INTEROFFICE MEMORANDUM

TO: Chairman and Members, San Bruno Planning Commission

FROM: George D. Foscardo, AICP
Director of Planning and Building

DATE: April 19, 1993

SUBJECT: Presentation by PG&E at Planning Commission Meeting
Replacement/relocation of high pressure gas lines

BACKGROUND

During the past year, the City of San Bruno has cooperated with PG&E regarding the replacement (relocation) of high pressure gas lines through San Bruno. The end result is the selection of a mutually agreeable route through the City which would meet the needs of PG&E and other responsible authorities, while having the least disruptive impacts on local residents, schools, traffic circulation, and the environment.

As part of their community involvement program, PG&E has requested the opportunity to provide a courtesy presentation to the San Bruno Planning Commission regarding this highly visible project. PG&E is not requesting any approval or action from the Planning Commission. The attached materials have been provided by PG&E for informational purposes only, with a copy available in the San Bruno Public Library.

PG&E'S ENVIRONMENTAL ANALYSIS AND GEOLOGIC HAZARD EVALUATIONS

Included in the attachments by PG&E are two (2) documents entitled "Environmental Analysis" and "Geologic Hazard Evaluations". Staff from the City's Planning Department, the Public Works/Engineering Division, as well as the City's Geotechnical Consultant have previously reviewed the materials contained within these documents.

The gas line replacement/relocation project does not require Planning Commission approval. The only City permit required for this particular project is an Encroachment Permit, which will be granted by Staff with routine conditions consistent with City practices and policies.

In some instances, encroachment permits have been treated as discretionary acts by San Bruno. In this case, however, PG&E has worked with Staff to such a point that there is no need for any substantive discretionary review. Therefore, the City is considering the relocation project as if it were Ministerially Exempt under CEQA.

PG&E maintains that the relocation of Gas Transmission Line 109 is not subject to the California Environmental Quality Act (CEQA).

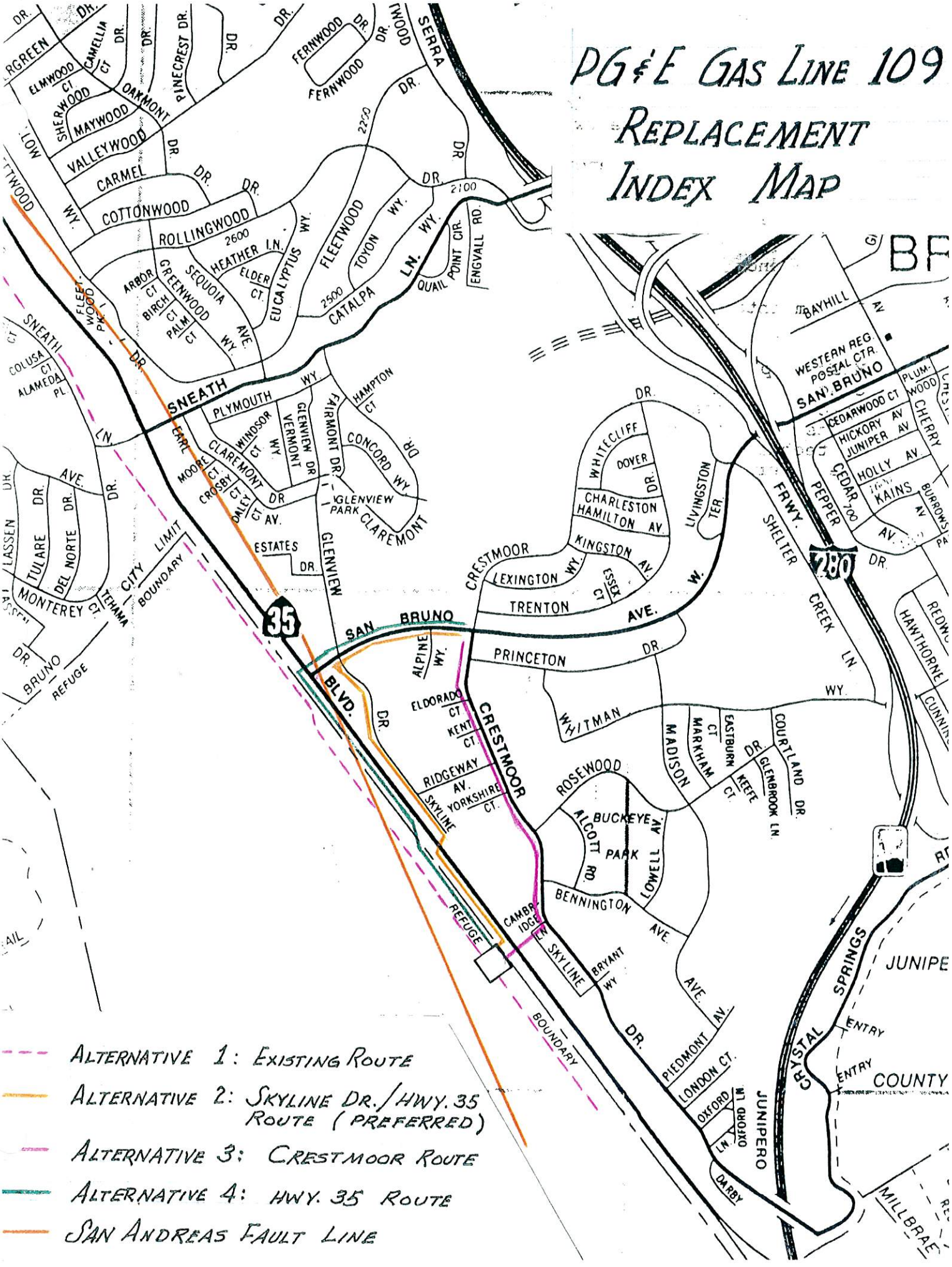
Most importantly, the critical environmental and geotechnical concerns expressed by Staff have been mitigated by selection of the specific route through San Bruno for the replacement/relocation lines. In addition, PG&E has provided environmental and geotechnical information, including mitigations, consistent with the general intent of the CEQA process.

RECOMMENDATION

No formal action or approval is required by the Planning Commission. Staff recommends that the Chairman accommodate the presentation by PG&E, allowing questions from the Commission and general public at the conclusion of the presentation.

cc: Frank Hedley, Interim City Manager
Jonathan P. Lowell, City Attorney

PG&E Gas Line 109 Replacement Index Map



San Bruno Planning Commission
Briefing Package

- Public Information Fact Sheet
- Presentation Outline
- Analysis of Alternatives for Caltrans Longitudinal Encroachment Permit Applications for I-280 frontage road and Hwy. 35 (dated 2/26/93 and 3/16/93)
- Environmental Analysis, Natural Gas Transmission Lines 109 and 132 Replacement Project (November 1992)
- Geologic Hazard Evaluations for Gas Transmission Lines 109 and 132 in San Bruno (November 1992)

San Bruno Planning Commission
Presentation Outline

PG&E Project Team Presenters:

- Paul Beckendorf, Gas Transmission Superintendent
- Leslie Day, Sr. Gas Transmission Engineer
- Bob Hillman, Gas Operations Supervisor

I. Purpose of Presentation -- *inform Planning Commission and public of major gas transmission line replacement project to be constructed through the City of San Bruno along with South San Francisco and Daly City this year beginning in May.*

II. Introductions of PG&E Representatives Present

III. Overall Scope and Background of Project

IV. Background on City Staff's Involvement in Project and Alternatives Studied

V. Existing Pipeline Routes

VI. New Pipeline Routes

VII. Construction Methods and Mitigation Measures

VIII. Construction Schedule

IX. Summary

X. Public Information Plan

XI. Questions and Answers

XII. Adjourn to Lobby for Additional Questions and Answers with PG&E Representatives

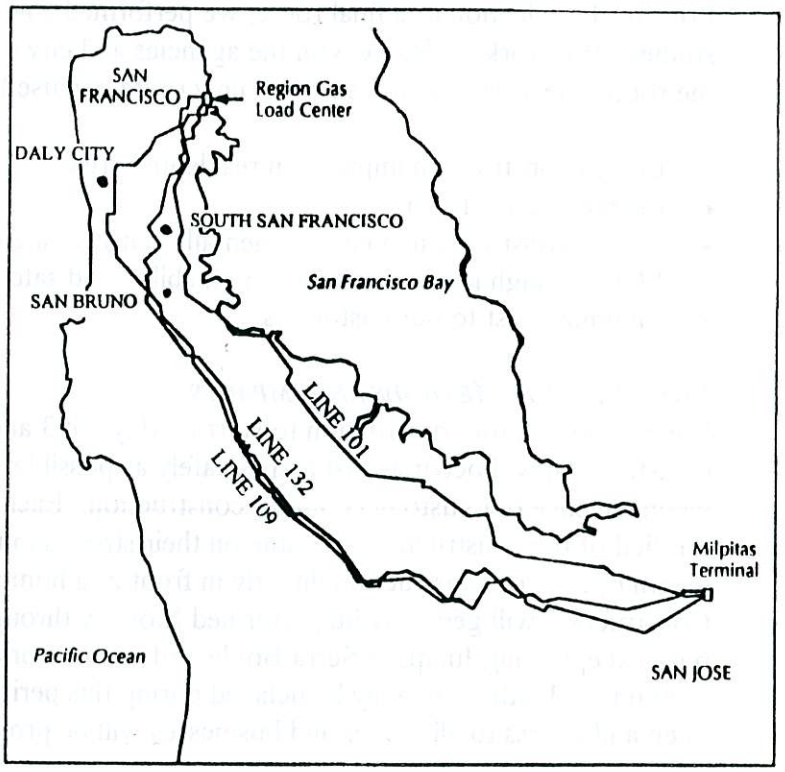
PUBLIC INFORMATION FACT SHEET
GAS LINES 109/132 REPLACEMENT PROJECT
DALY CITY, SOUTH SAN FRANCISCO AND SAN BRUNO

PURPOSE OF THIS FACT SHEET

This fact sheet provides information on a natural gas pipeline project that PG&E is starting in May. The following information will explain why this project is necessary, how we will keep you informed, and how we will try not to inconvenience you during construction. If you have any questions or concerns, please call the Line 109/132 Project Hotline at (415) 264-6280. For any other gas or electric service issues, please call the PG&E Customer Services office at (415)761-9103.

WHY DOES PG&E NEED TO DO THIS WORK?

In 1985, PG&E began the Gas Pipeline Replacement Program that will replace all aging natural gas pipelines in the system over a 25-year period. The purpose of this program is to maintain safe and reliable gas service to our customers. As part of this program, plans were made to replace the three natural gas pipelines that supply the Peninsula between San Francisco and Milpitas. We call these Lines 109, 132, and 101.



The old pipeline sections will be replaced with higher quality pipe using modern construction methods. The replacement of Line 101 was completed in 1989. The older portions of Lines 109 and 132 will be replaced by the year 2000. The current phase will be built from May 1993 to May 1994 in Daly City, South San Francisco and San Bruno.

EXISTING PIPELINES TO BE REPLACED IN 1993-1994

The section of Line 109 to be replaced in '93-'94 runs through Daly City, South San Francisco and San Bruno along Skyline Boulevard and in the San Francisco Watershed area. The short sections of Line 132 to be replaced in '93-'94 are located near Claremont Drive and along Skyline Drive and Skyline Boulevard in the City of San Bruno and in the San Francisco Watershed area. The existing lines cross the San Andreas fault in two locations along Skyline Boulevard, and also go through several residential back yards. We plan to replace these pipelines in new locations to reduce the seismic risk and environmental impacts along the lines. The maintenance access to the lines will also be greatly improved. All gas will be removed from the old pipelines and they will be sealed for safety and abandoned in the ground.

PUBLIC BENEFITS

The new lines will continue to provide safe, reliable gas to Daly City, South San Francisco and San Bruno, as well as the rest of the San Francisco Peninsula. The new lines should last for another 80 to 100 years.

NEW ROUTE DESCRIPTIONS

The new route for Line 109 starts at Hickey Boulevard and Saint Francis Boulevard in Daly City. It heads east on Hickey Boulevard and crosses under Interstate 280 to Junipero Serra Boulevard. It turns south on Junipero Serra Boulevard to Avalon Drive, which becomes Crestwood Drive as the street turns south. The pipeline continues on Crestwood past Sneath Lane, through the golf driving range, and onto the Interstate 280 frontage road until it reaches San Bruno Avenue. The pipeline will turn west on San Bruno Avenue to Skyline Drive and to Skyline Blvd. where it turns south and enters the San Francisco Watershed. The new route for Line 132 will run from San Bruno Avenue down Skyline Drive and the east shoulder of Skyline Boulevard, and will then turn south into the San Francisco Watershed. (Please see attached map.)

ROUTE SELECTION CRITERIA AND CONSIDERATIONS

Prior to the selection of a final route, we performed a number of environmental and geological studies. We worked closely with the agencies and city departments involved to get input into the route selection. In choosing this new route, we used the following items as criteria:

- Lessen construction impacts on residential areas.
- Lessen seismic hazards.
- Lessen construction in environmentally sensitive areas.
- Maintain high level of gas system reliability and safety.
- Minimize cost to our customers.

CONSTRUCTION METHODS AND IMPACTS

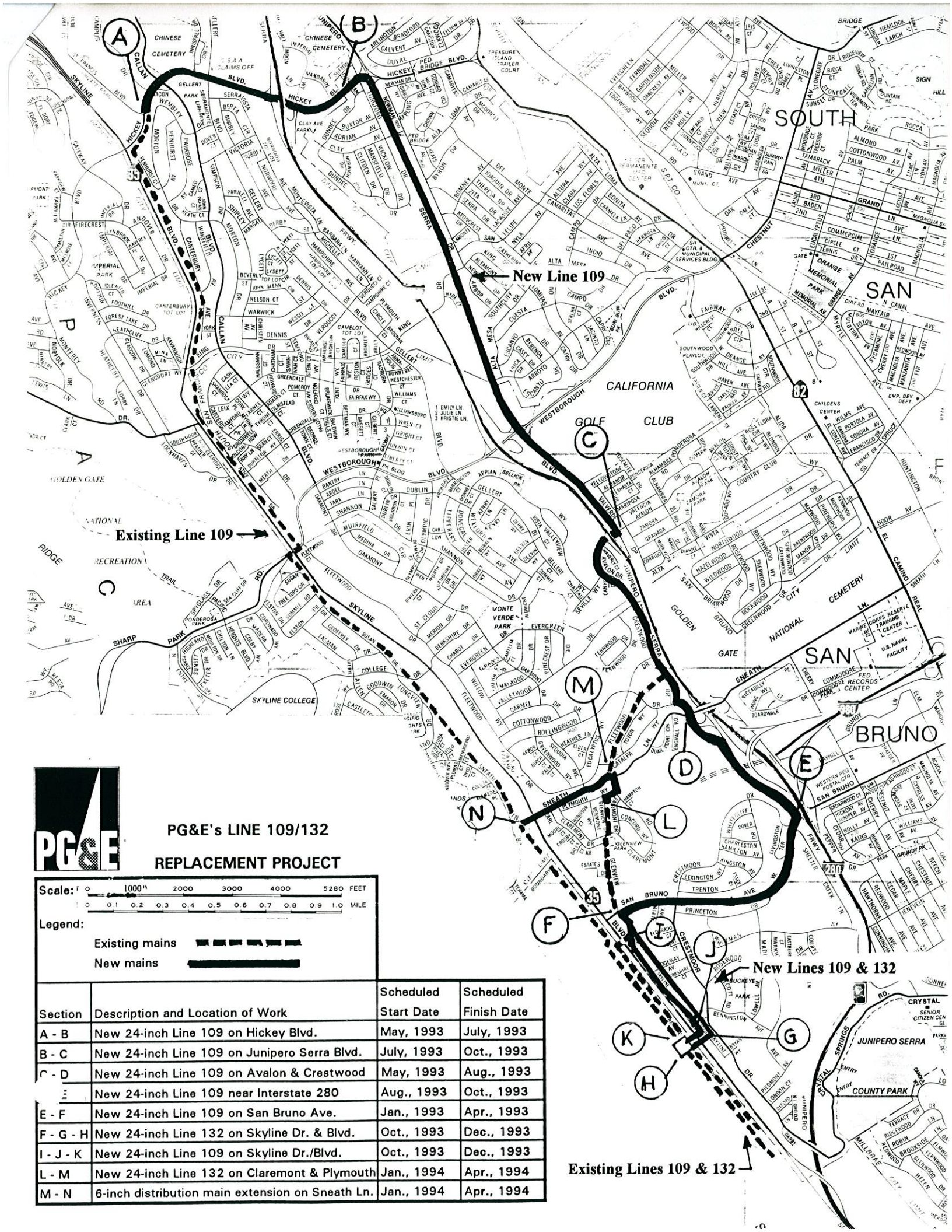
We are looking for construction to start in May 1993 and to last through May 1994. Construction will occur as fast and as safely as possible. We will do all we can not to inconvenience our customers during construction. Each home and business will be personally notified of the construction schedule on their street about one week in advance. The average length of time of construction directly in front of a home or business will be about one week. Construction will generally be performed Monday through Friday between 8:00 a.m. and 4:00 p.m. except along Junipero Serra Boulevard where work will take place from 7:00 a.m. to 6:00 p.m. Traffic flow may be delayed during this period, but at least one lane will be kept open and access to all homes and businesses will be provided.

The construction of Lines 109 and 132 will result in some noise, which is being limited by the daytime construction when fewer people will be affected. The trench will be filled or steel-plated at the end of each working day. All construction debris will be removed. In the event any landscaping is damaged by construction, it will be restored.

See the attached map for the schedules in specific areas. The project schedule may change due to weather, available manpower, and soil conditions.

FOR MORE INFORMATION, PLEASE CONTACT:

PG&E Line 109/132 Project Hotline.....(415) 264-6280



PG&E

PG&E's LINE 109/132 REPLACEMENT PROJECT

Scale: 0 1000 2000 3000 4000 5280 FEET
0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0 MILE

Legend:
- Existing mains
- New mains

Section	Description and Location of Work	Scheduled Start Date	Scheduled Finish Date
A - B	New 24-inch Line 109 on Hickey Blvd.	May, 1993	July, 1993
B - C	New 24-inch Line 109 on Junipero Serra Blvd.	July, 1993	Oct., 1993
C - D	New 24-inch Line 109 on Avalon & Crestwood	May, 1993	Aug., 1993
D - E	New 24-inch Line 109 near Interstate 280	Aug., 1993	Oct., 1993
E - F	New 24-inch Line 109 on San Bruno Ave.	Jan., 1993	Apr., 1993
F - G - H	New 24-inch Line 132 on Skyline Dr. & Blvd.	Oct., 1993	Dec., 1993
I - J - K	New 24-inch Line 109 on Skyline Dr./Blvd.	Oct., 1993	Dec., 1993
L - M	New 24-inch Line 132 on Claremont & Plymouth	Jan., 1994	Apr., 1994
M - N	6-inch distribution main extension on Sneath Ln.	Jan., 1994	Apr., 1994

Leslie Day

Pacific Gas and Electric Company

123 Mission Street
Mail Code H21A
P.O. Box 770000
San Francisco, CA 94177
415/973-7000

COPY

March 16 1993

Mr. Preston Kelly
State of California
Department of Transportation
Box 23660
Oakland, CA 94623-0660

Dear Mr. Kelly:

Re: Caltrans Application, Line 109 Replacement, Golden Gate Region, Highway 35 (Skyline Blvd.), GM 1958719
651.2

Enclosed for Pacific Gas and Electric Company's (PG&E) application (as set forth in Caltrans' guidelines, "Encroachment Permit Information for Work in State Highway Rights of Way) for the above mentioned project are the following:

1. Five copies of Caltrans' "Standard Encroachment Permit Application."

2. Five copies of PG&E's report describing all alternative routes considered for this area.

3. Five copies of the letter, dated August 25, 1992, from the City of San Bruno supporting PG&E's application. Although this letter was written for the I-280 application. 6U-92-2014, it applies to this application also.

4. Five copies of "PG&E Gas Line 109 Replacement Index Map."

5. Five copies of photos showing area for Alternative 1.

6. Five copies of PG&E's Drawing A-4730, sheets 1 and 2.

7. Five copies of aerial photograph.

We are aware that our preferred route is in conflict with Caltrans' usual procedures and that a variance must be approved by the Sacramento office. This replacement work will be performed in conjunction with the I-280 frontage road replacement project which was approved by the Sacramento office March 15, 1993. Both of these replacement projects

are of very high priority since they involve relocating gas pipelines that currently cross the San Andreas fault. We have worked closely with your staff and the City of San Bruno to determine a route that minimizes 1)seismic hazards and 2) impacts to the residential areas and to Caltrans facilities.

We propose to begin construction on this project in the latter part of 1993. In order for us to meet our construction date, we will need to know prior to June 30, 1993, whether this application will be approved or denied. Please inform me as soon as you know if (or when) this application is forwarded to the main office in Sacramento.

Please contact me or Ms. Leslie Day if there is any assistance that we can provide in order to expedite the processing of this application or if additional material is needed. Our telephone numbers are (415) 973-8238 and (415) 973-7211 respectively.

Thank you for your consideration on this high priority project.

Sincerely,

JLVG

Janice L. Van Gutman
Property management Agent
Enclosures

c: Mr. George D. Foscardo, AICP
Director of Planning and Building
City of San Bruno
567 El Camino Real
San Bruno, CA 94066

Mr. Marc Goto
City Encineer
City of San Bruno
567 El Camino Real
San Bruno, CA 94066

Tom Franklin
State of California
Department of Transportaion
Box 23660
Oakland, CA 94623-0060

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

STANDARD ENCROACHMENT PERMIT APPLICATION

TR 0100 (REV. 3/92)

Permission is requested to encroach on the State Highway Right of Way as follows: *(Complete all items: NA if not applicable.)*
Application is not complete until all required attachments are included.

FOR CALTRANS USE
PERMIT NO.
DIST/CO/RTE/PM
SIMPLEX STAMP
DATE OF SIMPLEX STAMP

1. LOCATION: CITY	2. COUNTY	3. ROUTE
San Bruno	San Mateo	SM - 35

4. POST MILE	5. APPLICATION DATE	6. ADDRESS OR STREET NAME
23.8	3-12-93	Skyline Blvd

7. CROSS STREET *(Distance and direction from site)*: Cambridge and Skyline Drive

8. PORTION OF RIGHT OF WAY:

9. WORK TO BE PERFORMED BY	10. EST. START DATE	11. EST. COMPLETION DATE	12. EST. COST IN STATE R/W
☒ OWN FORCES ☐ CONTRACTOR	9-1-93	3-1-94	--

	13. MAX. DEPTH	14. AVG. DEPTH	15. AVG. WIDTH	16. LENGTH	17. SURFACE TYPE
EXCAVATION	6'6"				Jack & bore under asphalt & concrete

	18. TYPE	19. DIAMETER	20. VOLTAGE / PSIG	21. PRODUCT
2 - PIPES	24- inch steel	30-inch steel/casing in crossing	400maop	Natural gas

22. FULLY DESCRIBE WORK WITHIN STATE R/W: *Attach complete plans (minimum 5 sets folded 8 1/2 x 11), specs, calcs, maps, etc., if applicable.*

As part of PG&E's Gas Transmission Pipeline Replacement Project, PG&E proposes to install two (2) 24-inch steel gas mains in the Skyline Boulevard right of way from the south end of Skyline Drive 845' ± to opposite Cambridge Way, then cross Route 35 using the dry bore and jack method. The portions of gas mains in the paved highway are would be installed in two (2) 30-inch steel casings to a receiving pit located outside the highway right of way on the west side.

Please review enclosed drawings A-4730, for a more clear picture on the east side. Between the two proposed mains there are large rows of trees. PG&E would remove one row closest to the east highway right of way line. These would be replaced with a suitable type tree agreeable to all parties at Company expense. The reason for our choice of location is to avoid the San Andreas fault line.

23. Is any work being done on applicant's property? *(If "YES", briefly describe and attach site and grading plans.)* ☐ YES ☒ NO

24. IS A CITY, COUNTY OR OTHER AGENCY INVOLVED IN ENVIRONMENTAL APPROVAL?

☐ YES (Check documentation type and attach approved copy) ☐ EXEMPT ☐ N.D. ☐ EIR

☒ NO (Check the category below which describes the project)

- ☐ SURVEY
- ☐ FLAGS, SIGNS, BANNERS, DECORATIONS
- ☐ TEMPORARY SIGNALS
- ☐ PUBLIC UTILITY MODIFICATIONS, EXTENSIONS, HOOKUPS
- ☐ SIDEWALK / GUTTERS
- ☐ FENCE
- ☐ SINGLE FAMILY DWELLING DRIVEWAY
- ☐ REMOVAL-REPLACEMENT OF DISTINCTIVE ROADWAY MARKINGS
- ☐ DITCH PAVING
- ☐ MAILBOX
- ☐ PARADES, CELEBRATIONS
- ☐ COMMUNITY ANTENNA TV SYSTEM
- ☐ EROSION CONTROL
- ☐ AGRICULTURAL APPROACH
- ☐ MAINTENANCE, RECONSTRUCTION, OR RESURFACING OF A DRIVEWAY OR ROAD APPROACH
- ☐ MAINTENANCE OF EXISTING LANDSCAPING
- ☐ REGULATORY WARNING, INFORMATION SIGNS
- ☐ MODIFICATION OF TRAFFIC CONTROL SYSTEMS
- ☐ MOVIE, TV FILMING

☐ NONE OF THE ABOVE *(If project cannot be described in above categories, request application Part B from the Permit Office.)*

The undersigned agrees that the work will be done in accordance with Caltrans rules and regulations and subject to inspection and approval

25. ORGANIZATION OR APPLICANT NAME *(Print or Type)*	26. BUSINESS PHONE
Pacific Gas & Electric Company	(415) 973-8238
27. ARCHITECT, ENGINEER OR PROJECT MANAGER NAME *(Print or Type)*	**28. BUSINESS PHONE**
Leslie D. Day	(415) 973-7211

29. BUSINESS ADDRESS *(Include City and Zip Code)*: P.O. Box 770000, San Francisco, CA 94177 Mail Code H21A

30. AUTHORIZED SIGNATURE	31. PRINT OR TYPE NAME	32. TITLE	33. DATE
Michael Sanchez	Michael Sanchez	Supervisor Acquisition	3-12-93

FM 91 1403

PG&E LINE 109/132 REPLACEMENT PROJECT, GOLDEN GATE REGION

Caltrans Longitudinal Encroachment Permit Application Supplement
Hwy. 35 (Skyline Blvd.) between San Bruno Ave. and Cambridge Way

OVERALL SCOPE AND BACKGROUND

In 1985, Pacific Gas and Electric Company (PG&E) implemented the Gas Pipeline Replacement Program to replace aging natural gas pipe throughout the PG&E system. As part of this 25-year program approved and monitored by the California Public Utilities Commission (CPUC), plans were formulated to replace the three natural gas transmission lines which serve every community along the Peninsula between San Francisco and Milpitas. These are Lines 109, 132, and 101. The program calls for replacing the deteriorating gas pipelines with higher quality pipe and employing modern arc welding techniques.

The existing 57-year old Line 109 and 45-year old Line 132 to be replaced on this project currently run through Daly City, South San Francisco, and San Bruno along Highway 35 (Skyline Boulevard) from Hickey Boulevard to Cambridge Lane. The existing lines cross the San Andreas fault in three locations, and go through an existing landslide area. The lines are also exposed in two areas along the existing route next to Highway 35. The new lines will be constructed with modern 24-inch steel arc-welded pipe that is very strong (60,000 psi yield strength), yet ductile, and performs exceptionally well in response to seismic activity. As part of this work, we are significantly reducing our seismic vulnerability by eliminating all existing crossings of Lines 109 and 132 on the San Andreas fault.

SUMMARY OF ALTERNATIVES STUDIED

Alternative	Description	Cost	Feasibility/Impacts
1	Parallels Hwy. 35 between San Bruno Avenue and Cambridge Way within the San Francisco Water Department Fish & Game Refuge.	$1.82 M	**Not viable.** Three fault crossings of the San Andreas and construction in the environmentally sensitive SFWD Fish & Game Refuge eliminate this route.
2	Heads south along Skyline Drive from San Bruno Avenue. When Skyline Drive ends south of Ridgeway Drive, the pipeline will cross into Skyline Blvd. (Hwy. 35) and continue south to a proposed valve lot at Cambridge Way in SFWD property.	$1.17 M	**Preferred Route.** Impacts only 11 homes along Skyline Drive. Up to 50 trees will need to be replaced along outer edge of Hwy. 35 right-of-way.
3	Follows Crestmoor Drive from San Bruno Avenue to Cambridge Way and then crosses Skyline Blvd. (Hwy. 35) to a proposed valve lot in SFWD property.	$1.60 M	**Not recommended.** Significant impacts to residents of over 50 homes and a grammar school along Crestmoor Drive. High cost due to additional footage and paving requirements.
4	Along Skyline Blvd. (Hwy. 35) between San Bruno Avenue and Cambridge Way.	$1.70 M	**Not viable.** Three fault crossing of the San Andreas eliminates this route.

CRITERIA USED TO EVALUATE ALTERNATIVES

The following criteria were used to evaluate the alternatives:

- Eliminate all San Andreas fault crossings and minimize exposure to other seismic hazards. Although a modern gas pipeline performs well in response to moderate ground displacement and shaking in an earthquake, it is prudent to eliminate and minimize the seismic exposure. This is especially necessary in cases where there is a potential for large ground displacement such as on the San Andreas fault and in unstable soil.
- Engineering/Construction feasibility.
- Minimize cost to PG&E rate payers (PG&E has an obligation to provide gas service at a reasonable cost which is regulated by the CPUC)
- Minimize construction impacts on residential areas.
- Minimize environmental and cultural resource impacts.
- Operational requirements (valve locations, accessibility, distance between lines, etc.).
- Minimize exposure of the line to dig-ins.

DETAILS OF ALTERNATIVES STUDIED

Alternative 1 - Replace in Existing Easement

Description:
This route parallels Skyline Blvd. (Hwy. 35) between San Bruno Avenue and Cambridge Way within the San Francisco Water Department Fish & Game Refuge.

Advantages:
This route would be in an existing easement parallel to Highway 35.

Disadvantages:
Three crossings of the San Andreas fault ***eliminate this route as a viable alternative***. The safety and reliability of the gas supply to the San Francisco Peninsula (over 347,000 customers) would be at risk. In addition, the existing route is located in the San Francisco Water Department State Fish and Game Refuge. Preliminary meetings with the San Francisco Water Department have revealed that they would be STRONGLY OPPOSED to PG&E constructing in this highly environmentally sensitive area. This area supports sensitive and endangered species such as the San Francisco Garter Snake.

Construction Feasibility:
The pipelines would have to be constructed using the best special design measures available for crossing the San Andreas fault in three locations. In order to adequately design the pipelines, additional right-of-way would be necessary in the environmentally sensitive San Francisco Water Department State Fish and Game Refuge. Special design measures for fault crossings include crossing at 90-degrees to the fault line and using extra wide V-trench construction with loose backfill. The existing easement is only ten feet

wide with an alignment at low angles with the fault, and therefore it is impossible to construct up to current standards for fault crossings within the existing right-of-way. The cost to PG&E rate payers of special design measures (if additional right-of-way could be obtained and construction allowed by the San Francisco Water Department) would be approximately $1.4 million more than the preferred route. This additional cost to PG&E rate payers would be unreasonable and most likely unacceptable to the CPUC.

Seismic/Geological Factors:
This route crosses the main trace of the San Andreas fault three times, leaving the pipeline very susceptible to substantial fault movement (about 10' horizontal right slip). It is impossible to design measures to accommodate these large potential displacements within the present configuration of the existing narrow ten foot right-of-way.

Environmental Factors:
This route passes through grasslands and woodlands in the environmentally sensitive San Francisco Water Department (SFWD) State Fish and Game Refuge. Biological studies revealed that habitat may be present for special status butterflies and the endangered San Francisco Garter Snake.

Cost:
$1,820,000.

Alternative 2 (Preferred) - Skyline Dr. to Hwy. 35

Description:
This route heads south along Skyline Drive from San Bruno Avenue. When Skyline Drive ends south of Ridgeway Drive, the pipelines will enter the eastern side of the Caltrans right-of-way parallel to Skyline Blvd. (Hwy. 35) and continue south to Cambridge Way. At Cambridge Way, the lines will cross Skyline Blvd. (Hwy. 35) to a proposed valve lot in SFWD property. See attached sketch for detail of the proposed route.

Advantages:
This route eliminates all San Andreas fault crossings, and has minimal impact on the residents of the City of San Bruno. This is the alternative preferred by both PG&E and the City of San Bruno. The line will be designed to withstand a repeat of the San Francisco 1906 earthquake or similar event. Longitudinal construction will occur off the paved shoulder and along the fence line on the east side of the Caltrans right-of-way parallel to Skyline Blvd. (Hwy. 35). PG&E will maintain traffic flow during construction.

Disadvantages:
One out of the existing three rows of Eucalyptus trees (up to 50 trees total) in the eastern side of the right-of-way will have to be removed in order to construct the pipelines. See "*Environmental Factors*" for proposed mitigation measures.

Engineering Construction Feasibility:
No factors exist which make this route infeasible.

Design:

Pipeline Design:
PG&E has consulted with Geomatrix Consultants and EQE Engineering Consultants on this project. Both these firms have performed numerous geological studies and finite element seismic analyses on the proposed design. As a result of these studies, PG&E has decided to eliminate the crossings of the San Andrea fault and to use special high strength/high ductility heavy-wall 24-inch steel pipe (0.5-inch wall thickness vs. normal 0.312-inch wall thickness) to provide extra protection against seismic activity near the fault line. Also, special long-radius elbows will be used at all bend locations to distribute pipe strain. This special seismic design will be able to withstand the expected ground warping during a repetition of the S.F. 1906 earthquake or similar event within acceptable strain limits.

Shutoff Valves:
PG&E must abide by the CPUC General Order 112-D, "Rules Governing Design, Construction, Testing, Maintenance, and Operations of Utility Gas Gathering, Transmission and Distribution Piping Systems" in designing and constructing this gas line. The CPUC General Order 112-D requires that PG&E install manual shut-off valves at least every eight miles along the line for this area. For this project, we will be installing manual shutoff valves no more than 2.5 miles apart. We will be installing these valves on either side of the Caltrans right-of-way at the following locations:

- Near the intersection of Fleetwood and Crestwood Drives just north of the I-280 and Sneath Lane intersection in San Bruno.
- At the proposed San Andreas Valve Lot west of Hwy. 35 (Skyline Blvd.) across from Cambridge Lane in San Bruno.

Seismic/Geological Factors:
As mentioned above, PG&E has consulted with Geomatrix Consultants and EQE Engineering Consultants on this project. Both these firms have performed numerous geological studies and finite element seismic analyses on the proposed design. The proposed pipeline will be able to withstand the expected ground warping during a repetition of the S.F. 1906 earthquake or similar event within acceptable strain limits.

Environmental Factors:
PG&E has completed literature and field searches for biological and cultural resources and hazardous substances. Since construction is limited to a landscaped area, no rare and endangered species habitat will be encountered. Also, no cultural resource restraints were identified and no hazardous substance sites were listed for this area.

One out of the existing three rows of Eucalyptus trees (up to 50 trees total) on the outer edge of the right-of-way will have to be removed in order to construct the pipelines. These trees will be replaced with fast-growing evergreen trees. We recommend replanting

with one of the following four species due to their low maintenance requirements, drought resistance, fast growth rate, and medium height:

- Casuarina Stricta ("Beefwood")
- Geijera Parviflora ("Austrailian Willow")
- Myoporum Laetum 'Carsonii' ("Myoporum")
- Pinus Contoria ("Shore Pine")

The new trees will be planted 15' to 20' on center to maintain a good screen. PG&E will maintain the new trees for one growing season. The City of San Bruno Parks and Recreation Department agrees with our recommendations above.

Estimated Cost:
$1,170,000.

Alternative 3: Construct in Franchise (Crestmoor Drive)

Description:
This route would follow Crestmoor Drive from San Bruno Avenue to Cambridge Way and then cross Skyline Blvd. (Hwy. 35) to a proposed valve lot in SFWD property.

Advantages:
This route would be entirely outside of the Caltrans right-of-way except for a perpendicular crossing at Cambridge Way.

Disadvantages:
This route ***is not preferred*** since it would significantly impact densely populated residential areas in the City of San Bruno during construction. The route would impact residences of over 50 homes and also would involve construction along the front and side of a large grammar school. The impact of installing two pipelines (one on each side of the street) would significantly impact these residences and school activities. The pipelines would have to be built one at a time in order to maintain traffic flow. Therefore, the construction period impacting these homes and school would be at least 6 months. Although our pipelines are designed according to the California Public Utilities Commission General Order 112-D Standards, there may still be a public perception that it is not safe to live on a street that contains a high pressure gas line, especially near the San Andreas fault. As a result of these factors, the City of San Bruno is STRONGLY opposed to this alternative and requested that PG&E pursue an alternative with a lesser impact on residential neighborhoods.

Engineering/Construction Feasibility:
This alternative would be substantially more difficult to construct than Alternative 2 because gas line trenching would take place through a densely populated residential neighborhood of San Bruno. Residents in the area would be greatly impacted by construction activities, traffic re-routes and delays, and noise for the duration of the project. Since construction of two lines will take place (one at a time on each side of the street), the construction time and disruption to residents will be doubled.

Seismic/Geological Factors:
Same as Alt. 2.

Environmental Factors:
Same as Alt. 2.

Cost:
$1,595,000.
(The cost for this alternative is significantly higher than the preferred alternative due to the additional footage and paving requirements.)

Alternative 4 - Skyline Blvd (Hwy. 35)

Description:
This route is within Skyline Blvd. (Hwy. 35) for the entire route between San Bruno Avenue and Cambridge Way.

Advantages:
Construction entirely in Hwy. 35 would minimize construction impacts to the residents of the City of San Bruno and to environmentally sensitive areas in the S.F. Water Department State Fish and Game Refuge.

Disadvantages:
Low angle crossings of the San Andreas fault ***eliminate this route as a viable alternative***.

Construction Feasibility:
This route would be very costly to construct since it is not possible to cross the San Andreas fault at a 90 degree angle within Hwy. 35. Other special design measures would have to be used at an excessive cost to rate payers.

Seismic/Geological Factors:
This route crosses the main trace of the San Andreas fault , leaving the pipeline very susceptible to substantial fault movement (about 10' horizontal right slip).

Environmental Factors:
No cultural resource restraints were identified. No hazardous substance sites were listed for this area. Since construction is limited to the paved road, no rare and endangered species habitat will be encountered.

Cost:
$1,700,000.

MAINTENANCE ACTIVITIES

Maintenance activities on Line 109 within Caltrans right-of-way will consist of quarterly pipeline patrols and yearly leak surveys. Quarterly pipeline patrols are usually performed by helicopter and will not affect traffic flow in any way. However, in the event of poor weather which would make it dangerous to patrol via helicopter, the pipeline route will be driven by Company personnel at speeds which are normal for traffic in the area. Yearly leak surveys will be performed by a leak surveyor in a car at low speed or by walking the pipeline route. In either case, adequate safety precautions will be taken so that neither the traffic flow is interrupted nor the safety of citizens or employees are endangered.

CONSEQUENCES OF PERMIT DENIAL

Should PG&E's request for this permit be denied, the pipeline would have to be constructed through densely populated residential streets and by the front and side of a large grammar school in the City of San Bruno (Alternative #3 of permit application). Residents in the area and the school would be greatly impacted by construction activities, traffic re-routes and delays, and noise for the duration of the project. Since construction of two lines will take place (one at a time on each side of the street), the construction time and disruption to residents and the school will be doubled. This route is also $430,000 more expensive than the preferred route which will have a negative impact on PG&E rate payers.

IMPACTS OF PROJECT ON STATE FACILITIES

There are no significant negative impacts of this project on the state highway facility. Minor impacts are as follows: yearly leak survey activities within the right-of-way by PG&E, existence of pipeline and pipeline markings within Caltrans right-of-way.

File: CTHWY35b.DOC

CITY OF SAN BRUNO
PLANNING & BUILDING

George D. Foscardo, AICP
Director

August 25, 1992

Mr. Preston Kelley, Director
State of California
Department of Transportation, District 4
P.O. Box 7310
San Francisco, CA 94120

RE: Pacific Gas & Electric Company's request for a CALTRANS Encroachment Permit to allow longitudinal encroachment within CALTRANS' right-of-way on I-280 frontage road from Sneath Lane to San Bruno Ave. for relocation of gas pipeline 109.

Dear Mr. Kelley:

The City of San Bruno supports PG&E's proposal to relocate its existing natural gas transmission line 109 from its current location along the seismically sensitive area of Skyline Boulevard (Highway 35) to a new location along the I-280 frontage in San Bruno.

The replacement and relocation of natural gas transmission system lines to assure public safety and system reliability in the event of an earthquake is of paramount importance. The existing location of PG&E's line 109 parallels Skyline Boulevard and the San Andreas Fault, which bisects our city. San Bruno is pleased that PG&E has shown concern for our residents' safety by proposing to upgrade their system with new pipes, joint configurations, and girth welds designed to current industry standards.

In selecting a route for the relocation of its line, San Bruno requested PG&E to select routes through the least populated areas. To this end, PG&E has proposed to relocate a portion of line 109 to the I-280 frontage from Sneath Lane to San Bruno Avenue. We understand the proposed alignment requires a longitudinal encroachment of CALTRANS' right-of-way which is normally not allowed and that PG&E is requesting a variance to this policy through the Sacramento Office of Project Planning and Design.

567 El Camino Real, San Bruno, California 94066
(415) 877-8874, FAX (415) 873-6749

The City of San Bruno requests your favorable review of PG&E's proposal to relocate a portion of their line 109 along the I-280 frontage to help assure the safety of our residents.

Thank you for your time and consideration on this matter of utmost concern.

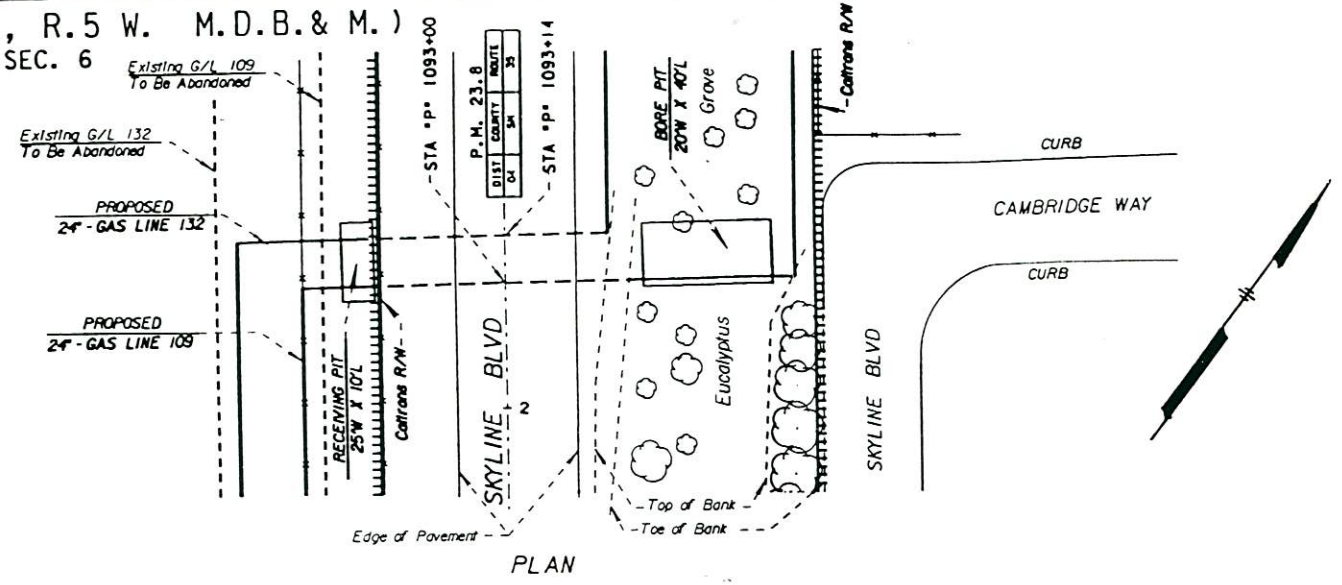
Yours truly,

[redacted]

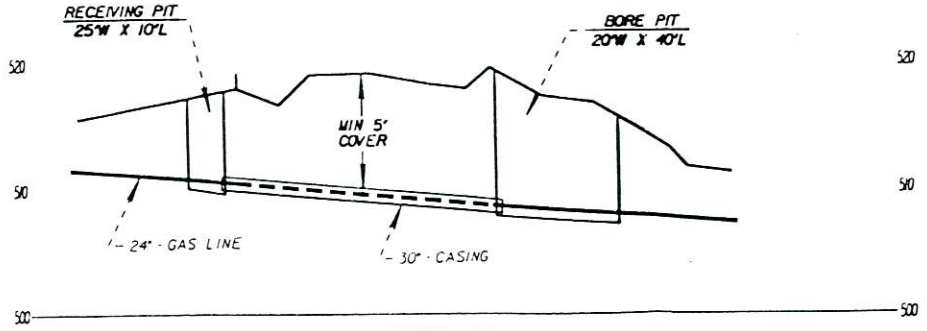
George D. Foscardo, AICP
Director of Planning and Building
City of San Bruno

cc: Frank Hedley, Interim City Manager
Leslie Day, PG&E Gas Transmission Superintendent

(T.4 S., R.5 W. M.D.B.& M.)
NE¼ SEC. 6



PLAN



PROFILE
Vert. Scale 1" = 10'
Horiz. Scale 1" = 40'

DESCRIPTION OF PIPE	
Type	API-5L-X60 DSAW
Diam	24.00"
Thickness	0.500"
Pressure	400 PSIG
DESCRIPTION OF CASING	
Type	API-5L-X60 DSAW
Diam	30.00"
Thickness	0.500"
Method of Install	JACK & BORE

SAN MATEO COUNTY
GOLDEN GATE REGION
SAN FRANCISCO DIVISION

REF. DWG. 301901 (CALTRANS)

MICROFILM

NO.	DATE	DESCRIPTION	GM	DWN.	CHKD.	SUPV.	APVD.

REVISIONS

APPROVED BY	
GM 196871 - 6	
SUPV. P. HURTER	
DSGN.	
DWN. G. MARTINELLI	
CHKD.	
O.K.	
DATE 3-3-93	
SCALES AS SHOWN	

PROPOSED GAS LINE 109 & 132 REPLACEMENT - CROSSING UNDER SKYLINE BLVD AT CAMBRIDGE WAY

PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

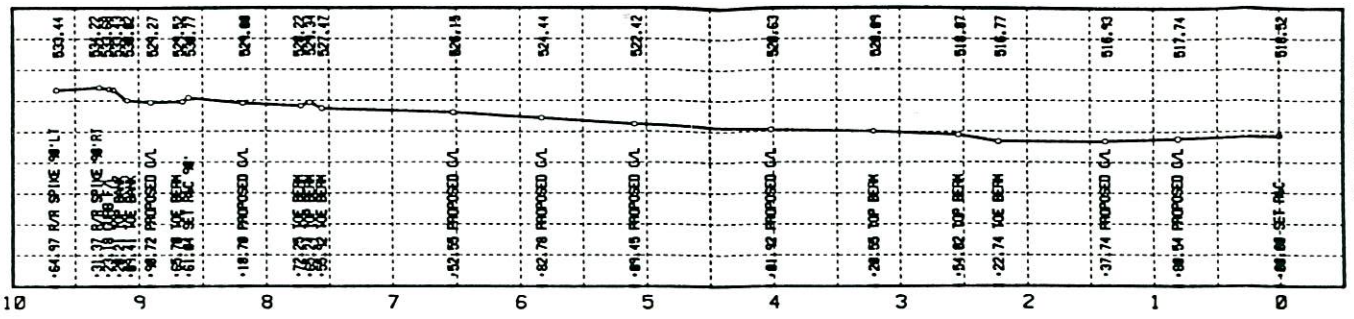
BILL OF MATL
DWG LIST
SUPSDS
SUPSD BY
SHEET NO. 1 OF 2 SHEETS

REV.

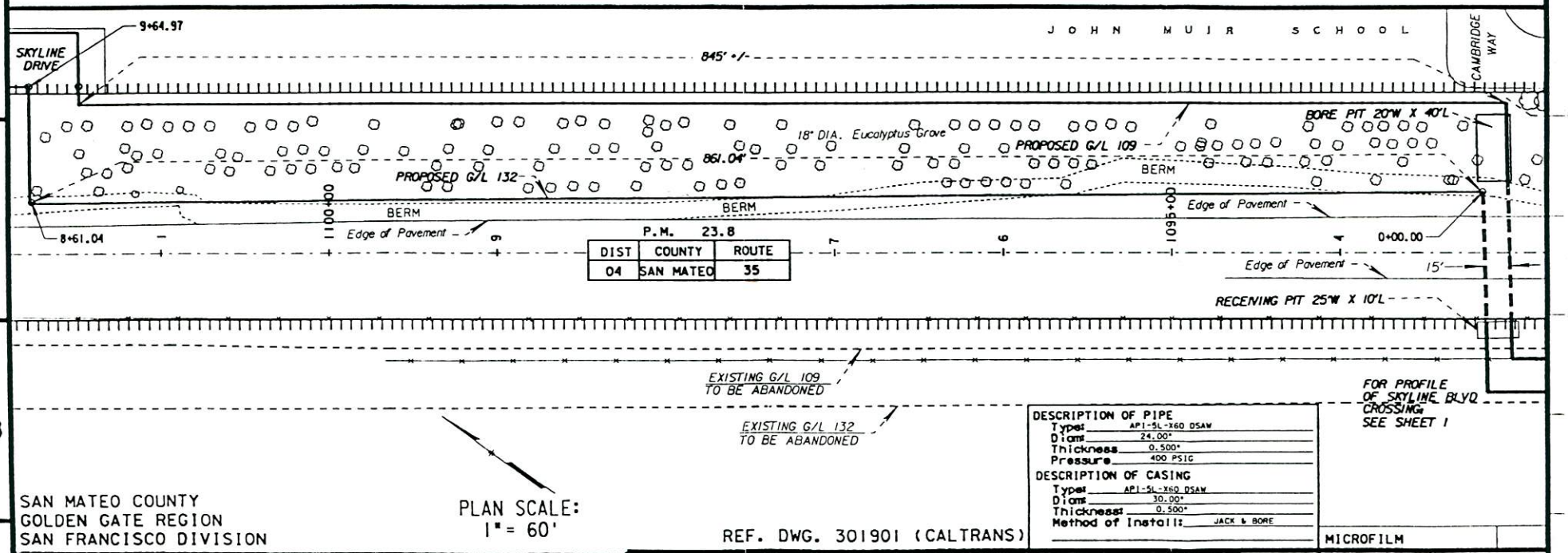
A-4730

62-1805 (REV 7-75)

(T.4 S., R.5 W.
M.D.B.& M.)
NE¼ SEC. 6



PROFILE SCALE:
HORIZ. 1" = 100'
VERT. 1" = 40'



P.M. 23.8		
DIST	COUNTY	ROUTE
04	SAN MATEO	35

SAN MATEO COUNTY
GOLDEN GATE REGION
SAN FRANCISCO DIVISION

PLAN SCALE:
1" = 60'

REF. DWG. 301901 (CALTRANS)

DESCRIPTION OF PIPE
Type: API-5L-X60 DSAW
Diam: 24.00"
Thickness: 0.500"
Pressure: 400 PSIG

DESCRIPTION OF CASING
Type: API-5L-X60 DSAW
Diam: 30.00"
Thickness: 0.500"
Method of Install: JACK & BORE

MICROFILM

NO.	DATE	DESCRIPTION	GM	DWN.	CHKD.	SUPV.	APVD.

REVISIONS

APPROVED BY	
GM	196871 - 6
SUPV.	P. HUNTER
DSGN.	
DWN.	G. MARTINELLI
CHKD.	
O.K.	
DATE	3-3-93
SCALES	AS SHOWN

PROPOSED GAS LINE 109 & 132 REPLACEMENT - CROSSING UNDER SKYLINE BLVD AT CAMBRIDGE WAY

PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

BILL OF MATL	
DWG LIST	
SUPSDS	
SUPSD BY	
SHEET NO. 2 OF 2 SHEETS	REV.
A-4730	

62-1805 (REV 7-75)

5 4 3 2 1 0 INCH

Pacific Gas and Electric Company

February 26, 1993

Mr. Preston Kelly
State of California
Department of Transportation
Box 23660
Oakland, CA 94623-0060

Dear Mr. Kelly:

Re: Caltrans Application 64-92-2014, Gas Line 109 Replacement Project, Golden Gate Region, Interstate 280, GM 1958719
651.2

On February 18, 1993, PG&E project engineers and the City of San Bruno's City Engineer met with the Caltrans Longitudinal Encroachment Permit Committee in Sacramento, headed by Mr. Wally Smith, to discuss our Gas Line 109 replacement project. Ms. Julie Hsu of the Caltrans District 4 office was also present. The purpose of this meeting was to review PG&E's proposal to parallel the frontage/collector road adjacent to Interstate 280 in San Bruno with the proposed 24-inch Gas Line 109. This gas line is being replaced and relocated due to its deteriorating condition and its existing location crossing the San Andreas fault line. At this meeting, Mr. Smith indicated that Caltrans would approve a modified version of our "Alternative 1B" route provided that PG&E keeps the gas line out of the traveled way and paved shoulder area (except for necessary crossings). Mr. Smith asked PG&E to submit the revised route to your office along with a proposal on special protection for the line, the depth of line, and shutoff valve locations.

Enclosed is the original application and additional information requested by the Longitudinal Encroachment Committee for your approval. Mr. Smith indicated that once District 4 approves our plans, the Committee will authorize our application within 1 to 2 days. Below is a detailed list of all information provided in this new application package:

- 5 copies of this cover letter along with the revised proposed route description and additional information requested at the 2/18/93 Sacramento meeting regarding special protection, depth of line, and shutoff valve locations.
- 5 copies of the original Encroachment Application dated 9-17-92.
- 5 copies of PG&E Line 109 Replacement Project Index Map (showing all alternatives studied).
- 5 copies of the revised proposed route map (modified version of Alternative 1B) (Plan & Profile).
- 5 copies of an aerial photograph showing the revised proposed route (modified version of Alternative 1B).

The construction of Line 109 will be done in conjunction with some road widening work planned by the City of San Bruno (Federal Aid Project M-3072) at the intersection of San Bruno Avenue and the frontage/collector road this year. Also enclosed are 5 copies of the

City of San Bruno's plans for this work marked with our revised proposed gas line location. As discussed in the 2-18-93 meeting, PG&E will coordinate construction with the City of San Bruno to minimize impacts on traffic and Caltrans facilities.

I hope this new information answers all of Caltrans' questions and concerns. PG&E must start construction on this project by May 1, 1993 in order to tie in the gas line before the winter season. To prepare for construction, we will need your approval and a decision from the Caltrans Sacramento Office before March 15, 1993. Please call me at (415) 973-8238 or Mr. Paul Beckendorf, Gas Transmission Superintendent, at (415) 973-7233 if we can provide more information to expedite approval of our application.

Thank you for your consideration and cooperation regarding PG&E's application for this high priority gas line replacement project.

Sincerely,

[redacted]

Janice L. Van Gutman
Property Acquisition Agent

Enclosures

cc: (with project description)
Mr. George Foscardo, AICP
Director of Planning and Building
City of San Bruno
567 El Camino Real
San Bruno, CA 94066

Mr. Bob Cashion/Ms. Julie Hsu
Caltrans District 4
Box 23660
Oakland, CA 94623-0060

Mr. Marc Goto (w/ drawings)
City Engineer
City of San Bruno
567 El Camino Real
San Bruno, CA 94066

Mr. Wally Smith
Caltrans Chief of Office of Project
Planning and Design (OPPD)
650 Howe Avenue
Sacramento, CA 95825

Mr. Walt Whitnack
Caltrans OPPD
650 Howe Avenue
Sacramento, CA 95825

PG&E LINE 109 REPLACEMENT PROJECT, GOLDEN GATE REGION
REVISED PROPOSED ROUTE DESCRIPTION
AND ADDITIONAL INFORMATION REQUESTED

Route Decision by Caltrans Longitudinal Encroachment Permit Committee in Sacramento (during 2-18-93 meeting):
Over the course of 1992 and 1993, PG&E reviewed several route alternatives for the new Line 109. Background information and a complete analysis of these routes was submitted to Caltrans on September 17, 1992, and a revised analysis on January 25, 1993. These routes were reviewed by the Caltrans Longitudinal Encroachment Permit Committee in Sacramento, headed by Mr. Wally Smith, on February 18, 1993. At this meeting, it was decided that if PG&E modifies the "Alternative 1B" route by relocating the pipeline off the paved traveled way and the shoulder area on the I-280 frontage/collector road, then the Caltrans Longitudinal Committee would issue PG&E an encroachment permit.

Revised Proposed Route Description (Modified Alternative 1B):
The revised proposed route starts outside of the Caltrans right-of-way at the northern end of the project in an existing PG&E easement located in a golf driving range near Sneath Lane and the I-280 frontage/collector road. The route follows an existing PG&E 10-inch gas distribution line which crosses through the driving range and enters the Caltrans ROW just south of the proposed I-380 extension. The line will then parallel the I-280 frontage/collector road, off the paved shoulder, for about 946'. We propose to install the line two feet off of the paved shoulder in the toe of the hill on the west side of the road (heading towards San Bruno Ave.) stopping just before reaching the northern end of the retaining wall. The line will then cross to the east side of the frontage/collector road (parallel to the existing 10-inch distribution line) off the paved shoulder of the frontage/collector road. (Please see attached photographs along the new proposed route.)

Special Protection -- Steel Plate or Concrete Cap/Depth of Line/Line Markers:
The proposed 24-inch arc-welded steel pipeline (with 0.312-inch wall thickness) is very rugged and not easily susceptible to damage by outside forces. However, to provide extra protection from potential dig-ins where the line is located parallel to the I-280 frontage raod, we propose to:

1. place a three foot wide, 3/16-inch thick steel plate (or alternatively, a three foot wide, 6-inch thick concrete slab), 12 inches above the line;
2. install the line with a minimum of 60-inches of cover to the top of pipe instead of a Caltrans' normal specification of 48 inches (please see attached "Typical Trench Section" proposal);
3. install gas line marker signs at the beginning and end of the frontage/collector road route and at the road crossing just north of the retaining wall (please see attached "SIGN - DETAILS" drawing);
4. install the section of 24-inch pipe in 30-inch casing where it crosses the frontage/collector road just north of the retaining wall.

During the February 18, 1993 meeting, the idea of a concrete cap over the gas line instead of a steel plate was discussed. PG&E feels that the steel plate will provide more

protection, but would be willing to substitute the steel plate for a three foot wide, 6-inch thick concrete cap, 12 inches above the line.

Shutoff Valves:
PG&E must abide by the CPUC General Order 112-D, "Rules Governing Design, Construction, Testing, Maintenance, and Operations of Utility Gas Gathering, Transmission and Distribution Piping Systems" in designing and constructing this gas line. The CPUC General Order 112-D requires that PG&E install manual shut-off valves at least every eight miles along the line for this area. For this project, we will be installing manual shutoff valves no more than 2.5 miles apart. We will be installing these valves on either side of the Caltrans right-of-way at the following locations:

- Near the intersection of Fleetwood and Crestwood Drives just north of the I-280 and Sneath Lane intersection in San Bruno
- At the proposed San Andreas Valve Lot west of Hwy. 35 (Skyline Blvd.) across from Cambridge Lane in San Bruno.

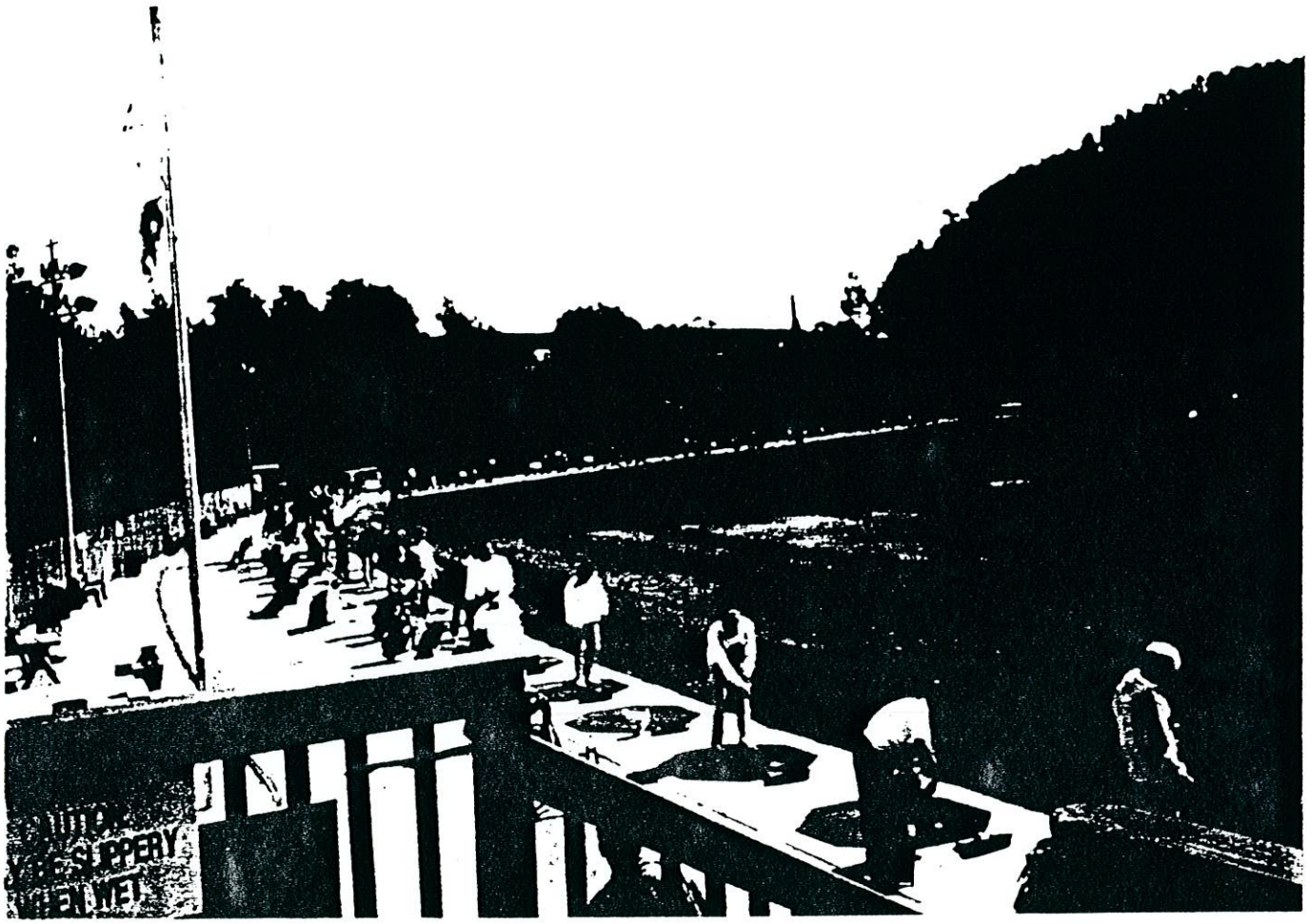
During the 2-18-93 meeting with Caltrans, the question of using automatic shutoff valves was raised. PG&E does not feel that automatic shutoff valves are required in this location because the line will be installed away of major seismic hazards. Historically, worldwide, modern constructed steel pipelines consistently perform superbly during earthquakes, especially when the line doesn't cross the main fault trace, as is the case here. Automatic shutoff valves are not foolproof, and an accidental or unnecessary shutoff of this transmission line could cause the loss of over 347,000 customers on the S.F. Peninsula. Purging mains and relighting these customers would cost over $12 million dollars and would take several months to complete. Since the line will be located away from geological hazards, we believe that installing manual shutoff valves is the best design.

Geological Studies
PG&E has consulted with Geomatrix Consultants and EQE Engineering Consultants on this project to identify and design for potential seismic hazards. Both these firms have performed numerous geological studies and finite element seismic analyses on the proposed design. These studies indicated that this route is not impacted by any geological hazards requiring special mitigation. Finite element analyses have shown that the proposed pipeline design is able to withstand a repeat of the San Francisco 1906 earthquake or other similar event with no adverse impacts.

PG&E LINE 109 REPLACEMENT PROJECT, GOLDEN GATE REGION
REVISED PROPOSED ROUTE - PHOTOGRAPHS

Photo #1:

This picture shows the north end of the project near Sneath Lane/I-280 intersection. Gas Line 109 will be installed outside of Caltrans ROW in an existing PG&E easement through the golf driving range. The line route will enter Caltrans ROW off the I-280 frontage/collector road near the proposed I-380 extension (see far end of photograph).



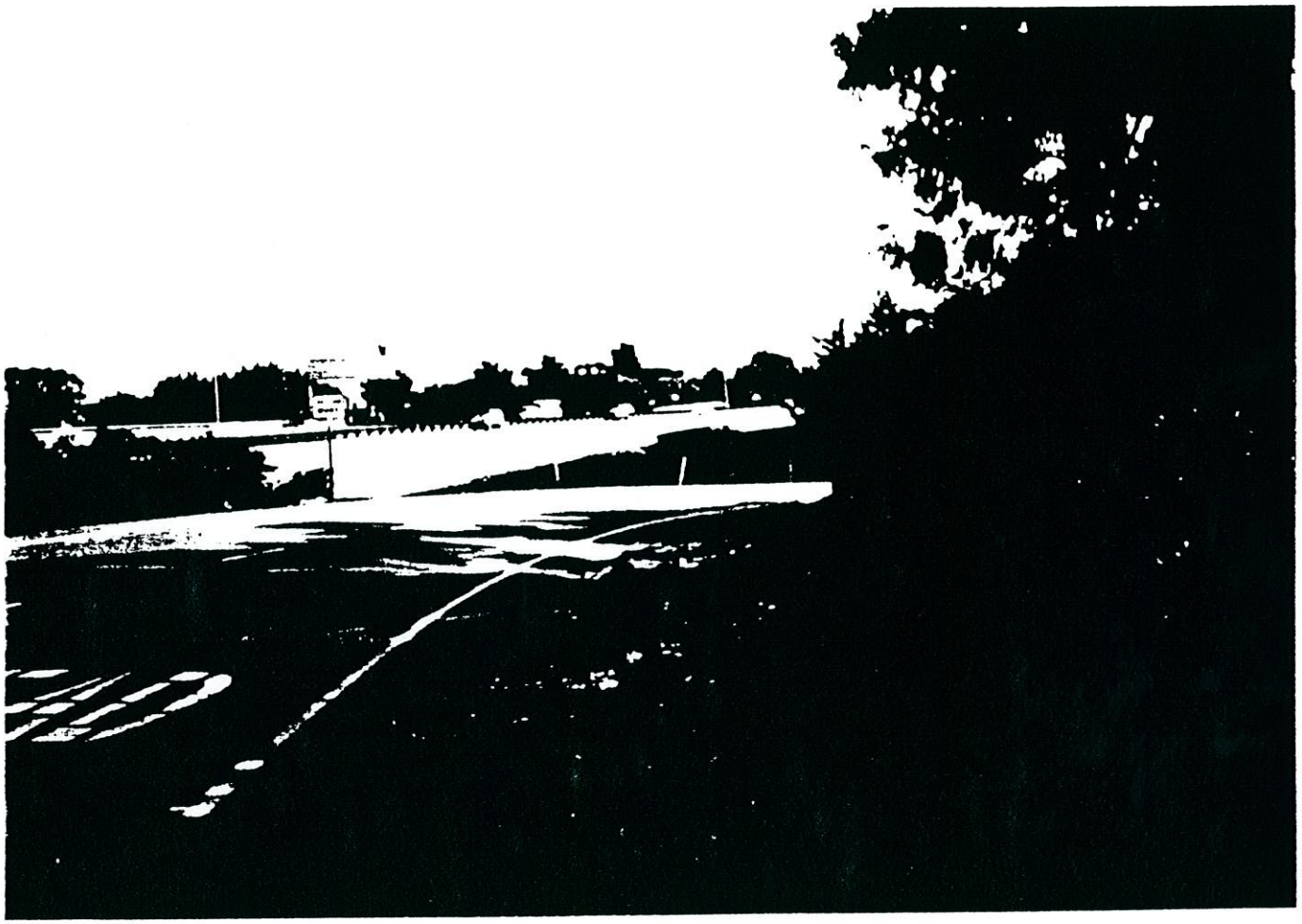
PG&E LINE 109 REPLACEMENT PROJECT, GOLDEN GATE REGION
REVISED PROPOSED ROUTE - PHOTOGRAPHS

Photo #2

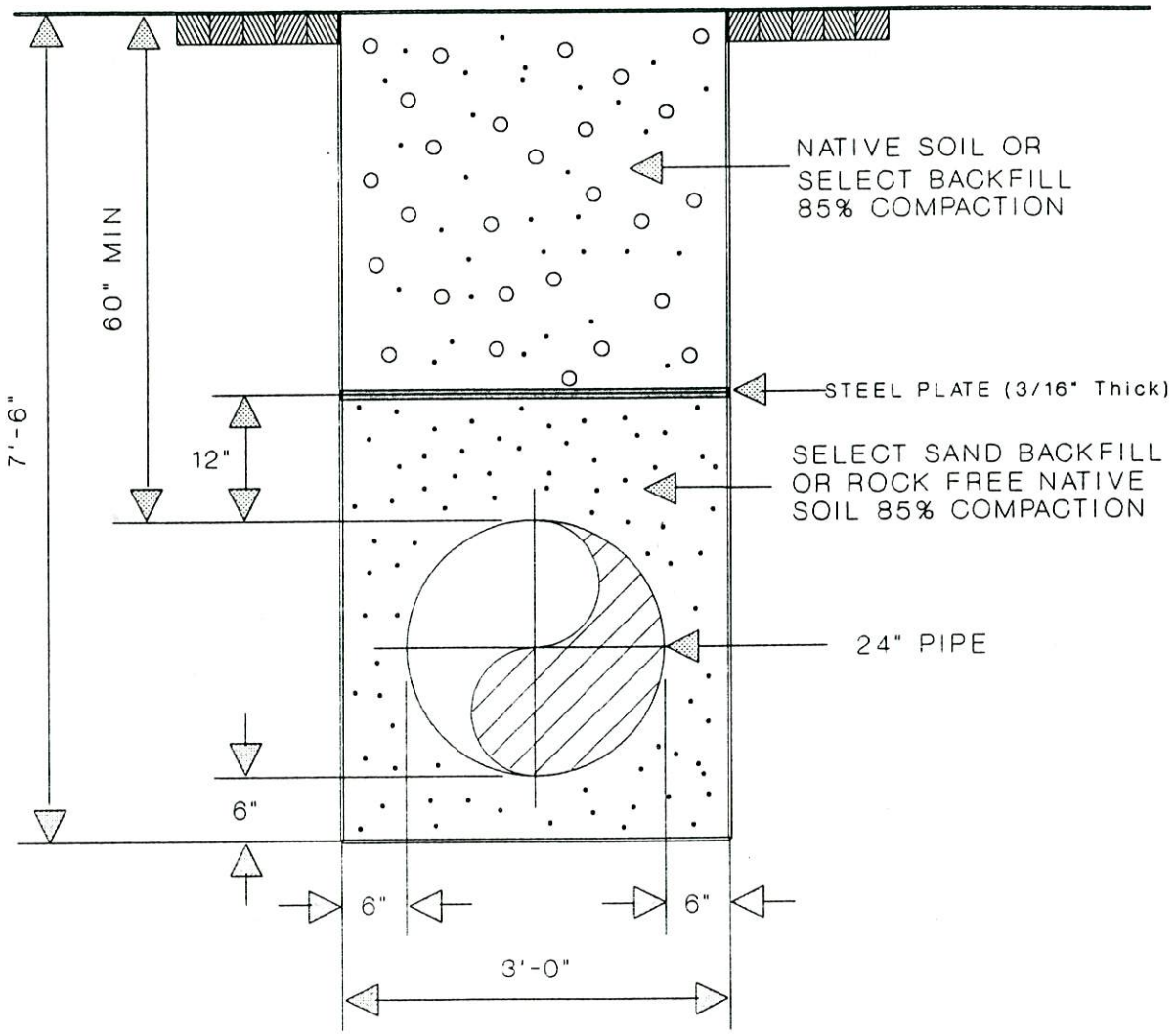
This picture shows the middle section of the project where Gas Line 109 will be installed in the base of the hill (shown on right) about two feet off of the paved shoulder of the I-280 frontage collector road per Caltrans' preference.

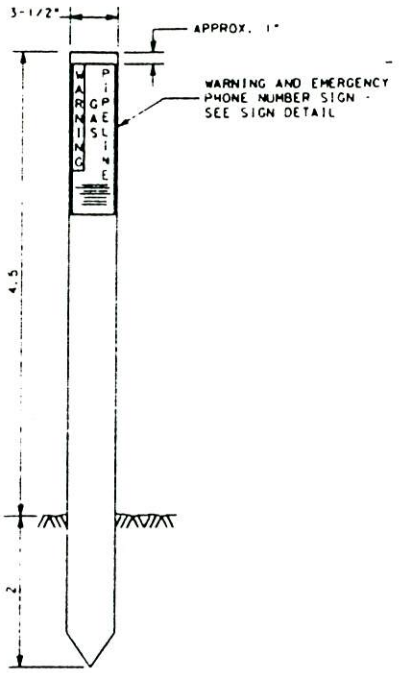
PG&E LINE 109 REPLACEMENT PROJECT, GOLDEN GATE REGION
REVISED PROPOSED ROUTE - PHOTOGRAPHS

Photo #3:
This picture shows the south section of the project where Gas Line 109 will cross the frontage/collector road in a 30-inch casing over to the grass area on the east side of the road. The line will then head south into San Bruno Avenue. The remaining of the line route will then be located in the City of San Bruno.

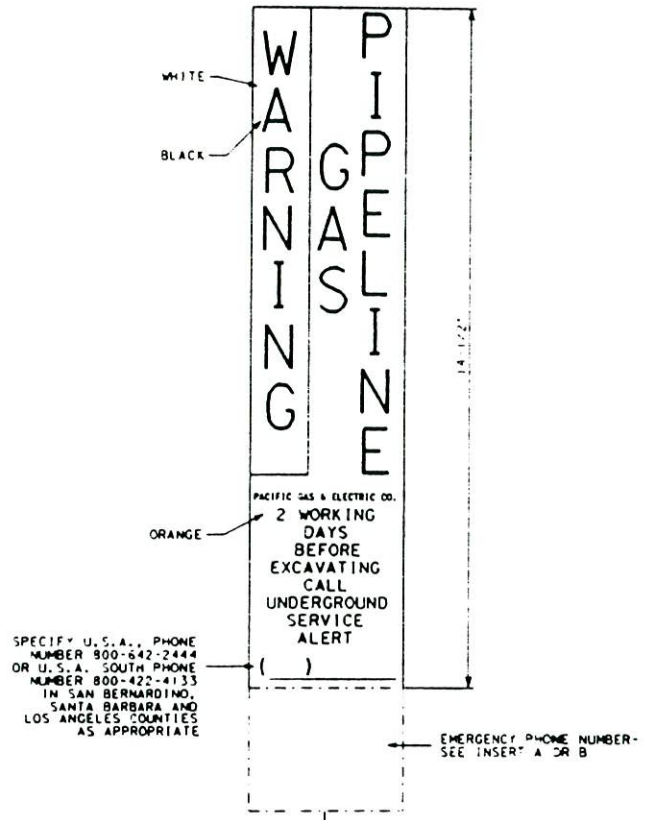


TYPICAL TRENCH SECTION
UNPAVED AREAS





REINFORCED COMPOSITE MARKER



SIGN DETAIL

ORDERING INSTRUCTIONS:

1. SELECT APPROPRIATE INSERT & SPECIFY:
   A) MARKER, REINFORCED COMPOSITE WITH SIGNS ATTACHED, GAS STD. L-10.1, DWG 284306,

      U.S.A. PHONE ( ) _____,
      PG&E EMERGENCY PHONE ( ) _____,
      CODE 37-3898, ORDER MANUALLY.

   OR

   B) MARKER; REINFORCED COMPOSITE WITH SIGNS ATTACHED, GAS STD. L-10.1, DWG 284306,

      U.S.A. PHONE NUMBER ( ) _____, PG&E
      BUSINESS HOUR PHONE NUMBER ( ) _____,
      NIGHTS, HOLIDAYS OR WEEKENDS ( ) _____,
      CODE 37-3898 , ORDER MANUALLY.

2. MINIMUM ORDER IS 20 MARKERS
3. MARKER, WARNING & EMERGENCY PHONE NUMBER SIGNS CAN BE ORDERED SEPARATELY - CONTACT G.S.D.D.

NOTES:

1. UNDERGROUND SERVICE ALERT & EMERGENCY TELEPHONE NUMBER SIGNS ARE REQUIRED ON MARKER.
2. STANDARD PRACTICE 463-5 OUTLINES THE REQUIREMENTS AND LIMITATIONS FOR MARKING GAS FACILITIES.
3. REINFORCED COMPOSITE MARKER IS AVAILABLE IN SHORTER LENGTHS IF 4-1/2" ABOVE-GROUND-HEIGHT IS NOT REQUIRED.
4. A DRIVER, CODE NUMBER 20-7753, IS REQUIRED FOR INSTALLATIONS OF REINFORCED COMPOSITE MARKER.

(270,170) 830941.G24 09-18-84 RG

APPROVED BY					
	2	9-19-84	REVISED U.S.A. SOUTH PHONE NUMBER	WRM	MOB/PAL
	1	5-25-83	ISSUED FOR USE		
	REV	DATE	DESCRIPTION	DWN	CHKD APVD

JH	
SUPV	
DSGN	
DWN	G. SANTIAGO
CHKD	
O K	
DATE	5-25-83
SCALE	NONE

SIGN - DETAILS

REINFORCED COMPOSITE MARKER, WARNING & EMERGENCY TELEPHONE NUMBER SIGNS

GAS STANDARD

PACIFIC GAS AND ELECTRIC COMPANY
SAN FRANCISCO, CALIFORNIA

SUPERSEDES	284276
SUPERSEDED BY	
SHEET NO.	OF SHEETS
DRAWING NUMBER	REV
284306	2

61-4345 REV. 7-75

MICROFILM

EPARTMENT OF TRANSPORTATION (CALTRANS)

STANDARD ENCROACHMEN[T] PERMIT APPLICATION

M-M-P-201A (REV 1/90) PART A

Permit No. 0442-64 GUT-2014

Dist/Co/Rte/PM

COPY

ermission is requested to encroach on the State Highway right of way as follows: *(Complete all items. NA if not applicable.)* Application is not complete until all required tach[ments] are included.

[C]ity 1	County 2	Route 3	Post Mile 4	Date 5
n Bruno	San Mateo	I-280, Frontage Road	21.2 Plus & Minus	Sept. 17, 1992

Address or Street Name 6	Cross Street *(distance and direction from site)* 7	FOR CALTRANS USE
rontage Road (no name)	Between Sneath Ln. & San Bruno	

Portion of Right of Way 8	Work to be Performed By 9	
long r/w portion of frontage road	☐ Own Forces ☐ Contractor Ave.	

Est. Starting Date 10	Est. Completion Date 11	Estimated Cost in State R/W 12
anuary 1, 1993	October 31, 1993	$

	Max. Depth 13	Average Depth 14	Average Width 15	Length 16	Surface Type 17
EXCAVATION	4' cover Ft	5 Ft	3 Ft	3194+ Ft	

	Type 18	Diameter 19	Voltage/PSIG 20	Product 21
PES	Steel API-5L,X60 DSAW	24" O.D. x 321"		

ULLY DESCRIBE WORK WITHIN STATE R/W: *Attach complete plans (5 sets folded 8½ x 11), specs, calcs, maps, etc., if applicable.*

Construct proposed Gas Line 109 in Caltrans' frontage road right-or-way along Interstate 280

S ANY WORK BEING DONE ON APPLICANT'S PROPERTY? *If "Yes" briefly describe and attach site and grading plans.* 22

☒ Yes ☐ No

S A CITY, COUNTY OR OTHER AGENCY INVOLVED IN ENVIRONMENTAL APPROVAL? 23

☐ Yes (Check Documentation type and attach approved copy)

☐ Exempt ☐ N.D. ☐ EIR

☐ No (Check the category below which describes the project)

- ☐ SURVEY
- ☐ FLAGS, SIGNS, BANNERS DECORATIONS
- ☐ TEMPORARY SIGNALS
- ☐ PUBLIC UTILITY MODIFICATIONS, EXTENSIONS, HOOKUPS
- ☐ SIDEWALK/GUTTERS
- ☐ FENCE
- ☐ SINGLE FAMILY DWELLING DRIVEWAY
- ☐ REMOVAL-REPLACEMENT OF DISTINCTIVE ROADWAY MARKINGS
- ☐ DITCH PAVING
- ☐ MAILBOX
- ☐ PARADES, CELEBRATIONS
- ☐ COMMUNITY ANTENNA TV SYSTEM
- ☐ EROSION CONTROL
- ☐ AGRICULTURAL APPROACH
- ☐ MOVIE, TV FILMING
- ☐ MAINTENANCE, RECONSTRUCTION, OR RESURFACING OF A DRIVEWAY OR ROAD APPROACH
- ☐ MAINTENANCE OF EXISTING LANDSCAPING
- ☐ REGULATORY WARNING, INFORMATION SIGNS
- ☐ DITCH PAVING
- ☐ MODIFICATION OF TRAFFIC CONTROL SYSTEMS

☐ NONE OF THE ABOVE. IF PROJECT CANNOT BE DESCRIBED IN ABOVE CATEGORIES, REQUEST APPLICATION PART B FROM THE PERMIT OFFICE.

HE UNDERSIGNED AGREES THAT THE WORK WILL BE DONE IN ACCORDANCE WITH CALTRANS RULES AND REGULATIONS AND SUBJECT O INSPECTION AND APPROVAL

Organization or Applicant	Phone	Architect, Engineer or Project Mgr.	Phone
cific Gas & Electric Company	(415 973-9384	Frank A. Dauby	415 973-8894

Address *(include city and zip code)*

dg. & Ld. Serv.,H21A, 123 Mission St., Rm 2013, P.O. Box 770000, San Francisco, CA 94177

Aut	Signature	Title
	/Michael G. Sanchez	Supervisor of Property Acquisition

bcc: (with project description only):
Harry Herrera
Leon Baulwin
Paul Beckendorf
Elisabeth Brokaw
Jared Brown
Leslie Day - including all maps
Cesar Formoso
Rich Gigliotti
Dennis Guido
Bob Groh/Lu de Silva
Pierre Hurter
George Novacek/Carl Horikoshi
Daven Phelan
Mike Sanchez/Art Roberts
Forrest Sullivan
Linda Tally

Pacific Gas and Electric Company
123 Mission Street
San Francisco, CA 94106
415/973-7000

COPY

January 25, 1993

Mr. Thomas Franklin
State of California
Department of Transportation
Box 23660
Oakland, CA 94623-0060

Dear Mr. Franklin:

Re: Caltrans: Application 64-92-2014,
PG&E: Gas Line 109 Replacement, Golden Gate Region,
Interstate 280, GM 1958719
651.2

At our meeting held December 16, 1992, Caltrans requested Pacific Gas and Electric Company (PG&E) to detail more fully the engineering and seismic/geological reasons why PG&E needs to parallel the frontage (or collector) road adjacent to Interstate 280 in San Bruno.

Enclosed are copies of attachments sent to you in our original application together with the additional information requested. As before, this new material is in the format specified in the Caltrans' Guide, "Encroachment Permit Information for Work in State Highway Rights of Way," pages 5-6, items A-J.

The following is a detailed list of all information provided in this package:

- 5 copies of the Encroachment Application dated September 17, 1992.
- 5 copies of our study describing the alternative routes. This study provides additional engineering and seismic/geological information. This revised study also includes two new alternatives; one of which is the Cherry Ave. route discussed in the December meeting. The other new alternative has been identified as a second preferred route. This alternative would involve following (or replacing if necessary) an existing PG&E 10-inch gas line which runs between Sneath and San Bruno Ave. near and in the I-280 frontage road.
- 5 copies of PG&E Line 109 Replacement Project Index Map (showing all alternatives studied).
- 5 copies of "Proposed Gas Line 109 along I-280" (Preferred Route) Map (5 sheets - Plan & Profile).

- 5 copies of new Proposed Alternative 1B. Map titled: "Preliminary Drawing of Gas Line 109 Alternative Route 1B" (Plan & Profile).

- 5 copies of map titled "Preliminary Drawing of Gas Line 109 Alternative Route 2."

- 5 copies of photos illustrated on drawings: "Proposed Gas Line 109 along I-280" (preferred route) and Alternative Route 2.

- 5 copies of an aerial photograph showing all the proposed alternatives near and in Caltrans right-of-way titled "Proposed G/L 109 along I-280 Alternative Routes."

- 5 copies of a letter, dated August 25, 1992, from the City of San Bruno supporting PG&E's application.

I hope this new information answers all of Caltrans' questions and concerns. Please call me at (415) 973-8238 if I can provide you with additional information. PG&E will do whatever you feel is necessary to expedite our application for District 4's approval and submittal for consideration at the next Caltrans Longitudinal Encroachment Committee Meeting on February 10, 1992 in Sacramento.

Thank you for your help regarding PG&E's application for this high priority project.

Sincerely,

Janice L. Van Gutman
Property Acquisition Agent
Enclosures

c: Mr. George Foscardo, AICP
Director of Planning and Building
City of San Bruno
567 El Camino Real
San Bruno, CA 94066

Mr. Marc Goto
City Engineer
City of San Bruno
567 El Camino Real
San Bruno, CA 94066

With Project Description

(with project description):

bc: Paul Beckendorf
Elisabeth Brokaw
Jared Brown
Leslie Day - including all maps
Ken DiVittorio
Cesar Formoso
Rich Gigliotti
Dennis Guido
Bob Groh/Lu de Silva
Aram Hadjian/Linda Tally
Harry Herrera
Pierre Hurter
C Horikoshi/G Novacek
Daven Phelan
Mike Sanchez
Forrest Sullivan

ARTMENT OF TRANSPORTATION (CALTRANS)

STANDARD ENCROACHMENT PERMIT APPLICATION

TP-201A (REV 1/90) PART A

Permit No. 0442 GUT-2014

Dist/Co/Rte/PM

COPY

...ion is requested to encroach on the State Highway right of way as follows: *(Complete all items: NA if not applicable.)* Application is not complete until all required ...nts are included.

1 City	2 County	3 Route	4 Post Mile	5 Date
...runo	San Mateo	I-280, Frontage Road	21.2 Plus & Minus	Sept. 17, 1992

6 ...ress or Street Name	7 Cross Street *(distance and direction from site)*	FOR CALTRANS USE
...ntage Road (no name)	Between Sneath Ln. & San Bruno	

8 ...tion of Right of Way	9 Work to be Performed By Ave.	
...ng r/w portion of frontage road.	☐ Own Forces ☐ Contractor	

10 Starting Date	11 Est. Completion Date	12 Estimated Cost in State R/W
...uary 1, 1993	October 31, 1993	$

...AVATION	13 Max. Depth	14 Average Depth	15 Average Width	16 Length	17 Surface Type
	4' cover Ft	5 Ft	3 Ft	3194+ Ft	

...S	18 Type	19 Diameter	20 Voltage/PSIG	21 Product
	Steel API-5L,X60 DSAW	24" O.D. x 321"		

...LY DESCRIBE WORK WITHIN STATE R/W: *Attach complete plans (5 sets folded 8½ x 11), specs, calcs, maps, etc., if applicable.*

Construct proposed Gas Line 109 in Caltrans' frontage road right-or-way along Interstate 280

...NY WORK BEING DONE ON APPLICANT'S PROPERTY? *If "Yes" briefly describe and attach site and grading plans.* 22

☐ Yes ☐ No

...CITY, COUNTY OR OTHER AGENCY INVOLVED IN ENVIRONMENTAL APPROVAL? 23

☐ Yes (Check Documentation type and attach approved copy)

☐ Exempt ☐ N.D. ☐ EIR

☐ No (Check the category below which describes the project)

- ☐ SURVEY
- ☐ FLAGS, SIGNS, BANNERS DECORATIONS
- ☐ TEMPORARY SIGNALS
- ☐ PUBLIC UTILITY MODIFICATIONS, EXTENSIONS, HOOKUPS
- ☐ SIDEWALK/GUTTERS
- ☐ FENCE
- ☐ SINGLE FAMILY DWELLING DRIVEWAY
- ☐ REMOVAL-REPLACEMENT OF DISTINCTIVE ROADWAY MARKINGS
- ☐ DITCH PAVING
- ☐ MAILBOX
- ☐ PARADES, CELEBRATIONS
- ☐ COMMUNITY ANTENNA TV SYSTEM
- ☐ EROSION CONTROL
- ☐ AGRICULTURAL APPROACH
- ☐ MOVIE, TV FILMING
- ☐ MAINTENANCE, RECONSTRUCTION, OR RESURFACING OF A DRIVEWAY OF ROAD APPROACH
- ☐ MAINTENANCE OF EXISTING LANDSCAPING
- ☐ REGULATORY WARNING, INFORMATION SIGNS
- ☐ DITCH PAVING
- ☐ MODIFICATION OF TRAFFIC CONTROL SYSTEMS

☐ NONE OF THE ABOVE. IF PROJECT CANNOT BE DESCRIBED IN ABOVE CATEGORIES, REQUEST APPLICATION PART B FROM THE PERMIT OFFICE.

...E UNDERSIGNED AGREES THAT THE WORK WILL BE DONE IN ACCORDANCE WITH CALTRANS RULES AND REGULATIONS AND SUBJECT ...INSPECTION AND APPROVAL

...rganization or Applicant	Phone	Architect, Engineer or Project Mgr.	Phone
...cific Gas & Electric Company	(415) 973-9384	Frank A. Dauby	(415) 973-8894

...ddress *(include city and zip code)*

...g & Ld. Serv.,H21A, 123 Mission St., Rm 2013, P.O. Box 770000, San Francisco, CA 94177

[redacted] /Michael G. Sanchez — Title: Supervisor of Property Acquisition

2A

PG&E LINE 109 REPLACEMENT PROJECT, GOLDEN GATE REGION

OVERALL SCOPE AND BACKGROUND

In 1985, Pacific Gas and Electric Company (PG&E) implemented the Gas Pipeline Replacement Program to replace aging natural gas pipe throughout the PG&E system. As part of this 25-year program approved and monitored by the California Public Utilities Commission (CPUC), plans were formulated to replace the three natural gas transmission lines which serve every community along the Peninsula between San Francisco and Milpitas. These are Lines 109, 132, and 101. The program calls for replacing the deteriorating gas pipelines with higher quality pipe and employing modern arc welding techniques.

The existing 57-year old Line 109 to be replaced on this project currently runs through Daly City, South San Francisco, and San Bruno along Highway 35 (Skyline Boulevard) from Hickey Boulevard to near Cambridge Lane. The existing line crosses the San Andreas fault in two locations, and goes through an existing landslide area. The line is also exposed in two areas along the existing route next to Highway 35. Line 109 was originally constructed with materials and techniques that are now recognized to be susceptible to brittle failure, especially in response to seismic activity. The new line will be constructed with modern 24-inch steel arc-welded pipe that is very strong (60,000 psi yield strength), yet ductile, and performs exceptionally well in response to seismic activity. As part of this work, we are significantly reducing our seismic vulnerability by eliminating all existing crossings of Line 109 on the San Andreas fault.

ALTERNATIVES STUDIED

Over the course of 1992, PG&E reviewed several route alternatives for the new Line 109. A description and analysis of these routes was submitted to Caltrans on September 17, 1992. At the request of Caltrans, we have again studied these route alternatives and have added two additional routes (Alternatives "1B" and "5" below). After this additional study, we feel that the Interstate 280 (I-280) frontage (or collector) road between Sneath Lane and San Bruno Avenue is still the best route (Alternative 1A). However, we have added a second preferred route (Alternative 1B). This route would be located in the I-280 frontage road for a much shorter distance than Alternative 1A. It would follow the alignment (or replace if necessary) our existing 10-inch gas line which is located within Caltrans right-of-way between San Bruno Avenue and the proposed I-380 extension. This route is not preferred over Alternative 1A due to impacts on the golf driving range business near Sneath Lane, but it is technically feasible and has fewer negative impacts than the other alternatives. All of the alternatives studied are summarized in the table below. Please refer to the Index Map for locations.

Table 1. Summary of Alternatives Studied

Alternative	Description	Cost[1]	Feasibility/Impacts
1A (Preferred Route)	I-280 frontage road between Sneath Lane and San Bruno Avenue in the City of San Bruno.	$10.3 M	This route is feasible and has no significant impacts. This is the preferred route.
1B (2nd Preferred Route)	Follow route of existing PG&E 10-inch gas distribution line west of the I-280 frontage road starting in a golf driving range near Sneath Lane and ending in the I-280 frontage road near San Bruno Avenue in the City of San Bruno.	$10.5 M	This route is feasible but impacts a golf driving range business. This is the 2nd preferred route. Note: This alternative has a sub-option of replacing the existing 10-inch line with the new 24-inch line (vs. keeping both in service) for $200,000 addt'l cost.
2	Follow route of existing PG&E 10-inch gas distribution line west of the I-280 frontage road near Sneath Lane and then utilize the Public Utilities Easement behind homes on Crestmoor Drive in Crestmoor Canyon outside of the Caltrans right-of-way.	N/A	This route is NOT feasible due to a landslide area, steep hill, limited space, and heavy vegetation along route in Crestmoor Canyon. No cost estimate was performed since not feasible.
3	Construct in residential franchise area of the City of San Bruno (starting on Fleetwood Drive).	$10.7 M	Although feasible, this route is NOT preferred due to increased seismic hazards and high impacts to residential areas of the City of San Bruno compared to no impacts on the preferred route. The city is strongly opposed to this route.
4	Construct in existing easement along Highway 35 (Skyline Boulevard).	$11.7 M	Although remotely possible to construct, this route is NOT feasible due to two San Andreas fault crossings, a landslide area along route, and severe environmental impacts (endangered species habitat). Even if viable, the significant added cost over the preferred alternative would be unreasonable and most likely not acceptable to the CPUC.
5	Bore under I-280 at Sneath Lane (from middle of west clover leaf to middle of east clover leaf) and construct in franchise area of the City of San Bruno on Cherry Avenue from Sneath Lane to San Bruno Avenue.	$12.4 M	Although possible to construct, this route is NOT feasible due to significant increased job cost (to PG&E ratepayers) of over $2 million above the preferred route. The added cost would be unreasonable and most likely not acceptable to the CPUC. In addition, this route has major impacts to on and off-ramps, and to commercial and residential areas of the City of San Bruno.

[1]Note: For comparison purposes, the above estimated costs include replacement costs through the cities of Daly City, South San Francisco and San Bruno.

CRITERIA USED TO EVALUATE ALTERNATIVES

The following criteria were used to evaluate the alternatives:

- Elimination of all San Andreas fault crossings and minimization of exposure to other seismic hazards. Although a modern gas pipeline performs well in response to moderate ground displacement and shaking in an earthquake, it is prudent to eliminate and minimize the seismic exposure. This is especially necessary in cases where there is a potential for large ground displacement such as on the San Andreas fault and in unstable soil.
- Engineering/Construction feasibility.
- Minimization of cost to PG&E ratepayers (PG&E has an obligation to provide gas service at a reasonable cost which is regulated by the CPUC).
- Minimization of construction impacts on residential areas.
- Minimization of environmental and cultural resource impacts.
- Operational requirements (valve locations, accessibility, distance between lines, etc.).

Below is detailed information regarding all of the alternatives. Please note that for comparison purposes, the estimated costs include replacement costs through the cities of Daly City, South San Francisco and San Bruno.

Alternative 1A (Preferred Route): I-280 Frontage Road between Sneath Lane and San Bruno Avenue

Advantages:
This route relocates the line away from the San Andreas fault, and has minimal impact on the residents of the City of San Bruno. This is the alternative preferred by both PG&E and the City of San Bruno. The line would be located in a frontage (collector) road well away from Interstate 280 (I-280), and in an area of minimal seismic activity. The line will be designed to withstand a repeat of the San Francisco 1906 earthquake or similar event, and thus would not impact I-280 in the event of an earthquake. Construction will occur in the shoulder of the frontage (collector) road west of I-280. Although PG&E can maintain traffic flow through most of construction, officials in Caltrans' Oakland office have stated that this road could be shut down during construction, if necessary, since it is not heavily traveled. However, PG&E will only close one lane during construction. PG&E will build an offset in the line at the proposed I-380 extension to accommodate any possible future Caltrans construction. If the I-380 extension begins, PG&E will be obligated to relocate the gas line as necessary at its own expense. However, PG&E has been informed by Caltrans officials in the Oakland office that the I-380 extension will not be constructed.

Disadvantages:
From PG&E's and the City of San Bruno's standpoint, there are no disadvantages to this route. This route is located entirely within the I-280 frontage road within Caltrans right-of-way between Sneath Lane and San Bruno Avenue.

Engineering/Construction Feasibility:
No factors exist which make this route infeasible.

Design:
The proposed 24-inch arc-welded steel pipeline (with 0.312 inch wall thickness) is very rugged and not easily susceptible to damage by outside forces. However, if required by Caltrans, we propose to protect the line from potential dig-ins by placing a three foot wide steel plate above the line. (See attachment: "Typical Trench Section".)

PG&E has designed and will construct this gas pipeline to meet all federal and state gas safety codes, including CPUC General Order 112-D.

Seismic/Geological Factors:
PG&E has consulted with Geomatrix Consultants and EQE Engineering Consultants on this project. Both these firms have performed numerous geological studies and finite element seismic analyses on the proposed design. These studies indicated that this route is not impacted by any geological hazards requiring special mitigation. The pipeline will be able to withstand a repeat of the San Francisco 1906 earthquake or other similar event with no adverse impacts.

Environmental Factors:
PG&E has completed literature and field searches for cultural resources and hazardous substances. The literature search for cultural resources revealed that a pre-historic site in this vicinity was recorded in 1955. On July 17, 1992, a PG&E archeologist completed a field check in this area. No surface evidence of the site was found. No hazardous substance sites were listed for this area. Since construction is limited to the frontage road, no rare and endangered species habitat will be encountered.

Estimated Cost:
$10,344,000.

Alternative 1B (New - 2nd preferred route): Follow Route of Existing 10-inch Gas Line

Advantages:
This route is similar to Alternative 1A except that it would start outside of the Caltrans right-of-way on the northern end in an existing PG&E easement in a golf driving range near Sneath Lane and the I-280 frontage road. The line would follow the route of an existing PG&E 10-inch gas distribution line which goes through the driving range, into Caltrans right of way and enters the Caltrans I-280 frontage (collector) road south of

the proposed I-380 extension. The line continues in the frontage road to San Bruno Avenue at the southern end. This route largely avoids construction in the I-280 frontage road. Only 946 feet of the gas line would be located within the frontage road (versus 3,193 feet for Alternative 1A). The route for PG&E's existing 10-inch gas distribution line was recommended and approved by Caltrans when I-280 was originally constructed in 1971.

Note: A sub-option of this alternative would be to replace the existing 10-inch gas distribution line in the Caltrans I-280 frontage road with the new 24-inch gas line. The 10-inch gas distribution line would be evacuated, cut off, and abandoned in place. This would cost an additional $200,000 due to the need to reinforce the gas distribution system outside of the Caltrans right-of-way.

Disadvantages:
This route is feasible but negatively impacts a golf driving range business near Sneath Lane and the I-280 frontage road. The driving range would have to be closed during construction of the pipeline (for about 14 days) since our existing PG&E easement runs underneath the tee locations.

Engineering/Construction Feasibility:
No factors exist which make this route infeasible.

Design:
See discussion under Alternative 1A.

Seismic/Geological Factors:
See discussion under Alternative 1A. This route is away from geologically hazardous areas. No adverse impacts are expected.

Environmental Factors:
See discussion under Alternative 1A for cultural resources and hazardous substances. This area is either landscaped or lacking vegetation and is therefore not likely to contain rare and endangered species.

Estimated Cost:
$10,474,000

Alternative 2: Utilize Public Utilities Easement (parallel to I-280 Frontage Road)

Advantages:
If feasible, this route would be entirely outside of the Caltrans right-of-way.

Disadvantages:
The northern portion of this route is the same as for Alternative 1B (in the golf driving range), but diverts at the end of the driving range outside of Caltrans right-of-way and

connects with a Public Utilities Easement (PUE) in Crestmoor Canyon on the southern end. This route is not feasible due to its location: 1) on a steep hillside, and 2) through a documented landslide area in Crestmoor Canyon which could experience slope failure during an earthquake or an unusually wet rainy season. Construction of the pipeline would jeopardize the integrity of the slope, resulting in a very dangerous situation that could impact homes on the ridge next to the PUE.

Engineering/Construction Feasibility:
Construction of this route is not feasible. This route runs through the golf driving range, up the hillside in Crestmoor Canyon, and behind homes on the top of the ridge along Crestmoor Avenue.

Installing the pipeline on the 60 degree slope to the top of the ridge in Crestmoor Canyon presents considerable construction as well as environmental/geological problems. The steep slope makes construction difficult and potentially hazardous. The pipeline would have to be installed in long, pre-fabricated segments. This would require the use of very large pieces of heavy equipment. A large, flat area of 45 feet is required at the summit to accommodate the necessary cranes and other pieces of equipment (See attachment: "Guidelines for Construction Workstrip Widths..."). This required area is not available, and cannot be created due to the homes on the hill. The flat area of the PUE varies to as little as ten feet in width. Also, there are already utilities in the easement; sewer, water and overhead electric. Even if construction in the PUE were possible, a considerable number of mature trees would have to be removed to make room for the equipment and the trench. This could cause erosion problems, as well as visual degradation, on this high-visibility hillside. Working in this heavily wooded area also poses a fire danger. The noise and disruption to the homeowners during the construction would be considerable due to the close proximity of the construction area.. Future maintenance on this section of line would be very complicated. We would require annual right-of-way clearing of vegetation resulting in soil erosion.

Seismic/Geological Factors:
Our engineering geologists have reviewed the records on this route and have conducted field visits. A large portion of the Crestmoor Canyon area is a documented landslide[2]. The clearing of large trees and vegetation, as well as excavation of a trench for construction of a pipeline, would greatly increase the potential for activation of landsliding and/or erosion. Landsliding or erosion would affect the integrity of the gas pipeline and possibly the stability of the homes at the head of the canyon, as well as cause environmental damage. Heavy rainfall this season increases the potential for slope instability and erosion during construction. For these reasons, we have been

[2]Mapped by E.E. Brabb and E.H. Pampeyan on U.S. Geological Survey Miscellaneous Field Studies Map MF-344, Preliminary Map of Landslide Deposits in San Mateo County, California (1972).

forced to conclude that this proposed alternate route is unacceptable and cannot be used.

Environmental Factors:
See discussion under Alternative 1A for cultural resources and hazardous substances.

Construction along the PUE route would require the removal of a large number of mature blue gum and Monterey pine trees and approximately 0.5 acres of northern coastal scrub habitat.

See below for more information on habitat types along the Public Utilities Easement in Crestmoor Canyon.

Environmental Field Survey Results of Public Utilities Easement (PUE):
A field survey was conducted on January 14, 1993 to identify habitat types present along the proposed Public Utility Easement (PUE) route in the City of San Bruno. Two habitat types were identified including Eucalyptus-Pine Woodland, and Northern Coastal Scrub.

Eucalyptus-Pine Woodland. The PUE is dominated by this highly maintained habitat. Dominant tree species include blue gum (*Eucalyptus globulus*) and Monterey pine (*Pinus radiata*). Understory vegetation includes English ivy (*Hedera helix*) and German ivy (*Senecio mikanioides*) as well as other ornamental species.

Northern Coastal Scrub. From the PUE to the driving range, the route traverses an area of northern coastal scrub. Dominant species within this habitat include coyote brush (*Baccharis pilularis*), toyon (*Heteromeles arbutifolia*), and blackberry (*Rubus vitifolius*).

A literature review was done to determine if any special status plant or wildlife species potentially existed within the vicinity of the proposed PUE route. For the purposes of this review, special status species were defined as species listed, proposed, or under review as rare, threatened or endangered by the federal government or the State of California. Species lists reviewed included those published by the U.S. Fish and Wildlife Service (1990), California Department of Fish and Game (1990), California Native Plant Society (1988), and California Natural Diversity Data Base (1992).

Special Status Plants. The literature review revealed three rare plant species with known occurrences in the vicinity of the proposed PUE route (Table 2). Surveys revealed no suitable habitat for these species along the proposed route, however.

Special Status Wildlife. The literature review revealed four special status wildlife species with known occurrences in the vicinity of the proposed PUE route (Table

2). Surveys revealed no suitable habitat for these species along the proposed route, however.

Table 2. Special Status Species

Plants	
Marin Dwarf Flax	*Hesperolinon congestum*
San Mateo Woolly Sunflower	*Eriophyllum latilobum*
White-rayed Pentachaeta	*Pentachaeta bellidiflora*
Wildlife	
Mission Blue Butterfly	*Icaricia icarioides missionensis*
San Bruno Elfin	*Incisalia mossii bayensis*
San Francisco Garter Snake.	*Thamnophis sirtalis tetrataenia*
Tomales Isopod	*Caecidotea tomalensis*

Estimated Cost:
No cost estimate was developed since this route is NOT feasible.

Alternative 3: Construct in Franchise (Fleetwood-Glenview-San Bruno Ave)

Advantages:
This route would be entirely outside of the Caltrans right-of-way.

Disadvantages:
This route crosses several faults (subsidiary faults of the San Andreas) in the City of San Bruno. The exposure level of the line to seismic hazards is much greater on this alternative compared to the preferred routes (Alternatives 1A and 1B) on or near the I-280 frontage road. Also, this route significantly impacts densely populated residential areas in the City of San Bruno during construction.

Engineering/Construction Feasibility:
This alternative is substantially more difficult to construct than Alternative 1A or 1B because gas line trenching would take place along narrow, winding steep streets in densely populated residential neighborhoods. Residents in the area would be greatly impacted by construction activities, traffic re-routes and delays, and noise for the duration of the project (approximately 9 months).

Seismic/Geological Factors:
This route would cause the line to cross several subsidiary faults of the San Andreas fault, which is undesirable. These subsidiary faults were mapped by Pampeyan (1981) and Bonilla (1971) and are assumed capable of generating a maximum horizontal right slip of 3 feet.

Environmental Factors:
PG&E has completed literature and field searches for cultural resources and hazardous substances. No cultural resource or hazardous substance sites are listed for this area. Since construction is limited to city streets, no rare and endangered species habitat will be encountered.

Of all our alternatives, this one has the greatest impact on residential neighborhoods. The residents along the route will be negatively impacted by temporary construction activities including noise, dust and traffic disruptions. Although our pipelines are designed according to the California Public Utilities Commission General Order 112-D Standards, there may still be a public perception that it is not safe to live on a street that contains a high pressure gas line, especially near the San Andreas fault. As a result of these factors, the City of San Bruno is STRONGLY opposed to this alternative and requested that PG&E pursue an alternative with a lesser impact on residential neighborhoods.

Estimated Cost:
$10,678,000.

Alternative 4: Construct in Existing Easement (along Skyline Boulevard)

Advantages:
This route would be entirely outside of the Caltrans right-of-way.

Disadvantages:
Two crossings of the San Andreas fault eliminate this route as a viable alternative. The safety and reliability of the gas supply to the San Francisco Peninsula (over 347,000 customers) would be at risk. In addition, the existing route is located in the San Francisco Water Department State Fish and Game Refuge. Preliminary meetings with the San Francisco Water Department have revealed that they would be STRONGLY opposed to PG&E constructing in this highly environmentally sensitive area. This area supports sensitive and endangered species such as the San Francisco Garter Snake.

Construction Feasibility:
The pipeline would have to be constructed using the best special design measures available for crossing the San Andreas fault in two locations. In order to adequately design the pipeline, additional rights-of-way would be necessary in the environmentally sensitive San Francisco Water Department State Fish and Game Refuge. Special design measures for fault crossings include crossing at 90-degrees to the fault line and using extra wide V-trench construction with loose backfill. The existing easement is only ten feet wide with an alignment at low angles with the fault, and therefore it is impossible to construct up to current standards for fault crossings within the existing right-of-way. Also, the cost to PG&E ratepayers for special design measures (if additional rights-of-way could be obtained and construction allowed by the San Francisco Water Department) would be approximately $1.4 million more than the

preferred route. This additional cost to PG&E ratepayers would be unreasonable and most likely unacceptable to the CPUC.

Seismic/Geological Factors:
This route crosses the main trace of the San Andreas fault twice, leaving the pipeline very susceptible to substantial fault movement (about 10-foot horizontal right slip). It is impossible to design measures to accommodate these large potential displacements within the present configuration of the existing narrow ten foot right-of-way. Additionally, the present route is susceptible to slope instability along Highway 35.

Line 109 provides gas supply to over 347,000 homes and businesses on the San Francisco Peninsula. Keeping the line on the San Andreas fault would risk the loss of gas supply to these customers in the event of an earthquake. It would take up to 8 months and cost over $10 million to relight all of the customers impacted should this line be taken out of service.

Environmental Factors:
This route passes through grasslands and woodlands in the environmentally sensitive San Francisco Water Department State Fish and Game Refuge. The literature search for rare and endangered species revealed that habitat may be present for special status butterflies and the endangered San Francisco Garter Snake. Preliminary meetings with the San Francisco Water Department have revealed that installing a new line in this environmentally sensitive area would be strongly opposed.

Estimated Cost:
$11,695,000.

Alternative 5 (NEW): Construct in Franchise (Sneath-Cherry-San Bruno Avenue)

Advantages:
This route would have a reduced distance of longitudinal encroachment compared to the preferred route on the I-280 frontage road.

Disadvantages:
This route would have a major traffic impact to all on and off-ramps at I-280 and Sneath Lane during construction. This route would cost PG&E ratepayers an additional $2 million more than the preferred route due to the large bore under I-280 and an additional 4,000 feet of gas line along city streets. PG&E is obligated to provide gas service at a reasonable cost to its ratepayers. This additional cost would not be reasonable and most likely would not be acceptable to the CPUC.

Construction Feasibility:
Although the amount of longitudinal encroachment in Caltrans right-of-way would be minimal, this route would require that all four on and off-ramps at I-280 and Sneath

Lane be disrupted (temporarily shutdown) in order to trench and then bore 500' under I-280 from the middle of one clover leaf to the middle of the opposite clover leaf. Constructing within the on and off ramps and clover leafs would put our workers at a much higher safety risk than working on the lightly traveled frontage road.

A bore on the northern side of Sneath Lane is not feasible due to the substantial elevation difference on each side of I-280, and the lack of access for the bore pits on either side of I-280 -- private property located on the west side, and the National Cemetary on the east side of I-280).

Seismic/Geological Factors:
This route is away from geologically hazardous areas. No adverse impacts are expected.

Environmental Factors:
This alternative is similar to Alternative 3 in that it will have major impacts to residences and commercial business in the City of San Bruno. The residences (apartment buildings) and businesses along the route will be disrupted by temporary construction activities including noise, dust and traffic disruptions.

Estimated Cost:
$12,400,000.

MAINTENANCE ACTIVITIES

Maintenance activities on Line 109 within Caltrans right-of-way will consist of quarterly pipeline patrols and yearly leak surveys. Quarterly pipeline patrols are usually performed by helicopter and will not affect traffic flow in any way. However, in the event of poor weather which would make it dangerous to patrol via helicopter, the pipeline route will be driven by Company personnel at speeds which are normal for traffic in the area. Yearly leak surveys will be performed by a leak surveyor in a car at low speed or by walking the pipeline route. In either case, adequate safety precautions will be taken so that neither the traffic flow is interrupted nor the safety of citizens and employees are endangered.

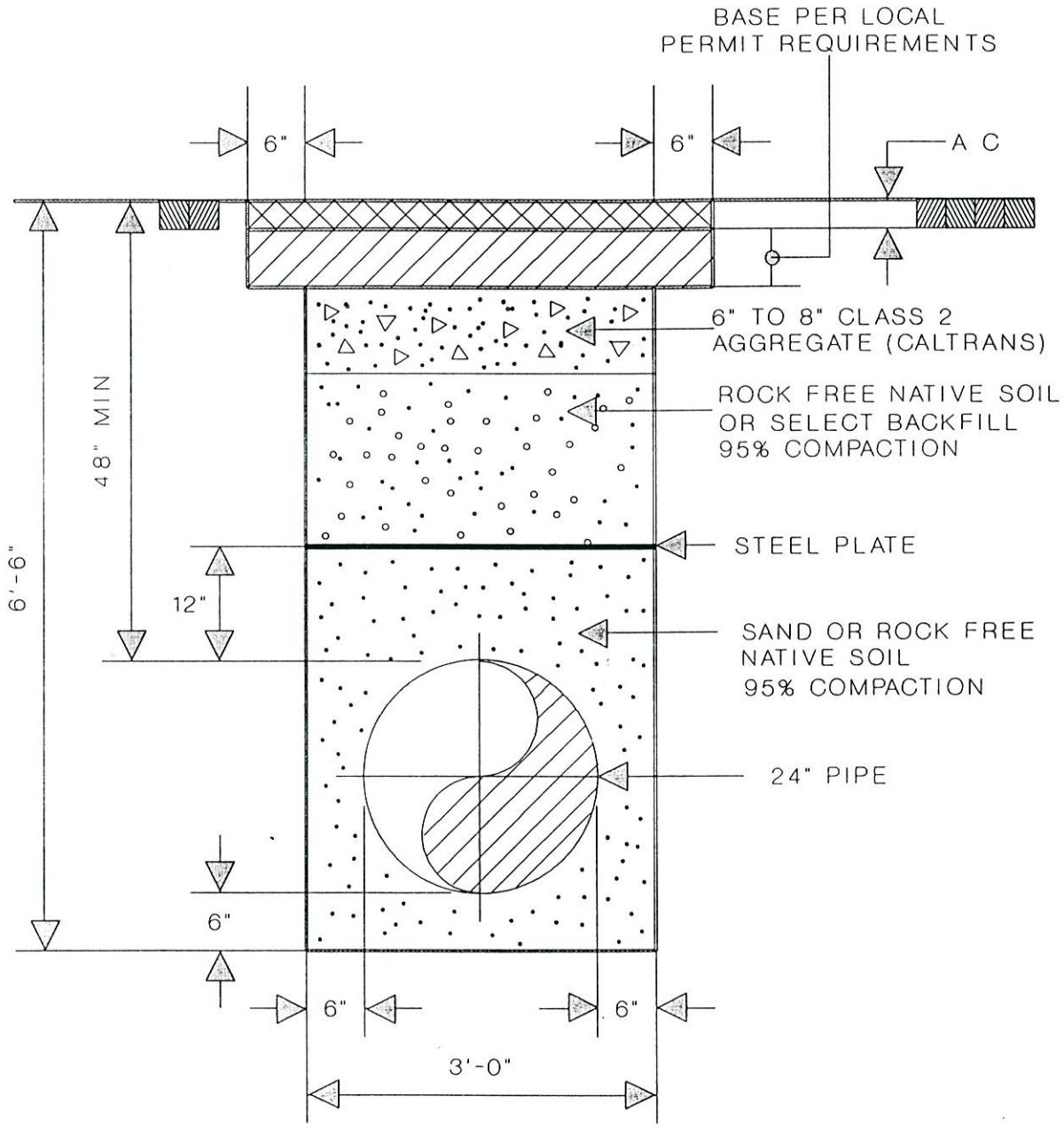
CONSEQUENCES OF PERMIT DENIAL

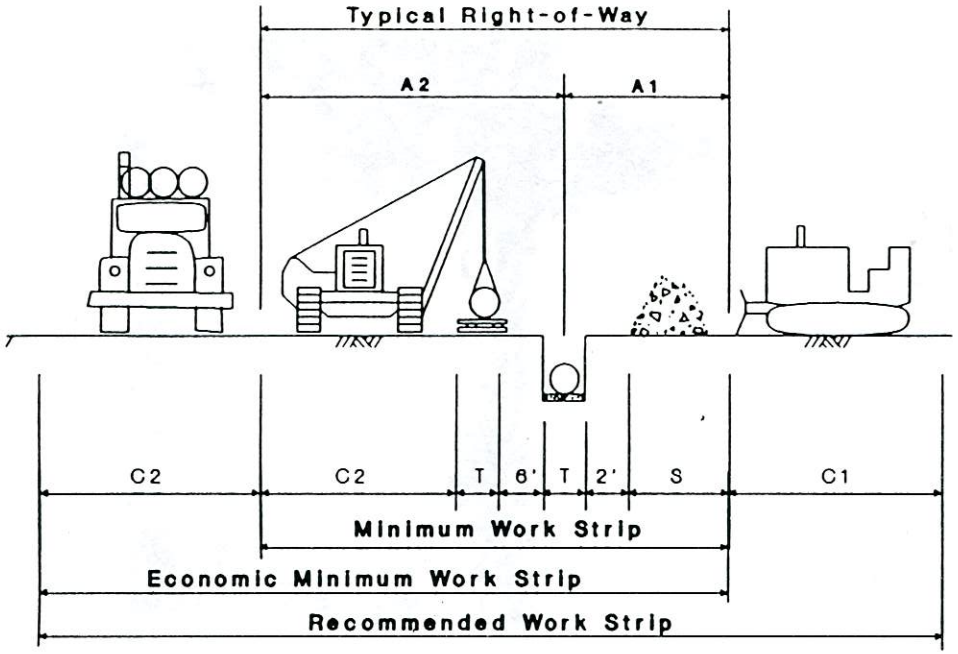
Should PG&E's request for this permit be denied, the pipeline would have to be constructed in residential streets of the City of San Bruno (Alternative #3). This would involve construction along narrow, winding, steep streets and would greatly impact residences in the area. This alternative would not reduce the seismic risk to our pipeline in comparison to the preferred routes due to subsidiary faults along and crossing Fleetwood and Glenview Drives that cannot be avoided.

IMPACTS OF PROJECT ON STATE FACILITIES

There are no significant negative impacts of this project on the state highway facility. Minor impacts are as follows: limited traffic flow during construction in the Caltrans right-of-way, yearly leak survey activities within the right-of-way by PG&E, existence of pipeline and pipeline markings within Caltrans right-of-way.

TYPICAL TRENCH SECTION





NOTES:

1) These figures are for use with pipe sizes from 6" to 36" and level construction areas where soil & site conditions, local regulations, permits, weather, etc. allow standard trenching and pipeline installation methods. Other conditions must be evaluated on a case-by-case basis.

2) RECOMMENDED is the desired work strip width for all locations where space is available.

3) ECONOMIC MINIMUM is the minimum work strip within which a pipeline could be economically installed under normal conditions.

4) MINIMUM is the minimum work strip required to install the pipeline. Installation within this work width will substantially decrease productivity & increase cost (for less than MINIMUM, see note 5).

5) Where practical, the RIGHT-OF-WAY WIDTH should be equivalent to the MINIMUM work strip width.

RIGHT-OF-WAY widths can be reduced for some conditions (for example, the RIGHT-OF-WAY is adjacent to existing easements, along a roadway, etc.) A reduced RIGHT-OF-WAY width, MUST allow for normal operation and maintenance (including replacement) of the pipeline considering the potential for development on one (or both) sides of the R.O.W.

							WORK STRIP			RIGHT OF WAY			
Main Size	Pipe 2(T)	Trench Setback 8'	Spoil Pile S	Dozer Length C1	Sideboom Width C2	2C2	Minimum 2(T)+8+S+C2	Economic Min. 2(T)+8+S+2C2	Recommended 2(T)+8+S+C1+2C2	Typ., Permanent RIGHT OF WAY	Typ. Pipe Offset A1=S+2+.5(T)	Typ. Pipe Offset A2=C2+6+1.5(T)	Construction Equipment
6"	3'	8'	5'	16'	14'	28'	30'	44'	60'	30-36'	8'	22'	D-4 & Whirley
8" - 12"	4'	8'	6'	18'	18'	36'	36'	54'	72'	36-45'	9'	27'	D-6 & 561 Sideboom
16" - 24"	6'	8'	12'	21'	19'	38'	45'	64'	85'	45-55'	15'	30'	D-7 & 572 Sideboom
26" - 36"	10'	8'	17'	22'	20'	40'	55'	75'	97'	55-100'	21'	34'	D-8 & 583 Sideboom

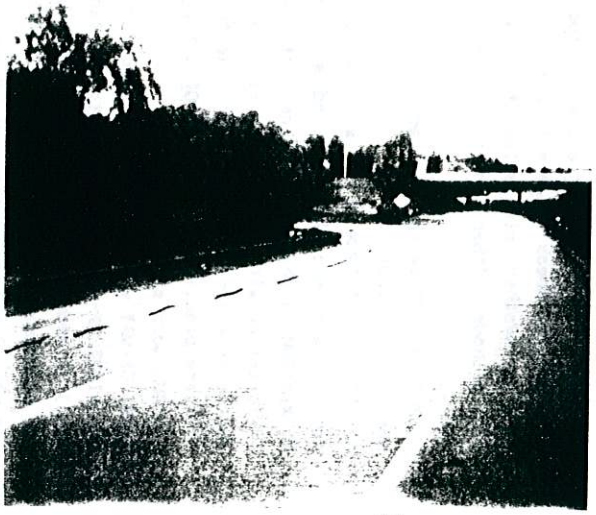
GUIDELINES FOR CONSTRUCTION WORK STRIP WIDTHS/ RIGHT-OF-WAY FOR VARIOUS SIZE PIPE ON LEVEL TERRAIN

GAS & ELECTRIC PROJECT ENGINEERING

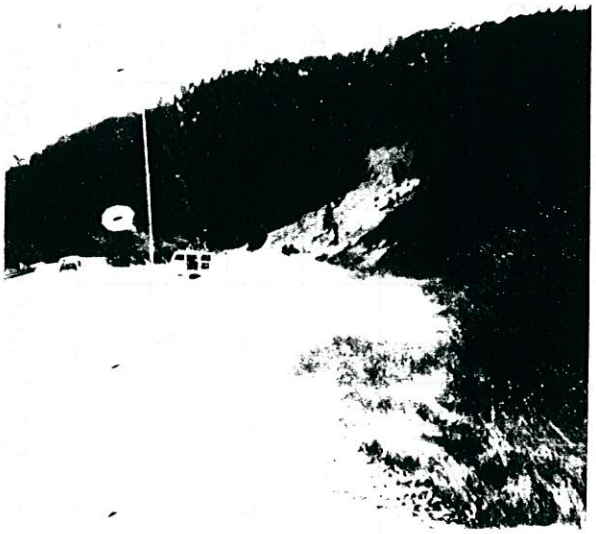
June 24, 1991

PHOTOGRAPHS
ON
PROPOSED GAS LINE
109 ALONG I-280

G/L 109 @ I-280 1 09-02-92
LOOKING DOWN STATION FROM
INTX. OF SNEATH



G/L 109 @ I-280 2 09-02-92
@ O/S POINT # 103
LOOKING UP STATION.



G/L 109 @ 280 3 9-1-92
LOOKING DOWN STATION FROM A#12

G/L 109 @ 280 4 9-1-92
LOOKING UP STATION FROM PT #11

PHOTOGRAPHS
ON
PROPOSED GAS LINE
109 ALONG I-280

G/L 109 @ 280 9-1-92
LOOKING UP STATION F & CREST OF
OFF RAMP BETWEEN PEA #7 AND PEA #8

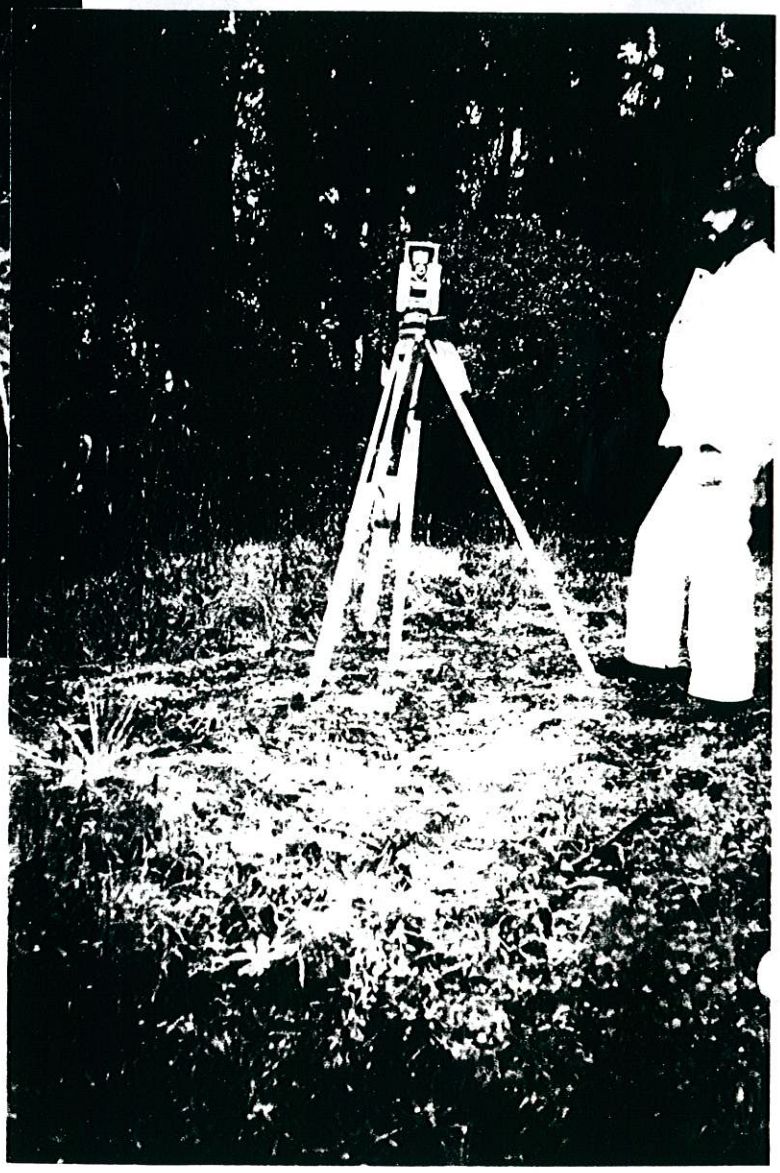
5

109 @ 280 9-1-92
LOOKING - STATION F PEA #1

6

PHOTOGRAPHS
ON
GAS LINE 109
ALTERNATIVE ROUTE 2

#1



#2

PHOTOGRAPHS
ON
GAS LINE 109
ALTERNATIVE ROUTE 2

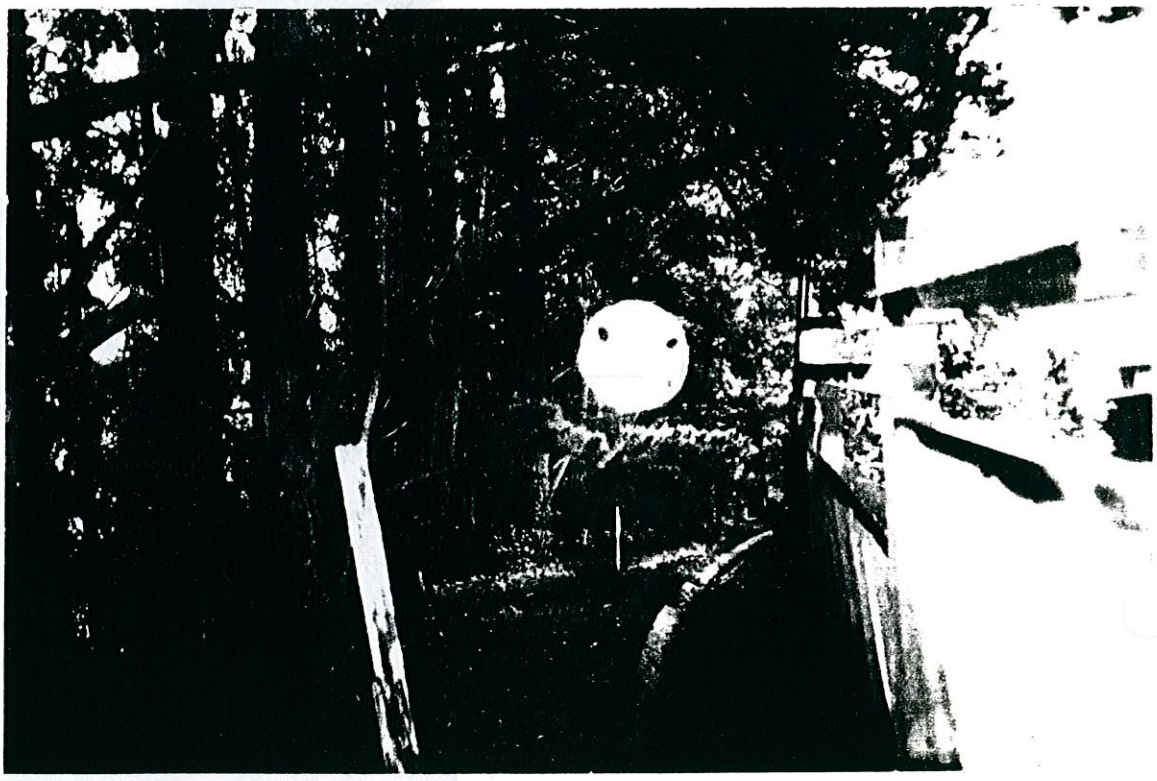
#3

#4

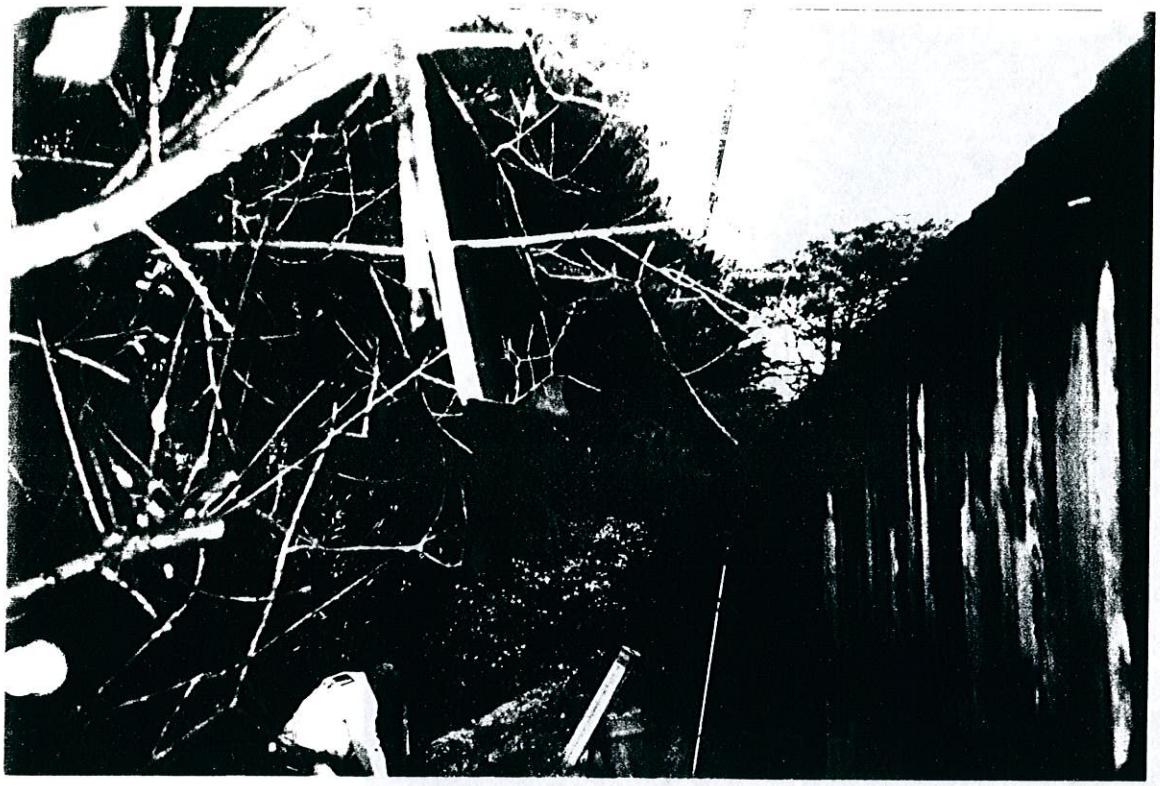
PHOTOGRAPHS
ON
GAS LINE 109
ALTERNATIVE ROUTE 2

← #5

#6 →



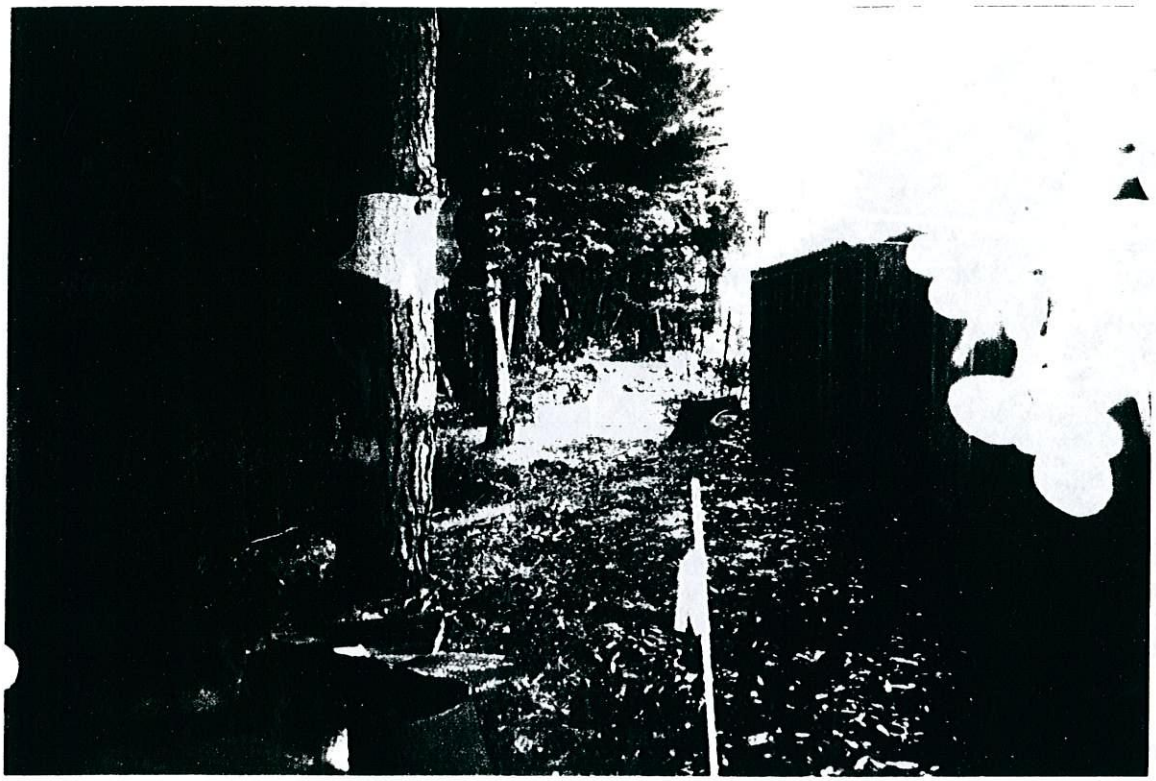
PHOTOGRAPHS
ON
GAS LINE 109
ALTERNATIVE ROUTE 2



#7

#8

PHOTOGRAPHS
ON
GAS LINE 109
ALTERNATIVE ROUTE 2



#9

#10

PHOTOGRAPHS
ON
GAS LINE 109
ALTERNATIVE ROUTE 2

#11

#12

P.G.&E. Gas Line 109 Replacement Project Index Map

P.G.&E. Gas Line 109 Replacement Project Index Map