TOWN OF HILLSBOROUGH

SAN MATEO COUNTY

DEPARTMENT OF
COMMUNITY SERVICES
(650) 375-7411
FAX (650) 375-7415

1600 FLORIBUNDA AVE.
HILLSBOROUGH
CALIFORNIA
94010

Tree Removal Guidelines

"Tree" is defined as follows:

Any woody plant which has a trunk with a diameter of twelve inches (12") or greater, measured at four feet, six inches (4'-6") above natural grade.

I. **Tree Removal Related to Property Improvements**
(in other words, if additional site or construction work is also proposed on the property)

Every tree removal which is related to the construction of property improvements shall be first be submitted, along with the proposed property improvement plans, for design review (ADRB) and approval; then a tree removal permit is required.

II. **Tree Removal Not Related to Property Improvements**
(in other words, if no additional site or construction work is proposed on the property)

A. On lots which have improvements: A design review (ADRB) approval, and then a tree removal permit, is required when removing a tree which is located on a lot or property which contains a structure or other improvements and, either:

1. The trunk is 36" or greater in diameter (circumference 113" or greater), measured at 4'-6" above natural grade; or,
2. The open-market valuation of the project involving the tree removal exceeds $5,000.00; or,
3. Both.

B. On Vacant Lots: A tree removal permit, issued by the City Engineer or his designated representative, is required when the tree is located on a vacant lot, regardless of the cost of the removal,

Exception: If the tree to be removed is diseased and/or hazardous, a tree removal permit may be issued upon submittal to the City Engineer of a report by a certified arborist stating that the tree presents an immediate hazard and must be immediately removed. Issuance of the tree removal permit requires the specification, and planting, of a native species replacement tree somewhere on the property.

Source: Hillsborough Municipal Code Chapters 14.04 and 17.72

Notes:

- The removal of eucalyptus and acacia trees is encouraged in Hillsborough.
- The Hillsborough Municipal Code does not provide regulations or standards for issues between neighbors regarding the trimming of branches of trees which may be overhanging a common property line. Such issues must be resolved between the involved property owners.

Preliminary Plan
4/1/02
Revised 4/25/02

Summary

EROSION CONTROL AND RESTORATION PLAN FOR DISTURBED AREAS OF THE SAN FRANCISCO 230 KV TRANSMISSION LINE

San Mateo County, California

Site Evaluations

1/23/02
3/25-26/02

Prepared for:

Sheila Byrne, PhD.
Senior Biologist
Technical and Ecological Services
Pacific Gas & Electric Company
3400 Crow Canyon Road
San Ramon, CA 94583

Prepared by:

Franklin J. Chan
Certified Professional Erosion
& Sediment Control Consultant
Native Plant Resources
Davis, California

EROSION CONTROL AND RESTORATION PLAN FOR DISTURBED AREAS OF THE SAN FRANCISCO 230 KV TRANSMISSION LINE

San Mateo County, California
Consultant Report

Table of Content

		PRESCRIPTION				
Tower Location	Seed Mix	Plug	Inoc	PltgT	FrosT	VegCT
West of Frwy 280-Canada Road						
4/25	#3	------	No	BC	M	PrP/M/R
4/24A	#2	J	Yes	BC	M	PrP/M/R/SHW
4/24B	#2	------	No	BC	H	PrP/M/R/SHW
4/23	#2	------	No	BC	M	PrP/M/R/SHW
3/22	#5	Dc	No	BC	M	PrP/M/R/SHW
3/21	#5	Dc	No	BC	M	PrP/M/R/SHW
3/20	#4	Dc	No	BC	M	PrP/M/R/SHW
3/19	#4	J	No	BC	M	PrP/M/R/SHW
3/18	#4	------	No	BC	M	PrP/M/R
2/17	#4	------	No	BC	M	PrP/M/R
2/16	#4	------	No	BC	M	PrP/M/R
2/15	#4	------	No	BC	M	PrP/M/R
2/14	#4	------	No	BC	M	PrP/M/R
1/13	#2	Lb	No	BC	M	PrP/M/R
1/12	#4	------	Yes	BC	M	PrP/M/R/SHH
1/11	#1	Lb	No	BC	M	PrP/M/R/SHW
1/10	#4	------	No	BC	H	PrP/M/R/SHW
East of Freeway 280						
1/9	#2	Nc	No	BC	M	PrP/M/R
1/8	#1	Np	No	BC	M	PrP/M/R
1/7	#1	------	No	BC	L	PrP/M/R/SHW
0/6 Edgewood park	#3	Lb	No	BC	L	PrP/M/R/SHW
0/5 Edgewood park	#3	Nc/Dc	No	BC	L	PrP/M/R
0/4 Edgewood park	#3	Nc	No	BC	M	PrP/M/R
0/3 Edgewood park	#5	Dc	No	BC	M	PrP/M/R

		PRESCRIPTION				
Tower Location	Seed Mix	Plug	Inoc	PltgT	FrosT	VegCT
Golf Course	----------	-----	-----	------	------	--------
9/62	----------	-----	-----	------	------	--------
9/61	----------	-----	-----	------	------	--------
9/60	----------	-----	-----	------	------	--------
9/59	----------	-----	-----	------	------	--------
9/58	----------	-----	-----	------	------	--------
9/57	----------	-----	-----	------	------	--------
9/56	----------	-----	-----	------	------	--------
9/55	----------	-----	-----	------	------	--------
9/54	----------	-----	-----	------	------	--------
8/64	----------	-----	-----	------	------	--------
8/63	----------	-----	-----	------	------	--------
8/62	----------	-----	-----	------	------	--------
8/61	----------	-----	-----	------	------	--------
Subdivision-Blk. Mtn.						
8/51	#4	------	No	BC	M	PrP/M/R
8/50	#4	------	No	BC	M	PrP/M/R
8/49	#4	------	No	BC	M	PrP/M/R
8/48	#4	------	No	BC	M	PrP/M/R
7/47	#4	------	No	BC	M	PrP/M/R
7/46	#4	------	No	BC	M	PrP/M/R
7/45	#4	------	No	BC	M	PrP/M/R
7/44	#4	------	No	BC	M	PrP/M/R
7/43	#4	------	No	BC	M	PrP/M/R
7/42	#4	------	No	BC	M	PrP/M/R
7/41	#4	------	No	BC	M	PrP/M/R
7/40	#2	------	No	BC	M	PrP/M/R
7/39	#4	------	No	BC	M	PrP/M/R
7/38	#4	------	No	BC	M	PrP/M/R/SHW
Park/Substation						
6/37	#2	Nc	No	BC	M	PrP/M/R/SHW
6/36	#4	Eg	No	BC	M	PrP/M/R/SHW
6/35	#4	Eg	No	BC	M	PrP/M/R/SHW
Serpentine Grassland						
6/34	#4	------	No	BC	M	PrP/M/R/SHW
6/33	#2+lupine	------	No	BC	L	PrP/M/R
6/32	#2+achillea	------	No	BC	L	PrP/M/R/SHH
5/31	#3	------	No	BC	L	PrP/M/R
5/30	#3	------	No	BC	L	PrP/M/R/SHH
5/29	#3	Dc	No	BC	L	PrP/M/R/SHW
5/28	#2	------	No	BC	L	PrP/M/R
4/27A	#2	------	No	BC	L	PrP/M/R
4/27B	#3	------	No	BC	L	PrP/M/R
4/26	#3	------	No	BC	L	PrP/M/R

EROSION CONTROL AND RESTORATION PLAN FOR DISTURBED AREAS OF THE SAN FRANCISCO 230 KV TRANSMISSION LINE

A. SITE ASSESSMENT

Introduction

The primary goals of the plan are to control erosion in all work areas where soil is disturbed and to restore native vegetation. Specific objectives include:

- Conducting a field inventory with biologists to determine sensitive sites or special restoration requirements.
- Avoiding soil and vegetation disturbance as much as possible during construction.
- Preserving topsoil during construction.
- Establishing site-specific sources of native grasses or the most appropriate commercial sources of native grasses as agreed upon by the landowners.
- Preserving and encouraging natural regeneration of native vegetation.
- Acquiring local seed sources as much as feasible for erosion control seeding and restoration.
- Collecting and propagating native grass ecotypes for plug planting of sensitive sites or sites with high erosion potential.
- Preparing erosion control and restoration specifications and coordinating the acquisition of a qualified source of environmental restoration labor.
- Implementing a vegetation control and management plan for vegetation establishment.
- Including monitoring and remedial measures until the levels of acceptance for erosion control and restoration are achieved.

Inventory Analysis and Mitigation

A field inventory (Appendix 2A-Table 1)) was conducted on March 25th and 26th, 2002 with the Project Biologist, Dr. Sheila Byrne, Plant Taxonomist, John Stebbins, and Restoration Consultant, Frank Chan. The purpose of the field inventory was to assess the environmental conditions and species present at representative planting sites. The inventory was also useful to determine if there were any special problems in the project area. Special problems include the presence of sensitive plant species, steep slopes prone to erosion, erosion and drainage problems on access roads, presence of noxious weeds, high potential for depredation, and extremely poor soil conditions including nutrient deficiency. After analyzing representative sites, the most appropriate measures were prescribed for each tower location (Appendix 2B- Table 2) to mitigate issues relating to the existing conditions.

Erosion Control and Restoration Criteria and Strategies

The short-term criteria for erosion control and restoration is to prevent erosion and sedimentation in the areas disturbed by the construction. The long-term goal is to establish a vegetation type that not only stabilizes soil, but also is natural in appearance and biologically compatible with the surrounding area. An important role of the established vegetation is to prevent the invasion of noxious weeds in the work areas (Photo 21). It is also important to achieve a vegetation type that

TABLE 2- Prescriptions For Each Tower Site

		PRESCRIPTION				
Tower Location	Seed Mix	Plug	Inoc	PltgT	ErosT	VegCT
Chaparral						
14/98	#1	Fi	No	BC	M	PrP/M/R/SHW
14/97	#1	Fi	No	BC	M	PrP/M/R/SHW
14/96	#1	Fi	No	BC	M	PrP/M/R/SHW
14/95	#1	Np	No	BC	M	PrP/M/R/SHW
Mowing Area						
14/94	#6	-----	No	NRG	L	PrP/M/R
14/93	#6	-----	No	NRG	L	PrP/M/R
14/92	#6	-----	No	NRG	L	PrP/M/R
14/91	#6	-----	No	NRG	L	PrP/M/R
14/90	#6	-----	No	NRG	L	PrP/M/R
14/89	#6	-----	No	NRG	L	PrP/M/R/SHH
Ascending fr.Lake						
13/88	#4	-----	No	BC	M	PrP/M/R
13/87	#4	-----	No	BC	M	PrP/M/R
13/86	#4	-----	No	BC	M	PrP/M/R
Lake Area						
13/85 (Test Area)	#1	Np/Dc	Yes	BC	H	PrP/M/R/SHW
13/84	#1	-----	No	BC	M	PrP/M/R
13/83	#2	Nc	No	BC	M/RR	PrP/M/R/SHH
12/82	#1	-----	No	BC	M	PrP/M/R
12/81A	#1	-----	No	BC	M	PrP/M/R
12/81	#1	-----	No	BC	M	PrP/M/R
12/80	#1	-----	No	BC	M	PrP/M/R
12/79	#4	-----	Yes	BC	L	PrP/M/R
12/78	#4	J	No	BC	M	CH, PrP/M/R
12/77	#1	-----	No	BC	M	PrP/M/R
11/76	#1	-----	No	BC	M	PrP/M/R
11/75	#1	Np/Dc	No	BC	M	PrP/M/R/SHW
11/74	#1	-----	No	BC	M	PrP/M/R/SHW
Trousdale to Lake						
11/73	#1	-----	No	BC	M	PrP/M/R
11/72	#1	-----	No	BC	M	PrP/M/R
11/71	#4	Eg	No	BC	M	PrP/M/R/SHW
11/70	#1	Eg	Yes	BC	M	PrP/M/R
10/69	#1	Np	Yes	BC	H	PrP/M/R/SHW
Housing Area/Skyline						
10/68	#4	-----	No	BC	L	PrP/M/R
10/67	#4	-----	No	BC	L	PrP/M/R
10/66	#4	-----	No	BC	L	PrP/M/R
10/65	#4	-----	No	BC	L	PrP/M/R
10/64	#4	-----	No	BC	L	PrP/M/R
10/63	#4	-----	No	BC	L	PrP/M/R

will not interfere with operations or maintenance of the power lines. The procedures for establishing and managing vegetation must be cost-effective for the short and long term.

Levels of acceptance guidelines will be established for the erosion control and restoration goals in order to achieve results as set forth in the erosion control and restoration plan. A minimum of 70% cover in the first year of establishment will be required. With remedial seeding and planting as needed, 100% cover will be required at the end of the second year. In all cases, results at each site should be comparable to the vegetation in the surrounding areas with similar environmental conditions.

Access and Logistics of Operational Erosion Control and Restoration

Because the erosion control and restoration work will be implemented during the fall and winter after construction is completed, access and logistics may be important for proper installation and prevention of damage to roads and planting sites. During restoration implementation, guidelines and requirements as to when conditions are unfavorable to work and when they are acceptable will be issued. Sensitive areas such as Edgewood Park where exceptional native vegetation should be preserve will have greater restrictions than other parts of the transmission line.

Access and logistics of the operational erosion control and restoration will be planned so that vehicles and equipment will create a minimum of disturbance. For site preparation work requiring heavy equipment, the construction crew will use an appropriate tractor to remove ruts, break up compacted soil, and prepare a adequate seed bed before they leave the site. Final site preparations before planting will be performed by the restoration contractor. As needed, a small tractor, four-wheel drive or all terrain vehicles will be used in order to minimize disturbance and accomplish the work. Revegetation crews will perform most of the planting and erosion control work using hand seeders and tools.

Erosion Control & Restoration Schedule

A generalized erosion control and restoration schedule for the years 2002 to 2008 is provided in Appendix 1. This schedule includes pre-planting preparations work, seed and plant acquisition, implementation, maintenance and monitoring, and follow-up work. The schedule assumes that construction will be completed by the fall of 2004.

If construction is not completed by the fall, and extends into the rainy season, supplemental erosion control measures will be implemented. For example, silt fences or other barriers may be installed around tower locations where excavation has occurred. Erosion control blankets may be installed on slopes with exposed soil. Water bars may be constructed on access roads. Whatever is required to control erosion (see RECOMMENDATIONS FOR EROSION CONTROL AND RESTORATION below) will be implemented depending on the site conditions.

The erosion control and restoration measures in the Erosion Control and Restoration Plan must be implemented and completed as scheduled in order to achieve desired results. It is important that parties cooperate and stay on schedule. Staying on schedule makes the difference between success and failure. There are no substitutes for the biological requirements of plants. In addition, failure means the loss of site-specific plant materials that are difficult to replace. Growing local seed and propagating plants take time, and site deterioration can occur if vegetation is not established in a timely manner.

PLUGS (Plug)

Nassella pulchra= Np
Nassella cernua= Nc
Elymus glaucus= Eg
Danthonia californica= Dc
Festuca idahoensis= Fi
Melica imperfecta= Mi
Carex sp.= C
Juncus sp.= J
Lupinus bicolor= Lb
Elymus elymoides= Ee

INOCULATION (Inoc)

Yes = commercial or local topsoil inoculant
No = no inoculant used

PLANTING TECHNIQUE (PltgT)

BC= Broadcast seeding plus mulching
NRG= Natural regeneration/ minimal seeding
NHS= Native hay seeding/target species
Golf= Golf course (no treatment)
Plug= native grass plugs

EROSION CONTROL TECHNIQUE (ErosT)

Low= rice straw mulch @ 800 to 1000 lb./acre
Moderate= rice straw mulch @ 1200 to 1500 lb./acre
High= rice straw mulch @ 1200 to 1500 lb./acre plus straw wattles
Bl= Blanket
RR= Riprap

VEGETATION CONTROL (VegCT)

PrP= preplanting primarily using disking but may also use herbicides, flaming, etc.
SHW= Selective herbicide/ woody plant
SHH= Selective herbicide/ herbaceous plant
CH= Contact herbicide (non-selective)
M= Mowing prior to annual weed seed set
R= Roguing (hand pulling or hoeing)
F= Flaming

Restrictive Use of Herbicides and Other Pesticides

Based upon the planting sites inventory, only limited use of herbicides is recommended. Herbicides may be used to kill woody vegetation close to the towers and to control invasive noxious weeds in the planting area. In most cases, only spot treatment of the invasive species would be applied by a licensed and qualified applicator. Landowner permission will be obtained. (See section D below relating to vegetation control and management).

Herbicides will play a restricted role in establishing native vegetation. Selecting adapted species, using high seeding and planting rates, implementing supplemental plantings or seedings, and using non-chemical vegetation control measures will reduce the need for chemical herbicides reduced to a minimum. The goal of vegetation establishment is to achieve a stand of native vegetation that is at least comparable to the surrounding vegetation in respect to the presence of introduced species. In general, there will be fewer introduced species and a greater percentage of native grasses established in the planted areas using the specified vegetation control measures.

B. ROLE OF LOCAL SOURCES OF NATIVE SPECIES AND NATURAL REGENERATION

Probably the most important factors in successful vegetation establishment are the selection and acquisition of site-specific plant material coupled with proper planting techniques, proper time of planting, and weed control. However, without acquiring plant materials adapted to local conditions, doing everything else right will not produce the desired results. Exceptional remnant stands of native grasses were observed throughout the entire length of the transmission line project even though the vegetation gradates from grassland to chaparral going from south to north (Photos 1-8).

Thus, an intensive effort will be devoted to acquiring local native grasses (Photos 9-17). The plant materials will consist of either seed from local collections contract grown by a specialty seed producer, or grass plugs grown by a specialty nursery. In situations where relatively small amounts of seed are needed, hand collecting or native hayseed collecting and directly broadcasting onto the planting sites may be used.

To ensure that native plant materials are available on schedule, collecting and propagation will start in the spring of 2002. Seeds collected during the spring and summer of 2002 will be sent to a qualified grower of native grass seed. The seeds will be propagated as grass plugs and the plugs planted in a field to produce the seed crop. Seeds collected in 2002 and are grown as a crop that matures in 2004 should produce sufficient seed for the erosion control and restoration seedings to be implemented in 2004. Seeds will continue to be harvested as needed the years following 2004 for supplemental and remedial seeding.

An estimated 10 acres will be seeded at approximately 85 tower sites. Approximately 350 to 600 pounds of seed may need to be produced within 2 years for the tower and other project sites. If the amount of seed is not produced, appropriate sources of commercial seed may need to be purchased to supplement the local seed.

Grass plugs are another very viable source of local native plant material. Grass plugs are seedlings of local native grasses grown in small containers or cells. By propagating plugs of native grasses, faster cover may be achieved and less seed is used to plant an area. Plugs can be produced in the same year that the seeds are collected, and can be planted in the fall and winter.

APPENDIX 2B- SITE SPECIFIC PRESCRIPTIONS

The key to the following table (TABLE 2) provides details of the specific prescription:

SEED MIXES (Seed Mix)

SEED MIX 1-Mainly *Nassella pulchra*

SPECIES	Pounds/Acre
Nassella pulchra (from Towers 1/9,0/4,Gate)	22.0
Nassella cernua (from Towers 1/9,0/4,7/40)	12.0
Elymus glaucus (from Tower 3/20, 4/27B,7/41)	11.1

SEED MIX 2- Mainly *Nassella cernua*

SPECIES	Pounds/Acre
Nassella cernua (from Towers 1/9,0/4,7/40)	22.0
Nassella pulchra (from Towers 1/9,0/4,Gate)	20.0

SEED MIX 3- Mainly Grassland

SPECIES	Pounds/Acre
Nassella cernua (from Towers 1/9, 0/4,7/40)	16.3
Nasella pulchra (from Towers 1/9, 0/4,Gate)	17.7
Elymus glaucus (from Tower 4/27B,7/41)	11.1

SEED MIX 4- Mainly *Elymus glaucus*

SPECIES	Pounds/Acre
Elymus glaucus (from Tower 3/20,4/27B,7/41)	22.2
Nassella pulchra (from Towers 0/4,1/9, Gate)	15.0
Nassella cernua (from Towers 0/4,1/9, 11/75,7/41)	5.4
Bromus carinatus (from Towers 0/4,3/19, 7/41)	11.5

SEED MIX 5- Mainly *Danthonia californica*

SPECIES	Pounds/Acre
Nassella pulchra (from Tower 1/9,0/4)	13.3
Nassella cernua (from Tower 1/9,0/4)	7.3
Elymus glaucus (from Tower 3/20)	11.1

SEED MIX 6- Mowed Area

SPECIES	Pounds/Acre
Nassella pulchra (from Tower 10/69-Gate)	16.7

Planting plugs is normally feasible for small areas, and seeding is often used to supplement the planting. Seeding is used in large areas rather than planting.

What species will be used at each planting site, whether seeding or planting will be used, as well as the type of material to be planted were determined by the field inventory (see Appendix 2-Table 1).

Sources of Local Plant Materials:

a. Wild-collecting

Local native seeds will be collected in 2002 from outstanding remnant stands of native grasses existing along the transmission line (Photos 9-13). The collected seeds will then be grown as a crop to be harvested in 2004 for seeding in the fall of that year (as well as follow-up years when remedial seeding may be needed). Wild collected seeds will also be sent to a native plant nursery in late spring of 2004 for propagation of plants to be planted in the fall of that year.

b. Contract growing

To illustrate the amount of seed that may need to be produced, the following calculation shows the extent of the contract growing for *Nassella pulchra*. The theoretic example needed for seeding 10 acres at a rate of 45 seeds per square foot:

> One pound of cleaned de-awned seed = approximately 130,700 seeds.
> The seeding density of one pound of seed per acre is 3.0 seeds per square foot.
> Therefore, for 45 seeds per sq. ft., seeding rate = 15.0 pounds per acre.
> And for 10 acres, the amount of cleaned de-awned seeds would be 150.0 pounds.

1. Species of local native grasses that may be grown as a seed crop:

Nassella puchra (Purple stipa)
Nassella cernua (Nodding stipa)
Elymus glaucus (Blue wildrye)
Bromus carinatus (California brome)

2. Species of native grasses that may be grown as plugs for planting in Fall, 2004:

Danthonia californica (California oatgrass)
Nassella pulchra (Purple stipa)
Nassella cernua (Nodding stipa)
Festuca idahoensis (Idaho fescue)
Melica imperfecta (Smallflowered melic)
Elymus elymoides (Squirreltail)
(See Appendix 2B for native non-grass species)

c. Alternative commercial sources of appropriate regional or local species:

If insufficient seed cannot be contract grown, seed producing companies that indicated that they might have local or appropriate sources of native grass seed in the fall of 2004 for the San Francisco peninsula area are:

	CRITERIA					
Tower Location	VegQ	Natgr	Soil	PltgT	ErosP	Vegtype
West of Frwy 280-Canada Rd						
4/25	---	---	---	---	---	---
4/24A	L	1	Po	B	L	WP
4/24B	---	---	---	---	---	---
4/23	---	---	---	---	---	---
3/22	---	---	---	---	---	---
3/21	---	---	---	---	---	---
3/20	H	4	Ad	B	M	WP/Nor
3/19	M	3	Ad	B	M	WP
3/18	---	---	---	---	---	---
2/17	---	---	---	---	---	---
2/16	---	---	---	---	---	---
2/15	---	---	---	---	---	---
2/14	---	---	---	---	---	---
1/13	M	3	Po	B	M	Nor
1/12	M	3	Ad	S	M	NW1
1/11	L	1	Ad	B	M	NW1, 3/WP
1/10						
East of Freeway 280						
1/9	H	4	A	S	L	Nor
1/8	L	2	Po	B	M	Nor/NW3
1/7	L	2	Po	B	L	Nor
0/6 Edgewood Park	M	3	Po	B	L	Nor/WP
0/5 Edgewood Park	M	3	Ad	B	L	Nor
0/4 Edgewood Park	M	3	Ad	B	M	Nor
0/3 Edgewood Park	M	3	Ad	B	M	NW1

1) ConservaSeed in Rio Vista, California. (916) 775-1676

2) Rana Creek Seed Co. in Carmel Valley, California. (831) 659-3811

3) Elkhorn Nursery in Moss Landing, California (831) 476-4321

d. Native hay seeding

Native hay seeding is a specialized seeding technique that effectively uses local sources of native hay. This technique is applicable if sufficient stands of native grass species (or other targeted species) with a heavy seed crop are available (Photos 9-13). Timing for harvesting and applying hay are critical, as is the preparation of a seedbed prior to dispersing the hay. This technique is generally applicable to small areas. Advantages include using local native plant material that is highly adapted, eliminating time required to grow a seed crop or propagate plant materials, and cost-effectiveness. Disadvantages may include having limited amounts of hay, traveling to the stands to check for seed maturity, having limited time for harvesting, and processing and storing material may not feasible if planting is delayed.

2. Natural Regeneration

Natural regeneration needs to be taken into account whenever restoration plantings are implemented. The benefit of utilizing natural regeneration as a tool for restoration is that the regenerated vegetation tends to blend in with the surrounding area and presumably locally adapted (Photos 18, 20). The problem with relying on natural regeneration is that the recovery of the disturbance may be slow, and undesirable vegetation will invade the disturbed area before desirable species from regeneration can become established. Also, the site can deteriorate if recovery is slow, and erosion can occur before native vegetation regenerates.

Thus in most cases, artificial seeding with local or other appropriate sources of native grasses and allowing a certain amount of natural regeneration to occur with the seeding is a sound approach. In this process, a level of tolerance of non-seeded species is acceptable. This level of tolerance is essentially allowing desirable native species and some introduced species to co-exist at a level that is comparable to the surrounding area. The main vegetation control is eliminating noxious weed species such as thistles, broom (Photo 21), and fennel during the establishment period.

At some sites, natural regeneration alone or with minimal seeding may be the most feasible approach (Photo 7). Sites that contain sensitive species that may not be able to compete with an artificial seeding should not be seeded. If necessary, sensitive species may be propagated and planted as plug seedlings that are more tolerant of weed competition. If not seeded, mechanical erosion control measures may need to be implemented to prevent erosion until the regenerated vegetation is established. Examples of mechanical erosion measures include straw mulching, installing straw wattles, diversion channels, and erosion control blankets that allow vegetation to grow through it. Vegetation control or weeding during the re-establishment period is important for the regenerated vegetation to become established.

C. RECOMMENDATIONS FOR EROSION CONTROL AND RESTORATION

1. Erosion Control and Restoration of Disturbed Areas during revegetation

			CRITERIA			
Tower Location	VegQ	Natgr	Soil	PltgT	ErosP	Vegtype
Golf Course						
9/62	----------	-----	-----	--------	------	-----
9/61	----------	-----	-----	--------	------	-----
9/60	----------	-----	-----	--------	------	-----
9/59	----------	-----	-----	--------	------	-----
9/58	----------	-----	-----	--------	------	-----
9/57	----------	-----	-----	--------	------	-----
9/56	----------	-----	-----	--------	------	-----
9/55	----------	-----	-----	--------	------	-----
9/54	----------	-----	-----	--------	------	-----
8/64	----------	-----	-----	--------	------	-----
8/63	----------	-----	-----	--------	------	-----
8/62	----------	-----	-----	--------	------	-----
8/61	----------	-----	-----	--------	------	-----
Subdivision-Blk. Mtn.						
8/51	---	---	---	---	---	---
8/50	---	---	---	---	---	---
8/49	---	---	---	---	---	---
8/48	---	---	---	---	---	---
7/47	---	---	---	---	---	---
7/46	---	---	---	---	---	---
7/45	---	---	---	---	---	---
7/44	---	---	---	---	---	---
7/43	---	---	---	---	---	---
7/42	---	---	---	---	---	---
7/41	M	4	Ad	S	M	WP
7/40	---	---	---	---	---	---
7/39	---	---	---	---	---	---
7/38	---	---	---	---	---	---
Park/Substation						
6/37	M	2	Ad	B	M	NW1/ WP
6/36	M	2	Ad	B	M	NW1/ WP
6/35	L	1	Ad	B	M	NW1, 2/WP
Serpentine Grassland						
6/34	L	0	Ad	S	M	WP
6/33	M	1	Ad	S	L	Nor
6/32	M	1	Ad	S	L	NW1, 5
5/31	M	2	Ad	S	L	Nor
5/30	M	1	Ad	S	L	Nor
5/29	M	3	Ad	B	L	WP
5/28	M	1	Po	S	L	Nor
4/27A	M	3	Ad	S	L	NW1
4/27B	H	3	Fv	S	L	Nor
4/26						

Temporary mechanical erosion control measures not only prevent erosion in the short-term, but aid establishment of vegetative cover that will prevent erosion in the long-term. During vegetation establishment, different erosion control and restoration treatments will be implemented at the various seeding sites (see Appendix 2). Depending on the erosion potential of the site, different erosion control measures may be installed (Photo 23).

All disturbed soil areas will be treated to prevent erosion and sedimentation. For level or gentle sloped areas, broadcast seeding with local sources of native grasses in a prepared seedbed is recommended. A light application of rice straw (800 to 1000 pounds per acre) over the seeded area will help prevent erosion and provide greater soil moisture for seed germination. Where wind is a factor in blowing straw away, the straw will be crimped into the soil surface, or a light straw erosion control blanket will be installed instead of the straw mulch.

For moderate to steep slopes (3:1 to 2:1) or sites with a moderate erosion potential, treatment similar to that for level and gentle sloped areas will be used except that a higher application of straw (1200 to 1500 pounds per acre) will be applied.

For erodible steep slopes, 2:1 or steeper, an erosion control blanket will be installed prior to seeding if seed retention is an issue. If seed retention is not an issue, the seed will be applied before the blanket is installed. These erosion control measures need to be applied early in the fall in order to prevent erosion in a high erosion potential situation and to assure good germination and vegetation establishment.

In addition to seeding and mulching, straw wattles (Photo 26) will be installed on or near contours where slopes are lengthy, where concentrated runoff will cause rilling or gullying, or where water needs to be diverted. Location and number of wattles will be determined on site. In extreme situations, wattle rows may be spaced as close as 15 to 20 feet intervals.

Vegetative erosion control measures (seeding and planting of native grasses) are intended to provide long-term erosion control of disturbed soil. Erosion control seeding will be implemented on all erodible disturbed soil in the construction area. Seeding mixes will consist of various native perennial grasses based on site conditions (see Appendix 2- Table 2). High seeding and planting rates will be used for areas with high erosion potential or where invasion of noxious weeds are an issue. Seeded areas will be mulched with rice or other cereal straw approved by the appropriate agency. Seeded areas will be monitored and, if needed, remedial seeding will be implemented to achieve the desired vegetative cover.

2. General Restoration Procedures

a. Site Preparation

Prior to broadcast seeding, and as feasible, soil will be scarified to create a seedbed for enhancing germination. If feasible, construction crews will loosen compacted soil areas prior to leaving the site. After the construction crew leaves the project, the restoration contractor will use equipment that causes minimal disturbance such as a small tractor or an all terrain vehicles (ATV) with a small harrow or disc to scarify compacted soil. Where soil is not compacted, scarifying by raking may be adequate to create a seedbed. If seeding is performed in the early part of the fall and if mulching is performed after seeding, little soil preparation is needed to achieve germination and establishment.

b. Preplant vegetation control

TABLE 1- INVENTORY DATA

			CRITERIA			
Tower Location	VegQ	Natgr	Soil	PltgT	ErosP	VegCtype
Chaparral						
14/98	M	1	Ad	B	M	WP
14/97	M	1	Ad	B	M	WP
14/96	M	1	Ad	B	M	WP
14/95	---	---	---	---	---	---
Mowing Area						
14/94	---	---	---	---	---	---
14/93	---	---	---	---	---	---
14/92	---	---	---	---	---	---
14/91	---	---	---	---	---	---
14/90	L	1	Ad	NR, S	L	Nor
14/89	L	1	Ad	NR, S	L	Nor/NW1, 3
Ascending fr. Lake						
13/88	---	---	---	---	---	---
13/87	---	---	---	---	---	---
13/86	---	---	---	---	---	---
Lake Area						
13/85	L	3	Ad	B	H	NW1, 2/ WP
13/84	---	---	---	---	---	---
13/83	M	3	Ad	B	H	NW1, 2,3/ WP
12/82	---	---	---	---	---	---
12/81A	---	---	---	---	---	---
12/81	---	---	---	---	---	---
12/80	---	---	---	---	---	---
12/79	L	2	Po	S	L	Nor/ WP
12/78	M	1	Fv	B	M	Nor
12/77	---	---	---	---	---	---
11/76	---	---	---	---	---	---
11/75	H	3	Ad	B	M	WP
11/74	M	1	Po	S	M	WP
Trousdale to Lake						
11/73	---	---	---	---	---	---
11/72	---	---	---	---	---	---
11/71	L	1	Ad	B	M	NW1/WP
11/70	M	3	Po	B	M	WP
10/69	L	1	Po	B	H	NW1/ WP
Housing Area/ Skyline						
10/68	---	---	---	---	---	---
10/67	---	---	---	---	---	---
10/66	---	---	---	---	---	---
10/65	---	---	---	---	---	---
10/64	---	---	---	---	---	---
10/63	---	---	---	---	---	---

If woody vegetation exists within the planting areas (under and near the tower), selective herbicides will be used to eliminate the undesired vegetation prior to seeding where landowners permit their use. Woody vegetation, including trees, is unsafe close to towers (Photo 22). This vegetation type will be replaced with herbaceous vegetation, especially native perennial grasses intended to prevent re-invasion of woody plants. The estimated disturbed area at each tower location where woody vegetation will be removed is approximately 50 by 50 feet (0.05 to 0.06 acre). Only spot treatment of herbicides will be used within this area.

Sites with noxious weeds will also be treated prior to planting. Each year, beginning in 2002, noxious weeds will be sprayed with a selective or contact herbicide, or rogued, depending on the infestation of the noxious weed, the presence of desirable or sensitive species, and environmental conditions. Noxious weeds include Italian thistle, milk thistle, bull thistle, yellow star thistle, cheeseweed, teezo, oxalis, fennel, and bristly oxtongue. Up-to-date recommendations to control noxious weeds will be attained from a qualified pest control advisor or University Cooperative Extension specialist. Herbicide label requirements and restrictions will be adhered to.

c. Erosion Control (also see Erosion control and restoration of disturbed areas above)

In most cases, straw mulching and seeding will be sufficient to control erosion (see Appendix 2 for site-specific treatments). On slopes that are long and erodible, straw wattle slope breakers may be installed at varied intervals to prevent erosion. Steep slopes on a few tower sites (approximately 2:1) will require spacing of wattles at 15 to 30 feet intervals. Moderate slopes (less than 2:1 to approximately 3:1) will require spacing of 30 to 40 feet apart. In lieu of straw wattles, jute netting or other kinds of erosion control blankets may be used, depending on soil conditions, mulching, and seed retention needs.

d. Seeding & planting at tower locations

Typically the strategy that will be used to control erosion, to prevent invasion of noxious weeds, and to reduce maintenance is to use high seeding and planting rates. The amount of disturbed soil area at each tower site is anticipated to be relatively small. Based on similar tower replacement on San Bruno Mtn., it is estimated that approximately 0.1 to 0.12 acre will need erosion control and restoration seeding at each tower location. There are approximately 85 tower locations in total. Thus, approximately 8.5 to 10.0 acres will be seeded and/or planted at tower locations.

Seeding rates of the seed mixes may be as high as 120 to 150 seeds per square foot. The seeding rate of various species in a seed mix may range from 22 to 90 seeds per square foot per species. Planting densities may be as close as 9 inches on center for plugs of smaller size species such as *Festuca idahoensis* and 12 to 14 inches for *Nassella pulchra*.

The exception of using high seeding rates is at the planting sites from Towers 14/89 to 14/94. In this area, the standard practice is to mow the vegetation on a routine basis. There are relatively few native grasses in this area and the herbaceous vegetation that exists in the area is in balance with the quality of soil at the sites. The soil is relatively poor with the dominant vegetation being annual grasses. A relatively low seeding rate of *Nassella pulchra* and vegetation control to the extent of allowing natural regeneration of the existing vegetation is recommended. This treatment will allow the vegetation to be restored, blend in with the surrounding area, and be compatible with the mowing practice of the area.

APPENDIX 2A- SITE INVENTORY

Representative sites were inventoried in order to determine which species of native grasses are best suited for the various conditions. In addition, the presence of noxious weeds and woody plants that have to be controlled during vegetation establishment was recorded. Special problems at the representative sites were also noted. The key to the following table provides details of the specific criteria used.

Table 1 below list all the tower sites, grouped into areas of similar habitat. The survey information was taken only on 37 representative sites. The prescriptions in Table 2 are in a large part based on the survey information. As time allows, additional survey data will be taken more of the sites and prescriptions refined. No data will be taken at the Golf Course.

QUALITY OF VEGETATION (VegQ)

Low= L
Moderate= M
High= H

PRESENCE OR ABSENCE OF NATIVE GRASSES (Natgr)

Not present= NP
At least one species= 1
2 species= 2
3 species= 3
4 species=4

QUALITY OF SOIL (Soil)

Poor= Po
Adequate= Ad
Favorable= Fv

PLANTING TECHNIQUES APPLIED (PltgT)

Seeding= S
Planting=P
Both seeding and planting= B
Natural regeneration= NR

EROSION POTENTIAL (ErosP)

Low= L
Moderate= M
High= H

TYPE OF VEGETATION CONTROL (VegCtype)
Woody plants= WP
Noxious weed= NW: 1= thistles, 2= fennel, 3= bristly oxtongue, 4= cheeseweed, 5=oxalis
Normal= Nor

e. Seed Mixes (see Appendix 2B for local seed sources)

SEED MIX 1-Mainly *Nassella pulchra*

SPECIES	Pounds/Acre
Nassella pulchra	22.0
Nassella cernua	12.0
Elymus glaucus	11.1

SEED MIX 2- Mainly *Nassella cernua*

SPECIES	Pounds/Acre
Nassella cernua	22.0
Nassella pulchra	20.0

SEED MIX 3- Mainly Grassland

SPECIES	Pounds/Acre
Nassella cernua	16.3
Nasella pulchra	17.7
Elymus glaucus	11.1

SEED MIX 4- Mainly *Elymus glaucus*

SPECIES	Pounds/Acre
Elymus glaucus	22.2
Nassella pulchra	15.0
Nassella cernua	5.4
Bromus carinatus	11.5

SEED MIX 5- Mainly *Danthonia californica*

SPECIES	Pounds/Acre
Nassella pulchra	13.3
Nassella cernua	7.3
Elymus glaucus	11.1

SEED MIX 6

SPECIES	Pounds/Acre
Nassella pulchra	16.7

f. Fertilization

The erosion control seeding will be fertilized with a low application of an organic fertilizer, Biosol 7-2-3 (350 pounds per acre).

g. Straw mulching (see Erosion control and restoration of disturbed areas above)

All seeded areas will be mulched with rice straw approved by the San Francisco Water Department or the San Mateo County Park Department (depending on ownership of sites). Mulch will be uniformly applied at a rate of approximately 800 to 1500 pounds per acre over seeded areas. Although the straw is effective for erosion control, the other major reason for mulching is to enhance seed germination.

h. Species for plug planting (see Species that may be grown as plugs for planting in Fall, Appendix 2, & Photos 13-16)

i. Vegetation control (see Monitoring and Vegetation Establishment below)

j. Supplemental and remedial seeding

Supplemental seeding is a follow-up seeding done at the end of the first year of maintenance (vegetation control). It is usually performed in localized areas where results do not meet the level of acceptance. Restoration sites are reviewed at the end of the season to identify areas that are sparse or bare. These sites are seeded with appropriate species.

Remedial seeding is similar to supplemental seeding, but occurs after the first year's maintenance and remedial measures are taken. For example, if a noxious weed invades a planting site, it may be necessary to apply a contact herbicide. After the weeds in the area are eliminated, remedial seeding would be applied to prevent re-invasion of weeds. Remedial seeding may be needed for any number of reasons during the short-term establishment period (up to 4 years after planting). Like supplemental seeding, it is generally applied in a relatively few localized areas.

3. Special Problem Areas Requiring Testing and Erosion Control

Two tower sites have special problems that warrant a testing approach to restoring native vegetation. Although the proposed treatments are experimental in design, the objectives are deemed operational in the sense that the same level of results is to be achieved. The general criteria, as previously stated, are "to restore native vegetation to the same or greater level than the surrounding area". At the two sites, the surrounding areas are degraded, and improving the vegetation would provide valuable information on how to restore similar types of disturbed areas.

One test location is Tower 13/85 (Photo 25) where the planting site and the surrounding area were drastically disturbed in the past. The tower is located on a slope that appears to be a cut or a slide area. At the north end of the slope is a protruding peak that appears to be at the original grade of the slope. The slope is steep and covered with invasive weeds or bare soil. The special problems at this site include 1) high potential for erosion during the restoration process, 2) invasive weed species (broom, fennel, and thistles) and 3) the difficulty of establishing native grasses due to the two problems previously noted besides the lack of topsoil in the disturbed area.

At Tower 13/85, basic restoration principles and engineering and construction practices to minimize erosion potential will be used. The mechanical measures will include using straw wattles and mulching. The straw wattles will be made of sterile rice straw, and the mulch will consist of local hay of *Elymus glaucus* collected from an area south of Tower 13/85 (Photo 13) or Tower 4/27A (Photo 10) and 3/20 sites. The amount of hay collected will not adversely affect the

APPENDIX 2

EROSION CONTROL AND RESTORATION CRITERIA AND SITE SPECIFIC PRESCRIPTIONS FOR TOWER SITE LOCATIONS ON THE SAN FRANCISCO 230 kV TRANSMISSION LINE

sites where it will be collected. If more mulch is needed than can be collected, rice straw will be used to supplement the native hay.

Other treatments at Tower 13/85 include collecting local seeds of *Nassella cernua* (Photo 14), *Nassella pulchra* (Photo 15), and *Elymus glaucus* (Photo 10), and contract growing a seed crop of these three species for restoration of the site. Some of the seed collected will also be used to propagate plugs of these native grasses as well as *Danthonia californica* (Photo 16), which will be propagated vegetatively. A preplanting vegetation control will be used in the area to be seeded and planted. Selective and contact herbicides will be used in order not to contaminate the soil with a residue that would adversely affect germination of the native grasses and grass seedlings. If local topsoil in the area is available, the seeded and planted area will be top dressed with a thin layer (approximately one-quarter to one-half inch) of topsoil. If not available, a commercial inoculum is proposed.

The planting of Tower 13/85 may be used as a project for a graduate student internship. If so, a small portion of the adjacent area will not be treated and will serve as a control. The planting will extend into the adjacent area not disturbed by the construction of the tower. This is an exception to the size of the restoration area at other tower sites.

The other test site is Tower 4/24A (Photo 24). This site consists of sparse herbaceous vegetation surrounded by shrubs. At several spots in the planting area, the soil was only 2 to 3 inches deep, with what appears to be underlying bedrock. Improving the vegetation at this site has limited possibilities because of the limited amount of soil and the unusual soil moisture conditions. In the rainy season the soil is excessively wet as evidenced by the undersized native rush growing under the tower. In spring, the soil dries rapidly, and during summer, very little moisture exists in the thin mantle of soil. The grasses and rush in this area are undersized and stressed compared to the grasses on the nearby hillside.

The approach to improve the vegetation at this site is similar to Tower 13/85. However, the major emphasis is to use a different set of locally adapted native species and a soil inoculant. The preferred inoculant is to use a topdressing of local native soil. If this is not possible, a commercial inoculant is proposed. A native legume, *Lupinus bicolor* (Photo 19), will also be seeded in the planting site. Hopefully, the legume will provide a long-term source of nitrogen to the soil.

4. Rehabilitation of Disturbed Areas Other than Tower Sites in the Rights-of-Way

In addition to the tower locations, non-paved spur access roads, roadsides, and laydown areas disturbed by the construction work will be restored similarly to the tower sites. Non-paved access roads that are frequently driven on and will produce dry flammable vegetation in summer will not be seeded to avoid creating a fire hazard situation. Other disturbed areas will be seeded to prevent erosion.

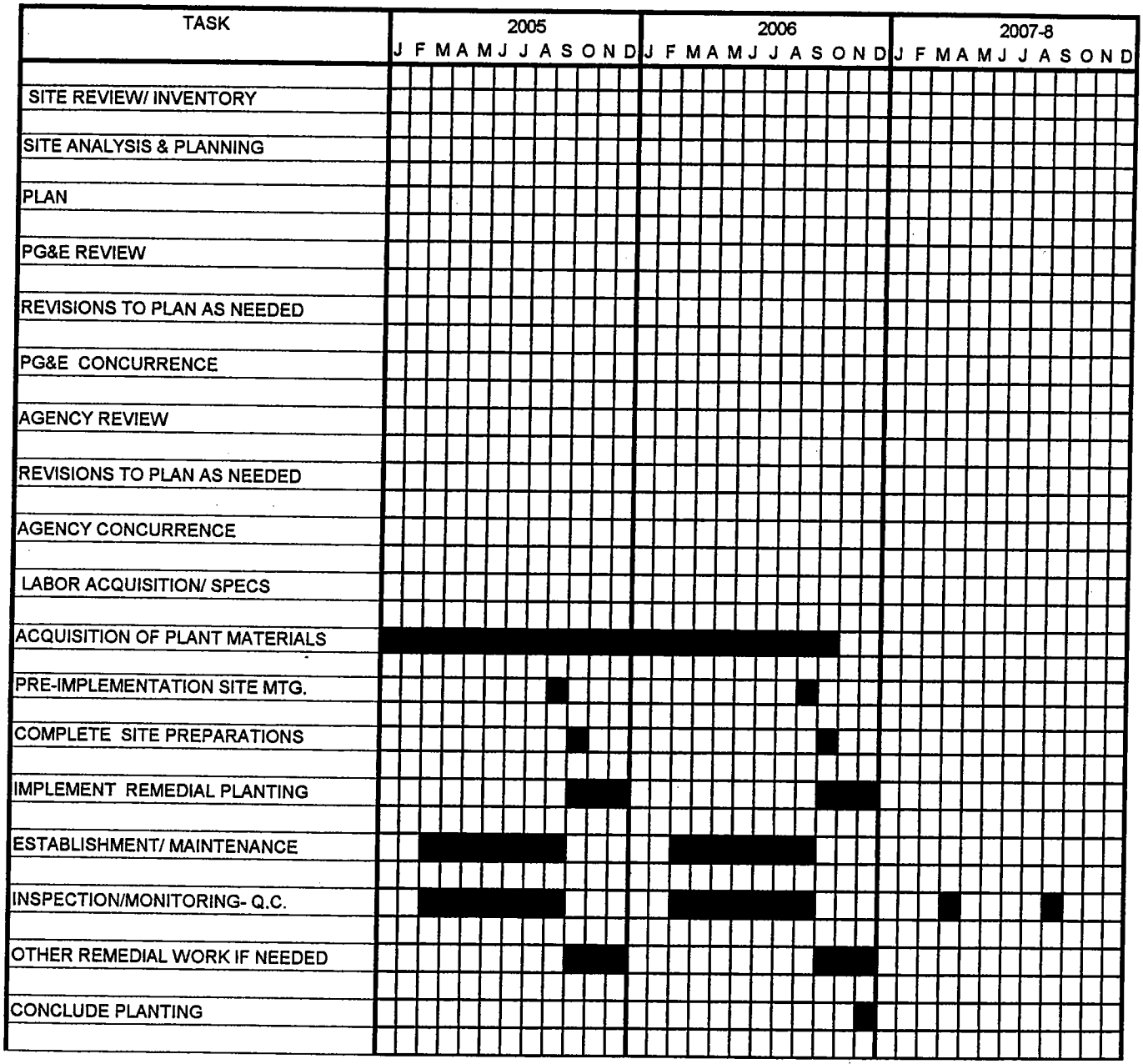
Repair and prevention of erosion along non-paved spur access roads:

a. Ruts in road

The construction crew will remove ruts in the spur roads after construction prior to leaving the sites. Erosion control and restoration of disturbed areas along spur access roads will be implemented during the same period that the tower sites are treated for erosion control and restoration.

APPENDIX 1B

WORK TASKS- 2005 to 2008



b. Water bars

Water bars will be constructed on non-paved spur access roads where needed to prevent concentration of runoff. Where runoff concentrates or builds up too much runoff energy on the road, water will be diverted to a safe, vegetated or protected area.

c. Disturbed roadsides and slopes

Roadsides and roadside slopes that may be disturbed by the transmission line construction will be treated to prevent erosion by seeding and mulching. Slopes that will not retain seed without pre-seeding treatment may be covered with jute or coir netting prior to seeding. Installing the netting in close contact with the soil is important in order to retain seed and to get the full mulching benefit of the netting.

d. Drainage across non-paved spur access roads

At locations where natural drainages cross the road and erosion may occur due to runoff, rolling dips will be installed to prevent erosion damage. Erosion control fabric will be applied to the soil after the dip is formed and prior to the placing of 4 to 6 inch-rock. Rock protection will also be installed on both sides of the rolling dip as needed. Diverting runoff to minimize impacts to the road crossing will also be implemented as necessary.

D. MONITORING AND VEGETATION ESTABLISHMENT

The follow-up work after planting is critical to the success of the restoration. Timely supplemental and remedial work is only possible by adequate monitoring. The key monitoring periods are based on the need for vegetation control and watering of planted plants. Vegetation control in the context of the restoration plan means weed control during initial establishment (first two years after planting) coupled with any remedial seeding needed.

Plugs will require minimal watering for two years. Minimal, but thorough and timely, maintenance is essential for successful restoration. Excessive watering may be detrimental to the plants because the plants cannot adjust to the natural soil moisture conditions if they are dependent upon artificial water. Plants must grow in balance with the natural existing soil conditions of the site if they are to perpetuate without irrigation.

D1. VEGETATION CONTROL

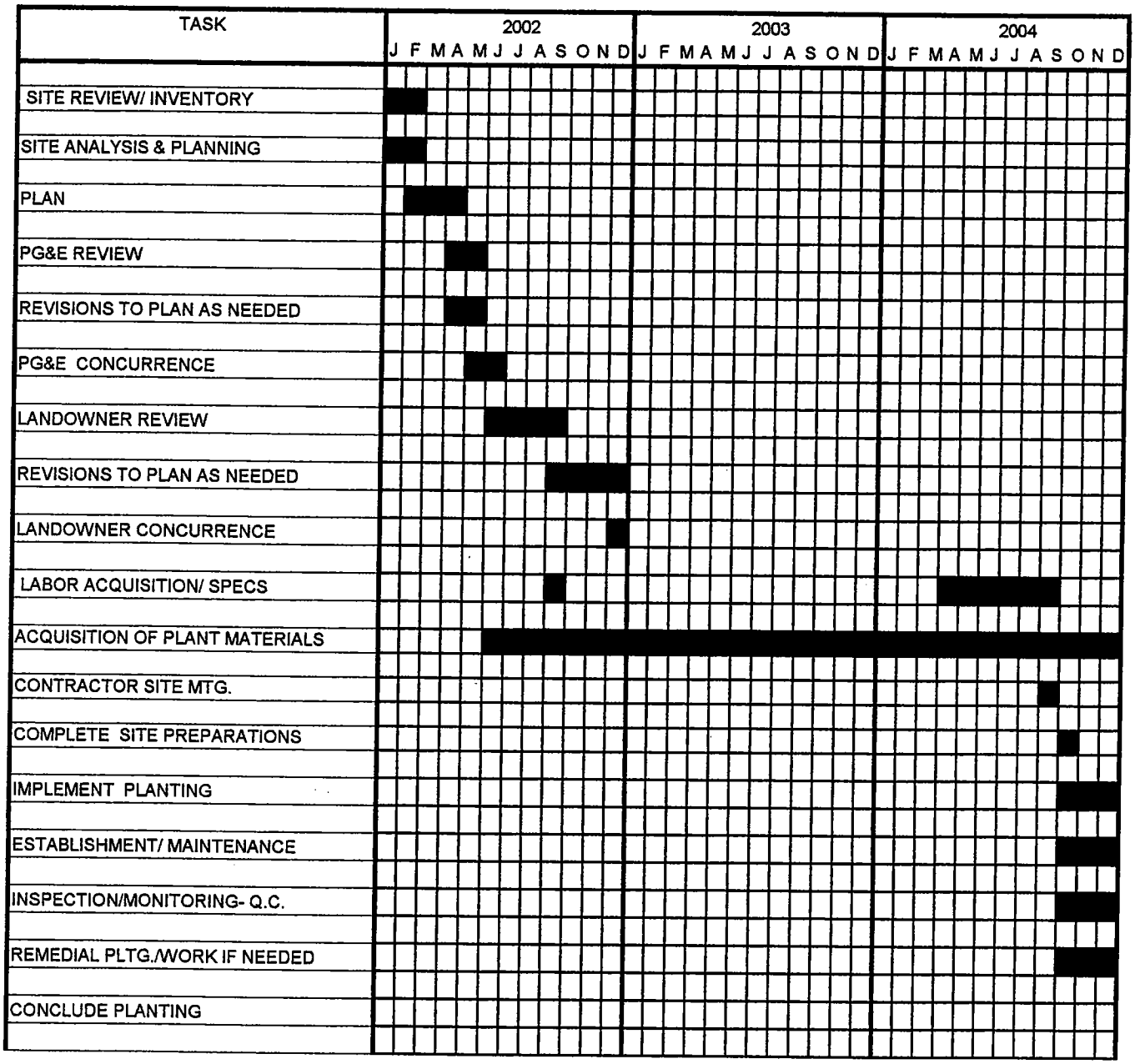
1. First Year Maintenance/ Supplemental Seeding

Planting sites will be monitored to determine when they will be mowed or trimmed (cut with "weed-eater" equipment). The target for this maintenance practice is non-native annual grasses. When the majority of the planting area has annual grasses in the stage of flowering or immature seed development, the area will be mowed or weed trimmed to eliminate the seed inflorescences (the approximate date for the first mowing or weed trimming is March 15 to March 30).

Prior to mowing or weed trimming, any noxious weeds in the plot will be hand pulled or cut below the ground. Noxious weeds include Italian thistle, milk thistle, bull thistle, yellow star thistle, cheeseweed, teezo, oxalis, fennel, and bristly oxtongue.

APPENDIX 1A

WORK TASKS- 2002 to 2004



At the time of the first mowing or weed trimming, planted native grass plugs in the plot will be weeded and watered after mowing or weed trimming is performed. An area approximately 6 inches in diameter will be weeded around each seedling.

The plantings will be monitored a second time to check for and to remove noxious weeds 3 to 4 weeks after the first maintenance. Any noxious weeds in the plot will be hand pulled or cut below the ground to remove. If immature annual grass inflorescences have re-developed since the last mowing, they should be weed trimmed in spots where they might occur. Grass plugs will the re-watered during the second maintenance after weeding.

The plantings will be monitored approximately one month after the second maintenance. At the third monitoring, watering may be applied if the grass plugs show any signs of stress. Otherwise, they should not be watered because it is important to wean the planted grasses as soon as possible. Any noxious weeds in the plot will be hand pulled or cut below the ground to remove. If immature annual grass inflorescences have re-developed since the last mowing, they should be weed trimmed in spots where they might have occurred.

After the third monitoring, the planting should be monitored once a month until September. During this period of monitoring, noxious weeds should be removed by pulling or cutting below ground, being careful not to disturbed the soil. Watering should not be applied during this period unless absolutely necessary. If the stand of planted plugs begins to wilt, then water should be applied. In September, the plantings should be mowed and supplemental seeding applied where the soil is bare or sparse with herbaceous vegetation.

2. Short-Term Vegetation Establishment

For the second and third year after planting, maintenance should be minimal. The seeded and planted grasses should be filling in and covering the soil along with the naturally regenerated species existing in the area. The major maintenance is mowing the plantings before the annual grass seed inflorescences mature in March and doing a follow-up weed trimming of annual grass inflorescences 3 weeks later. Removing noxious weeds once a month is the remaining maintenance. Although remedial seeding is not anticipated in the fall of the second and third year after the initial seeding, remedial seeding should be performed if a complete cover of vegetation has not been achieved.

For the fourth and fifth year after planting, monitoring to assure noxious weeds have not invaded the planting is recommended. If present, noxious weeds should be removed, and native grass seed selectively seeded in those spots in fall. No mowing or weed trimming is anticipated during this period of maintenance unless a heavy stand of annual grasses develops in any of the plots that would threaten the establishment of the native grasses.

D2. VEGETATION MANAGEMENT

Long-term vegetation management

Long-term vegetation management (vegetation control and management 4 years after the initial planting) is not within the scope of the mitigation. However, it is worthwhile to mention that vegetation in County Parks and the San Francisco Water Department lands need to be managed on a continual basis. This management includes controlling the build up of excessive fuels due to over grown vegetation, renewing decadent vegetation, reducing the competition of annual grasses and other non-desirable species, and encouraging seed germination of desirable species.

Although mowing may not be feasible over large extensive areas, grazing and control burning are considered sound management practices that would apply on County Parks and the San Francisco Water Department lands. Appropriate long-term management practices may need to be applied every 3 to 5 years.

F. SUMMARY

Erosion control and restoration objectives will be achieved by developing a set of criteria and prescriptions for each site. Overall objectives include a) minimizing disturbance during construction, b) controlling erosion, c) establishing local native grasses and other vegetation to a level that is comparable or greater than the surrounding area, d) utilizing natural regeneration in order to blend in with the surrounding area, e) preventing invasion and control of noxious weeds, and f) assuring establishment and management of planted vegetation within a five year period.

The basis of the strategy to achieve successful results for the erosion control and restoration objectives is developing prescriptions based on a specific set of criteria. (see Appendix 2A). The criteria included quality of the vegetation at the site, the presence or absence of native grasses, the planting technique(s) suited for the site, the erosion potential of the site, the quality of soil, and the need for vegetation control to assure establishment. The erosion control and restoration prescriptions based on the criteria are listed in Appendix 2B- Table 2.

Great emphasis is placed on the acquisition of local native plant materials. Because most of the sources of native grasses are not commercially available, contract growing of seed crops and nursery plants are necessary to acquire the specific local sources. Technical knowledge on seed collecting, seed handling, seed treatment, and plant propagation is important to acquire all the needed materials. In addition, a tight time line is associated with plant species acquisition due to the process used to grow seed crops and nursery plants.

Using proper planting techniques and timing are critical for native plant establishment. Equally important are the vegetation control (maintenance) and remedial seeding as needed after planting. In order to prescribe follow-up work on the plantings, the plantings need to be monitored, special problems identified, and appropriate remedial measures taken in a timely manner. If the specifications for erosion control, plant establishment, and vegetation control are adhered to, plantings should be successful. The planted areas are expected to be as rich or richer in native plants compared to the surrounding areas.

APPENDIX 1

WORK TASKS AND SCHEDULE