County of San Mateo
Planning & Building Department
455 County Center, 2nd Floor
Redwood City, California 94063
650/363-4161 Fax: 650/363-4849

Mail Drop PLN122
plngbldg@co.sanmateo.ca.us
www.co.sanmateo.ca.us/planning

April 26, 2007

Peter Colby, Land Acquisition Director
Save-the-Redwoods League
114 Sansome Street, Room 1200
San Francisco, CA 94104

Dear Mr. Colby:

SUBJECT: Certificates of Compliance (Type A), Lot Line Adjustment, Timberland Preserve Zone (Minor Development Permit), and Coastal Development Permit Exemption (CDX)
APNs 089-120-030 and 089-120-080
County File No.: PLN 2006-00513

Staff has completed its review of two (2) Certificates of Compliance (Type A), Lot Line Adjustment, Timberland Preserve Zone (Minor Development Permit), and Coastal Development Permit Exemption (CDX) to legalize the subject parcels and transfer 59 acres between the two properties, resulting in one 65-acre parcel (now 6-acre, PAD) and one 99-acre parcel (now 158-acre, TPZ-CZ/CD). This project is not appealable to the California Coastal Commission, as the Lot Line Adjustment is exempt from Coastal Development Permit requirements per Section 6328.5(l) of the County Zoning Regulations, for land division brought about in connection with the purchase of land by a public agency for recreational use.

In compliance with Coastal Development District exemption criteria and Condition No. 4, at the time of final parcel map recordation, the current owner, George C. Houck and Lou AK Trust (Houck Trust), will transfer the 99-acre parcel to the California Department of Parks and Recreation (State Parks), with the land transfer administered by the applicant, Save-the-Redwoods League (League).

For the Lot Line Adjustment, staff sent the required notification to adjacent property owners on April 2, 2007. For the Timberland Preserve Zone (Minor Development Permit), staff sent the required notification to property owners within 300 feet on April 16, 2007. In a letter dated April 5, 2007, George Allen, the property owner of the adjacent parcel to the east (APN 089-120-020), expressed concerns with regard to potential impact to future timber harvesting activities and potential vandalism resulting from the transfer of the adjacent property to the State Parks system. According to the 2007 California Forest Practice Rules, a 200-foot buffer zone or "Coastal Commission Special Treatment Zone" would be applied to properties adjoining

publicly owned preserves and recreation areas including national, state, regional, county, and municipal parks.

On April 19, 2007, the applicant faxed a letter to Mr. Allen stating that, based on conversations with State Park officials, State Parks has no intention of opening up APN 089-120-030 (land adjacent to Mr. Allen's property) for public access; therefore, the Lot Line Adjustment would not increase the likelihood of vandalism or trespass by park visitors on Mr. Allen's property. Also, the letter stated that State Parks has no intention of changing access restrictions on the existing fire road, which permits administrative access only. In a letter to Mr. Allen dated April 23, 2007, the applicant stated that, having consulted a professional forester regarding Mr. Allen's property, the "Coastal Commission Special Treatment Zone" requirement would have little, if any, impact on a typical timber operation at the Allen property.

Staff has approved your permits subject to the following findings and conditions of approval.

FINDINGS

A. For the Environmental Review

That this project is exempt from the California Environmental Quality Act, as no new development, change in land use or zoning, or increase in timber harvested on either parcel is proposed at this time. Therefore, no environmental impact is anticipated from this Lot Line Adjustment.

B. Regarding the Timberland Preserve Zone (Minor Development Permit)

That this project has been reviewed and found to comply with Chapter 37 of the County Zoning Regulations. Planning staff has completed a review of the project for compliance with the Development Design Criteria of the Timberland Preserve Zone and has determined that there is no substantial evidence that the project, if subject to the conditions of approval as contained in this letter, will have a significant effect on the environment.

C. Regarding the Coastal Development Permit Exemption

That this project is exempt from a Coastal Development Permit per Section 6328.5(l), land division brought about in connection with the purchase of land by a public agency for public recreational use. Condition No. 4 has been added to ensure that ownership of APN 089-120-030 is transferred to a public agency, with lands to be used for a public recreational use, prior to or at the time of the recordation of the final parcel map, in compliance with Coastal Permit Exemption criteria.

D. Regarding the Certificate of Compliance (Type A)

That the County Counsel and Department of Public Works have reviewed the land division history for the subject parcels and found that the land division, which created the subject

parcels, has been found to conform to the County's General Plan and zoning standards currently in effect or conformed to General Plan and zoning standards in effect at the time the division occurred.

CONDITIONS OF APPROVAL

Current Planning Section

1. This Lot Line Adjustment approval is valid for two years, during which time a final parcel map shall be filed. An extension to this time period in accordance with Section 7013.5.c of the Subdivision Regulations may be issued by the Planning Department upon written request and payment of any applicable extension fees if required.

2. The parcel map shall be recorded pursuant to the plans approved by the Community Development Director; any deviation from the approved plans shall be reviewed and approved by the Community Development Director or Zoning Hearing Officer, as deemed necessary.

3. Prior to the recordation of the final parcel map, the applicant shall meet the requirements of Section 6957 of the County Zoning Regulations, including the following:

   a. The applicant shall submit a joint timber management plan (JTMP) (as described in Section 6976 prepared or approved as to content by a registered professional forester), and

   b. Enter into a binding contract with the Board of Supervisors to manage and harvest timber on all the timberland jointly, and are bound by the provisions of such management plan for a minimum period of 30 years.

4. Prior to or at the time of the recordation of the parcel map, ownership of the property identified as APN 089-120-030 shall be transferred to a public agency, with lands to be used for a public recreational use, in compliance with Coastal Permit Exemption criteria.

5. The Certificates of Compliance shall be filed for record with the County Recorder.

6. Per Section 6401.5 of the County's Zoning Regulations, the following statement shall be recorded on a parcel deed for APN 089-120-080, located within the Planned Agricultural District (PAD) zoning district:

   "This parcel is adjacent to lands zoned to allow timber harvesting as permitted by either the County of San Mateo or the California Department of Forestry and Fire Protection. Residents on this parcel may be subject to inconvenience or discomfort arising from timber harvesting operations, including but not limited to the felling of trees; noise from trucks, tractors, chain saws; dust; vibration; slash burning; and timber harvest road and bridge

construction. San Mateo County has established that timber harvesting is an appropriate use on productive timberlands as a sustained yield management resource, and residents of adjacent property should be prepared to accept such inconvenience or discomfort from normal, necessary timber harvesting operations."

7. The deeds and legal descriptions shall not be recorded until all conditions of approval have been met or bonded for as appropriate. The Lot Line Adjustment shall be effective when the deeds and legal descriptions of the new parcels have been recorded.

This approval may be appealed by the applicant or any aggrieved party on or before 5:00 p.m. on **May 10, 2007,** the tenth business day following this action by the Community Development Director. An appeal is made by completing and filing a Notice of Appeal, including a statement of grounds for the appeal, with the Planning and Building Department, and paying the applicable fee. Further information may be obtained by calling Camille Leung, Project Planner, at 650/363-1826.

Sincerely,

Lisa Grote
Community Development Director

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cc: Ken Au, Department of Public Works
Bill Cameron, Building Inspection Manager
George C. Houck and Lou AK Trust
California Department of Parks and Recreation
George Allen, Owner of APN 089-120-020

ATTACHMENT B

RESOLUTION NO. _____

BOARD OF SUPERVISORS, COUNTY OF SAN MATEO, STATE OF CALIFORNIA

* * * * * *

RESOLUTION AUTHORIZING EXECUTION OF A REGULATORY AGREEMENT AND DECLARATION OF RESTRICTIVE COVENANTS

RESOLVED, by the Board of Supervisors of the County of San Mateo, State of California, that

WHEREAS, the George C. Houck and Lou AK Trust is the owner of properties located in Pescadero, identified as APNs 089-120-030 and 089-120-080, hereinafter referred to as "Owner" and "Properties", respectively, and wish to record a lot line adjustment for said Properties; and

WHEREAS, as required by Section 6957 of the County Zoning Regulations and as a condition of approval (County File Number PLN 2006-00513) of said lot line adjustment, the Owner was required and has agreed to manage and harvest timber on all the timberland on said Properties in conformance with the Joint Timber Management Plan (Forsburg, 2006); and

WHEREAS, this Board has been presented with a form of agreement establishing joint management of timber harvesting operations at said Properties, by the County of San Mateo and the Owner, for thirty (30) years.

NOW, THEREFORE, IT IS HEREBY DETERMINED AND ORDERED that the President of this Board of Supervisors be, and the President is hereby authorized and directed to execute said agreement for and on the behalf of the County of San Mateo, and the Clerk of this Board shall attest the President's signature thereto. The County Manager, or his designee, is hereby directed and authorized to record this agreement and any other documents that may be required to implement the agreement.

* * * * * *

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DRAFT

REGULATORY AGREEMENT AND DECLARATION OF RESTRICTIVE COVENANTS

THIS REGULATORY AGREEMENT AND DECLARATION OF RESTRICTIVE COVENANTS ("Regulatory Agreement") is made and entered into this 15th day of May, 2007 by and between the COUNTY OF SAN MATEO, hereinafter referred to as "County," and George and Lou Anne Houck, Janet H. Boreta, Jo Boreta, Anne Baxter, Jane Walerud, John Houck, Catherine Houck (referred to collectively as (George C. Houck and Lou AK Trust), hereinafter referred to as "Owners";

WITNESSETH

WHEREAS, the Owners of properties located in Pescadero, identified as APNs 089-120-030 and 089-120-080, hereinafter referred to as "Properties," wish to record a lot line adjustment for said properties; and

WHEREAS, as required by Section 6957 of the County Zoning Regulations and as a condition of approval (County File Number PLN 2006-00513) of said lot line adjustment, the Owners were required and have agreed to manage and harvest timber on all the timberland in conformance with a joint timber management plan; and

WHEREAS, the County and the Owners desire to enter into an agreement which will establish joint management of timber harvesting operations at said Properties, by the County of San Mateo and the Owner, for thirty (30) years.

NOW, THEREFORE, the parties mutually agree to manage timber resources in conformance with the Joint Timber Management Plan (Forsburg, 2006) (Exhibit "B").

PART I

A. Description of the Properties

The Real Properties subject to this Agreement are located in the County of San Mateo, State of California, and are more fully described in Exhibit "A," attached hereto and by this reference made a part hereof.

Timber resources at said Properties, hereinafter referred to as "Timberlands," are subject to these restrictions described in Exhibit "B."

B. Term of Agreement

The Owners agree that the Timberlands referred to in Part I, Paragraph A shall be restricted and managed in conformance with the Joint Timber Management Plan

attached as Exhibit B for a period of 30 years from the date hereof. This restriction shall be binding on the Owners and any and all successors in interest.

C. **Covenants to Run with the Land for Term of Agreement**

The Owners hereby subject the Properties referred to in Part I, Paragraph A to the covenants, reservations, and restrictions set forth in the Regulatory Agreement. The County and the Owners hereby declare their express intent that the covenants, reservations, and restrictions set forth herein shall be deemed covenants running with the land for the term of this Agreement and shall pass to and be binding upon the Owners' successors in title to each of the properties for the term of this Regulatory Agreement. Each and every contract, deed, or other instrument hereafter executed covering or conveying the each of the Properties or any portion thereof shall conclusively be held to have been executed, delivered and accepted subject to such covenants, reservations and restrictions, regardless of whether such covenants, reservations and restrictions are set forth in such contract, deed or other instrument.

PART II

A. **Enforcement**

If an Owner defaults in the performance or observance of any covenants, agreement or obligation of the Owners set forth in this Regulatory Agreement, and if such default remains uncured for a period of 30 days after notice thereof shall have been given by the County, then the County shall declare an "Event of Default" to have occurred hereunder, and, at its option may take any one or more of the following steps:

1. By injunction or other suit, action or proceeding at law or in equity, require the Owners to perform its obligations and covenants hereunder or enjoin any acts or things which may be unlawful or in violation of the rights of the County hereunder.

2. Have access to and inspect, examine and make copies of all of the books and records of the Owners pertaining to the Timberland.

3. Take such other action at law or in equity as may appear necessary or desirable to enforce the obligations, covenants and agreements of the Owners hereunder.

B. **Recording and Filing**

This Agreement be recorded and filed in the real property records of the County of San Mateo, California. The Owners shall pay all fees and charges incurred in connection with any such recording. A copy of this recording shall be submitted to the County Planning and Building Department for filing with the Planning file.

C. **Project Representation**

The County and Owners hereby designate the following agents to act as project representatives in the matters dealing with the performance of work under this Agreement:

COUNTY: Community Development Director
Planning and Building Department
455 County Center, 2nd Floor
Redwood City, CA 94063
650/363-4161

OWNERS: George C. Houck and Lou AK Trust
4613 Village Ct Se,
Olympia, WA, 98501--4721
415/362-8207

D. **Interest of Public Officials**

No members, officers, or employees or agents of San Mateo County, no member of the Board of Supervisors, and no other public official who exercises any function or responsibility with respect to this program during his/her tenure, or for one year thereafter, shall have any interest, direct or indirect, in this Agreement or a related subcontract, or the proceeds thereof. The Owners shall incorporate in all subcontracts hereunder a provision prohibiting such interest.

E. **Time**

Time is of the essence.

F. **Hold Harmless**

The Owners shall indemnify and save harmless the County, it officers, agents, employees and servants from all claims, suits or actions of every name, kind and description, brought for, or on account of, injuries to or death of any person, including Owner, or damage to property of any kind whatsoever and to whomso-ever belonging, including but not limited to, the concurrent active or passive negligence of the County, officers, agents, or employees and servants, resulting from the performance of any work required by this Agreement of Owner, provided that this shall not apply to injuries or damage for which County has been found in a court of competent jurisdiction to be solely liable by reason of its own negligence or willful misconduct.

The duty of the Owners to indemnify and save harmless, as set forth herein, shall include the duty to defend as set forth in Section 2778 of the California Civil Code.

G. **Merger Clause**

The document constitutes the sole agreement of the parties hereto relating to said project and correctly states the rights, duties, and obligations of each party as of the document's date. Any prior agreement, promises, negotiations, or representations between the parties not expressly stated in this document are not binding. All subsequent modifications shall be in writing.

H. **Counterparts**

This Agreement may be executed in counterparts, and shall be deemed legally effective at such time as counterparts thereof duly executed on behalf of all parties have been furnished and delivered to the attorneys for all parties to this Agreement.

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IN WITNESS WHEREOF, the parties hereto have executed this Agreement on the day and year first above written.

COUNTY OF SAN MATEO

By: _____
President, Board of Supervisors
San Mateo County

Date: _____

ATTEST:

By: _____
Clerk of the Board

OWNERS

By: _____
George Houck and Lou Anne Houck Trust, Trustees under the Living Trust Agreement of George C. Houck and Lou Anne K. Houck dated March 18, 1999

Date: _____

By: _____
Janet H. Boreta, Trustee under the Declaration of Trust dated May 1, 1996

Date: _____

By: _____
Jo Boreta (Spouse of James C. Boreta, deceased)

Date: _____

By: _____
Anne Baxter

Date: _____

By: _____
Jane Walerud

Date: _____

By: _____
John Houck

Date: _____

By: _____
Catherine Houck

Date: _____

EXHIBIT "A"

DESCRIPTION

The land herein referred to is situated in the State of California, County of San Mateo, and is described as follows:

HOUCK FAMILY PROPERTY (APN 089-120-080)

SITUATE in the County of San Mateo, State of California and being a portion of the lands described in deed to the George C. Houck and Lou Anne K. Houck Living Trust by Document number 99-087554 Official Records of San Mateo County. Being that portion of the Southwest Quarter of Section 20, Township 8 South, Range 4 West, Mount Diablo Base & Meridian lying Northerly, Northwesterly, and Westerly of the following described line:

BEGINNING at a 2 inch iron pipe with brass cap at the Southwest corner of said Section 20 from which a 2 inch iron pipe with brass cap at the Southeast corner of Butano Rancho bears N25°36'09"W, 453.67 feet (said pipes shown on that certain Record of Survey filed in Volume 15 of maps at Page 38 San Mateo County Records with a tie of N25°38'00"W, 454.70 feet). Thence from said point of beginning the following courses:

1) Easterly along the Southerly line of Section 20, S89°06'32"E, 251.92 feet to center of an existing road bed. Thence along the center of said road bed the following six courses:
2) N58°44'19"E, 95.16 feet to a point;
3) N35°57'22"E, 100.71 feet to a point;
4) N76°35'28"E, 173.73 feet to a point;
5) N57°31'53"E, 184.11 feet to a point;
6) N65°11'18"E, 172.60 feet to a point;
7) N62°57'06"E, 167.37 feet to a point;
8) Thence leaving said road bed NORTH, 391.21 feet to a point;
9) EAST, 68.70 feet to a point;
10) NORTH, 502.30 feet to a point;
11) WEST, 68.70 feet to a point;
12) NORTH, 1317 feet more or less to a point on the Northerly line of said Section 20

Together With Lot 3 of Section 19, Township 8 South, Range 4 West, Mount Diablo Base and Meridian.

GEORGE HOUCK PROPERTY(APN 089-120-030)

SITUATE in the County of San Mateo, State of California and being a portion of the lands described in deed to the George C. Houck and Lou Anne K. Houck Living Trust by document number 99-087554 Official Records of San Mateo County. Being that portion of the Southwest Quarter of Section 20, Township 8 South, Range 4 West, Mount Diablo Base & Meridian lying Southeasterly and Easterly of the following described line:

BEGINNING at a 2 inch iron pipe with brass cap at the Southwest corner of said Section 20 from which a 2 inch iron pipe with brass cap at the Southeast corner of Butano Rancho bears N25°36'09"W, 453.67 feet (said pipes shown on that certain Record of Survey filed in Volume 15 of maps at Page 38 San Mateo County Records with a tie of N25°38'00"W, 454.70 feet). Thence Easterly along the Southerly line of Section 20, S89°06'32"E, 251.92 feet to a point in the center of an existing road bed, said point being the TRUE POINT OF BEGINNING. Thence, from said TRUE POINT OF BEGINNING along the center of said road bed the following six courses:

1) N58°44'19"E, 95.16 feet to a point;
2) N35°57'22"E, 100.71 feet to a point;
3) N76°35'28"E, 173.73 feet to a point;
4) N57°31'53"E, 184.11 feet to a point;
5) N65°11'18"E, 172.60 feet to a point;
6) N62°57'06"E, 167.37 feet to a point;
7) Thence leaving said road bed NORTH, 391.21 feet to a point;
8) EAST, 68.70 feet to a point;
9) NORTH, 502.30 feet to a point;
10) WEST, 68.70 feet to a point;
11) NORTH, 1317 feet more or less to a point on the Northerly line of said Section 20

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EXHIBIT "B"

JOINT TIMBER MANAGEMENT PLAN

MID-BUTANO TREE FARM

San Mateo County, California

Prepared by:

Gene Forsburg, R.P.F. 1873
Buena Vista Services, LLC

December, 2006

JOINT TIMBER MANAGEMENT PLAN

MID-BUTANO TREE FARM

The Mid-Butano Tree Farm lies in San Mateo County and consists of two assessor's parcels: 089-120-080 and 089-120-030. According to a recent survey, this property contains 164 acres. Most of the property is zoned Timber Preserve Zone – Coastal Zone or "TPZ." A small, five acre portion is zoned "PAD" or Planned Agricultural Development. Under a new San Mateo County ordinance, harvesting of the PAD area would now require the approval of all homeowners within 1,000 feet; however, there do not appear to be any homeowners within that radius. The two zoning areas have traditionally been managed together for forestry purposes and will be treated as a unit herein.

The subject property may be characterized as vacant forestland. It is bisected by the Butano Fire Road but all of its other roads are currently impassible. The Fire Road divides the property into two forest types. North of the road is dense young growth and residual timberland consisting of redwood, Douglas-fir, and associated hardwoods such as tanoak. South of the trail is sparse Douglas-fir with live oaks and madrone.

This property has a history of timber harvesting. Early, destructive logging took place at the turn of the century and a second harvest occurred in 1953. Despite these aggressive harvests, some old growth trees remain on the property today. The ancestors of the current owners acquired the property in 1955 and the family has used it for dispersed recreation and timber harvesting since that time. The first modern timber cutting consisted of a selective harvest under State rules (THP 1-91-247 SMO) and was carried out in 1992. In 1995, the owners' forester prepared a long term forest management plan for the property for internal purposes.

The owners currently desire to adjust the lot line dividing the two parcels that make up the tree farm. Under TPZ zoning, the dominant use of the land must be for continued timber growing and harvesting and related uses such as watershed protection, fisheries and wildlife habitat, and recreational

opportunities. Division of TPZ properties requires that a joint timber management plan be prepared to guide activity according to these priorities. If uncontrolled, division of a TPZ property could result in smaller and isolated forest units that have reduced potential for timber harvesting, habitat values, and for effective watershed management. For example, careless division could result in harvest units that are economically sub-marginal, could cut off access to harvest units, and, if use of the property is to change, could interfere with harvesting and habitat patterns by introducing new infrastructure.

With the following exceptions, the 1995 Forest Management Plan is perfectly adequate to management after partition and the owners have requested that it be adapted for this purpose. The 1995 plan is quite detailed, is incorporated by reference, and is attached. It needs to be revised to reflect the following:

1) As a result of the partition process, a new timber inventory was conducted in 2004. It suggests that a much larger volume of timber is present than had previously been believed.

2) Some provision needs to be made for access to the resulting parcels over the existing transportation system during commercials harvests and related activities.

3) Although the partition proposal does not contain any change in land use or any proposal for development, in the future, any such proposals could affect the viability of the timberland and related natural resource values and should be accompanied by a new timber management plan.

It should be emphasized that the purpose of this Plan is to demonstrate that the adjusted parcels will still be eligible for harvest and that joint management is consistent with sustained yield. Of course, any proposal for harvesting will require a new permit and environmental review by the California Department of Forestry and Fire Protection. San Mateo County, the Dept. of Fish and Game, the Regional Water Quality Control Board, the State Dept. of Parks and Recreation, and the California Geological Survey would also participate in

the evaluation of any new harvest application.

Inventory and Allowable Harvest Adjustment

A forest inventory was conducted on the subject property in 2004 and the results are attached. The inventory reveals a much higher volume than that reported in the 1995 Management Plan. Fully 5,700,000 board feet were inventoried where as the management plan suggests that about 2,000,000 should have been present. It appears that the management plan data were simply based on averages from other properties although even a casual inspection would have shown higher standing volume on the subject property.

The higher inventory implies that the allowable harvest in the management plan could be adjusted. However, not all of the timber present can be reasonably expected to be harvestable considering the need to protect streams, visual buffers, and old growth stands, and that some of the stands are sub-marginal and likely to remain so. The following is an appreciation of the timber on harvestable acres:

	OGRW	YGRW	DF	Combined
	(thousands of board feet)			
Gross volume by species	979	3,338	2,506	6,823
Net as cruised	679	3,065	1,939	5,683
Less timber in wet areas, stream zones, visual buffers, and sub-marginal (low volume) stands	(125)	(383)	(230)	(738)
Less timber in old growth preserve	(190)	(360)	(85)	(635)
Timber on harvestable acres	364	2,322	1,624	4,310

The harvest in the original forest management plan was 40,000 board feet per year. On a fifteen year cycle, this can be portioned as 200,000 board feet for the western parcel and 400,000 board feet to the eastern parcel.

The new information could be faithfully applied to the rationale of the original management plan; namely that the growth rate and harvest cycle would determine the periodic allowable harvest. Updating the original information based on the cruise, an aggregate annual growth rate of 2.7 per cent is reasonable as is a fifteen year reharvest cycle. Of course, this is still conservative as the applicable forest practice regulations would allow even greater harvests of sixty percent of the

standing volume on a fourteen year cycle (or fifty percent on a ten year cycle). A 2.7 percent growth rate applied to 4,310,000 board feet implies that the operable component is growing 116,370 board feet per year. Thus in 2007, and every fifteen years thereafter, 1,750,000 board feet could be harvested from the entire tract. On a partitioned basis, the allowable harvest would become 590,000 board feet to be harvested from the western parcel, and 1,160,000 from the eastern parcel.

The application of either harvest regime can be according to the detailed "marking" rules contained in the original plan. These provide for a balanced forest structure and, in particular, although there is no "rotation" age associated with the selective harvesting system, they provide for the retention and recruitment of old growth stems. Both the current and potential harvest quantities, by parcel, are economically saleable under current and anticipated market conditions. It should be noted that this division of the allowable harvest will not equal the partition proportion as there are differing timber, environmental, and land value conditions on either side of the partition line.

Recommendation 1: In conformance with the intent of the original management plan, 200,000 board feet may be harvested from the western parcel in 2007 and every fifteen years thereafter, and 400,000 board feet may be removed from the eastern parcel in 2007 and every fifteen years thereafter. There is potential to revise these quantities based on updated information.

Access to the timberland

All infrastructure required to reharvest the timber is present including roads, landings, and skid trails and was constructed in the 1992 harvest operation or earlier. The proposed partition line will divide this network. Notably, roads in the western portion are needed to reach the timber in "Campbell Canyon" and the road to "Redwood Point" is the best haul route for both properties. To ensure that the timber on both parcels may be commercially harvested in the future without the need for new excavation and its associated environmental risk, it is recommended that the parties grant reciprocal rights of way for commercial timber harvesting.

Recommendation 2: The parties shall grant to each other rights to use existing roads, landings, and skid trails for commercial timber harvesting and related activities (only).

Compatible uses

Historical uses of the property include timber harvesting and management, watershed, private recreation, and wildlife habitat. For a time, the owners also had a "camp" cabin on the property. These uses have been well coordinated by the earlier management plan which included buffers to protect wetland and old growth areas and provided for forest and ecosystem rehabilitation activities. As noted above, further adjustments have been made to the allowable harvest to provide for additional stream protection and visual buffers.

In TPZ, the following uses are considered "compatible" and would be feasible on the subject property: residential housing and developed recreation. At this time, neither of the partitioning parties anticipates that these or any other new uses will be made of the subject property. Accordingly,

Recommendation 3: Should either party propose residential, recreational, or other development of the subject properties, a new Timber Management Plan should be prepared to coordinate and integrate these uses and further adjust the allowable harvest as desirable or necessary.

Subject to these recommendations, I find that the 1995 forest management plan (actually a forest and timber management plan) provides suitable guidance for the management of the timber and other forest resources on the subject property and will adequately maintain the viability of these resources following the proposed partition.

Exhibits:

1) Summary of Timber Inventory, January, 2004
2) Surveyor's map of proposed partition
3) Map showing partition line, existing logging and transportation system
4) Mid-Butano Forest Management Plan dated March, 1995
5) Preparer's Qualifications

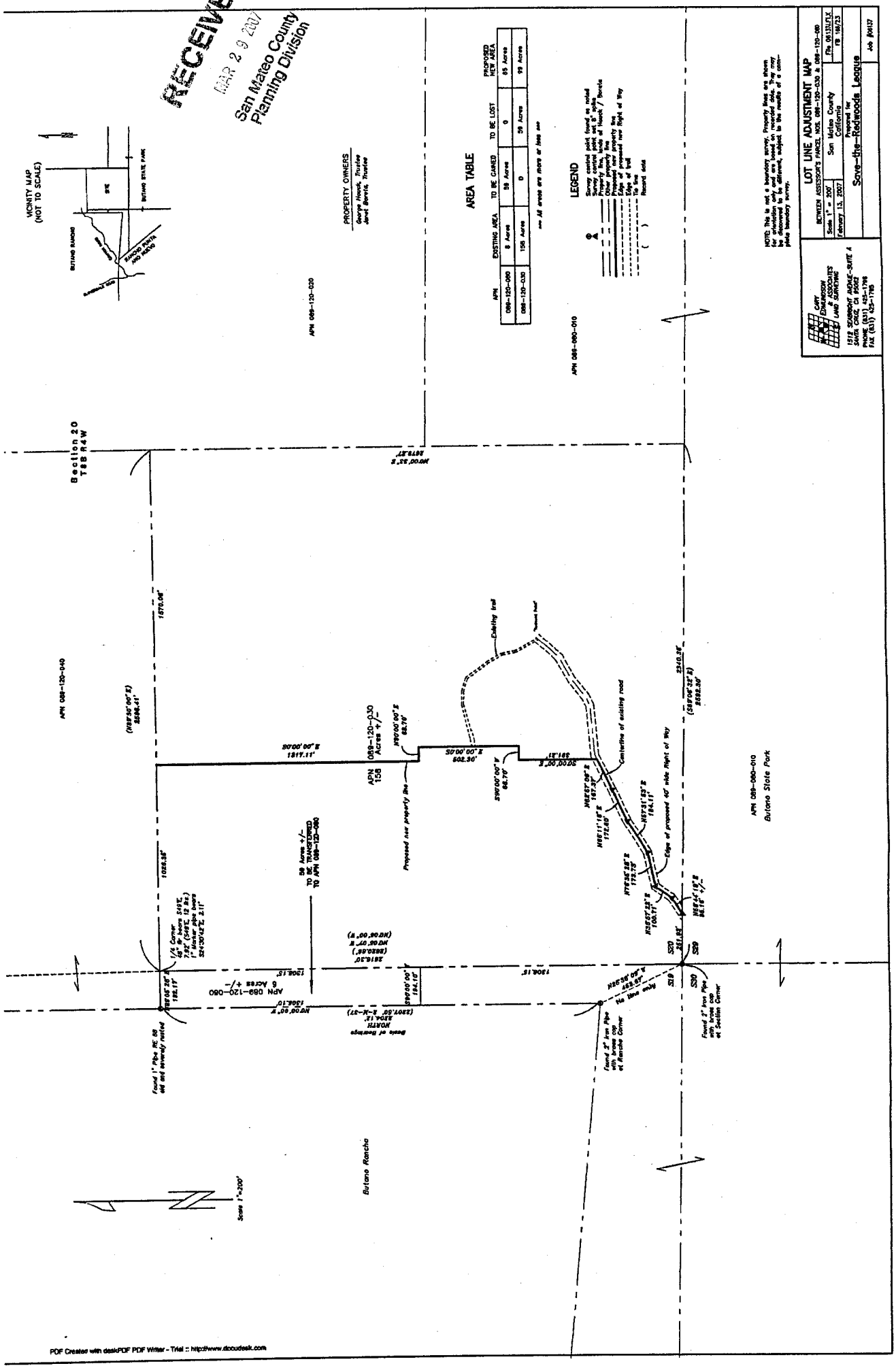
Summary of Timber Inventory
Mid Butano Tree Farm,
San Mateo County, California
January, 2004

Species and Diameter Class	Est. No. of Trees	Estimated Volumes in board feet: Gross Volume	Net Volume
Old Growth redwood (20 foot logs, Spaulding scale)			
28" inches and smaller	neg.	neg.	neg.
30-34	20	28,000	20,000
36-40	30	42,000	27,000
42-46	140	343,000	237,000
48-52	50	198,000	136,000
54-58	40	210,000	165,000
60+ inches	20	158,000	94,000
Total, old growth redwood	300	979,000	679,000
Young growth redwood (16 foot logs, Scribner scale)			
16 inches	710	154,000	145,000
18-22	1,400	613,000	577,000
24-28	1,130	932,000	863,000
30-34	380	524,000	476,000
36-40	290	574,000	521,000
42-46	100	272,000	241,000
48+ inches	80	269,000	242,000
Total, young g. redwood	4,090	3,338,000	3,065,000
Douglas-fir (16 foot logs, Scribner scale)			
16 inches	330	79,000	70,000
18-22	760	357,000	320,000
24-28	600	581,000	503,000
30-34	230	338,000	264,000
36-40	190	439,000	321,000
42-46	90	259,000	150,000
48-52	40	183,000	125,000
54+ inches	50	270,000	186,000
Total, Douglas-fir	2,290	2,506,000	1,939,000
TOTAL, commercial conifers	6,680	6,823,000	5,683,000

This inventory is based on 66 one-fifth acre circular plots arranged in a regular grid. On these plots, all merchantable conifers (16 inches diameter and larger) were measured. The standard error of the gross volume estimate is 6.4% (in other words, there is a two thirds chance that the actual gross volume is within plus or minus 6.4% of the stated figure, and equivalently there is a 95% chance that it is within +/- 12.8%). See accompanying text for explanation of methods, specifications, and limiting conditions.

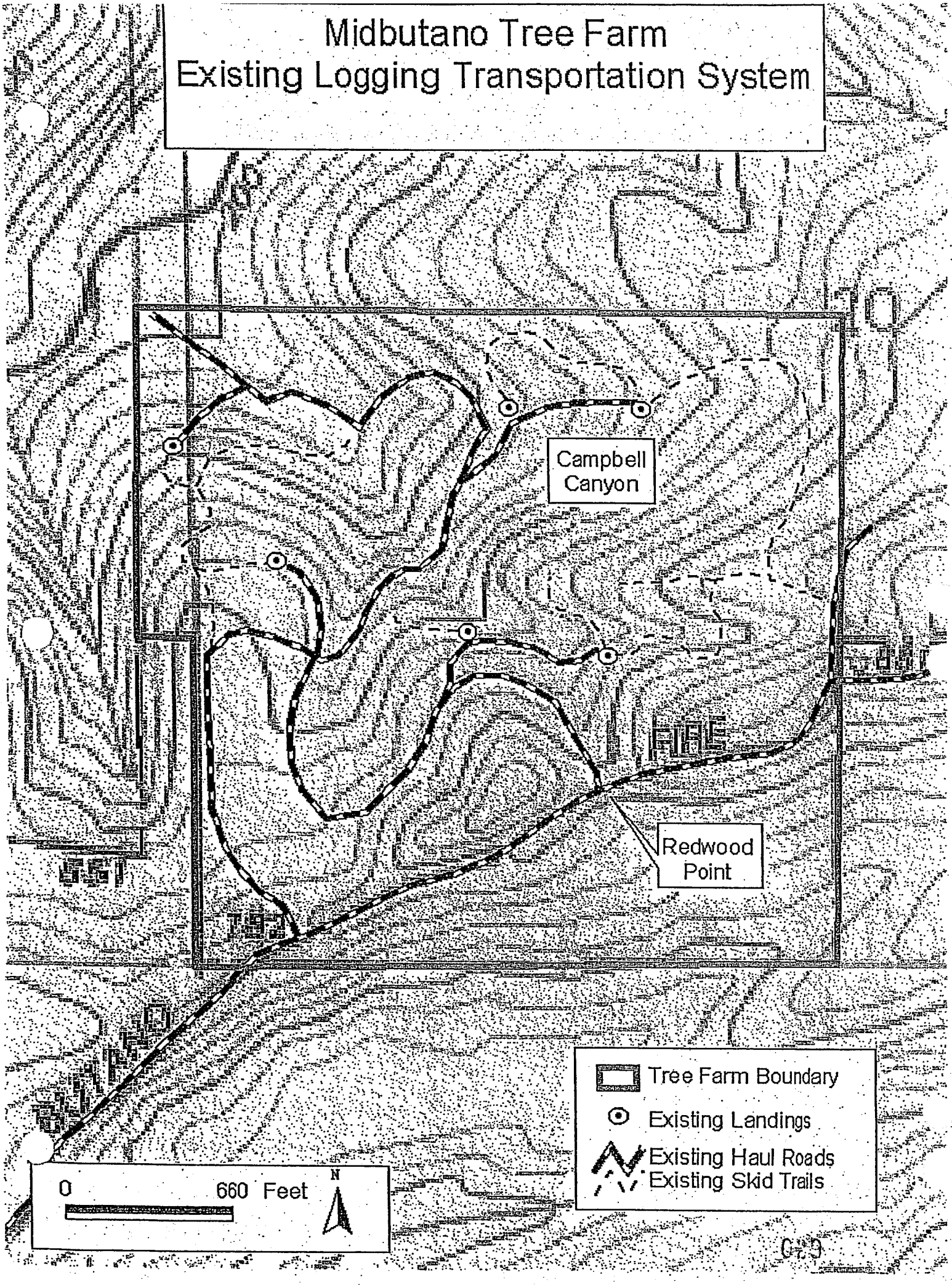
026

027



Insert topographic Map showing partition line, existing logging and transportation system (in preparation)

Midbutano Tree Farm
Existing Logging Transportation System



Original

MID-BUTANO

San Mateo County, California

FOREST MANAGEMENT PLAN

Stephen G. Smith
Forester
RPF License #1886

March, 1995

030

PREFACE

In January 1991 Stephen G. Smith was commissioned by George Houck and Janet Boreta, representing the landowners of Mid-Butano, to prepare a forest management plan on their 165 acre property adjacent to Canyon Road and between the Little Butano and Butano Creek drainages. The property is located in San Mateo County, Assessor Parcel Number (APN) 89-120-030 (160 acres) and 89-120-080 (5.8 acres). The 160 acres is classified as a Timber Protection Zone (TPZ). The landowner has a permanent seasonal residence on the property.

This plan incorporates currently available resource data including interpretation of timber stands using aerial photographs, soil conservation maps, San Mateo County data base, Department of Fish and Game natural diversity data base, field observation and data collection.

Initial field work was carried out March - May, 1991 with the assistance of J.P. Gray. After the Draft Forest Management Plan was completed, a timber harvest plan was developed for the property, THP #1-91-247SMO. This final Forest Management Plan incorporated changes from this harvest, completed in 1992 and forest improvements completed in 1993/4.

INDEX

GOALS and OBJECTIVES

MANAGEMENT GOALS

The overall goal on the Mid-Butano property is to both actively and passively manage the forest vegetation under three general strategies:

1. Ecological preserve,
2. Forest conservation,
3. Rehabilitation/tree farm.

The primary emphasis is to manipulate the redwoods and hardwoods to a situation similar to the pre-European historical setting while protecting, restoring and enhancing related values of wetlands, diversity, wildlife, recreation and aesthetics.

The overall management goal is based upon the following specific goals:

1. Correct past forest land abuses and increase forest vitality through a small but economic harvest.

2. Stabilize road, drainage network and stream banks by mitigating existing erosion problems and landslides.

3. Protect and improve wildlife habitat as much as feasible.

4. Achieve periodic yield of forest products by developing a long term sustained yield while promoting an old growth quality stand and habitat.

5. Maintain a high level of ecological and aesthetic values during all aspects of forest management.

6. Enhance current stocking and tree size by removing competing vegetation where conifers are being suppressed by each other, hardwoods or brush. Replant areas that support conifers where they have been eliminated through land abuse.

MANAGEMENT OBJECTIVES

Correct past land abuses using grants, cost share programs and timber harvest. Repair severe erosion and correct stand development problems and renovate the existing road system and install drainage structures.

1. Maintenance of key roads include brush control and maintaining of erosion control facilities. Important roads are identified and those no longer needed are to be abandoned, waterbarred and planted. Periodic long term inspection and maintenance of the basic road system will reduce fire hazard by providing limited access for fire suppression and prevent unwanted trespass.
(see FOREST PROTECTION)

2. Improve the watershed by stabilizing currently active slides and surface erosion. This will greatly enhance the water quality and fisheries of Butano Creek. Although this is for the public good, the landowner benefits from the resulting rehabilitation of tree growing ground and cleaner water.
(see EROSION CONTROL)

3. Provide for the periodic harvest of large high quality redwood. By perpetuating a cycle of cutting and growth while preserving the old growth forest diversity, a broad variety of tree sizes (old growth to sprouts) may be maintained throughout the stand.
(see ALLOWABLE HARVEST)

4. Improve wildlife habitat by cutting back native brush and releasing immature hardwood and fir, thus allowing continual sprouting which will benefit animals that depend upon those species for forage. Browsing will help slow the regrowth of the brush and possibly lessen browsing on fir seedlings. Tanoak removal within the hardwood forests will also improve the remaining tree growth and create short-term forage for wildlife.
(see WILDLIFE)

5. Maintain aesthetic and recreational value of the forest by combining recreation with timber production. Leaving the remaining old growth seed trees will not significantly affect overall timber production and will preserve these unique features for future generations to enjoy.

6. Enhance current stocking through planting and precommercial thinning. Dense clusters of redwood and Douglas fir should be thinned, removing sprouts that are misshapen and those on the tops and sides of stumps so that the healthy sprouts can thrive. Some of the areas now growing brush are capable of growing trees. If the brush is removed, the forest will be expanded by the release of conifer seedlings. The added growth will contribute significantly to the overall timber production on the property.
(see FOREST IMPROVEMENT)

7. Remove invasive plants. Scotch broom is invading the bottom riparian area from the Girl Scout property. Keep this plant out by removing it during the winter and spring. A continuous program of pampas grass removal near the slide will be necessary.

GENERAL PROPERTY DESCRIPTION

The property is identified by San Mateo County Tax Assessor's Parcel Number (APN) 89-120-080 of 5.8 acres and 89-120-030 of 160 acres. The 160 acres is zoned for Timberland Production (TPZ). The lands are also within the Butano Creek Watershed, an important watershed for San Mateo County. The property is within the California Coastal Zone but not within any special treatment zone.

The 165-acre property is located five miles southeast of the town of Pescadero, in southern San Mateo County. Mid-Butano lies between Butano Creek just west of the property and Little Butano Creek on the east. Hence the property located between the two Butano drainages is called Mid-Butano.

The property is a square parcel which occupies the south west quarter of Section 20, Township 8 South, Range 4 West, MDBM. A small 5 acre lot lies in adjacent section 19. State Parks owns adjacent parcels to the south and east, the Girl Scouts to the north, the Allen Tree Farm to the east and large ranches to the west.

General topography is flat on the ridge and moderate to very steep in the draw bottoms. Slopes vary from 5% near the residence area in the westem corner of the property, to more than 85% in the drainage bottom. Elevations vary from 200 to 900 feet above sea level.

Annual rainfall is 40-50 inches, falling mostly between November and March. Summers are cool due to the proximity of the Pacific Ocean. Summer fog keeps the forest moist the remainder of the year.

Vehicle access from Pescadero is via Cloverdale Road three miles south to the entrance to the Butano Fire Trail, thence approximately two miles to the property line.

The property is 85% forested. Redwood and Douglas fir are the commercial native conifers present on the property. The old growth redwoods were logged in the early 1950s and the Douglas fir were logged in 1963. The 1992 timber harvest started this phase of Mid Butano Forest Management Program. Principal hardwoods include tanoak, madrone, and live oak.

The property is a three-component forest: a) residual and old-growth trees uncut during the last harvest, b) young saplings which have grown since the logging of 1950s, c) the seedlings and sprouts from the 1992 harvest, and d) the hardwood/conifer/brush forest created by past harvesting and grazing activities.

HISTORY of FOREST MANAGEMENT and USE

Mid-Butano is and has always been a forest property and has been managed for timber production and related enterprises. It has been logged three times. The initial logging at the turn of the century used the slash and burn technique and thereafter the young redwoods sprouted prolifically creating a younger, but more vigorous forest. Most of the steeper portions of the property were not logged at that time.

For approximately 60 years the forest grew undisturbed. The next entry in 1953 was under Santa Cruz Lumber Company. The logging practices of the time made use of layouts, large tractors, employed the use of extensive landings and corduroy roads that were placed on steep slopes and drainages.

A large sawmill was established in the northwest corner of the property and was operated throughout the early 1950s. Access roads and skid trail systems were focused toward the mill and drainage bottoms were often used as roads. The redwood sprouts from this second cut are today about 70 feet tall.

The Mid-Butano Forest has been in the Houck/Boreta family since 1955, the year after it was logged. J.E. Greig became the Houck family forester, and in 1963 undertook a small harvest to reduce the high component of fir/hardwood and to release and replant the redwood. The majority of the larger fir trees were cut.

At this harvest time the current road system was emplaced and the drainages in the western half of the property were upgraded with erosion control facilities.

The old mill site was maintained as a working and living area and as an intermittent seasonal home for the Houck/ Boreta family until the storms of 1982 redefined the draw. The current generation of Houck/Boreta family owners have strong environmental concerns, with several members knowledgeable in fields of wildlife biology, botany and geology.

Today, the forest is continuing its recovery. All age classes of redwood are generally growing vigorously. The property has been split into three general management units: the Ecological preserve (E), the Rehabilitation/tree farm (R), and the Forest conservation area (F).
(see MAP)

Ecological preserves (E) have been established near the park boundaries, cabin sites and the wetlands. These are outside of the potential harvest areas and the only activities planned in these areas for the future will be to rehabilitate past problems. A mosaic of successful vegetation communities including wetlands are evolving in the drainage bottom where the mill once stood.

The rehabilitation areas (R) are portions of the forest heavily logged during the 1950s. The entire drainage had been moved and severe erosion has occurred due to poor road placement and drainage of the fire trail. Regeneration is excellent due to the 1963 thinning and in 1992 had a commercial thin to continue recovery.

This stand is 70 percent redwood and 30 percent Douglas fir. On the steeper slopes where the 1963 release did not occur, up to 50 percent hardwood replaces the redwood component. There are a few residual trees in the 30 to 40 inch range (seed trees) but the majority of the volume is in the 16 to 26 inch range. The largest number of trees are in the 8 to 16 inch class.

The forest conservation areas (F) have larger redwood and Douglas fir. There are a few of bonafide old-growth trees, a number of second growth trees in the 18 to 30 inch class and quite a number of suppressed trees in the smaller classes. These forests have been thinned from below to encourage growth in the 36 to 40 inch classes. The objective of the harvest in this area was to restore the forest community to a mature condition. The area south of the Butano Fire Trail has very large older fir and several flats that have been cleared once for pasture or grain fields.

A harvest by individual tree selection was proposed in 1991, designed to remove about 35 percent of the volume emphasizing second growth clump thinning and salvage of defective residuals. A Timber Harvest Plan was developed, #1-91-247SMO, and about 89 acres were harvested in 1992.

The harvest corrected the drainage systems damaged through earlier improper trail and road building as well as the poor drainage practices on the Butano fire trail and damage from the storms of 1982.

Several other upriver landowners are presently involved in ongoing selective harvest programs. The closest ones within a mile are the Allen Tree Farm, the Girl Scout property and Big Creek Lumber property.

With the 1992 harvest and for several years after, a percentage of the harvest proceeds (along with government assistance programs) have been used to upgrade stands, plant, and repair damaged drainages, wetlands and to stabilize slides.

DEFINITIONS and SYMBOLS

Definitions:

board feet ..... measure of wood volume 1"x12"x12"

bole..... trunk of a merchantable size tree

cruising..... process by which an estimate of the number of board feet and/or cords is determined.

conifer..... softwood, cone-bearing tree species suitable for commercial timber production (i.e. redwood, Douglas-fir)

cord..... measure of fuelwood volume; a stacked cord occupies 128 cubic feet (4'x4'x8'), and contains about 85 cubic feet of solid wood. One cord approximates 500 board feet

dbh..... "diameter at breast height" (tree diameter in inches, measured outside bark 4 1/2' above ground level)

hardwood..... non-conifer trees (i.e. tanoak, madrone, maple, live oak)

herbaceous..... non-woody seed plant (i.e. grass)

lop ..... to sever branches and trunks of cut trees so resulting slash will lie close to the ground

merchantable..... sound conifer trees at least 12" in diameter

net volume ..... tree volume remaining after deducting unmerchantable and cull material

old-growth..... trees older than 150 years

pre-commercial thinning ..... cutting in a pre-merchantable conifer stand (2-10" dbh) to reduce unwanted trees and improve growth on remaining trees

poles..... trees 4"-11" dbh

release..... freeing a tree (usually a conifer) from competition by cutting growth (usually a hardwood) surrounding or overtopping it

regeneration..... renewal of a tree crop, either by planting or natural seeding

residual growth..... mature trees (often of lower quality) left after original logging

riparian ..... stream and flood plain area along a watercourse

aplings ..... trees 1"-4" dbh

scalp..... vegetation removal, usually grass, down to mineral soil to prepare suitable seedling planting site

second growth..... trees established as seedlings after original old-growth logging; also called young-growth

seedlings..... trees less than 1" dbh

site index..... productive capacity of an area to grow trees, based on height of dominant trees at given age: often expressed as a numeral from I (good site) to V (poor site)

slash..... non-merchantable debris (i.e. limbs, chunks, leaves, etc.) resulting from logging, thinning, or fuelwood cutting

snag..... dead standing tree

stand..... tree community sharing characteristics which can be silviculturally managed as a unit

stocking..... number, or density, of trees in a given area

stumpage..... net value of standing timber to owner, exclusive of logging or trucking costs

sustained yield..... yield that a forest can continually produce at a given intensity of management

tsi..... timber stand improvement, the elimination or suppression of less valuable trees to increase growth rates of the more valuable ones

type..... any vegetation type currently on the ground, whether dominated by tree, shrub or grass species

vexar..... rigid plastic mesh applied over young trees to prevent animal browsing

Vegetative Type Symbols:

R	Redwood with Douglas fir
OG	Old-growth conifer
M	Mixed conifer and hardwood
M/B	Douglas fir, hardwood and brush
B	Brush/grass
W	Riparian

Soil Type Symbols:

BuE	Butano loam, steep
BuF	Butano loam, very steep
LmB	Lockwood loam, gently sloping
Rb	Rough, broken land
SaC2	Santa Lucia loam, sloping, eroded
SaD2	Santa Lucia loam, moderately steep, eroded
SaE2	Santa Lucia loam, steep, eroded

SOILS and SITE INDEX

There are three basic soil types mapped by the Soil Conservation Service (SCS) on the property. These are the Butano loams (BuE and F), rough or broken land (Rb), and the Santa Lucia loams (SaC2, D2 and E2). Each soil also has a county wide designator assigned to it by SCS. They are located on the soils map in the appendix.

The soils are derived from the Monterey shale formation, a white siliceous shale from the middle miocene. It is part of the old terrace landform where the Butano soils are on the side slopes and the Santa Lucia soils are formed on the old terraces.

Butano Series:
Butano loam, steep (BuE): 37 acres
Butano loam, very steep (BuF): 83 acres

The Butano is a deep forest soil and generally found on the moderate slopes (<50%).

The Butano series consists of well to excessively drained upland soils formed from siliceous shales. The native vegetation was Douglas-fir and redwood with some madrone, oak, ceanothus, poison oak, and scattered perennial grasses. Butano soils are extensive in the mountains in the southern part of the area at elevations above 600 feet. Runoff is medium to rapid, and the erosion hazard is moderate to high. Permeability is moderate. Effective rooting depth is deep and soil has good water-holding capacity. Soil is difficult to work and suitable only for forestry.

The Soil Survey of San Mateo discloses Site III (good productivity) for all the soils mapped on the property, and field observation indicates a redwood index of 130 (Site III) for much of the upper elevations. (This means that a 100 year old redwood tree should be 130 feet tall, however, this index is only an average, with both better and poorer microsites occurring throughout the property. Since economic returns from forest improvements are higher on better sites, rehabilitation should focus on the best sites whenever feasible.

The understory vegetation is typically that of a conifer forest. In moist areas, tanoak, madrone, and blue blossom ceanothus are the usual understory-associated species. On dryer sites (southfacing slopes or shallow soils), oak is the main hardwood; manzanita and poison oak are accompanying species. Where poor logging practices have eliminated the conifer overstory, brush and hardwoods have increased. Natural fir regeneration has been only fair.

Santa Lucia Series:
Santa Lucia loam, sloping, eroded (SaC2): 2 acres
Santa Lucia loam, moderately steep, eroded (SaD2): 9 acres
Santa Lucia loam, steep, eroded (SaE2): 25 acres

The Santa Lucia forest soils are found on flatter slopes and has surface rocks and stones. It is the more shallow of the two soils. It is rated by the SCS to grow poorer quality trees. The species and quality of trees growing on these mapped soils are better quality and show better growth than that expressed for Santa Lucia, more like the Gazos soil type.

These soils are usually shallow and excessively drained, supporting only the oak and brush. The deeper shale-like soils support the Douglas fir. Brush is also found on the Santa Lucia rock outcrop. These are not timber producing soils even though there are conifers mixed in this complex. The Santa Lucia soil is found on the upper portions of south-facing slopes. Effective rooting depth varies from 10 to 35 inches. Available water capacity is one to two and-a-half inches. Runoff is rapid and the erosion hazard is high.

The size and type of vegetation in the western portion of the property indicate that pockets of Butano and Gazos soils exist there. These soils are usually used for watershed and recreation purposes although in limited areas in the county where slopes are less than 20 % and with deeper soils, homesites have been established.

Other Soil Types:
Rough, broken land (Rb): 8 acres

The steep slopes are composed of miscellaneous land types and there is seldom more than a 10-inch thickness of soil material. The vegetation on the slopes is shrub with a few trees. The rock is mostly shale. This soil is not good for forest production.

Lockwood loam, gently sloping (LmB): 1 acre

Although mapped as a productive forest soil in 1954, the entire area mapped as Lockwood loam was graded into a flat area and used for a sawmill. The soil now supports a riparian vegetation with extensive redwood reproduction. With some manipulation, it can regain some site quality and be a productive site for redwood and riparian forests.

W RIPARIAN 7 acres

The riparian corridor begins at the northwestern end of the main property drainage where the vertical face levels off at 320' and continues in a north westerly direction descending to 200' before going off the property and emptying into Butano Creek. The current aspect of the property shows the effects of severe erosion, siltation and land movement caused by past indiscriminate grading used in turning the draw into a large landing and mill site.

The corridor has become a vast meander with several sub-drains for the drainage runoff. Several springs have appeared as a consequence of land movement. The area is overgrown with nettles, alders, blackberry, horse-tails, grasses and forbs. The area is also filled with the wood debris of the mill. This along with the accumulated sedimentation and slope movement constitutes the main impediment and dispersal of flow for the drainage prior to the 1992 harvest program. Through the harvest, the designed and naturalized drainage was identified and the old roads and trails were eliminated with the exception of the main access road. All trails and roads were put to bed using waterbars and outsloping the roadbed. The entire roadbed in this area was mulched, using logging slash and planted with annual grass and redwood seedlings. These roads were made inaccessible for unwanted motorcycle and 4WD trespassers. All waterbars and erosion facilities were focused into the main drainage.

042

TOTAL CONIFER VOLUME and GROWTH by TYPE

(Volume in board feet - net Scribner log scale)

Type	Acres	Vol./acre	Total	Growth/acre/yr.	Growth/yr.
R	66	22,720	1,498,200	410	27,000
M	32	19,200	614,400	345	11,000
M/B	30	4,500	135,000	80	2,500
B	16	200	3,200	5	50
W	7	neg.	---	5	50
OG	10	35,000	350,000	---	---
TOTAL	161**		2,600,800		40,600 @ 1.8%
TOTAL after 1992 timber harvest			1,650,800		32,520 @ 2.5%

* Growth rate prior to the 1992 harvest was 1.8%; post-harvest 2.5%.
** There are 4 acres in roads and disturbed areas.

HARDWOOD VOLUMES by TYPE

Type	Acres	Cords/acre	Total
R	66	8	528
M	32	13	416
M/B	30	16	480
B	16	2	32
W	7	1	7
OG	10	---	---
TOTAL	161		1463

This estimated data is for general information purposes only.

043

ALLOWABLE HARVEST and STOCKING ADJUSTMENT

GOAL

The ultimate program goal is to establish a healthy, old growth quality forest and habitat by harvesting diseased, defective and slow-growing trees. Each harvest should be viewed as an opportunity to adjust the size, spacing, and quality of the stand. Conifer volume should eventually average 38,000 board feet per acre over the 66 conifer acres and 26,000 board feet per acre over the 62 hardwood-conifer acres.

The goal of this prescription is to create an all-age forest with large sawlog quality trees which will maintain growth near the maximum for the site and, at regular intervals, permit harvesting of a portion of the merchantable timber.

STAND GROWTH

The concept of forest growth is best understood by remembering that:

1. Tree growth is actual physical size increase. As real volume growth, it is independent of economic inflation and discount factors.

2. Standing timber volume is best thought of as the principle and the growth as interest earned upon that principle.

3. Within a 20-year period, growth is expressed as simple, not compounded, interest.

The Mid Butano property is capable of growing 3.4 million board feet of commercial timber. The growth goal is to maintain a moderate 1.8% annual rate on a standing inventory.

By releasing young poles and saplings, planting conifers and controlling brush and hardwood growth for the next 10 years, a 2.5% growth rate will be achieved and the ideal stand should be realized in the following 20 years. At that time, a permanent non-diminished inventory of two million board feet (i.e.. principle) will be producing some 40,000 board feet per year or 900,000 board feet (i.e. interest) every 20 years; this will be the sustained-yield allowable cut.

HARVEST TIMING

The property's sustained-yield of 800,000 board feet could be removed every 20 years. An earlier entry, such as in 10 years, would extend the 2.5% growth rate but would reduce the management object of maintaining a fully stocked stand. A compromise of 15 years could be sufficient to carry out remedial stand treatments and salvage mortality, but long enough to minimize aesthetic disturbance and allow release growth to accumulate.

OBJECTIVE

To meet the above stated goal, it is necessary to develop a forest which, following cutting, will contain an equal number of trees in each of three diameter classes: 12"-24", 24"-36" and 36"-60". Trees less than 12 inches in diameter are considered the reproduction pool. Trees over 60" are considered part of the residual "old growth", replacing those lost during the past rotation.

MARKING CONTROL

To be certain that the forest is harvested in accordance with this prescription, the trees to be cut should be marked before harvesting commences. Young-growth redwoods generally grow in small, easily distinguishable clusters. Marking should proceed on a group by group basis so that the entire stand is treated uniformly. Unusually large patches of timber should be arbitrarily subdivided into groups of about average size (7-10 trees).

ENTRY CUTS

The 1992 harvest marked the trees for spacing. While spacing has the overriding consideration, whenever possible, an effort was be made to achieve an even distribution of trees among the various diameter classes.

MARKING GUIDELINES USED IN 1992

1. The trees 18 inches in diameter and larger were thinned by removing the fewest number which would provide growing space between all residual trees in a relatively uniform manner. In this case this often meant marking every third tree. The same was done in groups where the trees are primarily in the 12 to 18 inch diameter class.

2. In-so-far as possible, about an equal number of trees in each of the diameter classes was left.

3. The larger hardwoods that remained after the 1992 harvest program were removed.

4. Within the above guidelines as many as possible of the merchantable-sized defective trees were removed.

5. The trees were cut in areas of brush and hardwoods to allow for sunlight on the ground where new trees were planted in 1993.

CONTINUING CUTS

The principal objective of continuing cuts is to release suppressed trees so that all trees continue to grow at favorable rates. Besides releasing overcrowded trees, further adjustments in spacing may be necessary to reduce competition among younger, closely spaced trees.

MARKING GUIDELINES

1. Cut the trees over 36 inches in diameter, except to permit old growth recruitment.

2. Thin the trees 12 to 36 inches in diameter as necessary for allowing growth release in the remaining trees, leaving in so far as possible an equal number of trees in each of the diameter classes.

3. The total number of trees cut should equal no more than 35 percent of the trees 18 inches in diameter and larger.

4. Within the above guidelines, remove as many as possible of the merchantable sized defective trees.

IMPORTANCE OF FOREST IMPROVEMENT

The predicted yields are based upon a program of recommended thinning all sites suitable for timber production. The few remaining unstocked areas should be planted and kept free from competition. All young trees from the 1992 harvest should be pre-commercially thinned by the time they are at least 15-years of age. All mature timber should be commercially thinned at 45 years of age.

3,000 redwoods were planted in January, 1993 and 1,800 Douglas fir were planted in February, 1994.

Any departure from this program will increase the time until commercial harvest and/or reduce yields at the time of that harvest.

HARDWOODS

About 1,472 cords of hardwood exist on the property. The short distance from markets and high stumpage encourages a commercial fuelwood operation. Fuelwood cutting can be a valuable tool used to improve conifer stands. Unfortunately, the problems and road damage associated with unwanted trespassers and fuelwood operators can hinder this approach to forest improvement.

Considerations of hardwood management:

1. Select fuelwood from hardwoods overtopping or competing with conifers. Extreme care should be used to avoid damaging the conifer when the hardwood is cut or skidded.

2. Retain large hardwoods for wildlife, especially live oak. If over 16 inch dbh, 4-6 trees per acre are adequate. Retain hardwood snags for wildlife where feasible.

3. When cutting hardwoods for fuelwood, retain straight, thrifty trees and cut defective, low-quality trees.

4. If sprouting is desired, cut all stems from a multiple- stemmed trunk. If trying to discourage sprouting, cut only half the stems.

5. Cut hardwood stumps as low as possible.

6. Designate a specific fuelwood cutting area, preferably in an area where conifers will benefit (i.e.. to release conifers or prepare planting site). Mark trees to be cut and conduct all cutting in this block before moving on to the next fuelwood management block. Lop all slash.

7. Retain live oak and seed producing madrone for wildlife. Approximately 10% of these species produce 90% of the species seed.

TIMBER MARKETS--SAN MATEO COUNTY

The State Board of Equalization has established the following young growth harvest values:

	1992	1995
redwood	$290 per MBF	$450 per MBF
Douglas-fir	$250 "	$350 "

Average costs for logging and truck hauling have already been subtracted to arrive at these values. Considered an average of actual stumpage sale prices, these values give an idea of standing timber worth. Logging conditions, haul distance and timber quality all raise or lower these averages accordingly. As noted in the 1992 harvest, figures were reduced due to the small size of the trees and the distance to the mill (Harwood Timber)

Sawmills along California's coast generally desire redwood. While 12 inches is considered the minimum merchantable redwood tree diameter, larger trees obviously bring higher prices. Several mills pay a premium for logs which scale over 20 inches on the small end. It may be advisable to harvest trees on a longer rotation than the usual 80 years. The value gained resulting from the larger diameter more than justifies the extended cutting cycle time.

Douglas-fir is often sold as an "incidental" species, making up 10-30 percent of the total sale volume. The possibility of selling Douglas-fir poles should not be overlooked. A 40 foot fir log (7"x12"), when sold as a pole, earns 100-200% more than if it were sold as a sawlog. Even during periods when it is difficult to sell fir sawlogs, the market for quality poles generally remains strong.

To make timber more saleable, it is often useful to combine several small property sales. This increased volume offers economic operating advantages to a logger and ultimately higher stumpage returns to each of the landowners.

FOREST IMPROVEMENT

Pre-commercial Thinning

The redwood and Douglas fir should be thinned when they are 10-20 years old. Unfortunately, many of the stands on the Mid-Butano property have been overcrowded for more than 40 years. The cost effectiveness of this program is quickly reduced when diameters exceed 6 inches. By reducing the number of stems per acre, more recoverable growth will occur on fewer but higher quality stems. Desirable trees have at least 1/3 their height in vigorous crown. Poor quality trees should be weeded out and the well-formed dominant trees retained. Spacing will vary from 10-14 feet, depending upon size. During the 1992 timber harvest, over 35 acres were treated precommercially.

Hardwood Release

Where hardwood trees crowd or overtop conifers, severe loss in conifer volume occurs. Besides reducing fir growth, hardwood competition can mechanically injure conifers. Overtopping hardwoods should be removed from near growing conifers by careful falling practices. If the hardwoods are to be used for fuel, added care should be used when removing them from the woods; conifers should not be scraped or knocked over in this removal operation.

Hardwood release should be conducted concurrently with pre-commercial thinning. Slash generated by thinning and release should be lopped to within 30 inches of the ground and pulled back 20 feet from roadways. The 1992 harvest eliminated the solid groups of hardwoods around redwood stands.

Conifer Planting

As was done in the 1993/94 tree planting, continual future planting will be done with bare-root seedlings from a local seed source. 3000 redwood and 1800 Douglas fir were planted after harvest. Future redwood and Douglas fir should be two-year old stock. Spacing should be 10x10' (400 trees per acre). However, it is much more important to plant in the best microsite than it is to adhere to strict spacing criteria. Planting should occur as soon after January 1 as possible. Favorable survival has been demonstrated when fir is planted in areas where 50% of the day's sunlight reaches the ground.

A significant area in need of planting is in the Little Butano drainage on the south side of the property. There are several flats which have overgrown with brush; these would require tractor site preparation, planting and follow-up procedures.

See the appendix for a University of California cooperative extension publication titled Planting California Forest Lands.

Site Preparation

Where hand scalping is required, scalps should be 30x30 inches and should remove all sod down to mineral soil. This is extremely important when planting in the grassy areas. Competition is perhaps the main reason for plant failure.

Brush crushing is the preferred method of equipment site preparation. Unlike windrowing or piling, bulldozer crushing leaves the soil in place; the crushed debris acts as a mulch to protect the soil. If some piling and burning is required, re-blade the topsoil out of the piles and back onto the site as soon as feasible; plant the re-bladed area. The 1992 harvest opened trails to place erosion control measures and

closed unwanted drainages. These areas were planted since no more operations are planned in these immediate sites.

Follow-up

By quickly re-occupying a disturbed area, grass and brush offers intense water competition to seedlings. Depending upon local conditions, it may be advisable to discourage this new herbaceous growth in two non-chemical ways:

1. Hand cultivate weeds around seedling
2. Apply fiber matting mulch to keep down weeds
3. Mechanically till or mow grass and brush

This follow-up will generally be needed on the planted seedlings.

Deer browsing on Douglas-fir can be eliminated by applying vexar to each seedling. Vexar tubes should be 3 1/4 inches in diameter and at least 15 inches long; they should be securely staked with a 1/4 inch bamboo rod and placed on the windward side of the seedling. Vexar can also be slipped over leaders of larger established saplings that show a history of deer browsing. Scotch broom will naturally invade from a seed source from the Girl Scout property. This species will compete with the planted seedlings.

Pruning

Conifers along roadways and in high visibility areas should be pruned to a height of 8-16 feet. This pruning will improve visual penetration and aesthetics, and act as a shaded fuelbreak. Limbs should be cut flush with the trunk, taking care not to scar the tree bole. Hand pruning, though more time-consuming, produces better results than a chain saw; it is also much safer when cutting overhead.

Fire Protection

Roadside pruning and lopping of all slash and debris reduces fire hazard. Slash generated through pre-commercial thinning, commercial thinning, fuelwood cutting, release operations, or site preparation has been either lopped or crushed to within 30 inches of the ground or removed off site. Slash should continue to be pulled back at least 20 feet from well-traveled roads. All future operations need to follow these same requirements.

Chainsaws and other equipment should have spark arrestors and should not be operated during fire season unless a portable fire extinguisher is within 25 feet (California Public Resources Code sec. 4431). Ideally, pick-up trucks and other private vehicles should carry a shovel, ax, scraping tool (Mcleod), and a 5-gallon portable backpack (filled with water).

All structures must meet vegetation clearances that are required state law. An extended shaded fuel break is also recommended to keep fires originating in the forest as well as fires originating in the structures and roadsides.

The appendix has some general guidelines for fire protection as well as a description for a shaded fuelbreak.

Government Cost-Share Forest Improvement Incentive Programs

Two federal programs: the Agriculture Conservation Program (ACP) and the Forestry Improvement Program (FIP) provide incentive payments for site preparation, planting, pre-commercial thinning, and

hardwood release. Payments vary from 60 to 75% of the total project cost.

The state sponsors the California Forest Improvement Program (CFIP) through the California Department of Forestry (CDF). Eligible practices include those mentioned above, as well as wildlife habitat improvement and erosion control. The CFIP program currently pays up to 75% of the following cap rates:

Pre-commercial thinning and release	$260/acre
Planting (trees & labor)	$140/acre
Site Preparation	$200/acre
Follow-up (grass control, vexar, etc.)	$110/acre
Erosion control, wildlife habitat, cons.	no cap rate

This program was used following the 1992 harvest. Over 4,800 trees were planted and 35 acres of forest was pre-commercially thinned.

In 1994, the Stewardship Incentive Program (SIP) was used to fund additional planting but not used due to funding technicalities.

Priority 1

1. Pre-commercially thin and release:
   - all Douglas-fir and redwood saplings
   - hardwood removal
   - 10 acres/year
2. Erosion Control:
   - stabilize road drainages associated with old logging roads and land movement caused by the storms of 82/83
3. Plant:
   - redwood and Douglas-fir in R and O vegetation type
   - locations on Map #3
   - 15 acres

Priority 2

1. Plant:
   - Douglas fir in M and M/B vegetation type
   - opening in hardwood canopy
   - locations on Map #3
   - 10 acres
2. Erosion control:
   - plant/stabilize eroded areas caused by old roads and movement
3. Wildlife Habitat
   - rehabilitate fisheries on Butano Creek
   - locations on Map #3
   - several long term projects

Priority 3

1. Erosion Control:
   - plant/stabilize road surfaces and eroded areas as they occur

050

WILDLIFE and FISH HABITAT

Though wildlife may be a passive goal of forest management, every attempt should be made to enhance habitat when possible. Wildlife habitat can often be improved as a by-product of forest management with little or no extra cost.

Since wildlife numbers increase in direct proportion to habitat diversity, small interspersed blocks of different vegetation (i.e. grass, brush, forest) produce more animals than large unbroken expanses of only one vegetative type. Wildlife prefers this "edge" effect between two or more habitats. For example, deer prefer the meadow-forest edge so they may obtain food from the grass and cover from the trees.

The riparian corridor at the base of the Mid-Butano property will now provide a significant wildlife habitat. Higher moisture here provides sites limited elsewhere by inadequate water. This leads to vegetation diversity, providing nesting/roosting/ feeding bird habitat. Mammals utilize drinking water and grass remains green longer into the summer than in adjacent areas.

The property is home to common mammals and birds of the Santa Cruz Mountains. The most noteworthy game species include black-tail deer, California quail, wild pig and band-tail pigeon. Secretive nocturnal behavior make the bobcat, coyote, marbled murrelet and striped skunk less likely to be seen.

The following recommendations are intended to increase wildlife numbers by managing one or more of the essential requirements of all animals — food, cover and water.

Sprout Management

Since lack of suitable browse (shrubs) often limits coastal deer populations, attempts should be made to maximize young sprouting brush, especially live oak. Insure that stumps are cut low to keep sprouting within reach of deer. Favor sunny roadside locations. By re-cutting sprouts every 3 to 4 years, a continual supply will always be available.

Seeding

During erosion control, seed bare ground with forage species favored by wildlife. Quail prefer legumes. Add native lupine, or clovers to non-reproductive or native grass mixtures.

Brush Piles

Dense cover protects quail, small mammals, and songbirds from predators. Dead brush is preferred over live brush. When piled over a log or rock, limb pruning or thinning slash make effective, inexpensive shelters; they need only be 2-4 feet high and 6-8 feet wide. Meadow edges and roadside locations, especially near water, are prime areas for shelter construction.

Snag Retention

Snags, where fire considerations permit, should be retained. They are an absolute requirement of optimum wildlife forest habitat. Mammals build their dens in them, raptors perch in them, woodpeckers feed in them. Ideal snag density is:

diameter	number per acre
18" plus	2
12-18"	4
6-12"	12

Soft snags (fir or tanoak) are preferred over hard snags (redwood) since they are more easily excavated. Where snags are lacking, hardwoods or cull conifers can be girdled to create them.

Downed Logs

Reptiles, amphibians, and small wildlife live within and around old downed logs. Wildlife value is proportional to log diameter and length, with logs on the contour being more utilized than those lying perpendicular to the slope. Merchantable logs can be salvaged, but others should not be disturbed; they serve as a "prey base", attracting larger wildlife to feed upon the smaller log dwellers.

Hardwood Retention

Large hardwoods, especially those with rotten cavities, are favored by wildlife. Cavities are excavated by woodpeckers into denning sites for mice, owls and squirrels. Madrone berries attract migrating band-tail pigeons. Live oak acorns are particularly valuable to wildlife although only 25% of the trees may produce over 75% of the acorns. These few productive individual oaks and some other healthy hardwood trees at Mid-Butano should be recognized and given priority for protection even at the expense of conifer growth.

Precommercial Thinning, Commercial Harvest, Fuelwood Cutting

These activities have the beneficial effect of opening, at least temporarily, the forest canopy. Increased light encourages herbaceous forage that larger wildlife such as deer can utilize. As the canopy closes, wildlife values will decline until the next cutting re-opens it.

Forest Protection

Browsing by deer on Douglas-fir can also be a problem. Apply vexar to all fir seedlings. Where existing fir have been stunted by deer browsing, apply vexar to the apical leader until the sapling outgrows the reach of deer. Do not vexar all such trees, select them on a 10x10 foot grid.

Wild Pigs

Little is documented concerning behavior of wild pigs in the coastal forest setting. Subsurface "rooting" disturbs and turns over upper soil layers. On gentle terrain, this activity probably has an overall beneficial effect of mixing organic surface material with deeper soil. Since extensive rooting rarely occurs on steep slopes, this is probably not a problem.

Pig wallows can contribute to erosion when constructed in forest roads. On several properties in western Sonoma County, pig wallows have curtailed road use by causing deterioration of the running surface, soil erosion and impaired drainage. Short of depredation hunts, there seems little that can be cost-effectively done to eliminate pig-forest interactions.

Anadromous Fish Habitat

Houck Creek at the northwest corner of the property shows gradient (less than 5%) favored by trout and steelhead. There were several locations noted on the creek where passage for the spawning fish was impaired because of waterfalls, debris silt and continuous seasonal flow. Major rehabilitation work was conducted on this section of the creek in 1992 to benefit the Butano Creek fish habitat. Reducing these upstream sediment sources was the first step in its long term recovery program.

Marbled Murrelet

There is possible habitat of the Marbled Murrelet on the adjacent State Park property. Murrelets use old growth stands as nesting sites which are abundant in the Butano Drainage, especially in the State Parks. Surveys were conducted on the Mid-Butano in 1990 for this endangered species. At that time only one bird was noted as a "fly over" and the Mid-Butano has since been considered part of the Butano flyway for Marbled Murrelets. As young trees grow next to residual old growth, a Marbled Murrelet habitat will be encouraged.

EROSION CONTROL

Soil erosion is influenced by climate, geology, topography, soil type and vegetative cover. Any artificial disturbance of the natural soil mantle or associated vegetation leads to accelerated erosion which may progress at rates thousands of times faster than natural erosion.

Disturbance of soil through excavation, paving, building, cultivation, vehicular or foot travel, animal activity or removal of vegetation by fire or reforestation, causes increased runoff. This occurs under several circumstances on the Mid Butano such as: a) when the soil is directly exposed to the impact of raindrops they cause a drastic reduction in infiltration and percolation capacity; this is due to direct compaction of the soil by raindrops and a reduction in porosity due to the sealing of natural pores and channels by clay particles dislodged by raindrop splash and b) when natural drainages and streams are intercepted or modified, forcing the channeled water onto unarmored soil.

Roads

In most areas where logging has occurred in California, roads become the major sediment contributors. It has been demonstrated that whenever road length exceeds two miles per square mile of creek basin, critical sediment loads can enter streams.

Roads along creeks should be constructed with small catch basins below water bars to trap sediment from running directly into the stream. Just prior to the wet season, road drainages should be checked to insure full operation. Walking the roads with a shovel to correct immediate problems during the first significant storm is the most cost-effective method of curbing erosion and preventing future water flow problems.

The hand-dug waterbars on the logging roads should be maintained. There are several spots along these roads where the fill slope have been armored to carry water in natural drainages below the road. This will eliminate drainage cutting and soil loss from the downhill side of the road.

To prevent further unnecessary damage and expense, the permanent road system noted on Land Management Map must receive regular biannual maintenance, particularly during the rainy season. On permanent but seasonal roads, waterbars have been installed by hand or tractor at intervals no greater than 50 feet on significant grades these intervals would result in water discharge over erodible fill. Practical considerations should guide waterbar spacing, remembering that the object is to prevent excessive accumulation of water and to dissipate its erosive energy.

There are eight locations on the permanent road system where drainage crossings are to be used. Culverts were not recommended, but the road has been severely dipped to allow free drainage flow across the road.

The State Forest Note on waterbreaks, found in the appendix, provides a helpful guide.

Whenever possible, exposed soil should be kept to a minimum by mulching bare areas with straw or logging debris, accompanied as necessary by seeding with grass and legumes. Seeding and mulching are particularly good methods for protecting road surface and fill slopes. By maintaining vegetation on the surfaces and edges the potential for brush invasion is reduced. When seeding, use either native or non-reproductive grasses.

In combination with good waterbars, mulch, such as logging debris crushed on skid trails, is probably the most effective means of controlling erosion on steeper slopes and trails. This practice was used in the 1992 harvest.

Forest Management.

Reforestation and harvesting activities usually involve a great deal of soil disturbance, and the development of large, impervious surfaces. This can result in increased runoff and soil erosion. The resulting damages may amount to thousands of dollars. Because of the magnitude of the problems created, careful consideration must be given to the hydrologic impact of reforestation activities during the planning stages. The Houck harvest plan emphasized erosion problems with harvesting on this property. This plan is in the addendum.

There are three primary reasons for high erosion rates:

1. Erosion rates are closely related to vegetative density. Low summer rainfall produces less vegetative cover; therefore, more soil is exposed to forces of erosion.
2. In Mediterranean climates such as the Santa Cruz mountains, most rainfall occurs during the winter period when temperatures are too low for rapid vegetative growth.
3. Short duration rainfall intensity is as high or higher than many areas where three times as much rainfall occurs. Short duration intensity is often more important than total rainfall in influencing erosion rates.

These conditions not only have an influence on natural erosion rates but greatly magnify erosion on disturbed areas and hamper revegetation efforts. The single most important factor relating to erosion and runoff is vegetative cover. A selective type harvest (such as the 1992 operation) and adequate vegetation cover both function in several ways to reduce erosion and runoff:

1. It protects the soil from the direct impact of raindrops and surface flow.
2. It decreases runoff by increasing infiltration and percolation capacity of the soil.
3. Its roots hold the soil in place.
4. Dead leaves, twigs, limbs and other vegetative matter produce litter and humus which protect the soil surface and provide additional water storage capacity.

Vegetative cover found on the Mid-Butano property varies from dense forests with heavy understory to a sparse cover of annual grasses and forbs. The ability of vegetation to protect the soil from erosion increases as density and root depth increase. Heavy forest cover provides the best protection, brushlands provide intermediate protection; and sparse grassland provide only minimum protection.

The role of vegetation in protecting the soil was well illustrated in a U.S. Forest Service experiment comparing erosion on soils having grass cover of varying density. At rainfall intensities comparable to that of the Santa Cruz Mountains, it was found that as little as 10% grass cover reduced surface erosion by 50%; and 40% grass cover reduced erosion by 95%.

Landing and skid trail standards took into account soils, topography and vegetative characteristics. As a general rule, steep grades were avoided altogether and drainage disturbance kept to a minimum. Drainages were probably the most important consideration in the trail design construction. It is imperative that effective drainage be provided at all points of runoff concentration caused by trail construction, including natural drainages, cuts and fills, as well as the trail surface itself.

The harvest plan shows the logging roads identified for permanent long-term use. The remaining unidentified roads were reshaped back to their original contour and not used again. When skidding and preparing reforestation sites on steep areas it was important to establish a permanent vegetative cover on all disturbed slopes. Slash was packed into these slopes as an mulch cover.

The following steps were taken to prevent accelerated erosion due to site preparation activities and should be used in all future operations.

1. Minimizing on-site erosion. Leave as much of the site undisturbed as possible. Limit disturbances to specified areas. Leave vegetation that will not interfere or compete with the new trees on the site. The more topsoil and vegetation removed from an area, the greater the chance of erosion.

2. Use of woody debris. On highly erosive or steep ground, cutting up and laying large and small woody debris across the slope will help prevent on-site erosion.

3. Plant seed. For temporary protection, plant grass seed mixture in the Fall on large exposed areas to give temporary protection. Apply mulch as needed. For long-term protection on steep sites, plant native shrubs and grasses along with the established tree seedlings.

4. Use native vegetation. Native grasses and other native vegetation require the least care of any planting materials. These plants require little or no watering or fertilizer, and can grow on difficult sites.

5. Direct water runoff away from erodible areas and into natural drains. If natural drainage is not available, direct runoff onto well-vegetated areas or other downstream areas not prone to erosion.

6. Checkdams or energy dissipaters. Energy dissipaters will slow down the movement of water and reduce its capacity to carry soil. Checkdams can be used in conjunction with sediment basins to keep soil on the site. Leaving woody debris across the slope on highly erosive sites or steep areas, will slow soil movement down slope.

The best way to prevent erosion is to be on site during the significant first rain and watch for problems. The principal sediment sources on the Mid-Butano property aside from road and road reconstruction runoff are naturally-occurring slides and stream cutting.

For future assistance in the selection and design of erosion control structures, consult the U.S. Soil Conservation Service.

Slides

There is little that can be done to prevent slides in areas away from human activity. The slide removed for the harvest will slowly move back into the road again. Management should focus on minimizing further slide-induced sedimentation. Slides should be seeded in the autumn. Seed mixtures and application rates include annual rye and barley at 30-50 lbs. per acre for a quick, temporary cover. When seeding late in the fall, barley is preferred because of its cool weather growing ability. Rye grass is not a long-term solution since it tends not to reseed and requires plenty of sun. Scatter seed by hand. Apply 1/2 lb. per 1,000 square feet. On steep sandy sites, use two bales (100 lbs.) per 1,000 square feet. Anchor down with plastic netting and metal staples.

056

If possible, rake or drag the seed into the soil. Mulch with straw at a rate of two tons (50 bales) per acre. Use a shovel to "tuck" the straw into steep slide areas. Where it is not possible to get straw to the site, brush and limbs cut from nearby hardwoods can be used as a mulch.

If at all possible, water running onto the slide should be diverted. Hand ditching at the head of the slide scarp is sometimes all that is needed to remedy the situation.

Stream Cutting

Log jams must be removed when they contribute to bank erosion. Debris should be removed during low water and placed well above the high water line. However, woody material embedded in the stream channel should not be removed: this material creates waterfalls and pools, slows water velocity and provides habitat for aquatic life.

Careful evaluation should be made of debris jams and their relationship to bank cutting. Ask if the jam is contributing to bank cutting and would its removal change the stream channel and cause even more erosion. Areas exist along Houck Creek that may benefit from rip-rapping channel diversions. Always contact state Fish and Game before any work is conducted in the creek.

057

FOREST PROTECTION

There are a number of potential problems that could seriously affect the future of this forest. Natural pests such as insects, disease and/or fire can damage or destroy the forest. Unnatural pests, usually associated with people, can also cause significant problems to the forest.

Insects and Disease

Redwoods in a redwood forest have very few pests, all which are minor and will not affect the forest as a whole. The Douglas fir, however, is affected by a number of diseases and insects.

The most notable insect in this area is the Douglas fir engraver, Scolytus unispinosus. This minor beetle develops a large population in weak or overcrowded young fir stands during times of drought and can spread into older, healthier firs.

The hardwoods also have diseases and insects that can be a problem. Most of these pests are not fully understood but there is a cyclic pattern to most of their occurrences. When there is an outbreak of a pest problem, the CDF forest advisor is usually available to evaluate the situation and give remedial advice.

The most serious pest to the redwood forest (besides man) is a non-native insect, Gypsy Moth, which can thrive in this forest very well. It has been found once in the Felton area and has been successfully eradicated. All steps must be made to keep this insect out of this area or serious long-term problems will permanently alter the redwood forest ecology.

Fire and fire prevention

As noted in the appendix and in the Forest Improvement section, fire prevention is the best tool to keep fire from destroying this forest. By maintaining noted clearances for structures, creating a shaded fuelbreak along roads and maintaining an accessible road system, most fires can be controlled. Since people cause 98% of the fires in the urban-rural counties, another important step in prevention is maintaining property security.

Property security

Currently there are three usable access roads into the Mid-Butano property; Butano Fire Trail from the east and west, and Mill Road from Canyon Road on the north western boundary.

There is a CDF gate on the Butano Fire Trail at Cloverdale Road. This gate is locked at all times and the keys are available only to local property owners. Access from the east on Butano Fire Trail is also interrupted by a gate on the eastern portion of the trail several miles outside the property boundary.

Mill Flat Road is the property's alternative access from Canyon Road. This access is barred by a log at the property boundary. Additional security measures may be necessary if unwanted use is evident.

Fir seedlings were planted in 1994 at Vicky Point to eventually provide a screen, hiding access trails. Also the original (1956) cable and posts were reinstalled in 1992. a log was placed on the main haul road 50 feet from its entrance on the Butano Fire Trail.

SUMMARY of GENERAL RECOMMENDATIONS

1. Implement Sustained-yield Forestry Program

   a. Maintain vigorous, healthy timber stand.
   b. Cut tanoak for chips and firewood.
   c. Establish 1.7% annual growth rate on permanent inventory of two million board feet.
   d. Remove sustained-yield harvest goal of 750,000 board feet every 20 years.
   e. Commercial thinning in 20 years.
   f. Commercial harvest in 40 years.

2. Control Erosion

   a. Create a permanent road drainage system.
   b. Reestablish natural drainages.
   c. Stabilize, plant or seed and mulch slide areas.
   d. Evaluate stream channel and wetlands for protection. Use F&G technical and financial assistance.

3. Implement Forest Improvement Program

   a. Utilize incentive cost-share programs to assist in accomplishment of management goals including erosion and wildlife.
   b. Pre-commercially thin and release young poles and saplings.
   c. Plant redwood and Douglas-fir on suitable sites as specified and prioritized.
   d. Apply vexar to newly-planted fir seedlings and those fir saplings showing evidence of deer browse.

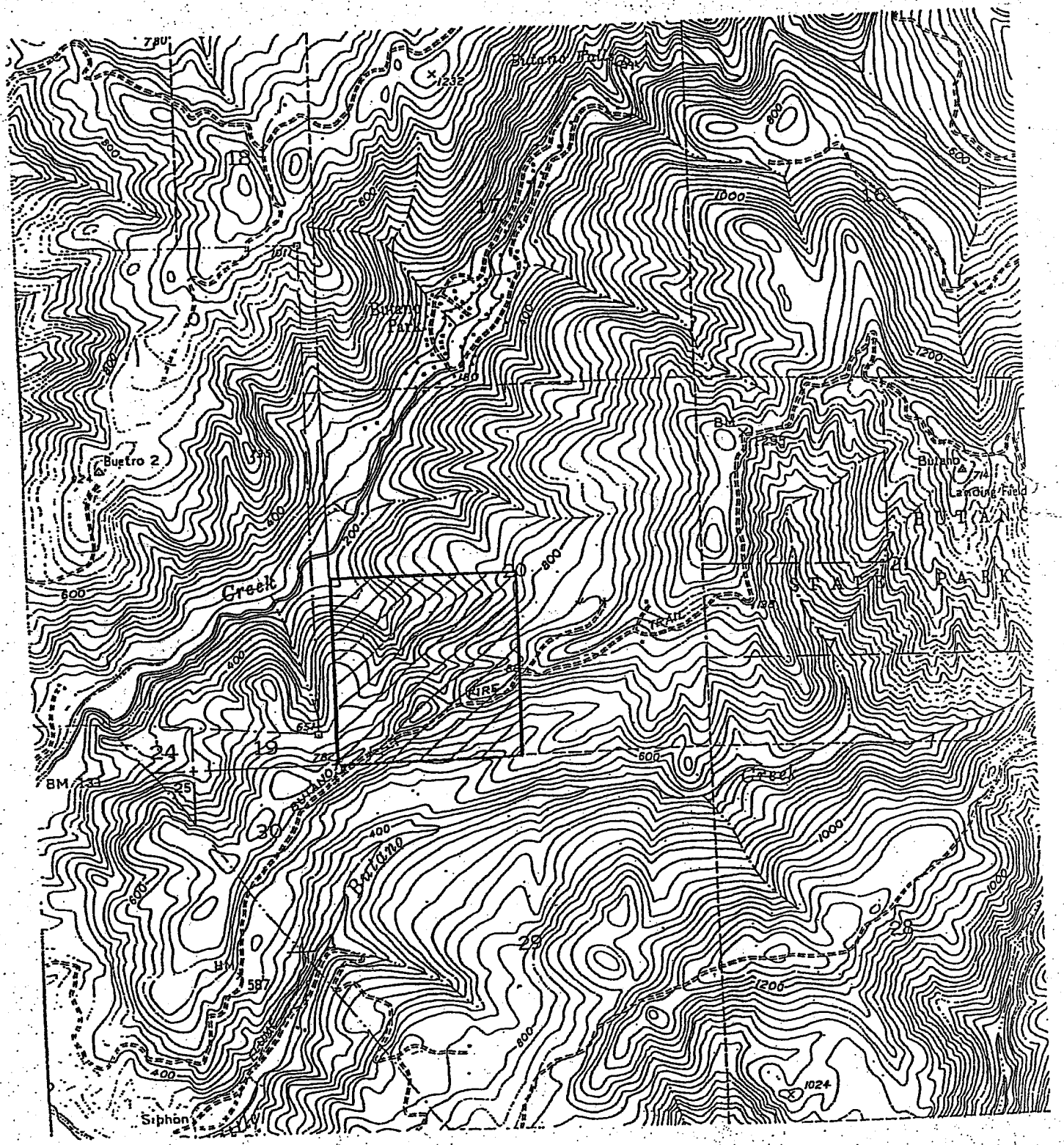
4. Improve Natural Habitat

   a. Protect oak and madrone which produce seed.
   b. Leave snags and fallen trees for wildlife habitat.
   c. Implement techniques mentioned herein.
   d. Recognize wildlife needs during timber operations and improvement work.
   e. Manipulate vegetation to protect or encourage natural biodiversity

5. Protect Aesthetics

   a. Lop or crush all slash and debris.
   b. Conduct forest operations with aesthetic considerations.
   d. Designate large old growth trees to be left.

LANDS OF BORETA AND HOUCK



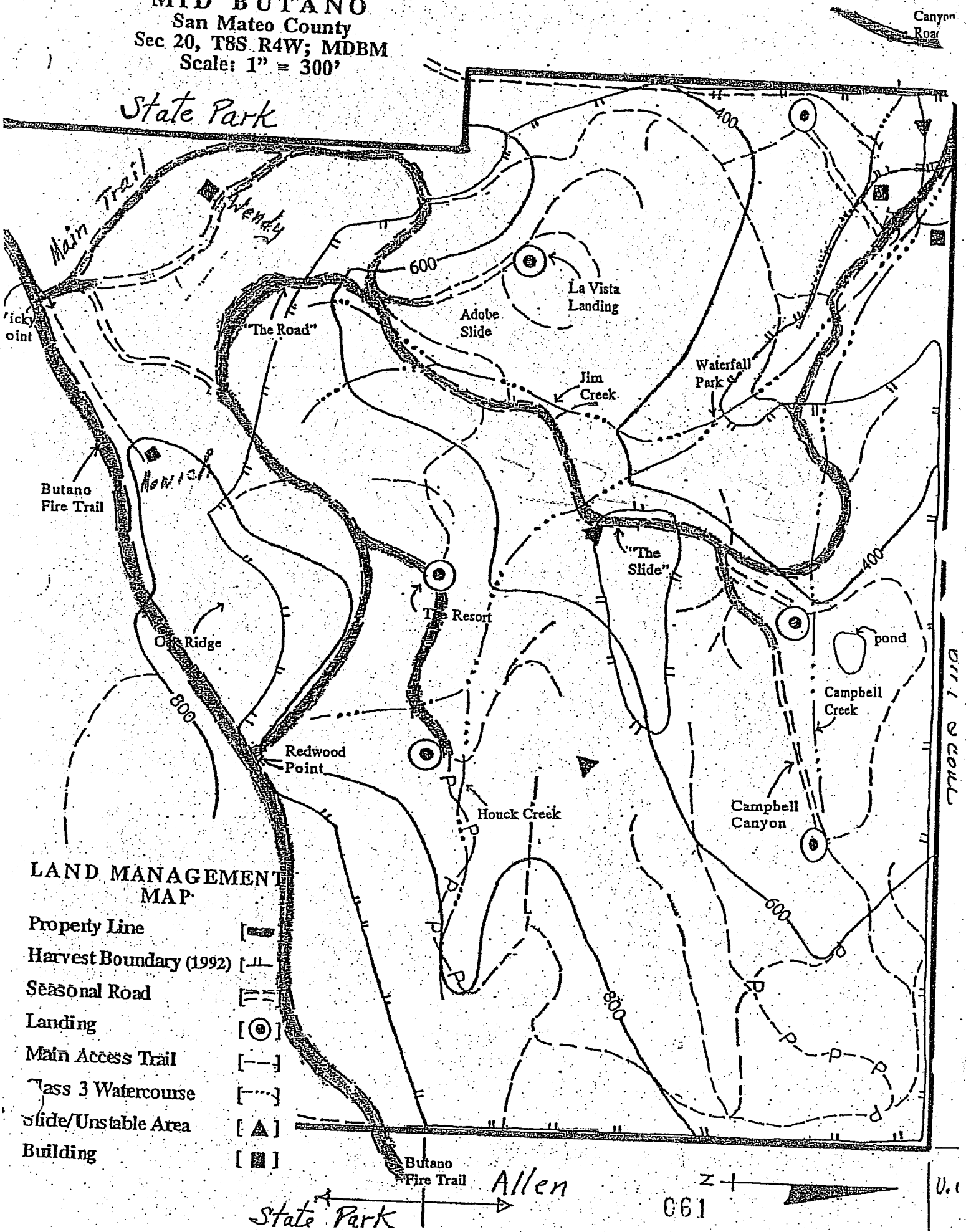
MID BUTANO
USGS Map
SEC 20, T8S R4W; MDBM

Property Line [———]
Project Area [////]
Scale 1" = ~~24,000'~~ 2,400'
Contour Interval 40'
APN 89-120-030
Franklin Point Quadrangle

060

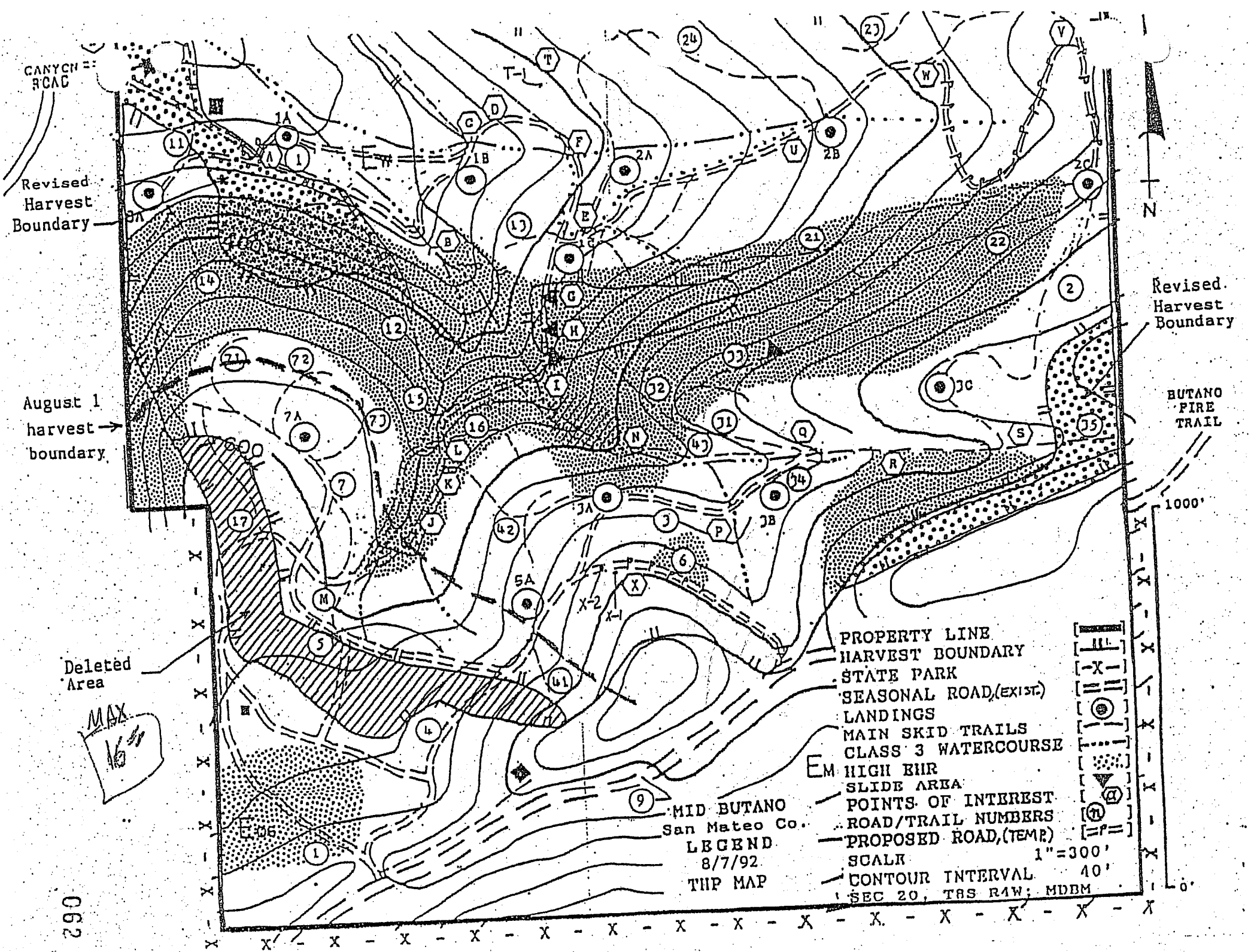
MID BUTANO

San Mateo County
Sec 20, T8S R4W; MDBM
Scale: 1" = 300'

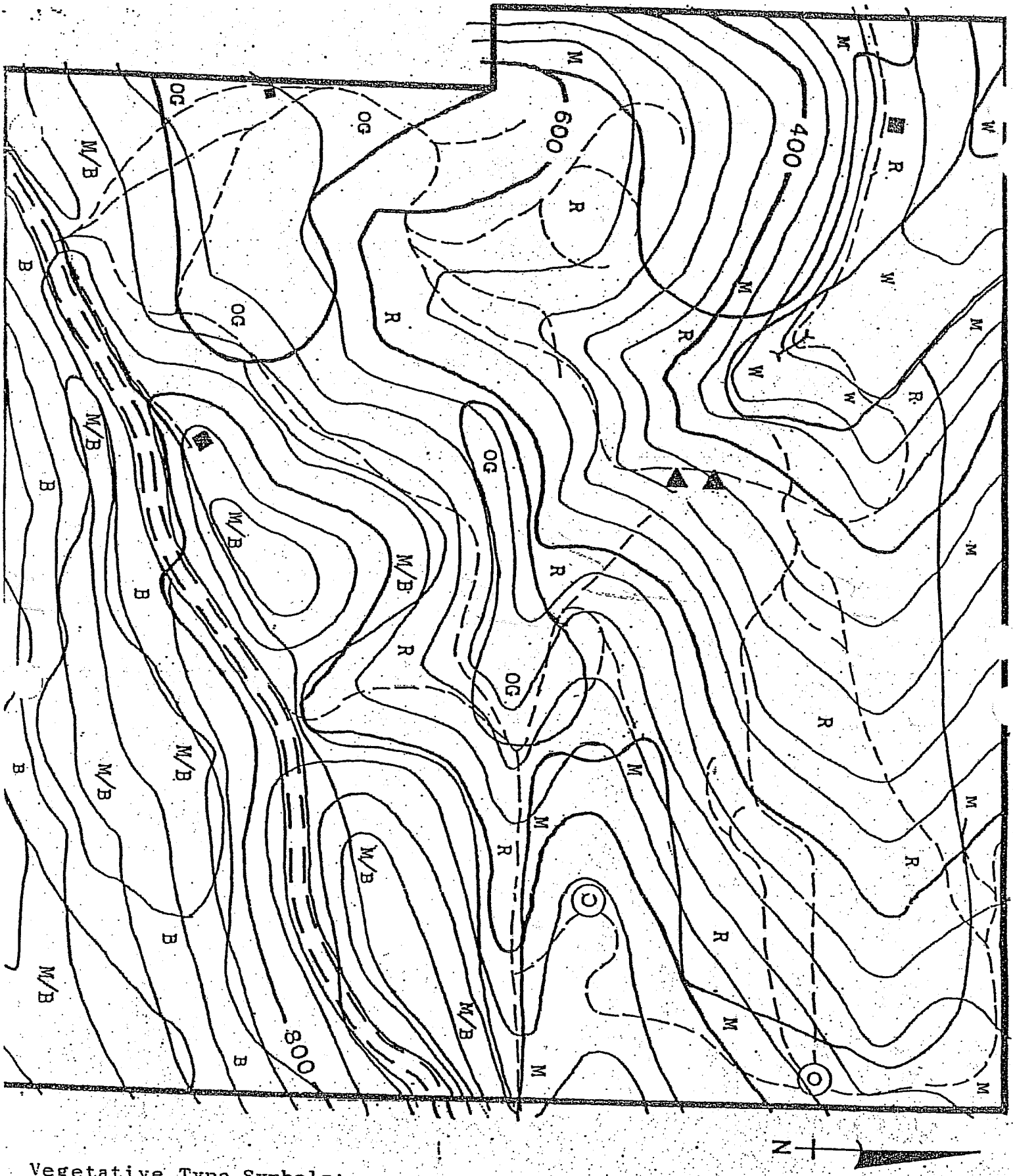


LAND MANAGEMENT MAP

- Property Line
- Harvest Boundary (1992)
- Seasonal Road
- Landing
- Main Access Trail
- Class 3 Watercourse
- Slide/Unstable Area
- Building


CANYON ROAD
Revised Harvest Boundary
August 1 harvest boundary
Deleted Area
MAX 16"
Revised Harvest Boundary
BUTANO FIRE TRAIL
1000'
0'
N
PROPERTY LINE
HARVEST BOUNDARY
STATE PARK
SEASONAL ROAD (EXIST.)
LANDINGS
MAIN SKID TRAILS
CLASS 3 WATERCOURSE
HIGH EHR
SLIDE AREA
POINTS OF INTEREST
ROAD/TRAIL NUMBERS
PROPOSED ROAD, (TEMP.)
SCALE 1"=300'
CONTOUR INTERVAL 40'
SEC 20, T8S R4W; MDBM
MID BUTANO
San Mateo Co.
LEGEND
8/7/92
THP MAP

290

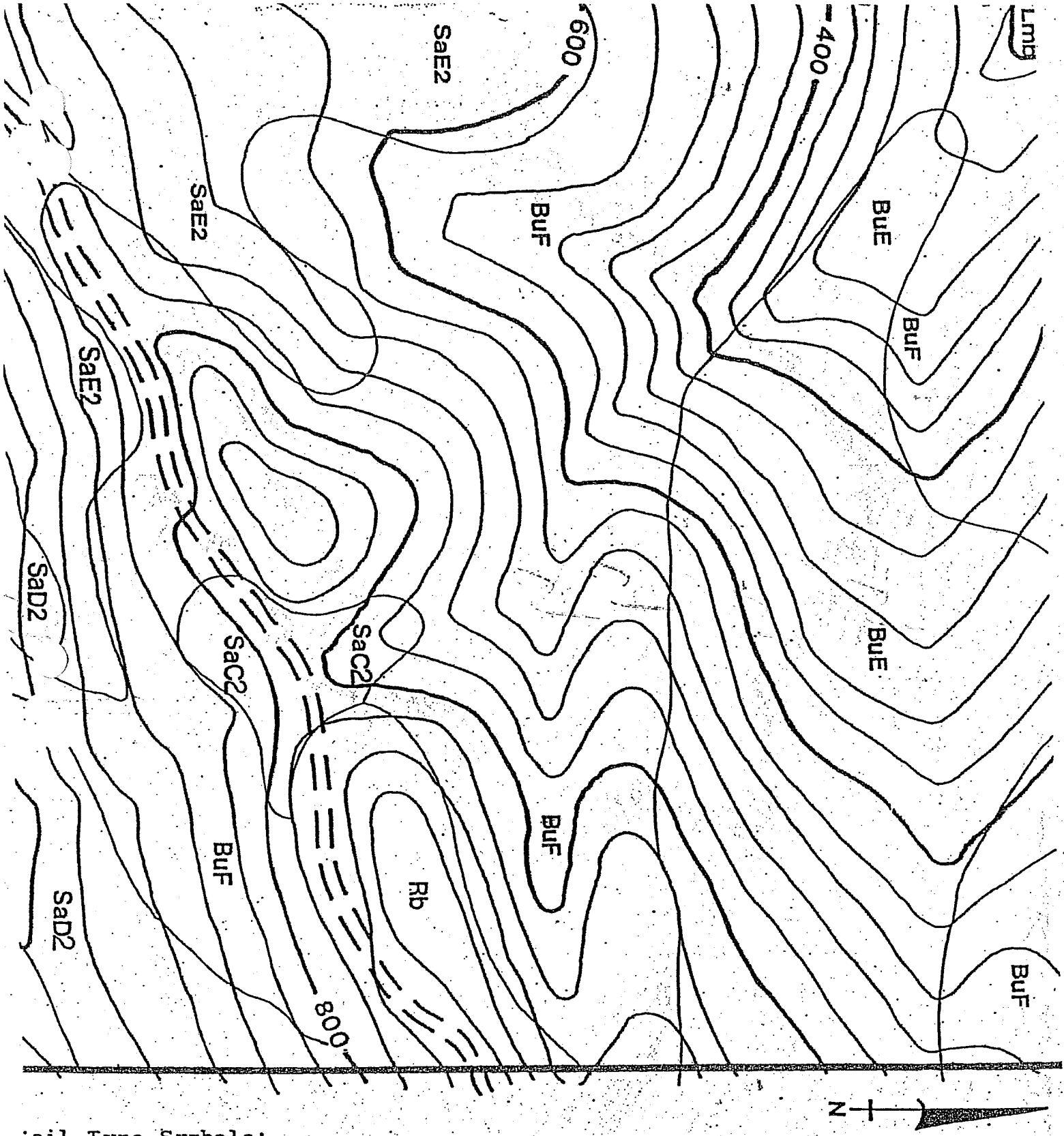


Vegetative Type Symbols:

R----------Redwood
G----------Old-growth redwood
M----------Hardwood
M/B---------Brush/grass
W----------Wetlands

MID BUTANO

SAN MATEO COUNTY
SEC 20, T8S R4W; MDBM
SCALE : 1" = 300'
C.I. : 40'



Soil Type Symbols:

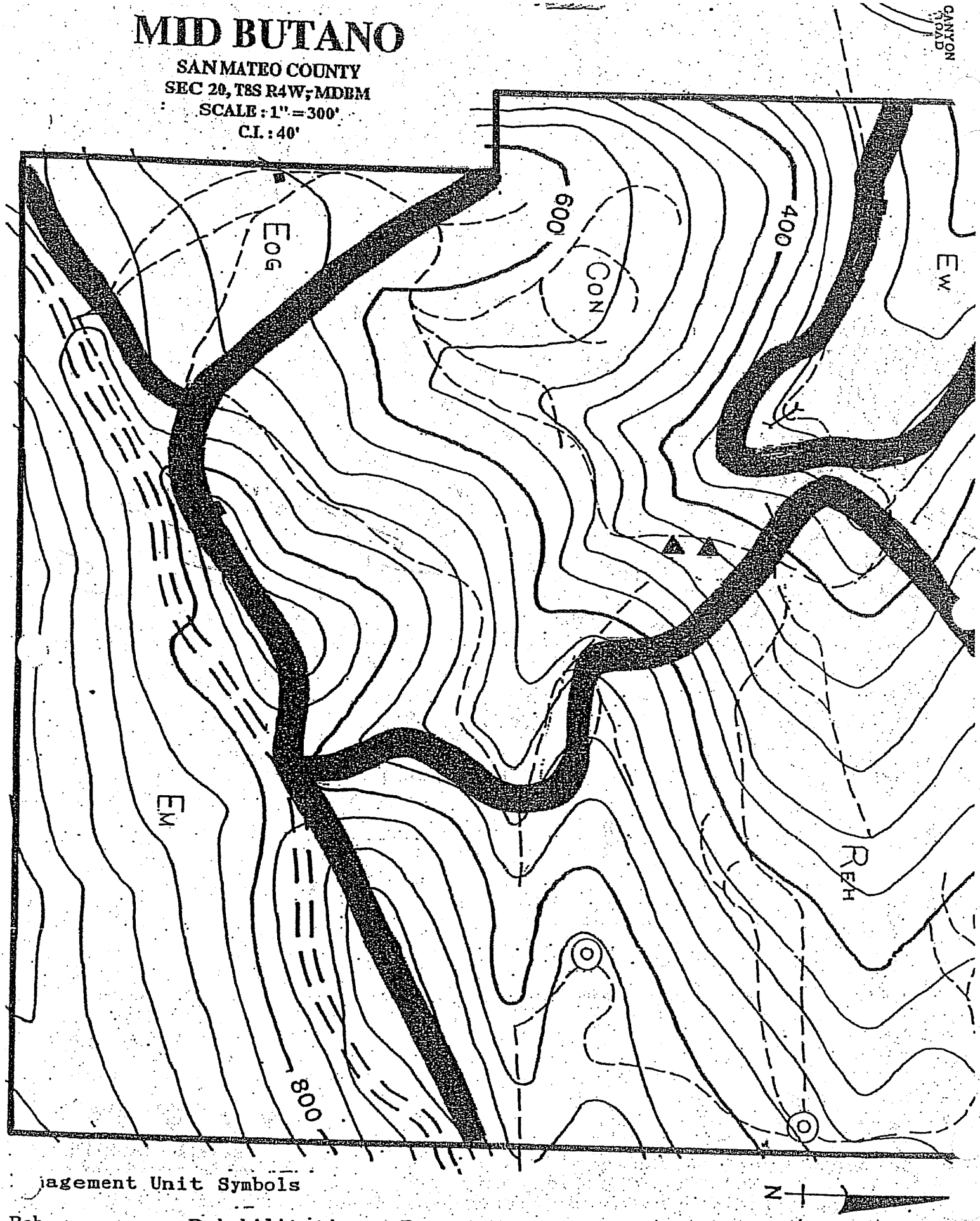
BuE--------Butano loam, steep
BuF--------Butano loam, very steep
Lm --------Lockwood loam, gently sloping
Rb---------Rough, broken land
SaC2-------Santa Lucia loam, sloping, eroded
SaD2-------Santa Lucia loam, moderately steep, eroded
SaE2-------Santa Lucia loam, steep, eroded

MID BUTANO

SAN MATEO COUNTY
SEC 20, T8S R4W; MDBM
SCALE: 1" = 300'
C.I.: 40'

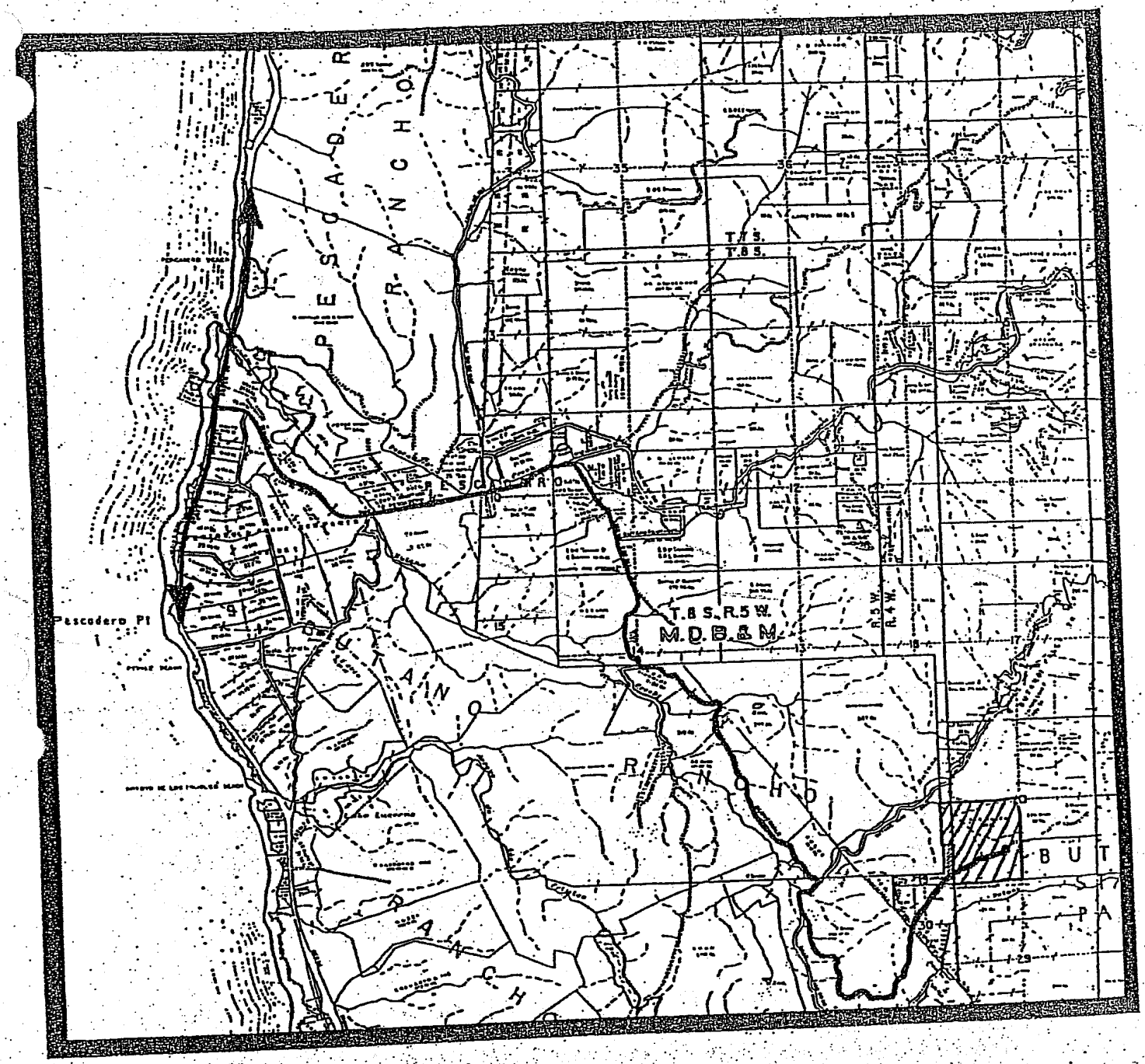
MID BUTANO

SAN MATEO COUNTY
SEC 20, T8S R4W; MDBM
SCALE: 1" = 300'
C.I.: 40'



agement Unit Symbols

Reh----------Rehabilitation - Forest Management
Con----------Forest Conservation - Enhancement
Eog----------Ecological Preserve - Old Growth
Ew----------Ecological Preserve - Wetland (potential)
Em----------Ecological Preserve - Mixed



MID-BUTANO
1991 Timber Harvest Haul Route

San Mateo County
T8S R4W Sec. 20

Property Location
Haul Route

N

scale 1" = 1 mile

Preparer's Qualifications

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Expert Testimony:	Superior Courts in Mendocino, Santa Cruz, and San Mateo Counties, California
	U.S. Tax Court, Portland, Oregon
	U.S. District Court, San Francisco, California

Gene Forsburg was a co-founder of Pacific Meridian Resources, a consulting firm specializing in remote sensing and GIS, forestry, and appraisal services. Under his 12 year tenure as Chief Financial Officer, Pacific Meridian grew to 75 employees with offices in several states. In 2000 Mr. Forsburg sold his interests in Pacific Meridian to Space Imaging L.L.C. - the operator of a private imaging satellite. After a time as a senior manager for that firm, he is now a consultant specializing in forestry, appraisal, and management.

Forsburg has been a practicing forester since 1975 and has considerable experience in vegetation mapping, forest inventory design, harvest administration, and forest planning. His forestry clients have included private and institutional landowners in the Santa Cruz mountains, several Indian tribes, open space trusts, and corporate owners in several states. He is also a forest landowner in California and Oregon.

Mr. Forsburg has also specialized in the valuation of timber and rural land. Since 1980, the total value of real estate that he has appraised exceeds four hundred million dollars and includes projects in California, Oregon, Washington, New Mexico, and Hawaii. These assignments have included purchases, conservation easements, exchanges, partitions, and condemnations, and projects involving damages, minority interests, and taxation.