.0003	0.2%	0.3%	0.0%
Average	0.1929	0.1099	0.3363	0.1934	0.1103	0.3368	0.0005	0.0004	0.0005	0.3%	0.9%	0.2%
Min	0.1245	0.0098	0.2451	0.1247	0.0105	0.2458	0.0002	0.0001	0.0002	0.2%	0.1%	0.0%
Max	0.2745	0.2745	0.6400	0.2752	0.2752	0.6403	0.0007	0.0007	0.0007	0.3%	6.8%	0.3%

Table 3b
Total Phosphorus Increase in Surface Water Discharge
Hot Creek near the Flume
With a P-Load 2 mg/L
and a Discharge Rate of 500 gpd/parcel
(mg/L)

Month	No Project Condition			With Project Condition			Concentration Increase Due to Project			Percent Concentration Increase Due to Project		
	Average	Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum	Average	Minimum	Maximum
January	0.2040	0.1569	0.2451	0.2052	0.1580	0.2465	0.0012	0.0011	0.0014	0.6%	0.7%	0.6%
February	0.2745	0.2745	0.2745	0.2760	0.2760	0.2760	0.0015	0.0015	0.0015	0.5%	0.5%	0.5%
March	0.2139	0.1307	0.2800	0.2149	0.1316	0.2813	0.0011	0.0009	0.0013	0.5%	0.7%	0.4%
April	0.1890	0.1367	0.3800	0.1901	0.1373	0.3808	0.0011	0.0007	0.0008	0.6%	0.5%	0.2%
May	0.1533	0.0300	0.2550	0.1541	0.0306	0.2563	0.0007	0.0006	0.0013	0.5%	1.9%	0.5%
June	0.1245	0.0588	0.2941	0.1250	0.0592	0.2949	0.0005	0.0004	0.0008	0.4%	0.6%	0.3%
July	0.1596	0.0490	0.2941	0.1604	0.0493	0.2954	0.0008	0.0003	0.0013	0.5%	0.5%	0.5%
August	0.1941	0.1300	0.2745	0.1950	0.1303	0.2757	0.0009	0.0003	0.0011	0.5%	0.3%	0.4%
September	0.1977	0.1100	0.3268	0.1987	0.1106	0.3280	0.0010	0.0006	0.0012	0.5%	0.5%	0.4%
October	0.1730	0.0817	0.2614	0.1740	0.0826	0.2627	0.0010	0.0009	0.0012	0.6%	1.1%	0.5%
November	0.1766	0.0098	0.5100	0.1776	0.0111	0.5105	0.0010	0.0013	0.0005	0.6%	13.7%	0.1%
December	0.2551	0.1503	0.6400	0.2562	0.1512	0.6405	0.0011	0.0009	0.0005	0.4%	0.6%	0.1%
Average	0.1929	0.1099	0.3363	0.1939	0.1107	0.3374	0.0010	0.0008	0.0011	0.5%	1.8%	0.4%
Min	0.1245	0.0098	0.2451	0.1250	0.0111	0.2465	0.0005	0.0003	0.0005	0.4%	0.3%	0.1%
Max	0.2745	0.2745	0.6400	0.2760	0.2760	0.6405	0.0015	0.0015	0.0015	0.6%	13.7%	0.6%

Analysis of Nutrient Loading from Sierra Business Park

Legend

- 7128 — Water Well with Groundwater Elevation *(Spring 2000 -- feet above mean sea level)*
- Approximate Groundwater Flow Direction
- Proposed Sierra Business Park

Other Map Features

- Mammoth Basin Watershed
- Boundary of Long Valley Caldera

N

0 2000 4000 6000 Feet

Figure 1

General Vicinity Map with Direction of Regional Groundwater Flow

WE WILDERMUTH ENVIRONMENTAL, INC.

Prepared by: AEM	Date: July, 2000

s:\clients\mcwd\industry_park\maps\location_map.apr

Analysis of Nutrient Loading from Sierra Business Park

Legend

- **7128** — Water Well with Groundwater Elevation *(Spring 2000 – feet above mean sea level)*
- Approximate Groundwater Flow Direction
- Proposed Sierra Business Park

Other Map Features

- **AB** — Spring Water Sampling Location
- Surface Water Sampling Location
- Well Water Sampling Location
- Lake/Pool Water Sampling Location
- Mammoth Basin Watershed
- Boundary of Long Valley Caldera

N

0 1000 2000 3000 Feet

Figure 2

Detailed Vicinity Map with Direction of Regional Groundwater Flow

WE WILDERMUTH ENVIRONMENTAL, INC.

Prepared by: AEM	Date: June, 2000

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Figure 3 Average Monthly Discharge at Hot Creek Flow near Flume

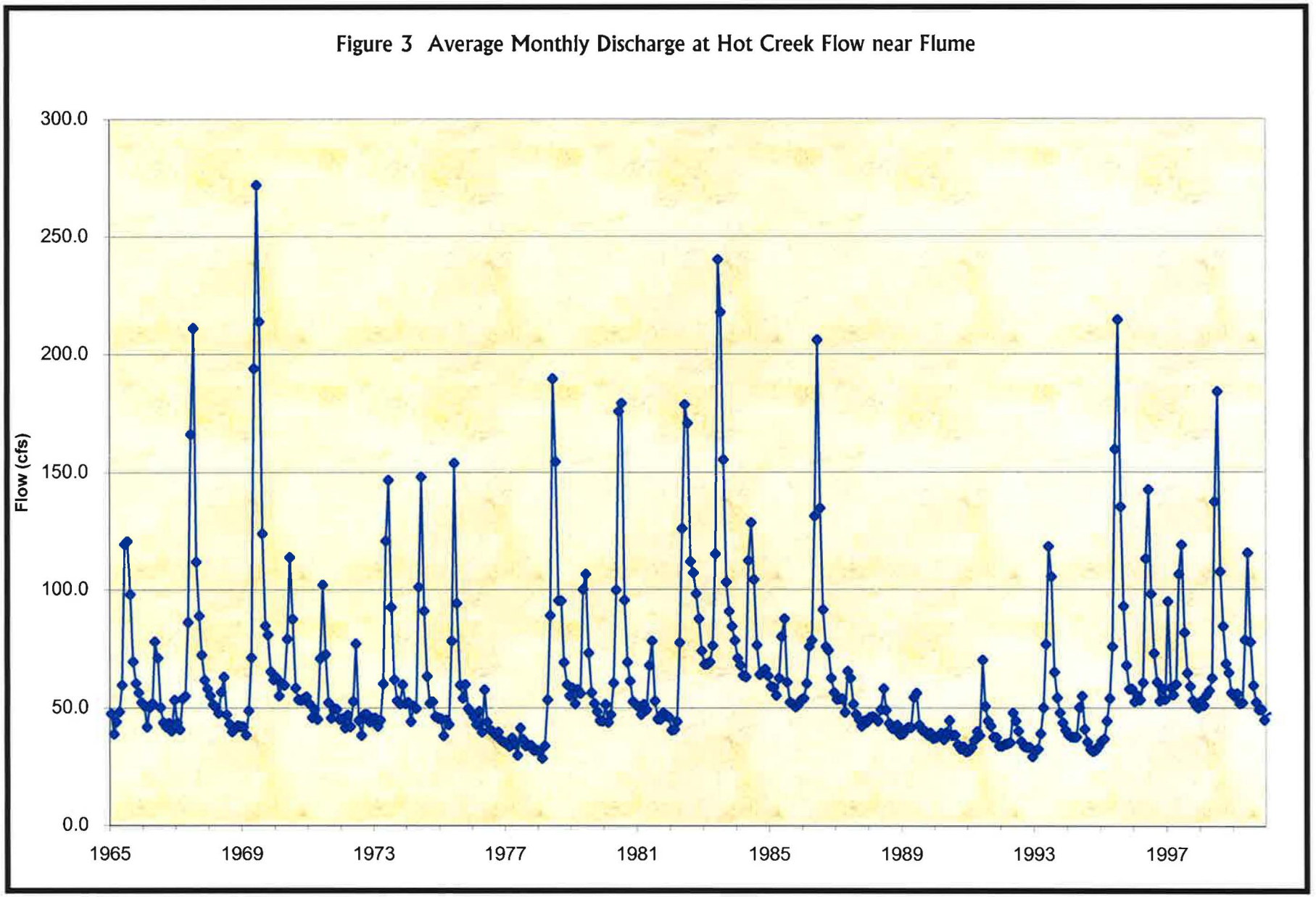


Figure 4 Total Nitrogen at Hot Creek near Flume

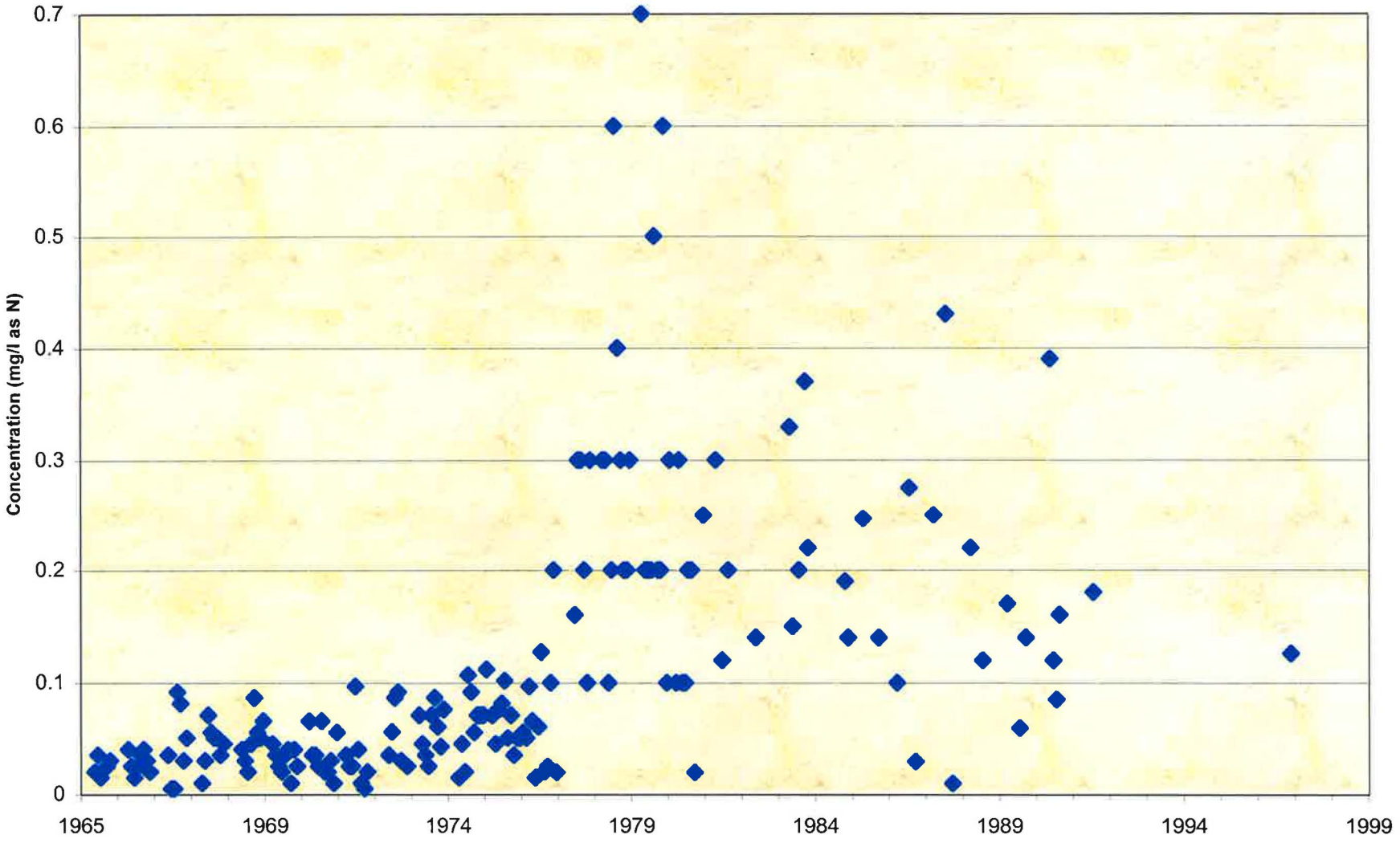
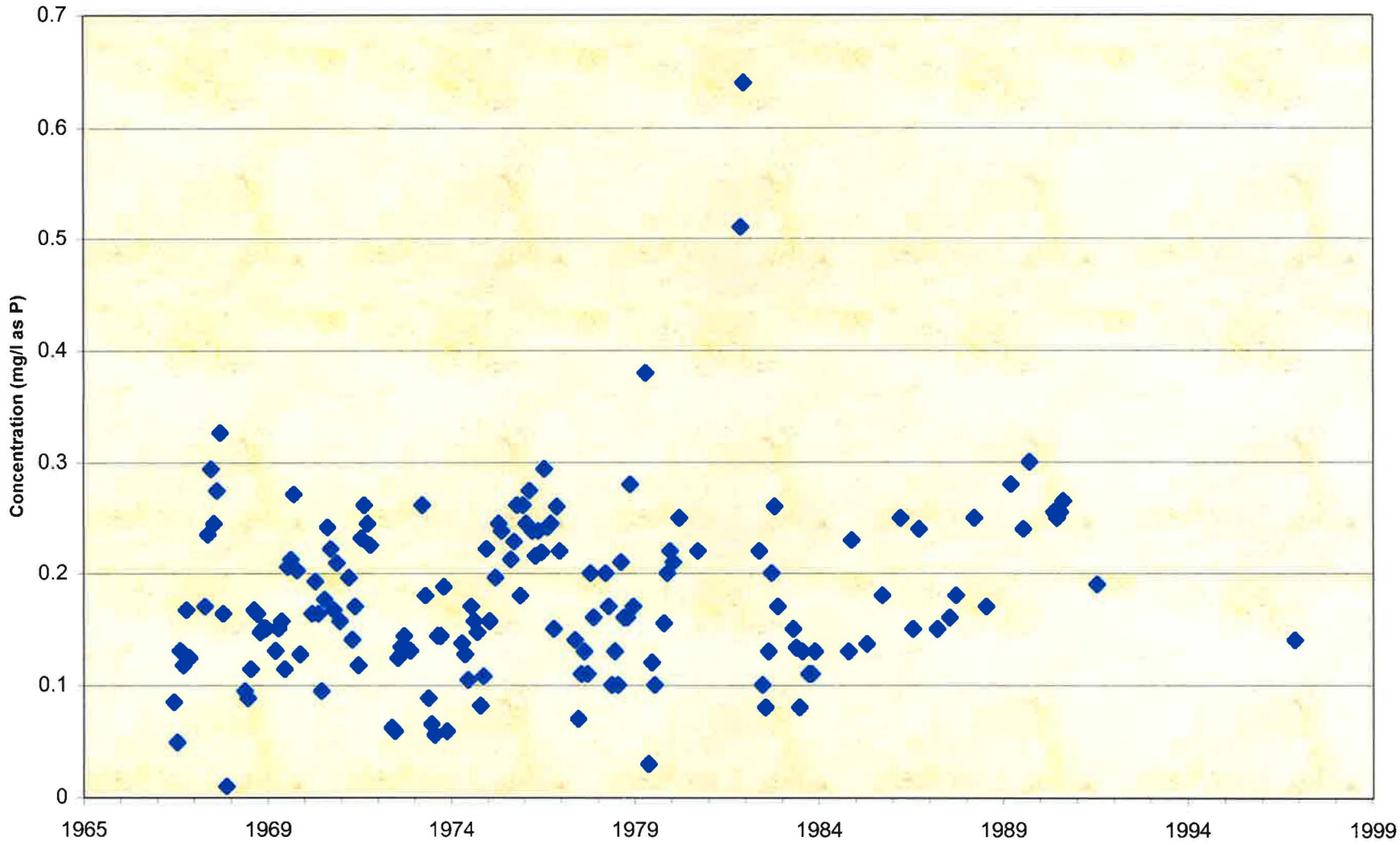


Figure 5 Total Phosphorus at Hot Creek near Flume



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San Bernardino, CA 92401
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