Box 1, Folder 5

Item 1

Disposal and Reuse of Naval Station Treasure Island

Draft Environmental Impact Statement

May 2002

Southwest Division
Naval Facilities Engineering Command
San Diego, California

DRAFT ENVIRONMENTAL IMPACT STATEMENT (EIS) FOR THE DISPOSAL AND REUSE OF NAVAL STATION TREASURE ISLAND SAN FRANCISCO, CALIFORNIA

Lead Agency for the EIS:	Department of the Navy
Title of Proposed Action:	Disposal and Reuse of Naval Station Treasure Island
Affected Jurisdiction:	City and County of San Francisco
Designation:	Draft EIS Submitted Pursuant to 42 U.S.C. § 4332(2)(C)

ABSTRACT

In 1993, the Defense Base Realignment and Closure Commission, pursuant to the Defense Base Closure and Realignment Act of 1990 (Pub. L. 101-510, Title XXIX, 10 U.S.C. § 2687 note), recommended the closure of Naval Station Treasure Island (NSTI). NSTI was closed on September 30, 1997. This EIS has been prepared in accordance with the National Environmental Policy Act (NEPA) (Pub. L. 91-190, 42 U.S.C. §§ 4321-4370f), the implementing regulations of the Council on Environmental Quality (CEQ) (40 C.F.R. Parts 1500-1508), and agency regulations and guidelines to evaluate the environmental consequences of the proposed disposal of surplus Federal property at NSTI and the subsequent reuse of those properties.

The EIS evaluates three reuse alternatives: Alternative 1 (Draft Reuse Plan Alternative); Alternative 2; and Alternative 3. Also evaluated is the No Action Alternative, in which Navy would retain ownership of NSTI surplus Federal property in a caretaker status. This EIS analyzes potential environmental impacts relating to land use; visual resources; socioeconomics; cultural resources; transportation; air quality; noise; biological resources; geology and soils; water resources; utilities; public services; and hazardous materials and waste. The only potentially significant and not mitigable impact is demolition of historic buildings that would occur under Alternative 2.

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May 2002

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ACRONYMS AND ABBREVIATIONS

µg/m³	micrograms per cubic meter
3D	three dimensional
AB	Assembly Bill
ABAG	Association of Bay Area Governments
AC Transit	Alameda-Contra Costa Transit District
ACHP	Advisory Council on Historic Preservation
ACM	asbestos-containing material
ADA	Americans with Disabilities Act
ADT	average daily traffic
AST	aboveground storage tank
BAAQMD	Bay Area Air Quality Management District
BART	Bay Area Rapid Transit
BCDC	Bay Conservation and Development Commission
BCP	BRAC cleanup plan
BCT	BRAC cleanup team
BMP	best management practices
BOD	biological oxygen demand
BRAC	Base Realignment and Closure
C_2H_3Cl	vinyl chloride
CAD	computer aided design
Cal. Code Regs.	California Code of Regulations
Cal. Pub. Res. Code	California Public Resources Code
Cal EPA	California Environmental Protection Agency
Cal. Stat.	California Statute
Caltrain	California Train
Caltrans	California Department of Transportation
CAP	corrective action plan
CARB	California Air Resources Board
CATS	consolidated area telephone system
CDFG	California Department of Fish and Game
CDMG	California Division of Mines and Geology
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERFA	Community Environmental Response Facilitation Act
C.F.R.	Code of Federal Regulations
cm	centimeter
CMP	congestion management program
CNEL	community noise equivalent level
CNPS	California Native Plant Society
CO	carbon monoxide
COE	US Army Corps of Engineers
CPOEC	chemicals of potential ecological concern
CRC	Citizens Reuse Committee
CZMA	Coastal Zone Management Act
dB	decibel
dBA	A-weighted decibel

ACRONYMS AND ABBREVIATIONS *(continued)*

DBCRA	Defense Base Closure and Realignment Act
DBI	Department of Building Inspection
DDT	dichlorodiphenyltrichloroethane
DoD	Department of Defense
DOL	Department of Labor
DON	Department of the Navy
Draft Reuse Plan	Draft Naval Station Treasure Island Reuse Plan
DRMO	Defense Reutilization and Marketing Office
DTSC	Department of Toxic Substances Control
EBMUD	East Bay Municipal Utility District
EBS	environmental baseline survey
EDD	California Economic Development Department
EFH	Essential fish habitat
EIS	Environmental Impact Statement
EIR	Environmental Impact Report
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
EMTs	emergency medical technicians
ESU	Evolutionarily Significant Unit
exposition	Golden Gate International Exposition
°F	degrees Fahrenheit
Fed. Reg.	Federal Register
FEMA	Federal Emergency Management Agency
FFSRA	Federal facility site remediation agreement
FHWA	Federal Highways Administration
FISC	Fleet and Industrial Supply Center
FISCO	Fleet and Industrial Supply Center, Oakland
FMP	Fishery management plan
FPMR	federal property management regulations
FS	feasibility study
FY	fiscal year
g	Gravity
GGNRA	Golden Gate National Recreation Area
H_2S	hydrogen sulfide
ha	Hectare
HABS	Historic American Buildings Survey
HAER	Historic American Engineering Record
HAP	Hazardous air pollutant
HOV	high occupancy vehicle
HUD	US Department of Housing and Urban Development
HVAC	heating, ventilation, and air conditioning
I-80	Interstate 80
IEP	Interagency Ecological Program
IR	installation restoration
IRP	Installation Restoration Program
kg	kilograms
km	kilometer

ACRONYMS AND ABBREVIATIONS *(continued)*

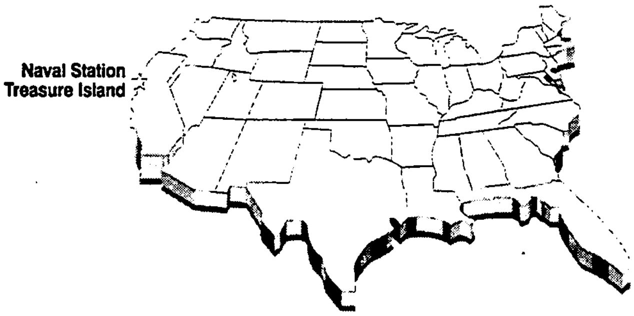
kV	Kilovolts
LBP	lead-based paint
Ldn	day-night average sound level
Leq	equivalent noise level
LOS	level of service
LRA	local redevelopment authority
LTMS	long term management strategy
m	meter
m^2	Square meter
m^3	Cubic meter
MARAD	Maritime Administration
MCLs	maximum contaminant levels
mg/l	milligrams per liter
MGD	million gallons per day
ml/1-hour	settleable matter
MLLW	mean lower low waterline
MOA	memorandum of agreement
mph	miles per hour
MSA	Magnuson-Stevens Fishery Conservation and Management Act
Msl	mean sea level
MTC	Metropolitan Transportation Commission
MTL	Mean tide level
MUNI	San Francisco Municipal Railway
NAGPRA	Native American Graves Protection and Repatriation Act
Navy	Department of the Navy
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEPA	National Environmental Policy Act
NESHAP	National Emissions Standards for Hazardous Air Pollution
NGVD	National Geodetic Vertical Datum
NHL	National Historic Landmark
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NMFS NWR	National Marine Fisheries Service, Northwest Region
NMFS SWR	National Marine Fisheries Service, Southwest Region
No.	number
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NOAA	National Oceanic and Atmospheric Administration
NOA	Notice of availability
NOI	Notice of intent
NOP	Notice of preparation
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NPS	National Park Service
NRHP	National Register of Historic Places
NSTI	Naval Station Treasure Island
NWIC	Northwest Information Center

ACRONYMS AND ABBREVIATIONS *(continued)*

O_3	ozone
O&M	operation and maintenance
OEA	Office of Economic Adjustment
OES	Office of Emergency Services
OMBC	Office of Military Base Conversion
OPNAVINST	Chief of Naval Operations instruction
OSHA	Occupational Safety and Health Administration
OWS	Oil/water separator
PA	preliminary assessment
PAH	polychlorinated aromatic hydrocarbon
Pb	lead particles
PCBs	polychlorinated biphenyls
pCi/L	picocuries per liter
PFMC	Pacific Fishery Management Council
PG&E	Pacific Gas & Electric Company
$PM_{2.5}$	fine particulate matter
PM_{10}	inhalable particulate matter
ppm	parts per million
PRC	Public Resources Code
PSMFC	Pacific States Marine Fisheries Commission
psi	pounds per square inch
Pub. L.	Public Law
PUC	Public Utilities Commission
PVC	polyvinyl chloride
RA	remedial action
RAB	Restoration advisory board
RAP	Remedial Action Plan
RBHSS	Richmond Bridge Harbor Seal Survey
RCRA	Resource Conservation and Recovery Act
RD	remedial design
Redevelopment Act	Base Closure Community Redevelopment and Homeless Assistance Act
Reuse Plan	Naval Station Treasure Island Draft Reuse Plan
RI	remedial investigation
ROD	record of decision
ROG	reactive organic compounds
RWQCB	Regional Water Quality Control Board
RONA	Record of Non-Applicability
SamTrans	San Mateo County Transit District
San Francisco	City and County of San Francisco
SD	site discovery
sf	square feet
SFEP	San Francisco Estuary Project
SFOBB	San Francisco-Oakland Bay Bridge
SFTA	San Francisco Transit Authority
SFUSD	San Francisco Unified School District
SFWD	San Francisco Water Department
SHL	State Historic Landmark

ACRONYMS AND ABBREVIATIONS *(continued)*

SHPO	State Historic Preservation Officer
SHSZ	Seismic Hazards Studies Zone
SI	site inspection
SMP	site mitigation plan
SO_2	sulfur dioxide
SO_4	sulfate particles
SPCC	Spill Prevention Control and Countermeasure
SVOC	semivolatile organic compound
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
TCM	transportation control measure
TDM	transportation demand management
TICA	Treasure Island Conversion Act
TIDA	Treasure Island Development Authority
TIHDI	Treasure Island Homeless Development Initiative
tit.	title
TPH	total petroleum hydrocarbon
TSCA	Toxic Substances Control Act
TSS	total suspended solids
UBC	Uniform building code
ULI	Urban Land Institute
U.S.C.	United States Code
USCG	United States Coast Guard
USFWS	United States Fish and Wildlife Service
UST	underground storage tank
VOC	volatile organic compound
vph	vehicles per hour
VTS	vehicle tracking system
WAPA	Western Area Power Administration



EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

ES.1 INTRODUCTION

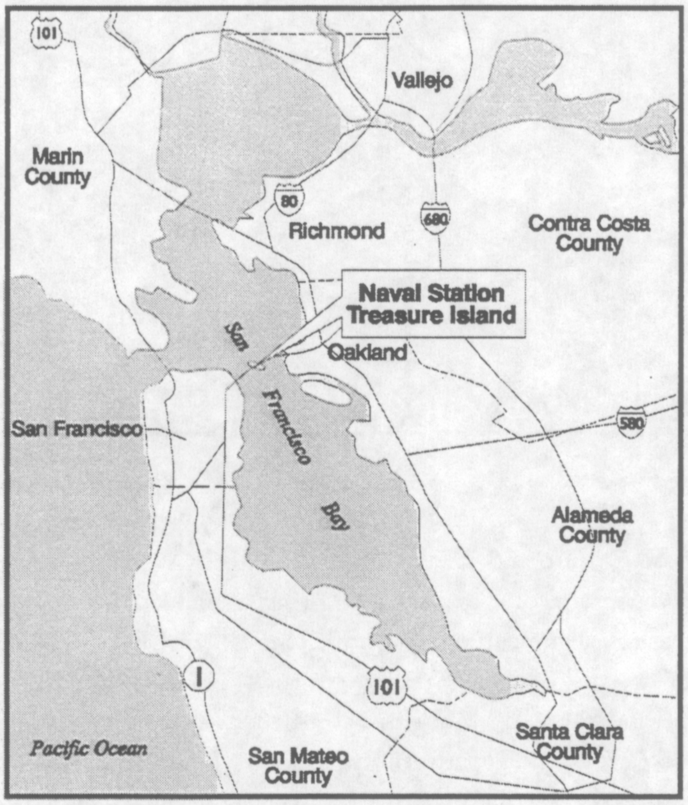
The Defense Base Closure and Realignment Act (DBCRA) (10 U.S.C. § 2687 note) directed the Department of Defense (DoD) to reduce and realign United States (US) military operations. The 1993 Defense Base Realignment and Closure Commission (BRAC '93 Commission) recommended the closure of Naval Station Treasure Island (NSTI). President Clinton approved this recommendation and the 103rd Congress accepted it on September 27, 1993. NSTI closed on September 30, 1997, and US Department of the Navy (Navy) is in the process of disposing of the property in accordance with applicable laws and regulations, including the DBCRA.

This environmental impact statement (EIS) evaluates the potential impacts on the natural and human environment that could result from Navy disposal of surplus federal properties within NSTI and subsequent reuse of those federal properties. NSTI is made up of dry and submerged lands of both Treasure Island and portions of Yerba Buena Island in San Francisco, California. The location of NSTI is shown on Figure ES-1.

This document has been prepared by Navy in accordance with the National Environmental Policy Act of 1969 (NEPA) (Public Law [Pub. L.] 91-190, 42 United States Code [U.S.C.]§§ 4321-4370f); the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 Code of Federal Regulations [C.F.R.] Parts 1500-1508); Navy regulations implementing NEPA (32 C.F.R. Part 775); and Navy guidelines (Chief of Naval Operations Instruction [OPNAVINST] 5090.1B [1998]).

This EIS was originally prepared as a joint document to fulfill the requirements of both NEPA and the California Environmental Quality Act of 1970 (CEQA) (California Public Resources Code [Cal. Pub. Res. Code] § 21000 et seq., as amended) and the implementing CEQA regulations (California Code of Regulations [Cal. Code Regs.], Title 14, § 15000 et seq. [1998]). The CEQA lead agency was the City and County of San Francisco (San Francisco). Scoping was a joint federal-state process. After scoping was completed, San Francisco elected to prepare a separate environmental impact report (EIR) to analyze the impacts from the reuse of NSTI. The EIR will undergo a separate public review process.

Figure ES-1
Regional Location



ES.2 PURPOSE AND NEED (CHAPTER 1)

The purpose of and need for the proposed federal action is to dispose of surplus federal property at NSTI for subsequent reuse. Navy considered the Local Redevelopment Authority's (LRA) stated purpose and need in developing reasonable reuse alternatives. This purpose and need focused on reusing NSTI property to support the local economic base, enhance the local image and identity, expand the range of recreational and entertainment opportunities available to the community, and enhance the overall livability of the local area and region.

ES.3 DISPOSAL AND REUSE PROCESS

On October 15, 1993, Navy issued a Notice of Availability (NOA) for NSTI (Treasure Island proper)to DoD and other federal agencies indicating that the property was excess to the needs of Navy. Between October 1993 and October 1995, nine federal agencies expressed interest in excess property at NSTI. Five of the agencies submitted formal requests for property transfer. Three of these agencies withdrew their requests in 1995 and early 1996. The transfer requests for the remaining two agencies, US Department of Labor and the US Coast Guard, were approved. The Department of Labor requested approximately 36 acres (15 ha) of property and associated facilities on Treasure Island for its Job Corps program, and the Navy authorized the requested property transfer on April 17, 1998. The US Coast Guard requested approximately 22 acres (9 ha), including land, facilities, and submerged areas of Yerba Buena Island. Navy authorized transferring 11 acres

(4.5 ha) of dry land in March 3, 1998. The remaining 11-acre (4.5 ha) parcel of submerged land is scheduled for transfer in 2002, following completion of appropriate environmental documentation. These properties are not part of the proposed disposal and subsequent reuse action evaluated in this EIS.

On October 26, 2000, the Federal Highways Administration (FHWA) acquired 97 acres (39 ha) of Navy dry and submerged land on Yerba Buena Island. FHWA conveyed this land in fee to the California Department of Transportation (Caltrans) for right-of-way purposes in connection with the construction, operation, and maintenance of the SFOBB east spans retrofit project, including a temporary construction easement over a substantial part of Yerba Buena Island and permanent aerial easements over two parcels of land. The easements impose substantial restrictions on Navy's ability to access and utilize the underlying property. This land is no longer available for transfer by the United States and, as such, is no longer available for community reuse in accordance with the NSTI Draft Reuse Plan. For that reason, the SFOBB property, including the construction and aerial easements, is not included in the Navy disposal and is therefore, excluded from this EIS. Figure ES-2 illustrates the boundaries of NSTI and the reuse plan area.

The DoD Office of Economic Adjustment (OEA) designated San Francisco as the LRA for NSTI in May 1994. As part of the NSTI reuse planning process, numerous alternatives were proposed and then evaluated using goals established by the LRA. The city's Office of Military Base Conversion, a partnership of San Francisco's Planning Department and Redevelopment Agency and the Port of San Francisco, directed the reuse planning process. On July 22, 1996, the San Francisco Board of Supervisors endorsed the Draft Reuse Plan. The reuse plan proposes to maximize a range of public benefits within the major constraints of the site. The plan emphasizes publicly oriented recreational, entertainment, and hospitality uses that maximize the island's central location and outstanding views. The NSTI Draft Reuse Plan also incorporates specific users and types of uses from the second homeless screening process.

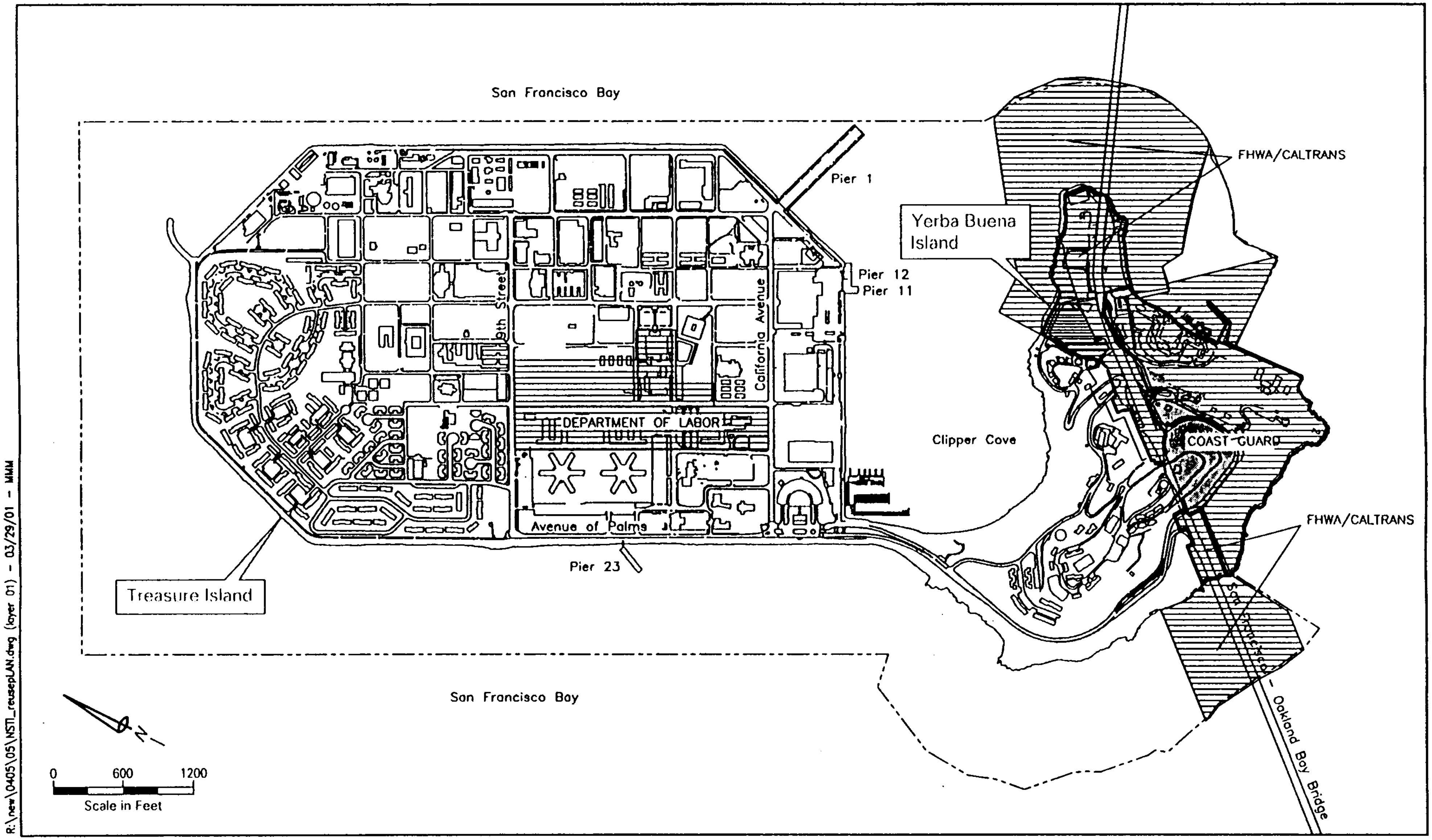
In 1997 the California State Legislature created a special reuse authority for Treasure Island, transferring the LRA status from San Francisco to the Treasure Island Development Authority (TIDA). TIDA is a state agency staffed by the San Francisco mayor's office and is the entity responsible for planning the reuse of Treasure Island. In March 1998, DoD OEA recognized TIDA as the implementing LRA for NSTI.

ES.4 RELATED STUDIES

Several project-related studies have been undertaken or are ongoing at NSTI. The major planning and restoration programs are the Environmental Baseline Survey, the Installation Restoration Program, and the BRAC Cleanup Plan.

ES.5 PUBLIC INVOLVEMENT PROCESS

The EIS process is designed to involve the public in federal decision-making. Opportunities to comment on, and participate in, the process are provided during preparation of this EIS. Comments from agencies and the public are solicited to help identify the primary issues associated with the



The area proposed for Navy disposal includes submerged lands and upland areas within NSTI. Parcels that were transferred to other Federal agencies are excluded from the proposed disposal.

Legend:

Areas Excluded from Proposed Navy Disposal

Naval Station Treasure Island Property Boundary/Reuse Plan Area

Reuse Plan Area

Naval Station Treasure Island, California

Figure ES-2

R:\new\0405\05\NSTI_reusePLAN.dwg (layer 01) - 03/29/01 - MMM federal disposal and proposed reuse of NSTI. San Francisco conducted public meetings and workshops as part of the reuse planning process, and the public was encouraged to comment on the various reuse alternatives. The public's input, as well as feedback from applicable resources and permitting agencies, will be used to evaluate the alternatives and environmental impacts before final decisions are made.

Scoping Process

Scoping is the process used to identify potential significant environmental issues and concerns related to the proposed action. The scoping period was from September 24, 1996, to October 28, 1996. The scoping process was conducted jointly by Navy and San Francisco.

On September 26, 1996, in accordance with NEPA requirements, a Notice of Intent (NOI) to prepare an EIS was published in the Federal Register. The NOI was mailed to regulatory agencies, local jurisdictions, elected officials, public service providers, and organizations.

As part of the scoping process, Navy and San Francisco held a public meeting to inform the public about disposal and reuse alternatives and to solicit the public's participation and comments. The scoping meeting was held on October 9, 1996, at the San Francisco Ferry Building. Six individuals from the public provided oral comments at the scoping meeting. Oral comments addressed alternate land uses on the site related primarily to residential, marine, and wildlife observation uses. Commentors also were concerned with addressing the needs of veterans in the reuse plan and concerns about public notification during the comment period. Additionally, twelve comment letters were received in response to the 1996 NOI. These written comments addressed a variety of concerns, including impacts to traffic, geology and seismology, historic architectural resources, hazardous and waste material, and archeological resources. All issues raised during the scoping period regarding environmental and socioeconomic topics have been addressed in this EIS.

Public Review

The public is invited to review and comment on this Draft EIS. An NOA was published in the Federal Register, and notices were published in the *San Francisco Chronicle*, *Marin Independent Journal*, *San Jose Mercury News*, and *Oakland Tribune*, and were mailed to those on the mailing list, beginning the 45-day public comment period. This period provides the public with an opportunity to review the document and to offer appropriate comments.

Interested parties are requested to submit comments on this Draft EIS to the following address:

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A public hearing will be held during the 45-day review period to hear comments on the Draft EIS. The time and place of the hearing will be announced in the media and is noted in the transmittal letter accompanying this document. A Final EIS that discusses the comments received on the Draft EIS will be published and made available for review to persons on the distribution list and to others requesting a copy.

ES.6 ALTERNATIVES CONSIDERED (CHAPTER 2)

Navy can either retain NSTI surplus property in federal ownership (No Action Alternative) or dispose of the property for subsequent reuse (Disposal Alternative). Navy disposal of surplus property at NSTI is the federal action evaluated in this EIS for potential environmental and socioeconomic impacts. Under the federal action, approximately 920 acres (373 ha) of federal property at NSTI would be conveyed to non-federal entities. Navy disposal is assumed as part of each of the three reuse alternatives.

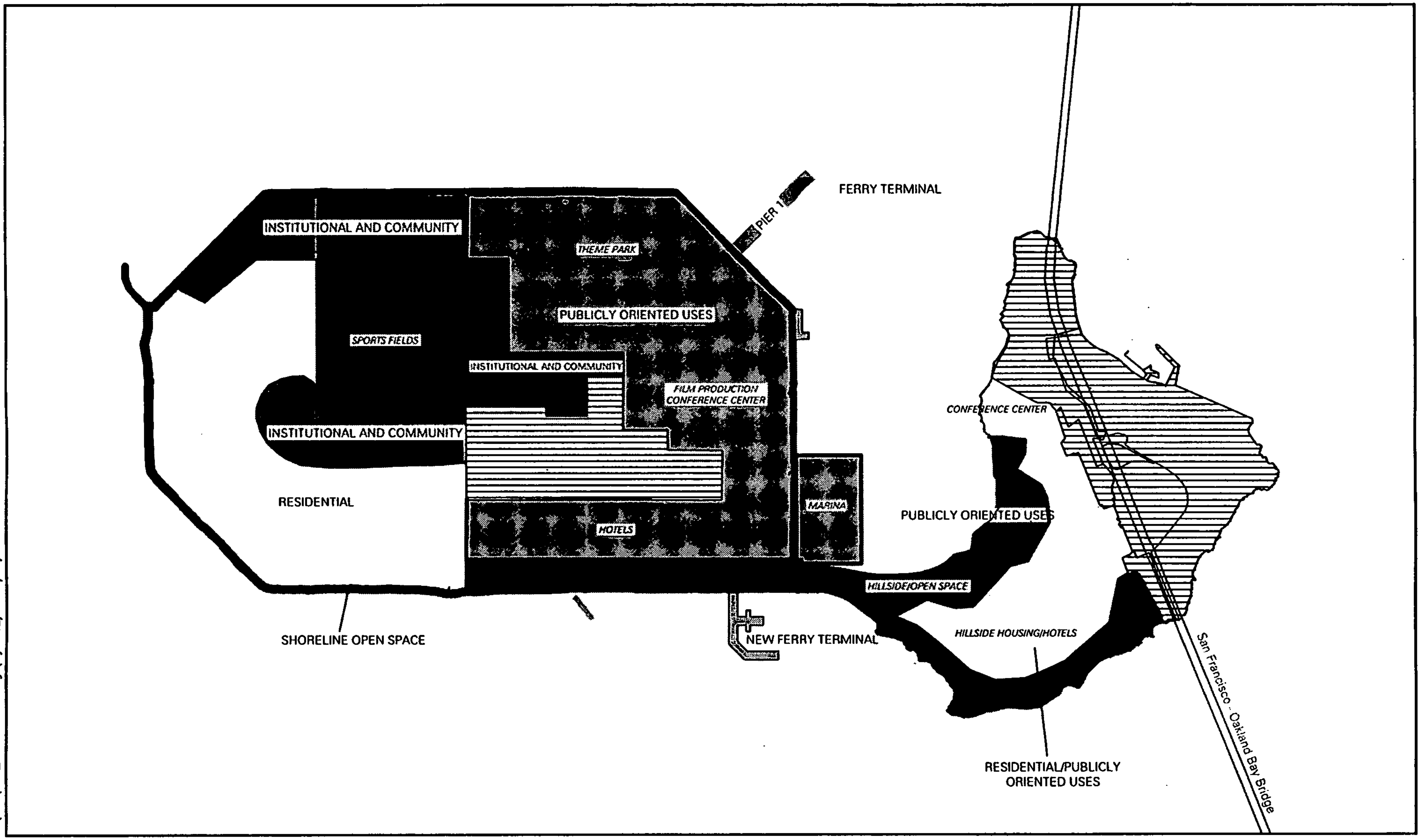
Reuse Alternatives

This section presents a detailed description of the three reuse alternatives developed and evaluated in this EIS—alternatives 1, 2, and 3. Alternative 1 represents full implementation of the development scenario described in the Draft Reuse Plan developed by the Local Redevelopment Authority. Alternative 2 is based on comments received during the scoping process, including the recommendations of an advisory panel convened by the Urban Land Institute. Alternative 3 represents a lower level of redevelopment than proposed in the Draft Reuse Plan. The proposed land use configurations of the three reuse alternatives are provided on Figures ES-3, ES-4, and ES-5, respectively.

Each reuse alternative is a broad conceptual plan characterized by a general land use concept and a development scenario. As such, each has general land use planning designations (residential, publicly oriented, institutional and community, and open space and recreation) that allow for a range of different types of land use. Table ES-1 provides a summary comparison of land use development of the three alternatives. This table is intended to help the reader identify specific differences among the three alternatives.

Alternative 1

Alternative 1 features a combination of publicly oriented development, open space and recreation, and extensive residential development at full buildout, such as envisioned in the Draft Reuse Plan. Under this alternative, the NSTI project acreage would be occupied in the following manner: publicly oriented land uses, approximately 34 percent; residential, 29 percent; open space and recreation, 27 percent; and institutional and community services, 10 percent. The four land use alternatives initially considered by the LRA were used to develop and further refine a "preferred reuse concept" that formed the basis of the Draft Reuse Plan, represented by Alternative 1. Seismic upgrades would include dike improvements to the entire Treasure Island perimeter. A new underground utility corridor would run along the perimeter of the island, carrying storm and sanitary sewer mains, water mains, reclaimed water mains, and electricity, gas, and telecommunications lines.



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ES-7

Alternative 1 is similar to the development scenario described in the Draft Reuse Plan.

Legend:

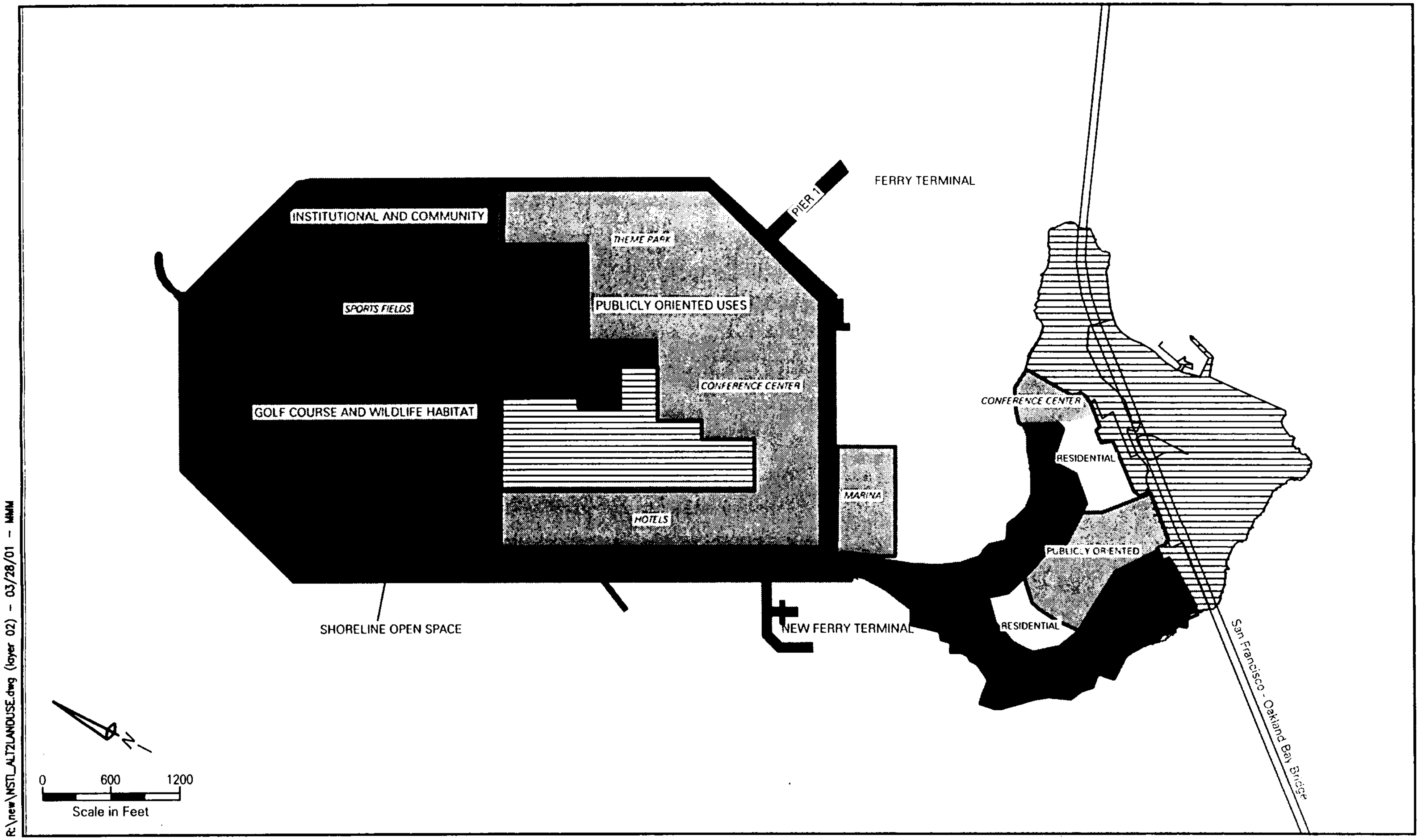
- Publicly Oriented
- Open Space and Recreation
- Institutional and Community
- Areas Excluded from Proposed Navy Disposal
- Residential

Alternative 1 Land Uses

Naval Station Treasure Island, California

Figure ES-3

Source: CCSF 1996e; Developed by CCSF 1997



Alternative 2 emphasizes open space/recreation and publicly oriented land uses.

Legend:

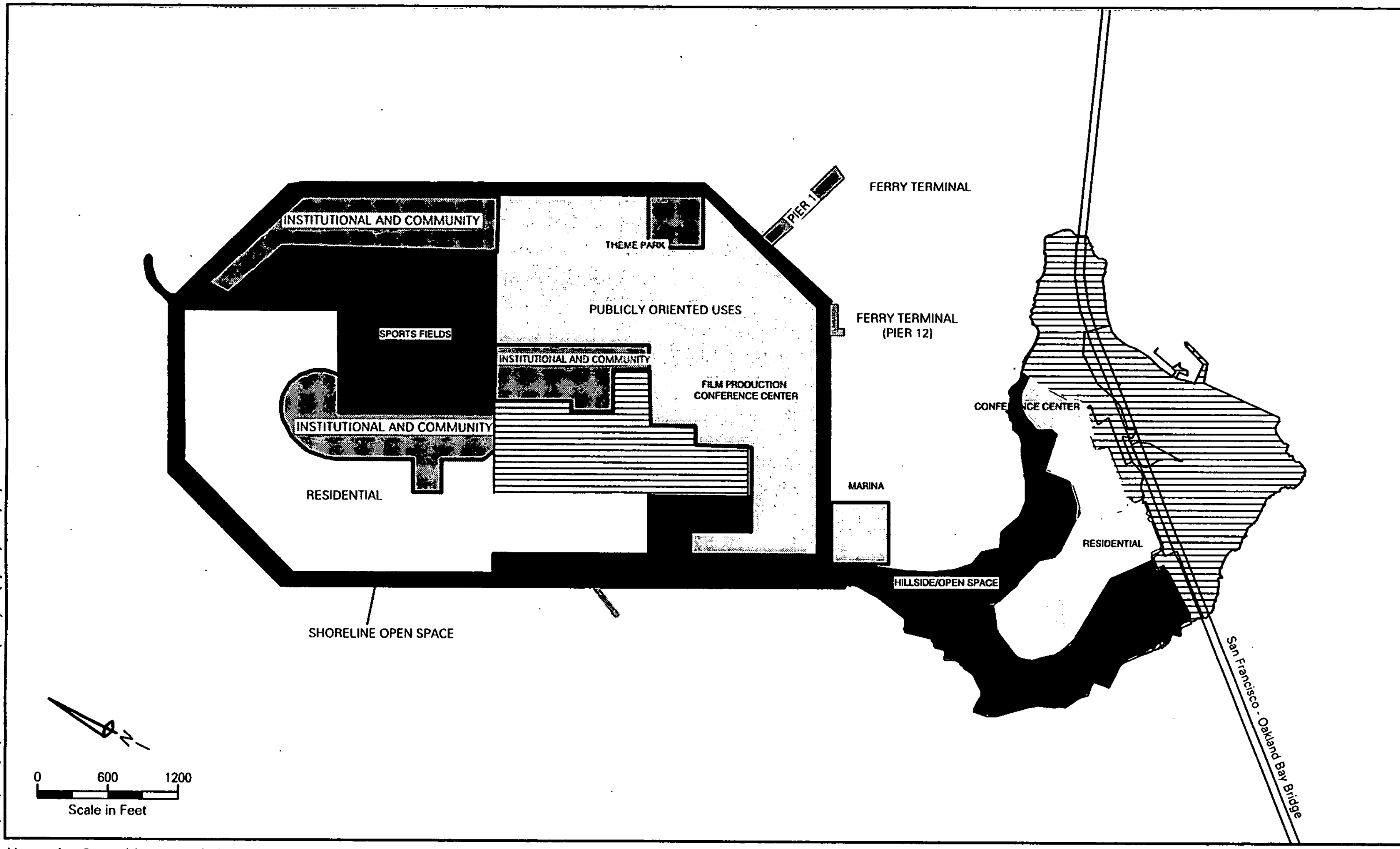
- Publicly Oriented
- Open Space and Recreation
- Institutional and Community
- Areas Excluded from Proposed Navy Disposal
- Residential

Alternative 2 Land Uses

Naval Station Treasure Island, California

Figure ES-4

Source: CCSF 1996e; Developed by CCSF 1997



Alternative 3 would reuse existing facilities and would involve little new development.

Legend:

- Publicly Oriented
- Open Space and Recreation
- Institutional and Community
- Areas Excluded from Proposed Navy Disposal
- Residential

Alternative 3 Land Uses

Naval Station Treasure Island, California

Source: CCSF 1996e; Developed by CCSF 1997

Figure ES-5

Table ES-1
Summary Comparison of Land Development Characteristics of Reuse Alternatives

Characteristic	Alternative 1	Alternative 2	Alternative 3
Residential	**dwelling units**	**dwelling units**	**dwelling units**
Existing residential	290	50	995
New residential	2,550	200	70
Total dwelling units	**2,840**	**250**	**1,065**
Publicly Oriented	**acreage**	**acreage**	**acreage**
Themed attraction	59	74	39
Hotel/conference/lodging	23	44	14
Retail/specialty/restaurant	8	1	1
Entertainment center	0	6	0
Amphitheater	0	7	0
Wedding chapel	0	1	2
Museum	3	4	4
Mixed use/office	11	0	6
Film production	31	0	33
Marina (yacht club)	2	0	2
Other publicly oriented uses	14	14	20
Subtotal Acres	**151**	**151**	**121**
Institutional and Community			
Elementary school	9	0	9
Child development center	4	0	4
Fire training school	5	5	5
Warehouse/storage	0	0	4
Wastewater treatment plant	10	5	3
Brig	5	4	5
Fire station	4	2	2
Police station	3	2	3
Other institutional facilities	0	0	8
Subtotal Acres	**40**	**18**	**43**
Open Space and Recreation			
Golf course	0	147	0
Sports fields/complex	47	18	40
Shoreline promenade/open space	73	71	88
Wildlife habitat	0	18	0
Subtotal Acres	**120**	**254**	**128**
Land Use Categories			
Public Oriented	151	151	121
Residential	131	19	150
Institutional and Community	40	18	43
Open Space and Recreation	120	254	128
Total Acres	**442**	**442**	**442**
Marina	Expansion	Expansion	Existing only
Ferry Terminals	New (west side) Retrofit (Pier 1)	New (west side) Retrofit (Pier 1)	Retrofit (Pier 12) Retrofit (Pier 1)
Approximate On-site Population	6,895	710	3,510
Approximate Employment	4,920	2,820	2,195
Approximate Average Daily Vehicle Trips	18,100	13,085	6,700

Source: San Francisco 1996e.
Notes: All acreage figures are estimates only. Figures in the text and the tables are included for discussion purposes.
no. = number

Alternative 2

Alternative 2 is a less intensive but similar development compared to Alternative 1. This alternative emphasizes open space and recreation and publicly oriented uses but on a smaller scale. Under Alternative 2, open space and recreation land uses would occupy 57 percent of NSTI acreage, publicly oriented 34 percent, residential 4 percent, and institutional and community services 4 percent. The existing housing would be reused initially. No new housing would be built on Treasure Island. An 18-hole golf course would occupy the present housing area on the northern part of the island. Regarding seismic upgrade, except for the golf course area, full-scale perimeter dike improvements would be implemented around Treasure Island. The utility corridor would be constructed around the perimeter of Treasure Island, but it would not extend along the perimeter adjacent to the proposed golf course.

Alternative 3

Alternative 3 represents the scenario where little new development would occur, and existing facilities would be reused. Under Alternative 3, open space and recreation land uses would occupy 30 percent of NSTI acreage, residential 33 percent, publicly oriented 27 percent, and institutional and community services 10 percent. Seismic upgrade dike improvements would occur along those areas of Treasure Island subject to rotational dike failure.

No Action Alternative

Under the No Action Alternative, Navy would retain ownership of NSTI. Except for existing building leases, all buildings would remain vacant, and all other facilities would remain but would be unused. No new leases would be entered into under the No Action Alternative, and existing leases would continue until they expire or are terminated.

The property would be held in an inactive or caretaker status, as discussed in Chapter 1. Navy and San Francisco executed a cooperative agreement in April 1997 and amended it in September 1997. Under this agreement, San Francisco is responsible for providing those caretaker services. Site environmental cleanup would continue until completed. No construction would occur under this alternative, except as allowed by existing lease authorization.

Environmentally Preferable Alternative

NEPA requires that an environmentally preferable alternative be identified. The No Action Alternative would have no significant impacts, and for NEPA purposes it would be the environmentally preferable alternative. However, the No Action Alternative would not meet the Navy's goals of property disposal and rapid economic recovery consistent with DBCRA 1990 and the Department of Defense Rule on Revitalizing Base Closure Communities–Base Closure Community Assistance (32 C.F.R. Part 175 [1998]). It also would not be consistent with former President Clinton's Five-Part Plan for Revitalizing Base Closure Communities, which emphasizes local economic redevelopment of closing military facilities and creation of new jobs as the means to revitalize these communities (32 C.F.R. Part 174 [1998]). The No Action Alternative would result in continued caretaker activities; therefore, socioeconomic gains in terms of new jobs and increased revenue in the region would not be realized.

ES.7 AFFECTED ENVIRONMENT (CHAPTER 3)

Chapter 3 sets forth the affected environment of the proposed action. The affected environment describes the present physical conditions within the area of the proposed action. The area, or region of influence, is defined for each environmental issue based upon the areal extent of physical resources that may be affected directly or indirectly by the proposed action and appropriate guidelines of regulatory agencies or common professional practice. This section of the EIS describes the baseline conditions for each environmental resource against which the potential impacts of the proposed action will be compared.

ES.8 ENVIRONMENTAL CONSEQUENCES (CHAPTER 4)

Chapter 4 addresses the environmental consequences of the proposed disposal and reuse of NSTI. Potential significant impacts and mitigation measures are summarized in Table ES-2. Measures that can be taken to reduce impacts to a level below significant are suggested for each alternative, as appropriate. Navy would be responsible for mitigation measures identified in its ROD for the proposed disposal action. Mitigation for impacts associated with reuse are not the responsibility of Navy.

ES.9 CUMULATIVE IMPACTS (CHAPTER 5)

Chapter 5 addresses what effects the proposed action would have on the environment, when combined with other past, present, and reasonably foreseeable actions.

ES.10 OTHER CONSIDERATIONS (CHAPTER 6)

Significant Unavoidable Adverse Effects

Implementation of Alternative 2 would require demolition of Building 2 and Building 3 on Treasure Island, buildings that are eligible for listing on the National Register of Historic Places (NRHP). This would result in the loss of significant historic resources. This adverse effect can be lessened or reduced by recording the affected resources to the standards of Historic American Buildings Survey or the Historic American Engineering Record, but recordation would not eliminate the adverse effect caused by the demolition of NRHP-eligible resources.

Short-term Uses and Long-term Productivity

Because most of NSTI has been developed, redevelopment under any of the three reuse alternatives would do little to negatively affect the short-term or long-term productivity of the area. However, disposal and subsequent reuse of NSTI could result in both short-term and long-term environmental gains that would enhance productivity of the site. Improved vehicle access and increased public recreation opportunities along the San Francisco Bay shoreline under reuse would be both a short-term and long-term gain. Long-term gains would also include increases in jobs and housing and would generate revenue to upgrade the Treasure Island perimeter dike and to make other seismic safety improvements.

Disposal and reuse of NSTI could result in potential environmental impacts, such as those to transportation, biological resources, and water resources. If not mitigated, these impacts could result in decreases in the long-term productivity of the environment on NSTI. Disposal and subsequent reuse of NSTI could also reduce long-term military productivity, should there be a future need for these facilities.

Irreversible and Irretrievable Commitment of Resources

NEPA requires that an EIS analyze the extent to which the proposed alternatives' primary and secondary effects would commit nonrenewable resources to uses that future generations probably would be unable to reverse. Disposal of the property and development under any of the reuse alternatives would permanently preclude future military use, should such a need arise in the future. Reuse of the property would provide for responsible long-term resource management and, except for Alternative 2, makes no irreversible resource commitments. Alternative 2 would include the planned removal of historic Building 2 and Building 3 on Treasure Island, which would be a permanent loss of these resources.

Implementing any of the reuse alternatives would require short-term commitments of renewable and nonrenewable energy and material resources for demolition and for construction of the structures and infrastructure improvements required for implementation.

Environmental Justice

The Executive Order on "Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations," issued on February, 11, 1994, requires that the impacts of federal actions on minority and low-income populations be addressed to avoid disproportionate adverse impacts to these groups. The potentially affected area adjacent to NSTI does not include disproportionately high minority populations or low-income populations compared to adjacent communities. In addition, impacts under any of the three reuse alternatives would either not be significant or, if significant, would be adequately mitigated such that no disproportionate impact would be expected to occur. As a result, none of the reuse alternatives appear likely to have a disproportionate impact on minority populations or low-income populations to warrant further analysis beyond that conducted in each of the environmental issue areas.

Protection of Children From Environmental Health Risks and Safety Risks

Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks (62 Federal Register 19885, April 23, 1997) requires assessment of child-specific environmental health risks and safety risk issues. For all significant and mitigable environmental impacts identified in this EIS, implementing identified mitigation measures as described would ensure that no disproportionate impacts to environmental health risks and/or safety risks to children would occur under any of the reuse alternatives.

ES.11 AGENCY COORDINATION (CHAPTER 7)

Federal, state, and local agencies were consulted prior to and during the preparation of this EIS. Agencies were notified of plans for closure and disposal activities by mail; by scheduled public meetings associated with the reuse planning process; by publication of an NOI announcing preparation of an EIS; and by a public scoping meeting. The agencies' viewpoints were solicited with regard to activities and issues within their jurisdiction.

Table ES-2
Summary of Potential Significant Environmental Consequences and Mitigation Measures

Resource Area	Alternative 1	Alternative 2	Alternative 3	No Action Alternative
Land Use	*Impact: Land use policy.* The zone classifications that would be required for Alternative 1 would be inconsistent with the existing general plan designation and zoning classification. *Mitigation:* To achieve consistency between the selected reuse alternative and city policies, it will be necessary to amend the San Francisco General Plan to include land use designations for surplus property on Treasure Island and Yerba Buena Island prior to approving future land use actions.	*Impact: Land use policy.* Similar to that described for Alternative 1.	*Impact: Land use policy.* Similar to that described for Alternative 1.	No impacts are expected.
Visual Resources	No significant impacts are expected.	No significant impacts are expected.	No significant impacts are expected.	No impacts are expected.
Socioeconomics	No significant impacts are expected.	No significant impacts are expected.	No significant impacts are expected.	No impacts are expected.
Cultural Resources	No significant impacts are expected.	*Impact: Alteration or demolition of historic resources.* Alternative 2 involves the demolition of Building 2 and Building 3 on Treasure Island, both of which are eligible for listing on the NRHP. *Mitigation:* None. This demolition would result in the irreversible loss of significant historic resources.	No significant impacts are expected.	No impacts are expected.
Transportation	*Impact: Increased volumes and queuing on SFOBB/I-80 Yerba Buena Island westbound on-ramp (west side).* Alternative 1 would result in peak-hour traffic volumes on the SFOBB/I-80 Yerba Buena Island westbound on-ramp on the west side of Yerba Buena Island that would exceed the current ramp capacity of 330 vph. The projected demand would result in a queue ranging from 7 vehicles (during the AM peak hour) to 239 vehicles (during the weekend midday peak hour). This queue would constrain vehicular circulation on the island. *Mitigation.* SFOBB/I-80 Yerba Buena Island on-ramps are substandard by current Caltrans standards, primarily in acceleration/deceleration lengths, ramp radii, and sight distances. Upgrading the on-ramps would increase ramp capacity and level of operation and decrease queuing impacts. However, upgrades to the on-ramps may be constrained by the geology of the site (elevation change and bedrock) and structural limitations due to the viaduct.	No significant impacts are expected.	No significant impacts are expected.	No impacts are expected.

Table ES-2
Summary of Potential Significant Environmental Consequences and Mitigation Measures *(continued)*

Resource Area	Alternative 1	Alternative 2	Alternative 3	No Action Alternative
	Implement measures, including signage and notices to residents, to encourage residents and visitors to use the second westbound on-ramp east of the Yerba Buena Island tunnel. Redirecting traffic during the weekend midday peak hour to the second on-ramp east of the Yerba Buena Island tunnel would reduce the queue at the first westbound on-ramp. Implement a Travel Demand Management (TDM) program to further reduce traffic generation during peak hours. Implement additional or enhanced TDM measures, such as discounted ferry passes, flex-time, public relations campaigns, and giving NSTI employees preferential access to housing on NSTI, to encourage ferry use or to encourage vehicle-trips during the nonpeak period to reduce queues on both westbound on-ramps to tolerable levels. Monitor NSTI ramp traffic volumes to ensure that the transportation goals and objectives established by the Reuse Plan are successfully implemented. Monitor NSTI bus transit demand on an annual basis (or at each phase of development) and ensure that planned services are implemented to meet or exceed demand. Implement a similar monitoring program for ferry demand. Restripe the portion of Treasure Island Road between the Main Gate and the westbound on-ramp on the west side of the Yerba Buena Island tunnel from two lanes to accommodate three traffic lanes.			
	Impact: Increased volumes and queuing on SFOBB/I-80 Yerba Buena Island eastbound off-ramp (west side). Alternative 1 would result in a substantial increase in traffic volumes on the eastbound off-ramp on the west side of Yerba Buena Island that would exceed the practical capacity of the off-ramp (500 vph), resulting in a maximum queue of 36 vehicles, or about 700 feet (219 m) on the SFOBB.	No significant impacts are expected.	No significant impacts are expected.	No impacts are expected.

Table ES-2
Summary of Potential Significant Environmental Consequences and Mitigation Measures (*continued*)

Resource Area	Alternative 1	Alternative 2	Alternative 3	No Action Alternative
	Mitigation. Use traffic control measures, such as signage, to encourage eastbound motorists to use the second Yerba Buena off-ramp (the off-ramp on the east side of Yerba Buena Island). Implement TDM and monitoring measures to reduce traffic volumes on this off-ramp.			
	Impact: Increased volumes and queuing on SFOBB/I-80 Yerba Buena Island eastbound on-ramp (east side). Alternative 1 would result in substantial increases in traffic volumes during the weekend midday peak hour on the eastbound on-ramp on the east side of Yerba Buena Island that would exceed the current on-ramp capacity of 330 vph, resulting in a maximum queue of approximately 150 vehicles, or about 3,000 feet (914 m). *Mitigation*: Upgrade the eastbound SFOBB/I-80 on-ramp on the east side of Yerba Buena Island to provide for an adequate acceleration lane. Preliminary concept plans for the new east span indicate that the eastbound on-ramp would be modified to Caltrans standards. Implement TDM and monitoring measures, as described above for increased volumes on the westbound on-ramp on the west side of Yerba Buena Island.	No significant impacts are expected.	No significant impacts are expected.	No impacts are expected.
	Impact: Transit operations – bus service to East Bay. Lack of direct bus service between NSTI and the East Bay is a significant and mitigable impact. *Mitigation*: Establishing direct transit service between NSTI and the East Bay would mitigate this impact to a not significant level. Bus service would need to be at 10-minute headways (the interval between the trips of 2 successive vehicles) throughout the day during the weekday and at 15-munite headways throughout the day during the weekend. Monitor NSTI bus transit demand on an annual basis (or at each phase of development) and ensure that planned services are implemented to meet or exceed demand.	*Impact: Transit operations – bus service to East Bay*. The impact would be similar to that described under Alternative 1. *Mitigation*: Mitigation measures would be the same as those described for Alternative 1. However, at build-out, bus service would need to be at 15-minute headways throughout the day during both weekdays and weekends.	*Impact: Transit operations – bus service to East Bay*. The impact would be less than that described under Alternative 1 but would remain significant but mitigable. *Mitigation*: Mitigation measures would be the same as those described for Alternative 1. However, at build-out, bus service would need to be at 20-minute headways throughout the day during weekdays and 15-minute headways throughout the day during weekends.	No impacts are expected.

Table ES-2
Summary of Potential Significant Environmental Consequences and Mitigation Measures (*continued*)

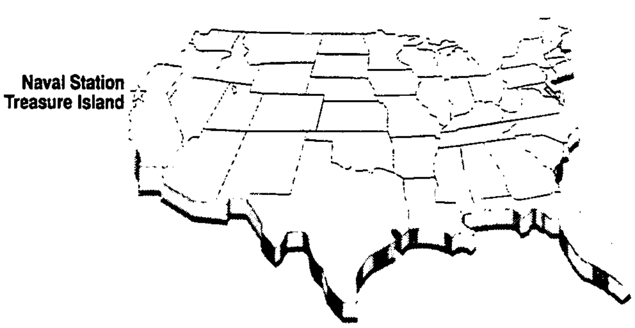
Resource Area	Alternative 1	Alternative 2	Alternative 3	No Action Alternative
	Implement TDM measures to encourage transit rather than auto use.			
Air Quality	No significant impacts are expected.	No significant impacts are expected.	No significant impacts are expected.	No impacts are expected.
Noise	No significant impacts are expected.	No significant impacts are expected.	No significant impacts are expected.	No impacts are expected.
Biological Resources	*Impact: Mudflat Habitat Disturbance.* Significant impacts to mudflat habitat, including eelgrass beds, may occur as a result of increased pedestrian and boating activity around Clipper Cove. Expanding the marina or constructing a yacht harbor, new docks, or other structures that would cover the surface of the water could impact eelgrass areas but would require a permit from the COE.	*Impact: Disturbance to sensitive mudflat habitat.* The impacts on mudflat habitat associated with pedestrians and boating activity would be similar, but reduced, from that described for Alternative 1. Pedestrian impacts would be approximately half of Alternative 1 while boating traffic impacts would be approximately 20 percent higher than Alternative 1.	*Impact: Mudflat Habitat Disturbance.* The impacts on mudflat habitat associated with pedestrians and boating activity would be reduced from that described for Alternative 1 but would remain significant but mitigable.	No impacts are expected.
	Mitigation: Post signs along the shore adjacent to the mudflats and at the marina to inform pedestrians and recreational boaters that the mudflats are a protected sensitive area and that trespassing is not permitted. Buoys would be placed in the bay to identify the restricted mudflat area. A five- mph (8 kph) zone would be established in Clipper Cove to minimize shoreline and mudflat erosion. Any impacts related to construction or fill would be addressed during the COE Section 404 permitting process.	*Mitigation.* Mitigation measures would be the same as those described for Alternative 1.	*Mitigation:* Mitigation measures would be the same as those described for Alternative 1.	
	Impact: Pedestrian and Boating Impacts on Wading Shorebirds. Increased pedestrian and boating activity around Clipper Cove could have a significant impact on shorebirds by affecting mudflats and eelgrass beds where shorebirds forage.	*Impact: Pedestrian and Boating Impacts on Wading Shorebirds.* Increased pedestrian and boating activity around Clipper Cove could have a significant impact on shorebirds by affecting mudflats and eelgrass beds where shorebirds forage. Pedestrian impacts would be approximately half of Alternative 1 while boating traffic impacts would be approximately 20 percent higher than Alternative 1.	*Impact: Pedestrian and Boating Impacts on Wading Shorebirds.* Increased pedestrian and boating activity around Clipper Cove could have a significant impact on shorebirds by affecting mudflats and eelgrass beds where shorebirds forage. These impacts are likely to be reduced under Alternative 3 as there would be less of an increase in boating traffic compared with Alternative 1.	No impacts are expected.
	Mitigation. Post signs along the shore adjacent to the mudflats and at the marina, informing pedestrians and boaters that the mudflats are a protected and sensitive area. Placing buoys in the bay, identifying the mudflat area as restricted, and establishing a five-mph (8 kph) zone in Clipper Cove.	*Mitigation.* Mitigation measures would be the same as described for Alternative 1.	*Mitigation.* Mitigation measures would be the same as described for Alternative 1.	

Table ES-2
Summary of Potential Significant Environmental Consequences and Mitigation Measures *(continued)*

Resource Area	Alternative 1	Alternative 2	Alternative 3	No Action Alternative
	Impact: Pedestrian and Boating Impacts on EFH. Increased boat and pedestrian activity around Clipper Cove could have an indirect significant impact on EFH by degrading eelgrass vegetated areas and shallow water and mudflat areas that provide important fish spawning, rearing, and foraging habitat.	*Impact: Pedestrian and Boating Impacts on EFH.* Increased pedestrian and boating activity around Clipper Cove and along the perimeter of the islands could have a significant impact on EFH, as described under Alternative 1.	*Impact: Pedestrian and Boating Impacts on EFH.* Increased pedestrian and boating activity around Clipper Cove and along the perimeter of the islands could have a significant impact on EFH, as described under Alternative 1.	No impacts are expected.
	Mitigation. Proposed mitigation measures are the same as those discussed under impacts to mudflat habitat above.	*Mitigation.* Mitigation measures would be the same as described for Alternative 1.	*Mitigation.* Mitigation measures would be the same as described for Alternative 1.	
Geology and Soils	No significant impacts are expected.	No significant impacts are expected.	No significant impacts are expected.	No impacts are expected.
Water Resources	*Impact: Exposure of individuals and property to ponding from high tides.* The installation of residential development in low-lying areas on Treasure Island would result in increased exposure of occupants, visitors, and property to ponding hazards due to seepage through the dike during some high tide events.	No significant impacts are expected relative to exposure of individuals and property to ponding from high tides.	*Impact: Exposure of individuals and property to ponding from high tides.* The impact would be similar to that described for Alternative 1.	No impacts are expected.
	Mitigation: Filling low-lying portions of the residential area to at least 9 feet (3 m) National Geodetic Vertical Datum (NGVD) prior to development would mitigate this impact. In addition, other low-lying areas within 500 feet (152 m) of the Treasure Island perimeter should be similarly filled before development is allowed.		*Mitigation:* Mitigation measures for ponding during high tides would be the same as those described for Alternative 1.	
	Impact: Exposure of individuals and property to flooding. Developing and reusing Treasure Island under Alternative 1 could expose occupants, visitors, and property to flooding hazards caused by dike overtopping during storms.	*Impact: Exposure of individuals and property to flooding.* This alternative would subject residents and daily visitors on the northern half of Treasure Island, where a golf course is proposed, to existing flood hazards. Flood hazards on the southern portion of the site would be similar to those described for Alternative 1.	*Impact: Exposure of individuals and property to flooding.* Alternative 3 could subject occupants, visitors, and property to substantial flooding hazards throughout Treasure Island.	
	Mitigation: Set back development inboard of the perimeter dike to allow room for periodic dike raising without substantially increasing Bay fill. Raise the dike as necessary to account for site settlement, changes in maximum tidal heights, and rises in sea levels. In addition, inspect the dike after each major storm to identify repair needs, and repair the dike promptly.	*Mitigation:* Mitigation measures would be the same as those described for Alternative 1.	*Mitigation:* Mitigation measures would be the same as those described for Alternative 1.	
Utilities	No significant impacts are expected.	No significant impacts are expected.	No significant impacts are expected.	No impacts are expected.

Table ES-2
Summary of Potential Significant Environmental Consequences and Mitigation Measures (*continued*)

Resource Area	Alternative 1	Alternative 2	Alternative 3	No Action Alternative
Public Services	No significant impacts are expected.	No significant impacts are expected.	No significant impacts are expected.	No impacts are expected.
Hazardous Materials and Waste	*Impact: Installation Restoration Program (IRP).* Construction activities at NSTI associated with future development of the housing unit area, including demolition of existing structures, may interfere with remedial actions under CERCLA.	*Impact: Installation Restoration Program (IRP).* Development of a golf course in the northern part of the island would involve demolition of existing structures and the grading and reconfiguring of the soil, which may interfere with remedial actions under CERCLA.	*Impact: Installation Restoration Program (IRP).* If subsequent redevelopment of the housing area involving demolition of existing structures and the grading and reconfiguring of the soil were to occur, it may interfere with remedial actions conducted under CERCLA.	No impacts are expected.
	Mitigation. The Navy is in the process of implementing various remedial actions at NSTI pursuant to and in accordance with the requirements of CERCLA and the NCP that will remove, manage, or isolate any potentially hazardous substances present on the property prior to conveyance. These remedial actions will ensure that human health and the environment will be protected based on continued residential use of the area. If the CERCLA remedy for a particular site includes land use controls, the acquiring entity or entities will be required to comply with the land use controls during construction or operations to ensure continued protection of human health and the environment. Subsequent redevelopment of the housing area which would involve demolition of existing structures and the grading and reconfiguring of the soil would likely be subject to land use controls on the property, including compliance with a City-administered soil management plan that would require soil and groundwater disturbance be permitted subject to proper characterization and management. In addition, deeds conveying the affected property will contain a notice that areas of the property not subject to remediation efforts (such as areas beneath existing foundations) may require additional characterization and possible response actions subject to appropriate regulatory oversight. Adherence to land use controls and regulatory requirements would mitigate potentially significant impacts to an acceptable level.	*Mitigation.* Mitigation measures would be the same as those described for Alternative 1.	*Mitigation.* Mitigation measures would be the same as those described for Alternative 1.	



1. PURPOSE AND NEED

CHAPTER 1
PURPOSE AND NEED

This environmental impact statement (EIS) evaluates the potential impacts on the natural and human environment that could result from US Department of the Navy (Navy) disposal of surplus federal properties within Naval Station Treasure Island (NSTI) and subsequent reuse of those federal properties. NSTI is made up of dry and submerged lands of both Treasure Island and portions of Yerba Buena Island in San Francisco, California.

This document has been prepared by Navy in accordance with the National Environmental Policy Act of 1969 (NEPA) (Public Law [Pub. L.] 91-190, 42 United States Code [U.S.C.]§§ 4321-4370f); the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 Code of Federal Regulations [C.F.R.] Parts 1500-1508); Navy regulations implementing NEPA (32 C.F.R. Part 775); and Navy guidelines (Chief of Naval Operations Instruction [OPNAVINST] 5090.1B [1998]).

This EIS was originally prepared as a joint document to fulfill the requirements of both NEPA and the California Environmental Quality Act of 1970 (CEQA) (California Public Resources Code [Cal. Pub. Res. Code] § 21000 et seq., as amended) and the implementing CEQA regulations (California Code of Regulations [Cal. Code Regs.], Title 14, § 15000 et seq. [1998]). The CEQA lead agency was the City and County of San Francisco (San Francisco). Scoping was a joint federal-state process. After scoping was completed, San Francisco elected to prepare a separate environmental impact report (EIR) to analyze the impacts from the reuse of NSTI. The EIR will undergo a separate public review process.

1.1 PURPOSE AND NEED

The purpose of and need for the proposed federal action is to dispose of surplus federal property at NSTI for subsequent reuse. The Defense Base Closure and Realignment Act (DBCRA) (10 U.S.C. § 2687 note) directed the Department of Defense (DoD) to reduce and realign United States (US) military operations. The 1993 Defense Base Realignment and Closure Commission (BRAC '93 Commission) recommended the closure of NSTI. President Clinton approved this recommendation and the 103rd Congress accepted it on September 27, 1993. NSTI closed on September 30, 1997, and Navy is in the process of disposing of the property in accordance with applicable laws and regulations, including the DBCRA. DBCRA requirements related to disposal of surplus property include the following:

- Compliance with NEPA;
- Environmental restoration of the property;
- Consideration of the local community's reuse plan before Navy disposes of the property; and
- Compliance with specific federal property disposal laws and regulations.

Under the DBCRA the decision to close, relocate, or realign bases is exempt from NEPA documentation requirements. However, once the decision has been made to close, relocate, or realign a specified base, the cognizant military service is required to prepare appropriate NEPA documentation evaluating the environmental effects of the disposal and subsequent reuse of the property.

Navy considered the Local Redevelopment Authority's (LRA) stated purpose and need in developing reasonable reuse alternatives (the LRA is discussed further in Section 2.2, Reuse Planning Process). This purpose and need focused on reusing NSTI property to support the local economic base, enhance the local image and identity, expand the range of recreational and entertainment opportunities available to the community, and enhance the overall livability of the local area and region. To meet these overall objectives, reuse alternatives must have provided employment and housing opportunities and generated sufficient revenue (e.g., property tax) to support the investment necessary to upgrade the Treasure Island perimeter dike and to undertake facility ground improvements for seismic safety of the site (San Francisco 1996e). In addition, reuse alternatives must have considered current access constraints (e.g., limited access via the San Francisco-Oakland Bay Bridge [SFOBB], inadequate on-ramp and off-ramp design, and traffic congestion during peak hours) and must have proposed alternative access options, such as ferry service, to solve existing vehicular access deficiencies.

To maximize efficiency of the reuse planning process, the LRA incorporated one other parcel into the NSTI Draft Reuse Plan (San Francisco 1996e). The approximately 36-acre (15-hectare [ha]) Job Corps parcel in the center of Treasure Island, although not part of the disposal action, was incorporated into the Reuse Plan to account for planned vocational and training facilities to be developed by the US Department of Labor (DOL). Incorporating this otherwise isolated parcel was a logical extension of the reuse planning process.

On October 26, 2000, the Federal Highways Administration (FHWA), pursuant to its authority under 23 U.S.C. § 107(d), acquired 97 acres (39 ha) of dry and submerged Navy land on Yerba Buena Island that was previously declared to be surplus to the needs of the federal government and was considered in the NSTI Draft Reuse Plan. FHWA conveyed this land in fee to the California Department of Transportation (Caltrans) for right-of-way purposes in connection with the construction, operation, and maintenance of the SFOBB east spans retrofit project, including a temporary construction easement over a substantial part of Yerba Buena Island and permanent aerial easements over two parcels of land. Because this property was conveyed to Caltrans, the property, including the easements, is not included in the Navy disposal and is excluded from this EIS.

Navy will use this EIS to make disposal decisions concerning the surplus federal property at NSTI suitable for conveyance. Following the completion of the Final EIS, Navy will issue its Record of Decision (ROD) that will identify the significant impacts that would occur as a result of disposal and reuse. Following disposal, no additional NEPA review by Navy will be required.

1.2 OVERVIEW OF NSTI

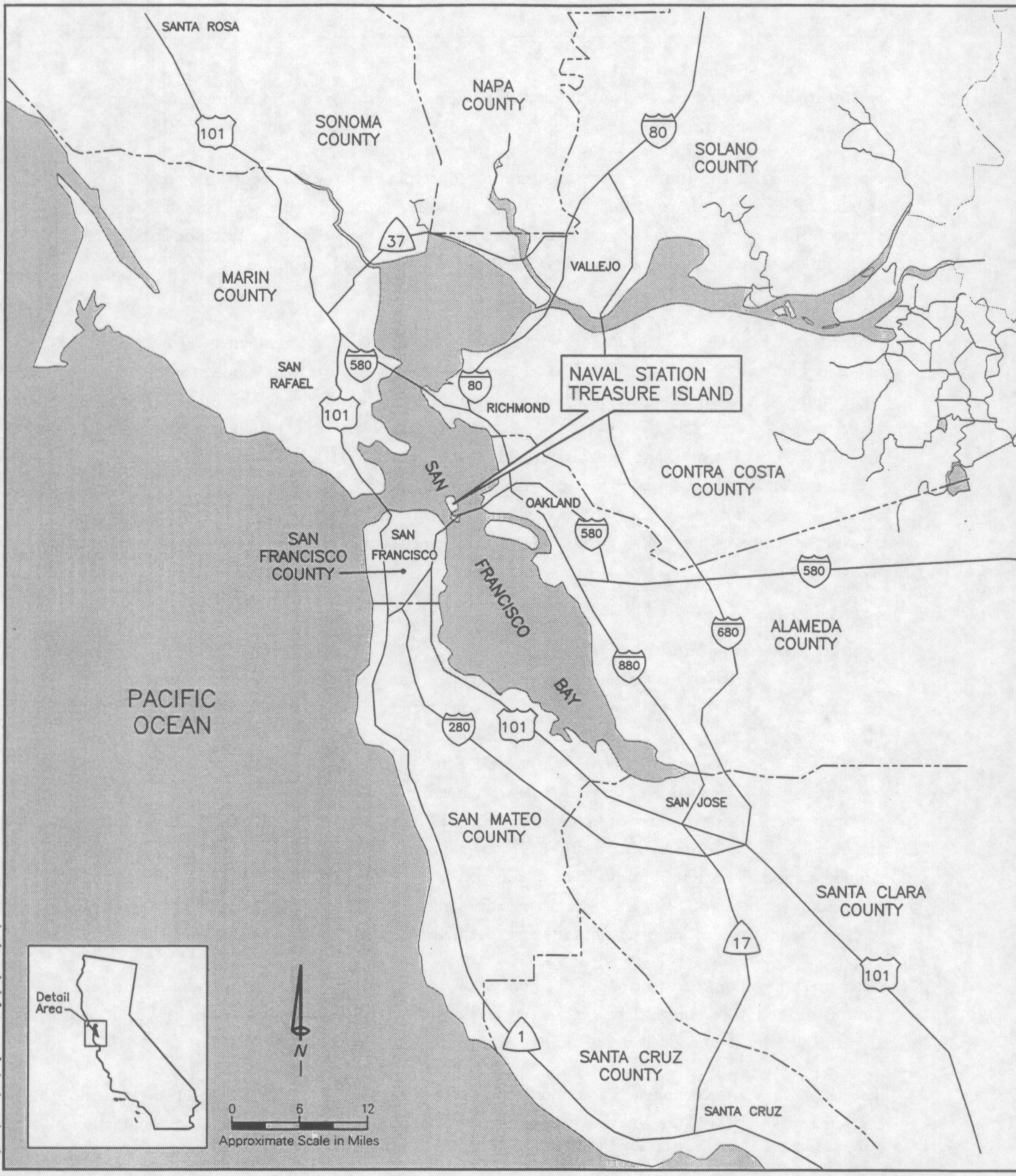
At the time of operational closure (September 1997), NSTI totaled approximately 1,075 acres (435 ha) of dry and submerged land within San Francisco. NSTI is on two islands in San Francisco Bay about midway between the shores of the cities of San Francisco and Oakland (Figure 1-1). The larger island, called Treasure Island, consists of 402 acres (160 ha) of dry land created with artificial fill in the 1930s. Yerba Buena Island, a natural island of approximately 150 acres (60 ha), is connected to Treasure Island by a causeway that also defines Clipper Cove. Vehicular access to NSTI is via the SFOBB on Yerba Buena Island. The SFOBB is part of the Interstate-80 (I-80) freeway system and provides an east-west link between the cities of San Francisco and Oakland. The Reuse Plan area is shown in Figure 1-2.

Treasure Island

Treasure Island is an artificial island built in the mid-1930s on shoals immediately north of and adjacent to Yerba Buena Island. The site is an area of tidal and submerged lands granted to San Francisco in 1933 by the state of California for constructing a public airport, for wharf and dock facilities, and for use as an airfield (California Statutes [Cal. Stat.] 1933, Chapter 912, August 21, 1933). In 1935, this legislative grant was amended to allow the site to be used for a fair. The legislative grant contained a restriction that prevented San Francisco from selling the property to private parties. Treasure Island was constructed over 19 months in 1936 and 1937 by San Francisco and the US Army Corps of Engineers (COE) as a project of the New Deal-era Works Progress Administration. The initial purpose of the island was to host the Golden Gate International Exposition (Exposition). The Exposition ran from February 1939 to September 1940 and was held to celebrate the engineering marvels of the just completed Golden Gate Bridge and SFOBB.

After the Exposition the island was to be converted to an international airport, but during the final months of the Exposition, and with increasing expectations of American involvement in World War II, plans were made to convert the island to a Navy base.

The federal government initiated a condemnation action in 1942 to acquire ownership of all lands that now make up Treasure Island. This condemnation action eventually was settled in conjunction with another condemnation action concerning San Francisco Airport property. The settlement of these two condemnation actions gave the federal government fee title to Treasure Island and a limited term at San Francisco Airport.



NSTI is located in San Francisco, about midway between the East Bay and West Bay shores.

Legend:

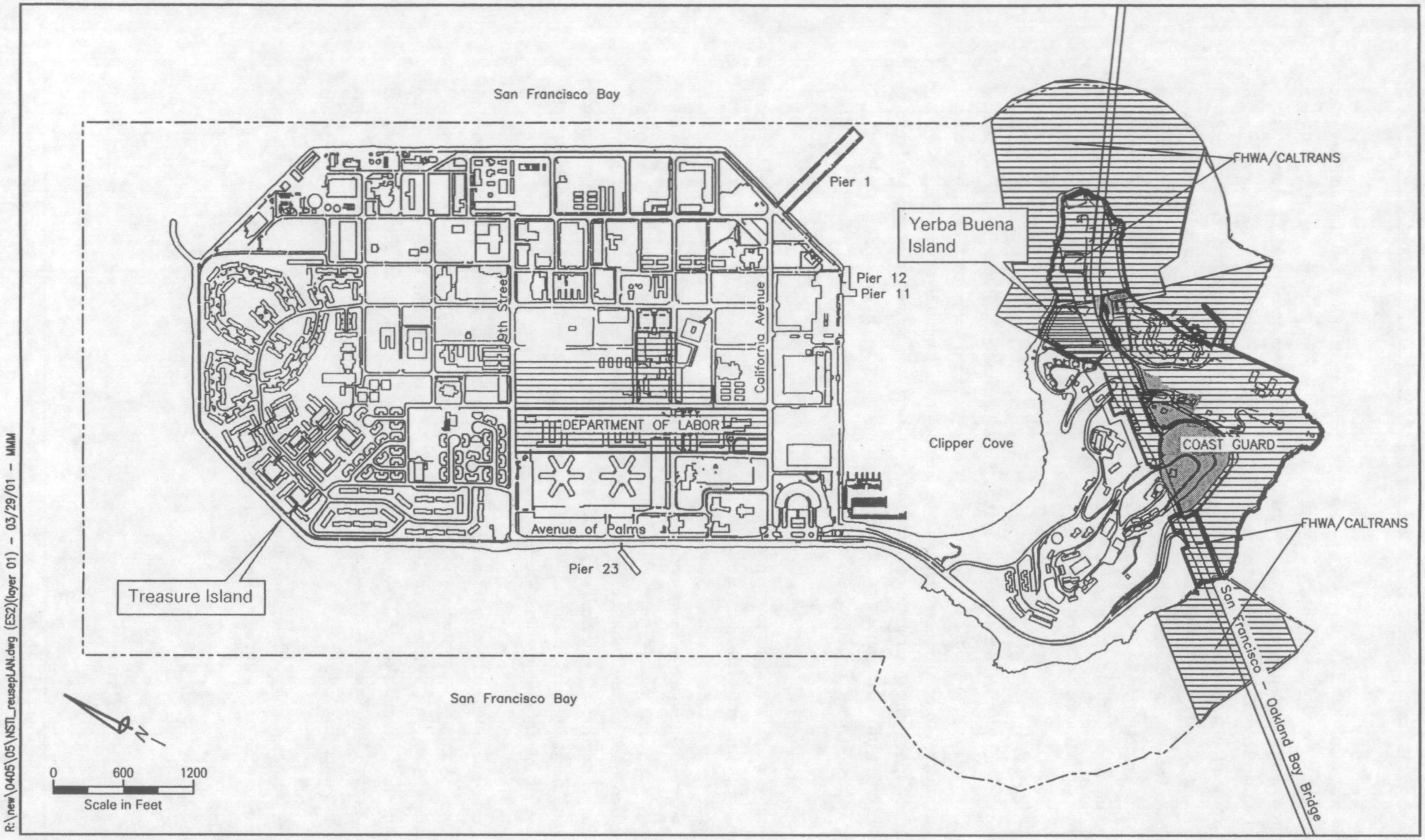
County Lines

Federal and State Highways

Regional Site Map

San Francisco Bay Area, California

Figure 1-1



The area proposed for Navy disposal includes submerged lands and upland areas within NSTI. Parcels that were transferred to other Federal agencies are excluded from the proposed disposal.

Legend:

Areas Excluded from Proposed Navy Disposal

Naval Station Treasure Island Property Boundary/Reuse Plan Area

Reuse Plan Area

Naval Station Treasure Island, California

Figure 1-2

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During the war years the island served as a center for receiving, training, and dispatching service personnel. After World War II, the Navy used the installation primarily as a training and administrative center. Treasure Island has approximately 150 nonresidential buildings, totaling about 2.5 million square feet (232,257 square meters [m]), and approximately 900 housing units. The housing units are mostly in four-, six-, and eight-unit two-story buildings, as well as in barracks for service personnel. The nonresidential buildings include an administration building, several classroom buildings used for training schools, former aircraft hangars, a fire training facility, a brig, offices, a conference center, restaurants, a school, a chapel, and storage and equipment buildings. Recreation facilities on the island include a marina, ball fields, a gym, a theater, a bowling alley, a fitness center, tennis courts, a picnic area, and open space.

Yerba Buena Island

Yerba Buena Island was used periodically by Native Americans before Europeans settled in the San Francisco Bay Area around 1835. In 1867, the US Army established a post on the northeastern side of the island adjacent to present day Clipper Cove. The post was established as an artillery base and quartermaster depot at the eastern end of the island. The Army was active there from 1868 through 1879. In the 1890s, the Army built a small torpedo station complex on the island, one building of which, the Torpedo Depot (Building 262), remains.

In 1898, Navy acquired the East Cove area of Yerba Buena Island from the Army. This area became the site for a Naval training station, which was active at the site between 1900 and 1923. During this period, several prominent buildings were constructed. The Commander's Quarters, or Quarters 1 (also referred to as "Nimitz House"), was completed in 1900, and seven other Senior Officers' Quarters (quarters 2 through 8) were completed between 1901 and 1905. Quarters 1 through 7, referred to as the "Great Whites" because of their exterior color and distinct architectural character, are clustered in a neighborhood on the north side of the SFOBB. Quarters 1 was listed individually on the National Register of Historic Places (NRHP) in 1991, and quarters 1 through 7, which form the Senior Officers Quarters Historic District, along with associated buildings and landscaping elements, are eligible for listing on the NRHP.

In 1946, Yerba Buena Island became primarily a residential facility and home to the US Guard; these functions have continued to the present (San Francisco 1996e). The Navy transferred ownership of approximately 30 acres of Yerba Buena Island to the US Coast Guard in 1973; this Coast Guard facility is on the southeast side of Yerba Buena Island (DON 1995a). An additional 11 acres was transferred in 1988. The Coast Guard will continue to operate on its property at Yerba Buena Island after the Navy disposes of NSTI.

Navy owns approximately 100 housing units and about 10 other buildings used for storage, communications, fire safety, and administration on Yerba Buena Island.

1.3 DISPOSAL OF NSTI PROPERTY

1.3.1 Predisposal Actions

The disposal process encompasses several sequential actions, further described below. The federal government is responsible for environmental cleanup and disposal of the property.

Caretaker Activities

NSTI is in caretaker status (inactive status under Navy control). On-site activities are limited to security, maintenance, cleanup, and other caretaker actions. Navy and San Francisco executed a cooperative agreement in 1997 in which San Francisco is responsible for providing caretaker services on NSTI. Approximately 50 persons are assigned to perform caretaker activities.

Contaminated Sites Cleanup

Navy is in the process of completing environmental cleanup of past releases of hazardous substances that pose a threat to human health and the environment. Navy cleanup efforts are being carried out in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (Pub. L. 96-510, 42 U.S.C.§§ 9601–9675).

Interim Lease Activities

Navy currently leases approximately 160 acres (65 ha) on NSTI to the LRA for a variety of uses, including film production facilities, residential housing, a marina, a fire-fighting school, special events and meeting center, warehouses, and multipurpose office space. In addition, space on NSTI is currently leased for reuse planning and stewardship, as well as for housing of homeless as part of a long-term homeless assistance program on NSTI.

1.3.2 Disposal Process Requirements

This section briefly highlights some of the key laws and regulations that guide BRAC disposal and reuse. An expanded discussion is provided in Appendix B.

The Federal Property and Administrative Services Act of 1949 (40 U.S.C. §§ 471 et seq.) establishes methods for the disposal of federal property and is implemented by the Federal Property Management Regulations (FPMR) (41 C.F.R. Part 101-47). The FPMR requires Navy to notify other military departments and DoD entities, as well as other federal agencies, that a property or facility is "excess." Any DoD or other federal agency that expresses an interest in the site during the process is given consideration before the property is determined to be "surplus." Once the property has been transferred, federal restrictions on reuse can only be imposed where it is authorized by statute.

Under the Stewart B. McKinney Homeless Assistance Act of 1987 (Pub. L. 100-77, codified as amended, at 42 U.S.C. §§ 11341-11448) (McKinney Act), a homeless services provider can prepare and submit an application to acquire surplus federal property to assist the homeless (see Appendix B). The homeless component of the Reuse Plan was developed through negotiation with Treasure Island Homeless Development Initiative (TIHDI), an association formed in June 1994 and composed of 14 nonprofit homeless and social service organizations. Section 2.2 describes the details of this process.

On October 15, 1993, Navy issued a Notice of Availability (NOA) for NSTI (Treasure Island proper) to DoD and other federal agencies indicating that the property was excess to the needs of Navy. After the property had been screened to federal agencies, Navy declared the property at Treasure Island surplus to the needs of the United States on July 11, 1994.

In March 1995, the Bureau of Land Management, as the former managing agency of Yerba Buena Island (prior to Navy), determined that the property on Yerba Buena Island was not suitable for return as Bureau of Land Management lands and concurred that Yerba Buena Island should be disposed pursuant to base closure law (Bureau of Land Management 1995). Therefore, a separate NOA for NSTI (Yerba Buena Island proper) was issued on July 6, 1995. DoD declared this property surplus in May 1996.

No DoD agency requested transfer of excess NSTI properties. Between October 1993 and October 1995, nine federal agencies expressed interest in excess property at NSTI. Five of the agencies submitted formal requests for property transfer. Three of these agencies withdrew their requests in 1995 and early 1996. The transfer requests for the remaining two agencies, DOL and the US Coast Guard, were approved. The DOL requested approximately 36 acres (15 ha) of property and associated facilities on Treasure Island for its Job Corps program, and the Navy authorized the requested property transfer on April 17, 1998. The US Coast Guard requested approximately 22 acres (9 ha), including land, facilities, and submerged areas of Yerba Buena Island(see Figure 1-2). Navy authorized transfer of 11 acres of dry land in March 3, 1998. The remaining 11-acre parcel of submerged land is scheduled for transfer in 2002 following completion of appropriate environmental documentation. These properties are not part of the proposed disposal and subsequent reuse action evaluated in this EIS.

Subsequent to completion of the federal screening process, the FHWA, pursuant to its authority under 23 U.S.C. § 107(d), acquired 97 acres (39 ha) on Yerba Buena Island held by Navy. In accordance with § 107(d), FHWA conveyed this property to Caltrans by fee for construction of the east span of the SFOBB. This acreage is not part of the disposal action.

Table 1-1 provides a categorized description of the historic acreage of NSTI on Treasure Island and Yerba Buena Island, which includes the areas previously transferred to DOL, US Coast Guard, and FHWA. The remaining NSTI property proposed for Navy disposal includes 681 acres (276 ha) at Treasure Island and 239 acres (97 ha) at Yerba Buena Island, for a total of approximately 920 acres (373 ha).

1.4 Document Organization

This EIS has an Executive Summary and 10 chapters. The title and contents of each chapter are provided below.

The ***Executive Summary*** provides an introduction to the proposed action and an overview of federal requirements and the environmental process. The section has a brief discussion of the three reuse alternatives and summarizes the potential significant environmental consequences of each. The summary also addresses cumulative impacts and discusses other NEPA considerations.

Table 1-1
NSTI Acreage on Treasure Island and Yerba Buena Island

	Acres
Treasure Island	
NSTI	
Dry	366
Submerged	315
NSTI Treasure Island Subtotal	*681*
NSTI land transferred to Department of Labor[1]	36
Treasure Island Subtotal	***717***
Yerba Buena Island	
NSTI	
Dry	76
Submerged	163
NSTI Yerba Buena Island Subtotal	*239*
NSTI land transferred to Coast Guard[2]	
Dry	11
Submerged	11
Coast Guard Subtotal	*22*
NSTI land transferred to FHWA/Caltrans[3]	
Dry	28
Submerged	69
FHWA/Caltrans Subtotal	*97*
Yerba Buena Island Subtotal	***358***
Total NSTI Acreage (Treasure and Yerba Buena islands)	**1,075**
Total NSTI Acreage Proposed For Disposal[4]	**920**

[1]Approximately 36 acres was transferred from Navy to the Department of Labor in 1998.
[2]Approximately 11 acres of dry land was transferred to the Coast Guard in 1998, to create a total of approximately 40 acres of dry land. An additional 11 acres of submerged land is scheduled for transfer to Coast Guard in 2002.
[3] Approximately 97 acres of dry and submerged land was transferred to FHWA on October 26, 2000, which then deeded it to Caltrans for the construction of the east span of the SFOBB.
[4]Total NSTI acreage proposed for disposal = NSTI Treasure Island Subtotal + NSTI Yerba Buena Island Subtotal. Total does not include property transferred to Department of Labor, Coast Guard, and FHWA/Caltrans.

Chapter 1, Purpose and Need, provides a project overview of the reasons for the disposal of federal property and the subsequent reuse. It includes a description of the EIS contents and approach, a description of the decision process for the disposal of federal property, and the public involvement process used to solicit input on potentially significant environmental impacts.

Chapter 2, Alternatives Considered, describes the alternative federal actions considered, along with a summary of the planning process leading to development of the reuse alternatives. This chapter describes in detail the following alternatives:

- Navy Disposal/Reuse Alternative 1 (the Reuse Plan Alternative);
- Navy Disposal/Reuse Alternative 2;
- Navy Disposal/Reuse Alternative 3; and
- No Action Alternative.

This section also includes a table that summarizes the potential significant impacts and proposed mitigation measures.

Chapter 3, Affected Environment, presents a description of the baseline environmental and socioeconomic conditions that may be affected by the proposed action. The discussion also identifies the region of influence (ROI) applicable to each resource area.

Chapter 4, Environmental Consequences, describes the potential environmental consequences, or impacts, of disposal of Navy property and the subsequent reuse of NSTI. Direct impacts of disposal and indirect impacts of reuse are evaluated. Mitigation measures are identified for any impact determined to be significant. The purpose of this chapter is to provide the public, interested agencies, and decision-makers a clear understanding of the environmental impacts of disposing (or not disposing) for subsequent reuse.

Chapter 5, Cumulative Projects and Impacts, addresses what effects the proposed action would have on the environment, when combined with other past, present, and reasonably foreseeable actions.

Chapter 6, Other Considerations, addresses three topics required by federal law. These are (1) the unavoidable adverse impacts on the environment, (2) the short-term uses and long-term productivity, and (3) the irreversible or irretrievable commitment of resources. Two pertinent Executive Orders are addressed as well—Executive Order 12898, Environmental Justice in Minority and Low-income Populations (59 Federal Register [Fed. Reg.] 7629 [Feb. 16, 1994]), which requires evaluation of any potential disproportionate adverse impacts on low-income or minority populations; and Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks (62 Fed. Reg. 19883 [1997], which requires assessment of child-specific environmental health risk and safety risk issues.

Chapters 7 through 10 provide background information on consultations with interested and responsible agencies, a list of this document's preparers, a list of references, and a distribution list for the EIS. Technical appendices are included after Chapter 10 and provide factual support for much of the analyses contained in the main body of the EIS. A glossary of terms and index for this EIS is included as Appendix A.

Acronyms and abbreviations are used throughout the document to avoid unnecessary length. A list of acronyms follows the table of contents for the reader's reference.

1.5 RELATED STUDIES

Several project-related studies have been undertaken or are ongoing at NSTI. The major planning and restoration programs are the Environmental Baseline Survey (EBS), the Installation Restoration Program (IRP), and the BRAC Cleanup Plan (BCP).

The EBS, completed in May 1995, is a broad evaluation and summary of all known and suspected areas where hazardous materials or petroleum products have been handled, stored, disposed of, or released within the boundaries of NSTI and adjacent areas (DON 1995c). Two major environmental restoration programs (IRP and the Compliance Program) have been established in response to releases of hazardous substances, pollutants, contaminants, petroleum hydrocarbons, and hazardous and solid waste. The IRP identifies, assesses, characterizes, and cleans up or controls contaminants from past hazardous waste disposal operations and hazardous materials spills. The Compliance Program addresses solid waste management, underground storage tanks (USTs) and fuel lines, aboveground storage tanks (ASTs), oil/water separators (OWS), asbestos-containing materials, polychlorinated biphenyls (PCBs), radon, lead-based paint, lead in drinking water, septic tanks, and indoor and outdoor small arms ranges. A draft phase I remedial investigation (RI) report was prepared in 1993 (DON 1993d) to describe past and current land use and hazardous substance/waste management practices. Navy completed the NSTI BCP in March 1997 (DON 1997b). The BCP contains a plan and a remediation schedule for environmental restoration and associated remediation programs.

1.6 PUBLIC INVOLVEMENT PROCESS

The EIS process is designed to involve the public in federal decision-making. Opportunities to comment on, and participate in, the process are provided during preparation of this EIS as outlined in the following sections. Comments from agencies and the public are solicited to help identify the primary issues associated with the federal disposal and proposed reuse of NSTI. San Francisco conducted public meetings and workshops as part of the reuse planning process, and the public was encouraged to comment on the various reuse alternatives. The public's input, as well as feedback from applicable resources and permitting agencies, will be used to evaluate the alternatives and environmental impacts before final decisions are made. Chapter 7 includes a brief discussion of the public involvement process, and Chapter 10 contains the mailing list for this Draft EIS.

1.6.1 Scoping Process

Scoping is the process used to identify potential significant environmental issues and concerns related to the proposed action. The scoping period was from September 24, 1996, to October 28, 1996. The scoping process was conducted jointly by Navy and San Francisco.

On September 26, 1996, in accordance with NEPA requirements, a Notice of Intent (NOI) to prepare an EIS was published in the Federal Register. A copy of the NOI is in Appendix D of this document. The NOI was mailed to regulatory agencies, local jurisdictions, elected officials, public service providers, and organizations.

As part of the scoping process, Navy and San Francisco held a public meeting to inform the public about disposal and reuse alternatives and to solicit the public's participation and comments. The scoping meeting was held on October 9, 1996, at the San Francisco Ferry Building. The meeting was advertised in the *San Francisco Chronicle*, *Marin Independent Journal*, *San Jose Mercury News*, and *Oakland Tribune* on Sunday, September 29, 1996, and Tuesday, October 1, 1996. At the meeting, Navy and local representatives presented an overview of the proposed action and the environmental review process. This presentation was followed by an opportunity for public oral or written comment. Six individuals from the public provided oral comments at the scoping meeting. Oral comments addressed alternate land uses on the site related primarily to residential, marine, and wildlife observation uses. Commentors also were concerned with addressing the needs of veterans in the reuse plan and concerns about public notification during the comment period.

Additionally, twelve comment letters were received in response to the 1996 NOI. These written comments addressed a variety of concerns, including impacts to traffic, geology and seismology, historic architectural resources, hazardous and waste material, and archeological resources. All issues raised during the scoping period regarding environmental and socioeconomic topics have been addressed in this EIS. A more detailed summary of the scoping comments is included in Chapter 7.

1.6.2 Public Review

The public is invited to review and comment on this Draft EIS. An NOA was published in the Federal Register, and notices were published in the *San Francisco Chronicle*, *Marin Independent Journal*, *San Jose Mercury News*, and *Oakland Tribune* and were mailed to those on the mailing list, beginning the 45-day public comment period. This period provides the public with an opportunity to review the document and to offer appropriate comments.

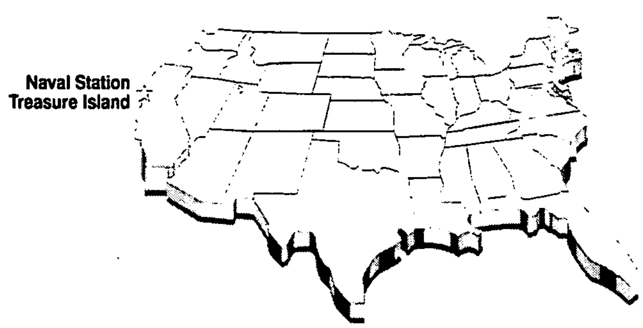
Interested parties are requested to submit comments on this Draft EIS to the following address:

Southwest Division
BRAC Operations Office
1230 Columbia Street, Suite 1100
San Diego, California 92101-8517
Attn: Timarie Seneca
Phone: (619) 532-0955
Fax: (619) 532-0940

A public hearing will be held during the 45-day review period to hear comments on the Draft EIS. The time and place of the hearing will be announced in the media and is noted in the transmittal letter accompanying this document.

A Final EIS that discusses the comments received on the Draft EIS will be published and made available for review to persons on the distribution list, provided in Chapter 10, and to others requesting a copy. An NOA of the Final EIS will be published in the Federal Register and in public notices.

As required under NEPA, there will be a 30-day review period after publication of the Final EIS. After the 30-day review period, Navy will issue a NEPA ROD.



2. PROPOSED ACTION AND ALTERNATIVES

CHAPTER 2
PROPOSED ACTION AND ALTERNATIVES

This chapter describes alternatives for the proposed action and considers Navy *disposal* alternatives and subsequent *reuse* alternatives. NEPA requires that an EIS objectively evaluate a "reasonable" range of alternatives. Under NEPA, reasonable alternatives are those that are practical or feasible from a technical and economic perspective and that are based on common sense (Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations [CEQ 40 Most Asked Questions], 46 Fed. Reg. 18026, March 23, 1981; as amended, 51 Fed. Reg. 15618, April 25, 1986).

This chapter of the EIS is organized into seven primary sections. Section 2.1 discusses Navy disposal alternatives. Section 2.2 describes the generation of reuse alternatives. Alternatives eliminated from review in this EIS, and the reasons for their elimination, are addressed in Section 2.3. Section 2.4 provides detailed descriptions of the reuse alternatives evaluated in this EIS. Section 2.5 identifies the environmentally preferable alternative, and Section 2.6 provides a list of permits and approvals required for disposal and subsequent reuse of NSTI. Finally, Section 2.7 provides a summary comparison of the potential impacts and corresponding mitigation for each alternative.

2.1 NAVY DISPOSAL

Navy can either retain NSTI surplus property in federal ownership (No Action Alternative) or dispose of the property for subsequent reuse (Disposal Alternative). The description of retaining NSTI in federal ownership is included in the No Action Alternative (Section 2.4.5). Navy disposal of surplus property at NSTI is the federal action evaluated in this EIS for potential environmental and socioeconomic impacts. Under the federal action, approximately 920 acres (373 ha) of federal property at NSTI would be conveyed to non-federal entities.

Although it will not retain control of the properties after their disposal, Navy is required, in accordance with DBCRA, to evaluate the reasonably foreseeable impacts arising from reuse Consequently, this EIS evaluates the potential environmental and socioeconomic impacts associated with the reuse of NSTI property. The Federal Action, Navy disposal, is assumed as part of each reuse alternative. As discussed in Chapter 1, Navy's disposal action does not include those properties affected by the October 26, 2000 deed between FHWA and Caltrans.

2.2 Reuse Planning Process

DoD Office of Economic Adjustment (OEA) designated San Francisco as the Local Redevelopment Authority (LRA) for NSTI in May 1994. In late June 1994, the Mayor of San Francisco appointed the Treasure Island Citizens Reuse Committee (CRC) to make recommendations for the consideration of the Planning and Redevelopment Commissions and the San Francisco Board of Supervisors. The CRC consisted of a diverse group of community professionals and activists represented by environmentalists, architects, labor union members, educators, municipal finance experts, developers, homeless service providers, real estate analysts, neighborhood and cultural leaders, planners, and lawyers. The CRC convened its first public workshop in June 1994 and met regularly until it had completed its work in 1996.

As part of the NSTI reuse planning process, numerous alternatives were proposed and then evaluated using goals established by the LRA. The city's Office of Military Base Conversion (OMBC), a partnership of San Francisco's Planning Department and Redevelopment Agency and the Port of San Francisco, directed the reuse planning process. This process, described in detail in the *Naval Station Treasure Island Draft Reuse Plan* (San Francisco 1996e), included substantial public input and technical direction from city departments, as summarized below.

Before, during, and after the approval of the Reuse Plan, a continued effort was sustained in soliciting meaningful public involvement by the OMBC and the CRC. CRC meetings were open to the public, and public comment was invited and considered. CRC meeting minutes were made available to the public and were regularly distributed to more than 100 organizations and individuals in the Bay Area.

The public also was informed about the progress of reuse planning through a regular newsletter, *Treasure of the Bay,* the first issue of which was published in Spring 1994. Several issues of the newsletter were published thereafter and mailed to over 2,400 community leaders, neighborhood organizations, and citizens of San Francisco and the Bay Area. Newsletter issues focused on important aspects of the reuse planning process, informed the public about other ways to get information, and advertised the availability of reuse planning reports, which present a more detailed account of NSTI reuse planning.

The OMBC and CRC, through their consultants, conducted public workshops and prepared a number of publicly available documents to assist in formulating a reuse plan for NSTI. Two widely publicized public planning workshops on the reuse planning process (including bus tours of the islands) were held in June 1994 and August 1995. In July 1995, the CRC prepared exhibits for public display at the Treasure Island Museum and the San Francisco Main Library, accompanied by newsletters and questionnaires soliciting public input on the proposed Draft Reuse Plan. A draft set of reuse planning goals and objectives was produced as a result of these workshops, and the goals and objectives were subsequently refined and approved by the CRC on December 1, 1995.

Documents prepared include a two-volume Existing Conditions Report in August 1995 (San Francisco 1995a; 1995b), with findings summarized in the August 1995 Issues and Opportunities Report (San Francisco 1995d) and the January 1996 Alternatives Report (San Francisco 1996a). The adopted goals and objectives address six specific topics—economics, community, character, transportation, environment, and safety. For a detailed listing and discussion of the goals and objectives envisioned by the CRC, refer to the *Naval Station Treasure Island Draft Reuse Plan* (San Francisco 1996e).

From information in these documents and based on public input, a concept plan, entitled *Conceptual Planning Framework, Treasure Island – Yerba Buena Island* (San Francisco 1996d), was developed and approved by the CRC in February 1996; this plan led to the publication of the July 1996 Draft Reuse Plan (San Francisco 1996e). Recommendations for the "preferred reuse concept" included an emphasis on visitor-oriented recreational, commercial, and entertainment uses to serve as a major jobs and revenue generator to support needed improvements and services. Due to the instability of fill material on Treasure Island, phased implementation of seismic upgrades to structures and utilities was also recommended to reduce the risk of failure during an earthquake. The earlier phases of improvements focus on accommodating major visitor-oriented uses. Another recommendation was that the reuse plan be developed to allow substantial flexibility to adapt to market conditions and emerging information.

On July 22, 1996, the San Francisco Board of Supervisors endorsed the Draft Reuse Plan. In September 1996, the San Francisco Redevelopment Agency contracted the Urban Land Institute (ULI), a non-government organization (NGO), to convene an advisory panel to evaluate the feasibility of the Draft Reuse Plan. The resulting report, entitled *Treasure Island Naval Station San Francisco, California: An Evaluation of Reuse Opportunities and a Strategy for Development and Implementation* (ULI 1996), suggested changes and revisions that were considered in the development of the reuse alternatives. Alternative 2 incorporates many of the changes suggested by the ULI study.

The reuse plan proposes to maximize a range of public benefits within the major constraints of the site. The plan emphasizes publicly oriented recreational, entertainment, and hospitality uses that recall the spirit of the 1939 Golden Gate International Exposition (Exposition). These uses maximize the island's central location and outstanding views, and the plan links NSTI to San Francisco and the Bay Area by ferry. The NSTI Draft Reuse Plan also incorporates specific users and types of uses from the second homeless screening process. The Draft Reuse Plan was approved by the Department of Housing and Urban Development (HUD) on November 26, 1996 (see Appendix C). The Draft Reuse Plan is described in Section 2.4.2 (Alternative 1), along with two other reuse scenarios, Alternative 2 and Alternative 3 (sections 2.4.3 and 2.4.4, respectively).

In 1997 the California State Legislature created a special reuse authority for Treasure Island; transferring the LRA status from San Francisco to the Treasure Island Development Authority (TIDA). TIDA is a state agency staffed by the San Francisco mayor's office and is the entity responsible for planning the reuse of Treasure Island. In March 1998, DoD OEA recognized TIDA as the implementing LRA for NSTI.

2.2.1 Homeless Assistance Planning Process

Federal base closure law and regulations were changed during the period of reuse planning for NSTI. The Stewart B. McKinney Homeless Assistance Act of 1987 (McKinney Act) (Pub. L. 100-77, codified as amended, at 42 U.S.C. §§ 11341-11448) requires DoD and other federal agencies to give priority consideration for homeless assistance over other uses for property considered excess, surplus, or underutilized by federal agencies. HUD screens properties in these categories for suitability for homeless assistance (42 U.S.C. § 11411). Because NSTI was closed in 1993 under the '93 round of BRAC, homeless assistance screening was originally initiated under this law. In October 1994, the Treasure Island Homeless Development Initiative (TIHDI), a coalition of 14 nonprofit social service and homeless service organizations, submitted a revised plan to the San Francisco Department of Health and Human Services under the McKinney Act for providing homeless services.

The first TIHDI plan submitted to the San Francisco Department of Health and Human Services in October 1994 was building-specific. In the fall of 1994, the Base Closure Community Redevelopment and Homeless Assistance Act of 1994 (Redevelopment Act) (Pub. L. 103-421, 10 U.S.C. § 2687) modified the federal process for accommodating the needs of the homeless in connection with disposal of military installations. This act provided the affected local community greater opportunity to participate in the decision regarding disposal of military properties by requiring homeless providers to work through LRAs. In 1995, the LRA notified Navy of its intent to conduct a second homeless screening process under this act. DoD approved this action on May 9, 1995.

TIHDI conducted an extensive solicitation process throughout 1995. TIHDI submitted a comprehensive Notice of Interest for surplus property at NSTI to the LRA on November 1, 1995, for incorporation into the LRA's reuse plan. The TIHDI Notice of Interest includes homeless housing, support services, employment, and economic development programs and services.

The 1995 plan provides economic development opportunities and employment for homeless individuals. TIHDI organizations may provide contract services, such as landscaping and grounds maintenance, and operate businesses, such as restaurants and convenience stores, at a level that is proportionate to overall development on the islands. These businesses would provide employment and job training and would be an important part of the ongoing transition of NSTI to civilian use.

Up to 375 existing housing units will be leased to TIHDI to provide shelter for individuals and families. In total, 90 housing units on Yerba Buena Island are set aside for homeless housing, as well as 285 housing units on Treasure Island. If substantial new residential development occurs on NSTI in the future, TIHDI will be offered sites for constructing additional affordable housing.

The plan sets goals for providing long-term jobs for homeless people and the working poor as a part of new uses on NSTI. The overall employment goals for NSTI include offering 25 percent of permanent jobs to homeless or other economically disadvantaged persons within a larger goal of setting aside 50 percent of all new jobs for San Francisco residents.

2.3 ALTERNATIVES ELIMINATED FROM DETAILED REVIEW

In determining the scope of alternatives to be considered under NEPA, the emphasis is on what is "reasonable." The term "reasonable" is used primarily to insure that federal agencies preparing NEPA documents make the effort to explore a number of common sense-based alternatives that meet the purpose and need of the project. Reasonable alternatives include those that are practical or feasible from a technical and economic standpoint (Question 2a, CEQ 40 Most Asked Questions, 46 Fed. Reg. 18026 [March 23, 1981]). An alternative can be eliminated from further discussion if it does not meet the purpose and need of the project.

During the reuse planning process, the LRA developed a purpose and need statement that served as the basis for evaluating reuse alternatives and for refining the Draft Reuse Plan. This purpose and need focused on reuse of NSTI property to support the local economic base, enhance the local image and identity, expand the range of recreational and entertainment opportunities available to the community, and enhance the overall livability of the local area and region. To meet these overall objectives, the proposed reuse alternatives must have provided employment and housing opportunities and generated sufficient revenue (e.g., property tax) to support the investment necessary to upgrade the Treasure Island perimeter dike and to undertake other facility ground improvements that would improve the seismic safety of the site (San Francisco 1996e). In addition, reuse alternatives must have considered current access constraints (e.g., limited access via the SFOBB, inadequate on- and off-ramp design, and traffic congestion during peak hours) and proposed alternative access options, such as ferry service, to solve existing vehicular access deficiencies.

The Alternatives Report (San Francisco 1996a) that preceded the Draft Reuse Plan identified four preliminary land use alternatives. These four alternatives evolved in an iterative process with a series of meetings and discussions with the CRC. Table 2-1 lists the land use requirements of the four preliminary reuse alternatives that were considered by the LRA in 1995 to meet their reuse objectives. From these alternatives, a screening process was initiated by the LRA to determine if these alternatives would 1) attain the objectives of the LRA; 2) avoid or substantially lessen environmental effects of the project; 3) be technically feasible; and 4) be economically feasible. Although these four alternatives were eliminated from analysis by the LRA as a single plan to guide the redevelopment of NSTI , elements of each were included in the Draft Reuse Plan.

Navy reviewed the Draft Reuse Plan (San Francisco 1996e), the ULI report (ULI 1996), the Alternatives Report (San Francisco 1996a), scoping comments and letters, and newspaper articles related to reuse of NSTI to identify a range of reasonable alternatives and to determine which alternatives would be eliminated from detailed review in the EIS. While many reuse scenarios have been suggested, most major elements of the alternatives eliminated from review have been incorporated into one of the three reuse alternatives evaluated. For instance, some reuse suggestions, such as a public park or a sports center, were not feasible as a single use; however, they have been incorporated as elements in the three reuse alternatives evaluated. The four reuse alternatives that were eliminated by the Navy mirror the four preliminary alternatives studied in the Alternatives Report (San Francisco 1996a). The following table and subsequent discussions provide a description of those alternatives that were eliminated from further review.

Table 2-1
NSTI Land Development Program for Alternatives Initially Considered by the LRA in 1995

	Alternatives							
	Harbor-oriented Themed Attraction		Destination Entertainment District		Residential Neighborhood		Major Themed Attraction	
Land Use	**Acres**	**Program**	**Acres**	**Program**	**Acres**	**Program**	**Acres**	**Program**
Treasure Island								
Themed Attraction	86.0	1 million s.f.						
Hotel/Entertainment	30.0	1,200 rooms 500,000 s.f.					30.0	2,000 rooms
Sports Complex	80.0							
Public Promenade	6.0		4.0		7.0		7.0	
Destination Entertainment			23.0	500,000 s.f.				
Film/Institutional			11.0	300,000 s.f.	14.0	300,000 s.f.		
Resort Hotel			18.0	600 rooms				
Business Hotel			13.0	400 rooms				
Golf Course			144.0	18 holes				
Marina				500 slips		500 slips		500 slips
Residential					88.0	3,520 units		
Residential/Mixed Use					37.0	1,480 units 200,000 s.f.		
Hotel/Conference					8.0	400 rooms		
School/Child Care/Gym					22.0			
Park/Open Space					125.0			
Roads					13.0			
Themed Attraction/Entertainment							263.0	
Film Production								300,000 s.f.
Job Corps	36.0		36.0		36.5		36.0	
Open Space	165.0		154.0		52.5		67.0	
Subtotal Acres	403		403		403		403	
Yerba Buena Island								
Themed Attraction	7.0	200 rooms 100,000 s.f.						
Hotel/Conference			7.0	200 rooms			7.0	200 rooms
Residential (new)					7.0	140 units		
Existing Housing	36.0	95 units	36.0	95 units	36.0	95 units	36.0	95 units
Open Space	72.0		72.0		72.0		72.0	
Subtotal Acres	115		115		115		115	

Source: San Francisco 1996a.
Notes for all alternatives:
Improved land acreage includes stabilized land area within a footprint defined by an improved perimeter dike, including the Job Corps site. Land within the core is excluded for the Harbor-oriented Themed Attraction and Destination Entertainment District alternatives.
Initial alternatives include 39 acres (16 ha) of dry land on Yerba Buena Island that was subsequently transferred to the US Coast Guard and FHWA.
s.f. = square feet

2.3.1 Harbor-oriented Themed Attraction Alternative

This alternative envisioned Treasure Island as a major visitor destination. A large themed attraction occupying approximately 86 acres (35 ha) on the scale of Disneyland would be built primarily on Treasure Island, but it also would include Clipper Cove and the eastern tip of Yerba Buena Island. Visitors to the Treasure Island themed attraction would arrive by ferry to a new terminal on the west side of the island. Pier 1 would be incorporated into the themed attraction.

Under this alternative, the west side of Treasure Island would be devoted to visitor-serving uses, primarily hotels and supporting retail and entertainment uses, which would complement and support the new themed attraction. The remainder of the island would be unprotected by shoreline improvements and held in open space. The center of the island, which is more geologically stable, could be used for active recreational uses, such as a sports complex consisting of amateur athletic fields. New uses on Treasure Island would be focused around a central roadway and utility corridor that provides access and services to each of the uses.

On Yerba Buena Island, it is assumed that one small 200-room hotel could be part of development on the flatter, eastern area. The Senior Officers Quarters would be preserved and incorporated into the themed attraction, either as lodging or as an attraction. The remainder of Yerba Buena Island would be primarily devoted to housing and open space uses.

Major elements of this alternative were incorporated into two of the reuse alternatives that are already included in this EIS. For example, the major themed attraction and use of the west side of Treasure Island for visitor-serving uses, such as hotels, is part of Alternative 1. Providing shoreline improvements only to portions of Treasure Island and dedicating the less reinforced part to open space and recreation is similar to Alternative 2. In addition, this alternative was found to be marginally economically feasible due to the single source of revenue and the reliance on supplemental funding from tax increment financing (San Francisco 1996a). Therefore, this alternative was eliminated from further review.

2.3.2 Destination Entertainment District Alternative

This alternative would include developing a resort hotel and a visitor-serving entertainment district along the Clipper Cove shoreline of Treasure Island. For illustrative purposes, this alternative envisions a fairly large facility similar in scale to the Inn at Spanish Bay in Pebble Beach. Another hotel and conference center would be established on the western side of the island. The area between the two hotels and along the Clipper Cove shoreline would be a visitor-oriented entertainment zone, similar in concept to Citywalk in Universal City in Los Angeles, incorporating themed attractions, along with clubs, restaurants, and shops oriented to the waterfront promenade. This alternative also provides an area for existing film production or a similar employment use, such as recording or multimedia studios, which could be related to the entertainment themes of the island.

Open space on Treasure Island would be developed as an 18-hole golf course to complement the hotels. Similar to the Harbor-oriented Themed Attraction Alternative, the outer perimeter of the island would be set aside as natural open space with limited public access. This alternative also envisions a small hotel and conference center on the eastern tip of Yerba Buena Island, with reuse of existing residential units and potentially up to 90 infill units.

This alternative was eliminated from further consideration due to economic factors. The principal source of revenue to support development of NSTI is the value that private development can pay for the land. Compared to the other three preliminary alternatives, the Destination Entertainment District Alternative would result in the lowest residual land values, which would not be sufficient to cover all costs even with supplemental tax revenues (San Francisco 1996a), therefore, this alternative was eliminated from further review. However, elements of this alternative have been integrated into the EIS reuse alternatives. For example, the golf course is represented in Alternative 2.

2.3.3 Residential Neighborhood Alternative

Under this alternative, both Treasure Island and Yerba Buena Island would be devoted primarily to residential uses; up to 4,000 new housing units would be added to the existing approximately 1,000 units at NSTI (approximately 900 units on Treasure Island and approximately 100 units on Yerba Buena Island). New residential uses on Treasure Island would be oriented around shoreline open space areas and a central park. A commercial residential mixed-use center would be established along the Clipper Cove shoreline. A new marina would be established on Treasure Island at Clipper Cove for recreational uses. On the west side of the island, a small business hotel and conference center would be located to take advantage of views and ferry access to downtown San Francisco. Redevelopment on Yerba Buena Island would include new housing units developed at townhouse densities (i.e., up to 20 units per acre for the level portion of the island and 10 units per acre for sloping and redeveloped areas). Up to 230 new dwelling units could be established on Yerba Buena Island in addition to rehabilitating existing housing units.

This alternative was eliminated from further consideration because of both economic and environmental factors. Economic feasibility studies during the master planning process revealed that given the high dike reinforcement, infrastructure, and service costs and the expected rate of absorption for residential uses, an alternative that relied primarily on residential uses would be economically infeasible. For example, it was estimated to take 25 years for this alternative to be built out. Even with the inclusion of tax increment financing, the revenues generated, primarily consisting of land sales, were found to be insufficient to cover the high costs associated with this alternative. (San Francisco 1996a). It was also questionable whether a suitably amenable residential environment could be established in the early phases to establish new market-rate housing on Treasure Island.

This alternative also would be expected to generate unacceptably high traffic volumes on the SFOBB, based on a likely greater reliance on the private automobile for transportation and access to and from NSTI. Based on a residential trip generation rate of 10 trips per day, this alternative would generate approximately 49,950 vehicle trips per day. Vehicle use would have to be stringently curtailed for this alternative to be feasible from a transportation standpoint, and the anticipated level of non-auto use (e.g., ferry and shuttle systems) that would be required of new residents would be generally unprecedented in the US. This alternative would not meet the LRA's purpose and need to enhance the overall livability of the local area and region because it would worsen existing vehicular access deficiencies on the SFOBB. For these reasons, this alternative was eliminated from further consideration.

2.3.4 Major Themed Attraction Alternative

This alternative would develop an extensive themed attraction on Treasure Island. The themed attraction would occupy approximately 260 acres (105 ha), on the scale of Universal Studios in Los Angeles, and would include film production. The western portion of Treasure Island would be developed primarily as hotels and visitor-serving uses. In this alternative, Clipper Cove and the associated shoreline would be for public use and would not be included within the themed attraction.

Public access to the themed attraction would be through the west side ferry terminal and through Building 1. Pier 1 would serve as a ferry terminal and a second entrance to the themed attraction. This alternative also would include construction of a new 200-room hotel on the eastern tip of Yerba Buena Island. The existing housing would be reused and infilled, as feasible.

This alternative would meet the basic project purpose and need to enhance local image and identity and to expand the range of recreational and entertainment opportunities available to the community. However, this alternative was regarded as too narrowly drawn, relying too much on a very large themed attraction. The marketability of this alternative is questionable due to the unlikelihood that a developer or corporation would purchase such a large area of land for themed attraction purposes, particularly given the costs associated with land improvements and that the intensive use area is generally around 60 to 80 acres (24 to 32 ha) (San Francisco, 1996a). For these reasons, this alternative was eliminated from consideration as a single development plan. However, the major themed attraction elements were incorporated in all three of the EIS reuse alternatives at a reduced scale.

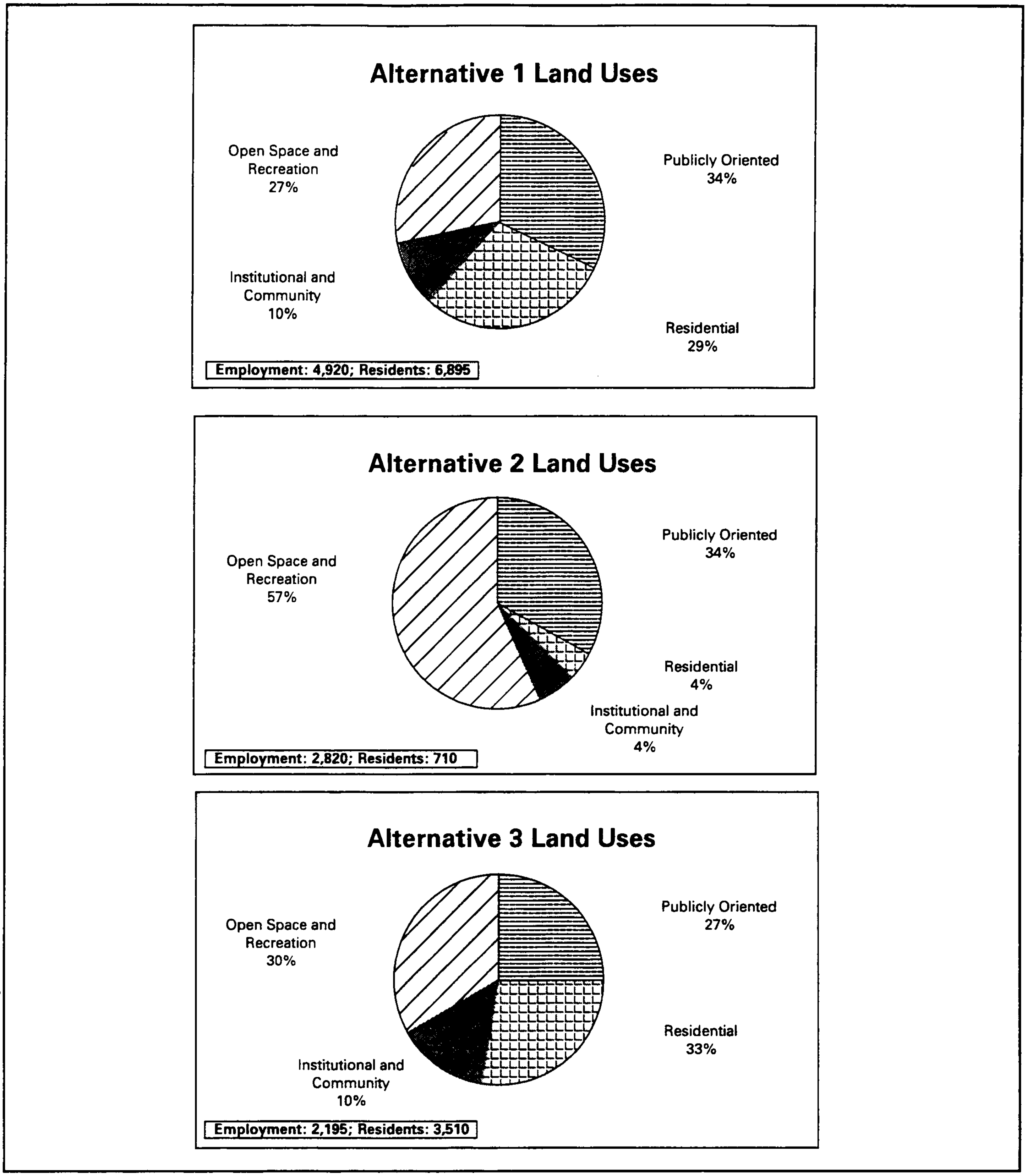
2.4 DETAILED DESCRIPTION OF REUSE ALTERNATIVES

This section presents a detailed description of the three reuse alternatives developed and evaluated in this EIS—alternatives 1, 2, and 3. Navy disposal is assumed as part of each of the three reuse alternatives. Alternative 1 represents full implementation of the development scenario described in the Draft Reuse Plan (San Francisco 1996e) developed by the Local Redevelopment Authority. Whereas the Draft Reuse Plan envisions buildout by 2030, this EIS alternative assumes buildout by 2015. Year 2015 was used as the EIS buildout year because it was the year for which there was the most representative data concerning projected population and economic growth at the time of the analysis. Alternative 2 is based on comments received during the scoping process, including the recommendations of an advisory panel convened by the ULI (ULI 1996). Alternative 3 represents a lower level of redevelopment than proposed in the Draft Reuse Plan.

Each reuse alternative is a broad conceptual plan characterized by a general land use concept and a development scenario. Each has general land use planning designations (residential, publicly oriented, institutional and community, and open space and recreation) that allow for a range of different types of land use. For example, residential uses for the three alternatives range from 250 to 2,850 dwelling units, while open space and recreation uses range from a combination of shoreline promenades and sports fields on 135 acres (55 ha) to a combination of these uses plus an 18-hole golf course on approximately 273 acres (110.5 ha). Alternative 1 proposes the largest population (employees, residents, and visitors). Alternative 3 proposes approximately half as much employment and resident population compared to Alternative 1. Alternative 2 provides more jobs than Alternative 3 and the fewest residents of all the reuse alternatives.

Alternatives 1, 2, and 3 have different perimeter dike improvements to seismically upgrade Treasure Island. Alternative 3 includes a lower level of development, and many existing buildings are reused.

Figure 2-1 compares land use development proposed for each of the three alternatives. The publicly



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Percentages of land uses may vary somewhat within each alternative, especially in the area of residential and open space/recreation use.

Comparison of Reuse Alternatives

Naval Station Treasure Island, California

Source: CCSF 1996e, Developed by CCSF 1987

Figure 2-1

oriented and institutional and community categories are composites and would include a range of land uses. For example, the publicly oriented category would include such uses as a themed attraction, hotels, and an expanded marina. The institutional and community category would include such uses as police and fire stations, schools, and the wastewater treatment plant. The residential land use category would include a range of housing options on both Treasure Island and Yerba Buena Island. The open space and recreation land use category would include shoreline open space at Treasure Island and hillside open space on Yerba Buena Island.

Table 2-2 provides a summary comparison of land use development of the three alternatives. This table is intended to help the reader identify specific differences among the three alternatives. The resulting combination of the use categories provides a level of reuse intensity that is analyzed and compared as part of this EIS. Analyses of the three reuse alternatives, which include a range of possible uses, provide a basis for decision-makers and the public to consider the environmental impacts of reuse.

The reuse alternatives are general, representative, and appropriate for the level of environmental analysis needed to make a disposal decision. Most uses depend on future conditions and circumstances. Use categories, such as a themed attraction, sports fields, or residential developments, are representative of but are not the only specific uses for a parcel or building. The use categories analyzed provide a basis for estimating the potential numbers of future residents, employees, and visitors for environmental impact analysis purposes.

This section describes reuse alternative assumptions, followed by a more detailed description of land use development for each alternative. The discussion of each alternative is organized by the four general land use planning categories. For reference, Figure E-1 in Appendix E identifies NSTI building numbers used in the following discussion.

2.4.1 Assumptions for Reuse Alternatives

Construction and Demolition

Development is expected to occur in phases in accordance with infrastructure improvements. Phasing in the Draft Reuse Plan is illustrative and is expected to vary depending on actual market conditions, funding, and policy decision. Each phase would include some demolition and construction activities and would lead to additional employment and housing development (San Francisco 1996e).

Facility Improvements

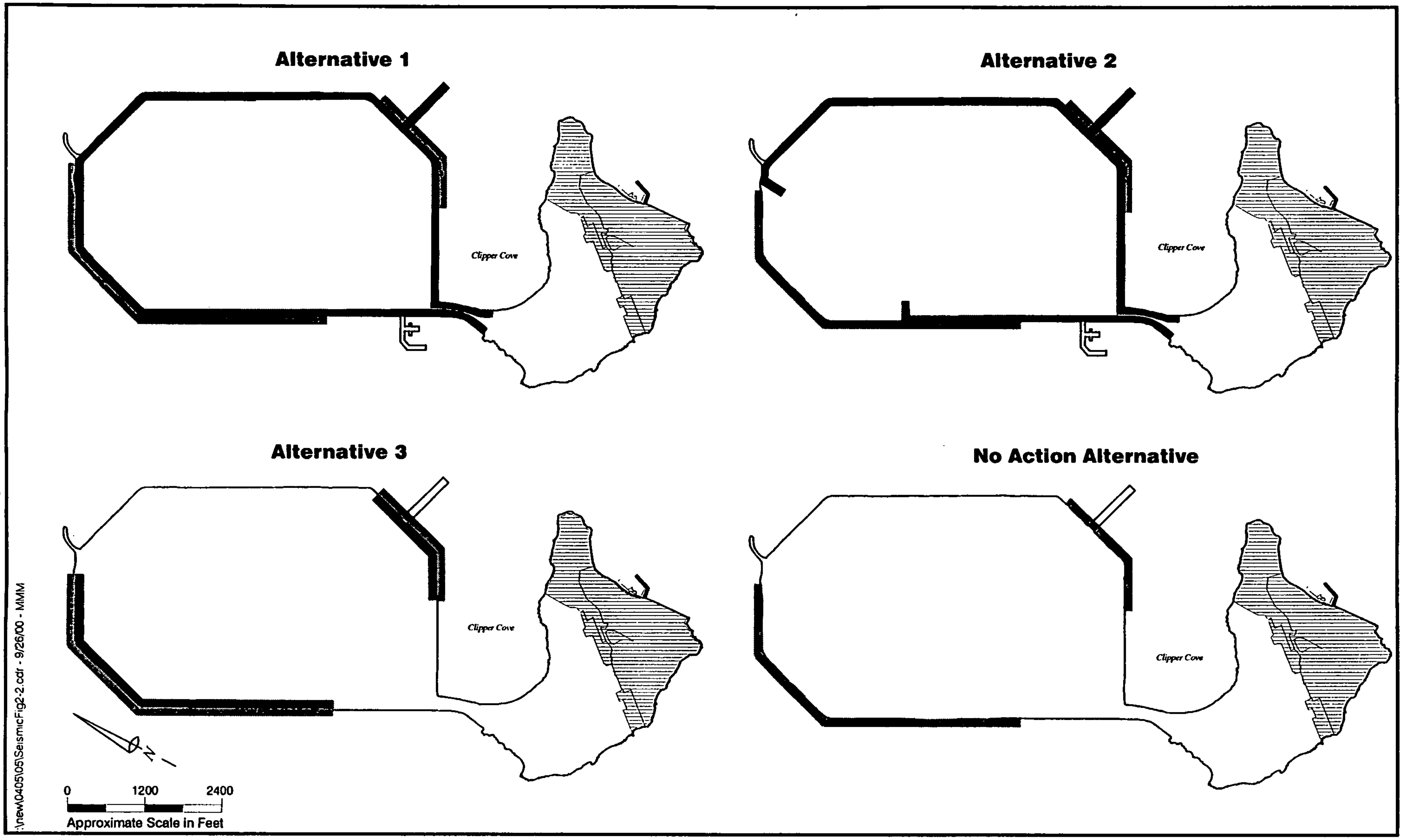
The extent of perimeter dike improvements and other seismic improvements on Treasure Island would vary with each reuse alternative, as indicated in the alternative descriptions in sections 2.4.2, 2.4.3, and 2.4.4, and as shown on Figure 2-2.

Existing utility systems would be improved to provide better service and upgrades needed to meet applicable codes. Water system upgrades, for example, would include improving the chlorinating

Table 2-2
Summary Comparison of Land Development Characteristics of Reuse Alternatives

Characteristic	Alternative 1	Alternative 2	Alternative 3
Residential	**dwelling units**	**dwelling units**	**dwelling units**
Existing residential	290	50	995[1]
New residential	2,550	200	70
Total dwelling units	**2,840**	**250**	**1,065**
Publicly Oriented	**acreage**	**acreage**	**acreage**
Themed attraction	59	74	39
Hotel/conference/lodging	23	44	14
Retail/specialty/restaurant	8	1	1
Entertainment center	0	6	0
Amphitheater	0	7	0
Wedding chapel	0	1	2
Museum	3	4	4
Mixed use/office	11	0	6
Film production	31	0	33
Marina (yacht club)	2	0	2
Other publicly oriented uses	14	14	20
Subtotal Acres	**151**	**151**	**121**
Institutional and Community			
Elementary school	9	0	9
Child development center	4	0	4
Fire training school	5	5	5
Warehouse/storage	0	0	4
Wastewater treatment plant	10	5	3
Brig	5	4	5
Fire station	4	2	2
Police station	3	2	3
Other institutional facilities	0	0	8
Subtotal Acres	**40**	**18**	**43**
Open Space and Recreation			
Golf course	0	147	0
Sports fields/complex	47	18	40
Shoreline promenade/open space	73	71	88
Wildlife habitat	0	18	0
Subtotal Acres	**120**	**254**	**128**
Land Use Categories			
Public Oriented	151	151	121
Residential	131	19	150
Institutional and Community	40	18	43
Open Space and Recreation	120	254	128
Total Acres	**442**	**442**	**442**
Marina	Expansion	Expansion	Existing only
Ferry Terminals	New (west side) Retrofit (Pier 1)	New (west side) Retrofit (Pier 1)	Retrofit (Pier 12) Retrofit (Pier 1)
Approximate On-site Population	6,895	710	3,510
Approximate Employment	4,920	2,820	2,195
Approximate Average Daily Vehicle Trips	18,100	13,085	6,700

Source: San Francisco 1996e.
[1] Does not include 75 beds in barracks on Treasure Island.
Notes: All acreage figures are estimates only. Figures in the text and the tables are included for discussion purposes.
no. = number



Stabilizing the Treasure Island causeway and shoreline to reduce earthquake-induced lateral spreading would vary under each alternative. Full-scale stabilization under Alternative 1 would be achieved by sinking rows of stone columns within a 50-foot wide band along the shoreline and soil cement columns in the 6,700 linear feet of shoreline that is subject to rotational dike failure. There would be no stabilization under the No Action Alternative.

Legend:

- Seismic Stabilization Improvements
- Shoreline Subject to Rotational Dike Failure
- Areas Excluded from Proposed Navy Disposal

Extent of Perimeter and Seismic Stabilization

Naval Station Treasure Island, California

Source: CCSF 1996e

Figure 2-2

system, installing new water pumps, and replacing existing pipes and valves, meters, back-flow preventers, and air valves, as needed. Sanitary sewer system upgrades would include replacing sewage pipes or lining them for low-flow use. Storm drainage improvements would include inspecting and replacing selected storm drains, rebuilding or replacing pump stations, and repairing and replacing outfalls. Alternative technologies, including establishing wetlands, may be considered as part of required improvements.

Ferry Service

Ferries would be an important mode of transportation to the islands under all of the reuse alternatives. Under alternatives 1 and 2, a new ferry terminal would be built on the west side of Treasure Island. In all alternatives, Pier 1 would be retrofitted to serve as a ferry landing on the east side of the island. Under Alternative 3, Pier 12 would be adapted to accommodate ferry service rather than constructing a new ferry terminal.

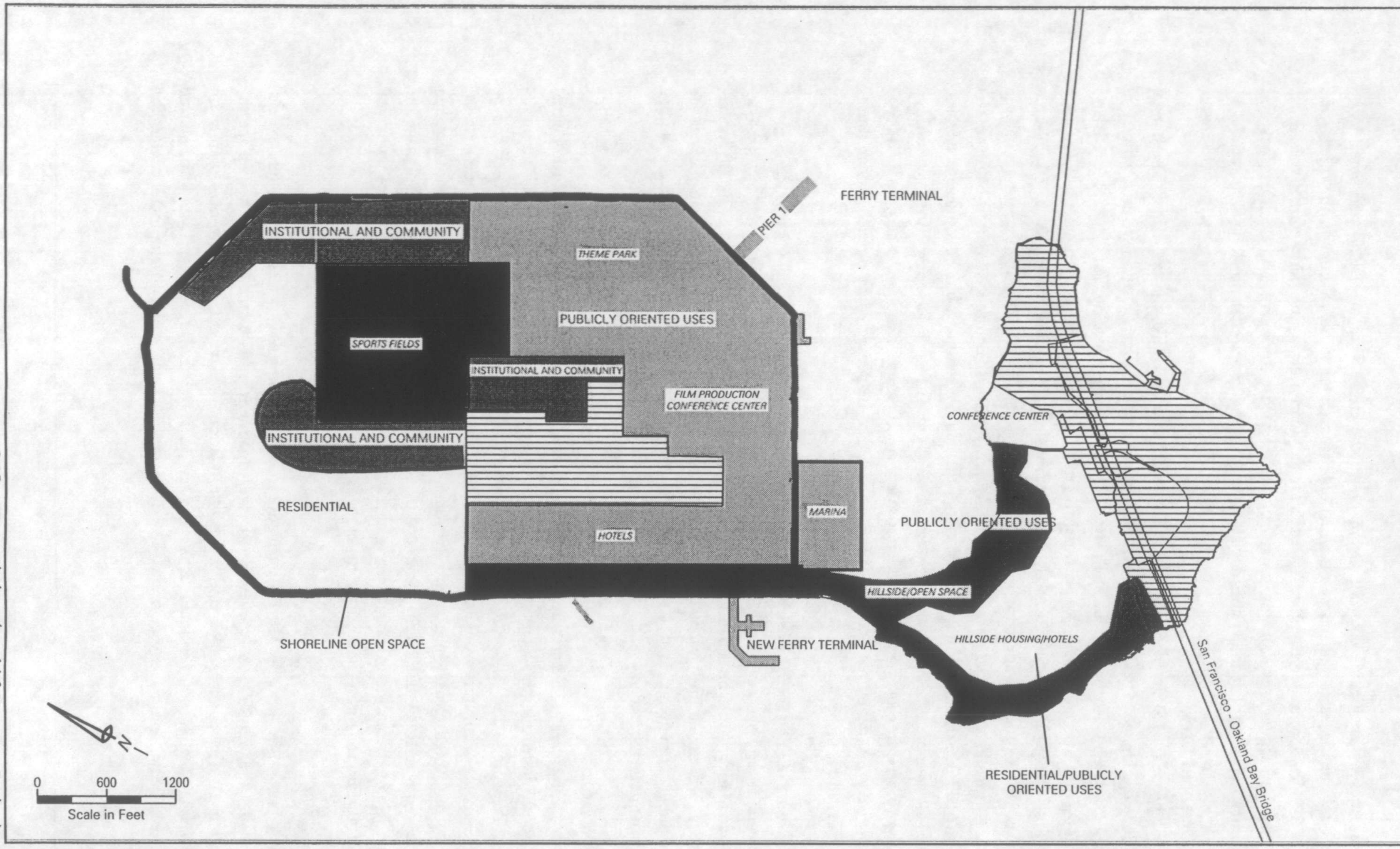
Under all three reuse alternatives, ferry service would be provided between NSTI and San Francisco and the East Bay, with service to and from the Ferry Building in San Francisco at the foot of Market Street and Jack London Square in the Oakland/Main Street terminal in Alameda. Additional ferry service under alternatives 1 and 2 would be provided between NSTI and Candlestick Point in San Francisco and Golden Gate Fields on the Berkeley and Albany border in the East Bay.

Dredging

Dredging may be associated with modifications necessary for ferry service (new ferry terminal and retrofitted piers). Dredging also may be necessary for maintenance of the marina under all alternatives and expansion of the marina under alternatives 1 and 2. The exact location and amount of potential dredging is not known at present and therefore, this EIS must necessarily evaluate potential impacts from dredging on a programmatic level. All dredging activities would require permits and approvals from Bay Conservation and Development Commission (BCDC), San Francisco Bay Regional Water Quality Control Board (RWQCB), and the COE which would require measures to minimize potential environmental impacts. (Disposal of dredge material is discussed in Section 4.10, Water Resources.)

2.4.2 Alternative 1

Alternative 1 features a combination of publicly oriented development, open space and recreation, and extensive residential development at full buildout, such as envisioned in the Draft Reuse Plan. Under this alternative, the NSTI project acreage would be occupied in the following manner: publicly oriented land uses, approximately 34 percent; residential, 29 percent; open space and recreation, 27 percent; and institutional and community services, 10 percent (see Figure 2-1 and Table 2-2). The four land use alternatives initially considered by the LRA (see Section 2.3) were used to develop and further refine a "preferred reuse concept" that formed the basis of the Draft Reuse Plan, represented by Alternative 1. Figure 2-3 shows proposed land uses for Alternative 1. Table E-2 in Appendix E provides detailed assumptions for this alternative.



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Alternative 1 is similar to the development scenario described in the Draft Reuse Plan.

Legend:

- Publicly Oriented
- Open Space and Recreation
- Institutional and Community
- Areas Excluded from Proposed Navy Disposal
- Residential

Alternative 1 Land Uses

Naval Station Treasure Island, California

Source: CCSF 1996e; Developed by CCSF 1997

Figure 2-3

Seismic upgrades would include dike improvements to the entire Treasure Island perimeter, using soil cement columns in areas subject to rotational dike failure and stone columns in the other areas (see Figure 2-2). A new underground utility corridor would run along the perimeter of the island, carrying storm and sanitary sewer mains, water mains, reclaimed water mains, and electricity, gas, and telecommunications lines. The utility corridor also would cross Treasure Island along 9th Street.

Publicly Oriented Uses

Alternative 1 proposes 151 acres (61 ha) of publicly oriented uses. Unlike the preliminary alternative, Harbor-oriented Themed Attraction, Alternative 1 has a broader diversification of uses, while still proposing a Disneyland-like attraction. The major publicly oriented development on Treasure Island would be a themed attraction with the potential to attract an average of approximately 13,700 daily visitors and to employ up to approximately 3,500 seasonal and permanent workers (1,750 full-time equivalent jobs). This themed attraction would be similar to Disneyland, with lighting displays, some tall structures, such as a roller coaster, and at least one landmark structure assumed to be up to 100 feet (305 m) tall. Maximum building density at the themed attraction would be similar to existing conditions. Development also would include a 300-room and a 1,000-room hotel with three restaurants and offices. Existing film production uses would be expanded by an additional 100,000 square feet (9,290 m^2). The total number of jobs expected to be generated by publicly oriented uses on Treasure Island is 4,482.

Publicly oriented uses on Yerba Buena Island would include a 150-room hotel, conference facilities, and a restaurant, and would generate approximately 168 new jobs. The approximately 100-slip Clipper Cove Marina would be expanded to 300 slips and 100 tie-up buoys, and a new 20,000 square-foot (1,858 square-meter [m^2]) yacht club would be developed. Existing structures also would be reused for publicly oriented activities, such as a conference and reception center, and these buildings would be seismically upgraded.

Residential Uses

Alternative 1 proposes 131 acres (53 ha) of residential uses. Unlike the rejected Residential Neighborhood Alternative, this alternative has mixed uses including the themed attraction discussed above. On Treasure Island, about 200 of the approximately 900 existing housing units would be reused, and about 2,300 units would be built. On Yerba Buena Island, approximately 100 units of existing housing would remain in use, and 250 units would be built. The total number of housing units associated with this reuse alternative would be about 2,850. TIHDI initially would manage the leasing of 375 units from the existing housing stock on the two islands, with promise of additional land for TIHDI housing if new housing is developed.

Institutional

Alternative 1 proposes 40 acres (16 ha) of institutional and community uses on Treasure Island, generating an estimated 200 jobs. A new wastewater treatment plant would be built to replace the existing plant. A new police station and a new fire station also would replace those existing on Treasure Island; these facilities and an existing fire station on Yerba Buena Island would be staffed with fire, paramedic, and police personnel. The elementary school, child development center, fire training school, and brig would be retained and reused, for their original uses, with some modifications.

Open Space and Recreation Uses

Alternative 1 proposes 120 acres (48 ha) of open space and recreation uses on NSTI. The existing Treasure Island shoreline open space would be widened from 25 to 50 feet (7.5 to 15 m) to approximately 100 feet (30 m) and would feature a bikeway and pedestrian path. The proposed perimeter band would surround Treasure Island and would be linked to a series of parks, plazas, greens, and overlooks. The existing fitness center and gym would be retained, and there would be new spectator and competitive sports facilities. The majority of this area would consist of open playing fields for soccer, basketball courts, and tennis courts expected to generate 7 new jobs. Beach areas and picnic grounds at the foot of the cove would be retained, and existing mudflats would remain for shorebird forage and habitat.

2.4.3 Alternative 2

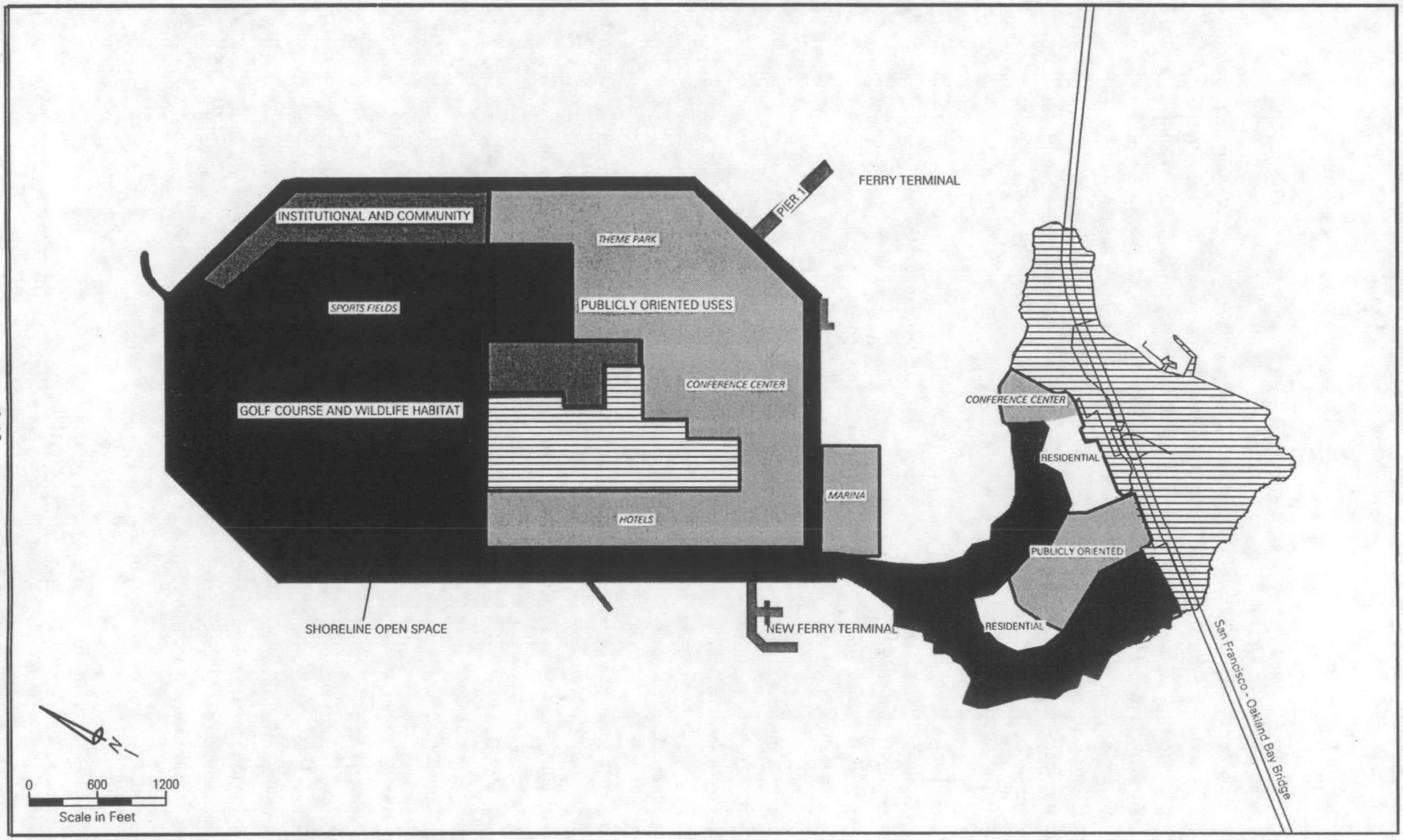
Redevelopment under Alternative 2 is similar to Alternative 1, but less extensive. This alternative emphasizes open space and recreation and publicly oriented uses but on a smaller scale. Figure 2-4 identifies proposed land uses for Alternative 2. Table E-3 in Appendix E provides detailed assumptions for this alternative.

Under Alternative 2, open space and recreation land uses would occupy 57 percent of NSTI acreage, publicly oriented 34 percent, residential 4 percent, and institutional and community services 4 percent (see Figure 2-1 and Table 2-2). The existing housing would be reused initially. No new housing would be built on Treasure Island. An 18-hole golf course would occupy the present housing area on the northern part of the island.

Regarding seismic upgrade, except for the golf course area, full-scale perimeter dike improvements would be implemented around Treasure Island (see Figure 2-2). Extending a stone column dike reinforcement on the east to beyond Building 461 and on the west to 9th Street would reduce damage to structures, such as the brig and fire training center, in the event of an earthquake. Where dike improvements would end, an approximately 500-foot (152-m) soil cement column would be extended into the island (see Figure 2-2). The utility corridor would be constructed around the perimeter of Treasure Island, but it would not extend along the perimeter adjacent to the proposed golf course.

Publicly Oriented Uses

Alternative 2 proposes 151 acres (61 ha) of publicly oriented uses. A themed attraction would draw up to approximately 5,500 daily visitors and would employ approximately 1,400 seasonal and permanent employees (700 full-time equivalent jobs). As with Alternative 1, this themed attraction would be similar to Disneyland, with lighting displays, some tall structures, such as a roller coaster, and at least one landmark structure assumed to be up to 100 feet (305 m) tall. However, maximum building density at the themed attraction would be less dense and would include more open space



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Alternative 2 emphasizes open space/recreation and publicly oriented land uses.

Legend:

- Publicly Oriented
- Open Space and Recreation
- Institutional and Community
- Areas Excluded from Proposed Navy Disposal
- Residential

Alternative 2 Land Uses

Naval Station Treasure Island, California

Figure 2-4

Source: CCSF 1996e; Developed by CCSF 1997

and landscaping. Development would include a 700-room and 500-room hotel, a 5,000-seat amphitheater, and an entertainment and retail center. The total number of jobs expected to be generated by publicly oriented uses on Treasure Island is 2,513.

The Clipper Cove Marina would be expanded to have 500 to 675 slips and tie-up buoys. Existing facilities (e.g., Senior Officers Quarters 1 through 7) would be reused for publicly oriented uses, such as a 100,000 square-foot (9,290 m^2) conference and reception center or bed and breakfast facilities. The number of jobs expected to be generated by publicly oriented uses on Yerba Buena Island is 180.

Residential Uses

Alternative 2 proposes 19 acres (8 ha) of residential uses. On Treasure Island, all housing would eventually be demolished. There may be replacement homeless housing for TIHDI to manage and lease elsewhere off-island. On Yerba Buena Island, approximately 50 existing housing units would remain and approximately 200 new units would be added, for a total of about 250 units.

Institutional and Community Uses

Alternative 2 proposes 18 acres (7 ha) of institutional and community uses on Treasure Island, generating an estimated 103 jobs. A new wastewater treatment plant would be built to replace the existing plant. Wetlands also could be constructed for treating stormwater runoff (see description below under Open Space and Recreation Uses). The elementary school and the child development center would ultimately be removed. A new fire station and police station would be built; these facilities and an existing fire station on Yerba Buena Island would be staffed with fire, paramedic, and police personnel. The brig and the fire training school would remain and be reused, for their original uses, with some modifications. The fire training school would be modified to include passenger aircraft fire-fighting training.

Open Space and Recreation Uses

Alternative 2 proposes 254 acres (103 ha) of open space and recreation uses. An 18-hole golf course would be developed on the northern half of Treasure Island. An approximately 20-acre (8-ha) area near the proposed golf course would be set aside for wildlife habitat, for wildlife observation, and possibly for wetlands. There are no wetlands on NSTI. If wetlands were proposed, the type of wetlands would need to be defined and further studies conducted as part of site-specific environmental documentation. Wetlands could be introduced and analyzed as part of proposed infrastructure (e.g., stormwater system) improvements. The hillside open space extending to the water on Yerba Buena Island's steep side would remain as open space.

2.4.4 Alternative 3

Alternative 3 represents the scenario where little new development would occur, and existing facilities would be reused. The wastewater treatment facility would be retained, and the existing housing and other structures would be reused. Building upgrades would include rehabilitation to meet life safety requirements recommended by the Federal Emergency Management Agency (FEMA)-178 evaluations and other code requirements. Minimal development would occur.

Figure 2-5 identifies proposed land uses for Alternative 3. Table E-4 in Appendix E provides detailed assumptions for this alternative. Under Alternative 3, open space and recreation land uses would occupy 30 percent of NSTI acreage, residential 33 percent, publicly oriented 27 percent, and institutional and community services 10 percent (see Figure 2-1 and Table 2-2). Reuse under this alternative could include uses similar to those under existing leasing actions, such as film production, the conference center, fire-fighting school, marina, and elementary school. These uses would continue through 2015 under this alternative.

Seismic upgrade dike improvements would occur along those areas of Treasure Island subject to rotational dike failure (Figure 2-2).

Publicly Oriented Uses

Alternative 3 proposes 121 acres (49 ha) of publicly oriented uses. A themed attraction would reuse existing facilities and draw up to an average of approximately 2,740 daily visitors and employ up to approximately 700 seasonal and permanent workers (350 full-time equivalent jobs). Compared to alternatives 1 and 2, the themed attraction would be much smaller in size with less extensive development. It would include at least one landmark structure assumed to be up to 100 feet (305 m) tall, and other new buildings would be similar in height to existing conditions. The Nimitz Conference Center (Building 140) would be reused. The Fogwatch Restaurant (Building 227) would continue to be a restaurant (building numbers are shown on Figure E-1 in Appendix E). Existing film production uses would be expanded. Building 450 would be reused either for film production or for other publicly oriented uses, such as mixed use or office space. The existing marina would be retained but would not be expanded, and a new 20,000 square-foot (1,858 m^2) yacht club would be developed. The number of jobs expected to be generated by publicly oriented uses on Treasure Island is 1,736.

On Yerba Buena Island, quarters 1-7 would be reused for conference and reception and lodging. The number of jobs expected to be generated by publicly oriented uses on Yerba Buena Island is 180.

Residential Uses

Alternative 3 proposes 150 acres (61 ha) of residential uses. On Treasure Island, approximately 900 existing housing units (as well as approximately 75 beds in barracks) would be reused, but no new units would be constructed. Approximately 200 units of the existing housing units would be made available to TIHDI for leasing. On Yerba Buena Island, approximately 100 units would be reused, and about 70 housing units would be constructed by 2015. The number of housing units associated with this alternative would be approximately 1,100.

Institutional and Community Uses

Alternative 3 proposes 43 acres (17 ha) of institutional and community uses on Treasure Island, generating an estimated 276 jobs. Some of the same institutional and community facilities identified under Alternative 1 would be retained under this alternative, such as the school, the brig, the fire-fighting training school, and the fire station. A new police station would be constructed on Treasure

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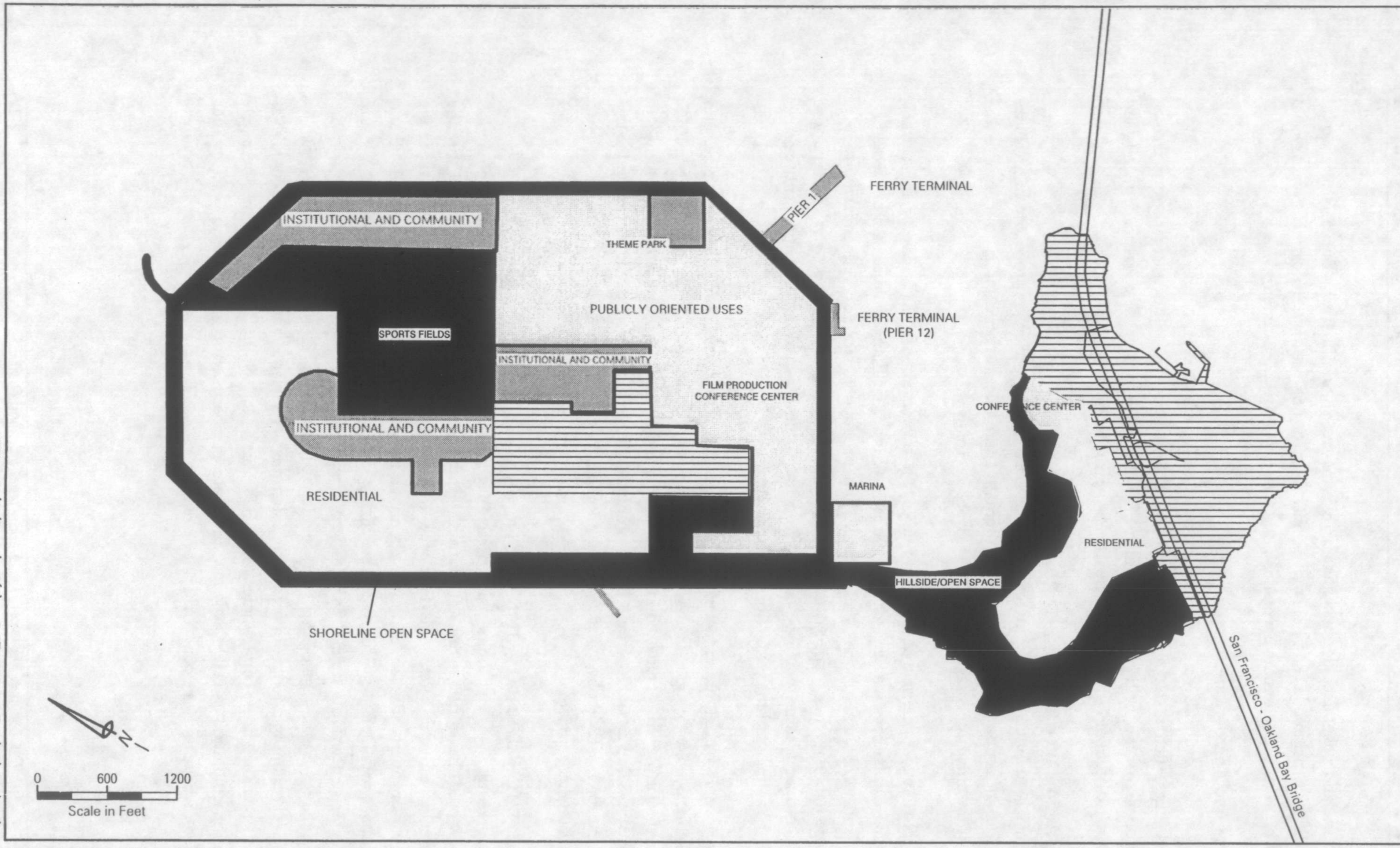


Alternative 3 would reuse existing facilities and would involve little new development.

Legend:

- Publicly Oriented
- Open Space and Recreation
- Institutional and Community
- Areas Excluded from Proposed Navy Disposal
- Residential

Alternative 3 Land Uses

Naval Station Treasure Island, California

Source: CCSF 1996e; Developed by CCSF 1997

Figure 2-5

Island. The fire and police facilities, including an existing fire station on Yerba Buena Island, would be staffed with fire, paramedic, and police personnel. The existing wastewater treatment plant would continue to be used. This alternative would include 4 acres (1.5 ha) of warehouse use.

Open Space and Recreation Uses

Alternative 3 proposes 128 acres (52 ha) of open space and recreation uses. Existing indoor recreation facilities, such as the gym and fitness center, would become part of a larger sports facility. A series of open spaces would be created north of Building 1. Open space on Yerba Buena Island would remain, extending to the water on the island's northeast side.

2.4.5 No Action Alternative

No action may be defined as the continuation of an existing plan, policy, or procedure or as failure to implement an action. The No Action Alternative provides a benchmark to compare the magnitude of the environmental effects of the various alternatives.

Under the No Action Alternative, Navy would retain ownership of NSTI. Except for existing building leases, all buildings would remain vacant, and all other facilities would remain but would be unused. Existing interim uses on NSTI include film production facilities, residential housing, a marina, a fire-fighting school, special events and meeting center, warehouses, and multipurpose office space. No new leases would be entered into under the No Action Alternative, and existing leases would continue until they expire or are terminated.

The property would be held in an inactive or caretaker status, as discussed in Chapter 1. Navy and San Francisco executed a cooperative agreement in April 1997 and amended it in September 1997. Under this agreement, San Francisco is responsible for providing those caretaker services. Site environmental cleanup would continue until completed. No construction would occur under this alternative, except as allowed by existing lease authorization. Approximately 50 persons are assigned to perform caretaker activities.

2.5 ENVIRONMENTALLY PREFERABLE ALTERNATIVE

NEPA requires that an environmentally preferable alternative be identified. The No Action Alternative would have no significant impacts, and for NEPA purposes it would be the environmentally preferable alternative. However, the No Action Alternative would not meet the Navy's goals of property disposal and rapid economic recovery consistent with DBCRA 1990 and the Department of Defense Rule on Revitalizing Base Closure Communities–Base Closure Community Assistance (DoD Rule) (32 C.F.R. Part 175 [1998]). It also would not be consistent with former President Clinton's Five-Part Plan for Revitalizing Base Closure Communities, which emphasizes local economic redevelopment of closing military facilities and creation of new jobs as the means to revitalize these communities (32 C.F.R. Part 174 [1998]). The No Action Alternative would result in continued caretaker activities; therefore, socioeconomic gains in terms of new jobs and increased revenue in the region would not be realized.

2.6 PERMIT REQUIREMENTS AND RELATED COORDINATION

Approvals and permits would be required for disposal and subsequent reuse of NSTI. Table 2-3 lists the federal, state, and local permits, policies, and actions that may be required and lists the agencies that may use the information presented in the EIS to make decisions regarding issuance of permits or approvals.

2.7 COMPARISON OF ALTERNATIVES, INCLUDING IMPACTS AND MITIGATION

NEPA requires that the EIS include a presentation of the alternatives in comparative form, to define the issues and to provide a clear basis for choice among options by the decision-makers and the public. Table 2-4 lists potential significant impacts and corresponding mitigation measures for each alternative. Impacts that are not significant are described in Chapter 4 but are not included on this table.

Navy cannot control reuse after the property is conveyed from federal ownership; therefore, implementation of mitigation measures for reuse-related environmental impacts would be the responsibility of the LRA and not the responsibility of Navy.

Table 2-3
Permits or Actions Potentially Required

Issuing Agency	Permit or Action	Requirement
Permits Required Prior to Disposal		
US Environmental Protection Agency; California Department of Toxic Substance Control	CERCLA, 42 U.S.C. §§ 9601-9675	Requires deed that contains hazardous substance information and covenant warranting necessary remedial action.
US Environmental Protection Agency; California Department of Toxic Substance Control	Resource Conservation Recovery Act, 42 U.S.C. §§ 6901-6992k	Compliance with remedial action plans relative to hazardous wastes and materials.
State Historic Preservation Officer/Advisory Council on History Preservation	National Historic Preservation Act, Section 106 Compliance, 16 U.S.C. § 470f (West 1985 & Supp. 1998)	Requires a memorandum of agreement to mitigate impacts to NSTI historic buildings.
Permits Related to Reuse/Responsibility of Local Reuse Authority		
San Francisco Bay Conservation and Development Commission	McAteer-Petris Act, Cal. Gov't Code §§ 66600-66682 (West 1997 & Supp. 1999) and San Francisco Bay Plan	Permit for fill, dredging, and construction in shoreline band
US Environmental Protection Agency; US Army Corps of Engineers	Clean Water Act, Section 404, 33 U.S.C. § 1344 River and Harbors Act, Sections 9 and 10, 33 U.S.C. §§ 401, 403	Permit required for discharging dredged material, placing fill and pilings in waters of the US. Permit required for construction in navigable waters of the US.
Bay Area Air Quality Management District	Permit to Construct and Permit to Operate	Depends on specific future construction/operation activities
US Environmental Protection Agency; San Francisco Bay Regional Water Quality Control Board	National Pollutant Discharge Elimination System (NPDES) Permit under Clean Water Act Section 402, 33 U.S.C. § 1342	Required for discharge of pollutants from any point source in waters of the US and for stormwater discharges associated with industrial activity and from large and medium municipal storm sewer systems. US EPA must endorse NPDES permits issued by the RWQCB.
US Coast Guard	Aid to Navigation Permit	Permit required for navigational hazards.
City and County of San Francisco	EIR certification Adopt mitigation monitoring program General plan amendments Consistency with Priority Policies Building and demolition permits Redevelopment Plan adoption	Various permits and approvals required to accommodate proposed reuse development.

Table 2-4
Summary of Potential Significant Environmental Consequences and Mitigation Measures

Resource Area	Alternative 1	Alternative 2	Alternative 3	No Action Alternative
Land Use	*Impact: Land use policy.* The zone classifications that would be required for Alternative 1 would be inconsistent with the existing general plan designation and zoning classification. *Mitigation:* To achieve consistency between the selected reuse alternative and city policies, it will be necessary to amend the San Francisco General Plan to include land use designations for surplus property on Treasure Island and Yerba Buena Island prior to approving future land use actions.	*Impact: Land use policy.* Similar to that described for Alternative 1.	*Impact: Land use policy.* Similar to that described for Alternative 1.	No impacts are expected.
Visual Resources	No significant impacts are expected.	No significant impacts are expected.	No significant impacts are expected.	No impacts are expected.
Socioeconomics	No significant impacts are expected.	No significant impacts are expected.	No significant impacts are expected.	No impacts are expected.
Cultural Resources	No significant impacts are expected.	*Impact: Alteration or demolition of historic resources.* Alternative 2 involves the demolition of Building 2 and Building 3 on Treasure Island, both of which are eligible for listing on the NRHP. *Mitigation:* None. This demolition would result in the irreversible loss of significant historic resources.	No significant impacts are expected.	No impacts are expected.
Transportation	*Impact: Increased volumes and queuing on SFOBB/I-80 Yerba Buena Island westbound on-ramp (west side).* Alternative 1 would result in peak-hour traffic volumes on the SFOBB/I-80 Yerba Buena Island westbound on-ramp on the west side of Yerba Buena Island that would exceed the current ramp capacity of 330 vph. The projected demand would result in a queue ranging from 7 vehicles (during the AM peak hour) to 239 vehicles (during the weekend midday peak hour). This queue would constrain vehicular circulation on the island. *Mitigation.* SFOBB/I-80 Yerba Buena Island on-ramps are substandard by current Caltrans standards, primarily in acceleration/deceleration lengths, ramp radii, and sight distances. Upgrading the on-ramps would increase ramp capacity and level of operation and decrease queuing impacts. However, upgrades to the on-ramps may be constrained by the geology of the site (elevation change and bedrock) and structural limitations due to the viaduct.	No significant impacts are expected.	No significant impacts are expected.	No impacts are expected.

Table 2-4
Summary of Potential Significant Environmental Consequences and Mitigation Measures *(continued)*

Resource Area	Alternative 1	Alternative 2	Alternative 3	No Action Alternative
	Implement measures, including signage and notices to residents, to encourage residents and visitors to use the second westbound on-ramp east of the Yerba Buena Island tunnel. Redirecting traffic during the weekend midday peak hour to the second on-ramp east of the Yerba Buena Island tunnel would reduce the queue at the first westbound on-ramp. Implement a Travel Demand Management (TDM) program to further reduce traffic generation during peak hours. Implement additional or enhanced TDM measures, such as discounted ferry passes, flex-time, public relations campaigns, and giving NSTI employees preferential access to housing on NSTI, to encourage ferry use or to encourage vehicle-trips during the nonpeak period to reduce queues on both westbound on-ramps to tolerable levels. Monitor NSTI ramp traffic volumes to ensure that the transportation goals and objectives established by the Reuse Plan are successfully implemented. Monitor NSTI bus transit demand on an annual basis (or at each phase of development) and ensure that planned services are implemented to meet or exceed demand. Implement a similar monitoring program for ferry demand. Restripe the portion of Treasure Island Road between the Main Gate and the westbound on-ramp on the west side of the Yerba Buena Island tunnel from two lanes to accommodate three traffic lanes.			
	Impact: Increased volumes and queuing on SFOBB/I-80 Yerba Buena Island eastbound off-ramp (west side). Alternative 1 would result in a substantial increase in traffic volumes on the eastbound off-ramp on the west side of Yerba Buena Island that would exceed the practical capacity of the off-ramp (500 vph), resulting in a maximum queue of 36 vehicles, or about 700 feet (219 m) on the SFOBB.	No significant impacts are expected.	No significant impacts are expected.	No impacts are expected.

Table 2-4
Summary of Potential Significant Environmental Consequences and Mitigation Measures (*continued*)

Resource Area	Alternative 1	Alternative 2	Alternative 3	No Action Alternative
	Mitigation. Use traffic control measures, such as signage, to encourage eastbound motorists to use the second Yerba Buena off-ramp (the off-ramp on the east side of Yerba Buena Island). Implement TDM and monitoring measures to reduce traffic volumes on this off-ramp.			
	Impact: Increased volumes and queuing on SFOBB/I-80 Yerba Buena Island eastbound on-ramp (east side). Alternative 1 would result in substantial increases in traffic volumes during the weekend midday peak hour on the eastbound on-ramp on the east side of Yerba Buena Island that would exceed the current on-ramp capacity of 330 vph, resulting in a maximum queue of approximately 150 vehicles, or about 3,000 feet (914 m). *Mitigation:* Upgrade the eastbound SFOBB/I-80 on-ramp on the east side of Yerba Buena Island to provide for an adequate acceleration lane. Preliminary concept plans for the new east span indicate that the eastbound on-ramp would be modified to Caltrans standards. Implement TDM and monitoring measures, as described above for increased volumes on the westbound on-ramp on the west side of Yerba Buena Island.	No significant impacts are expected.	No significant impacts are expected.	No impacts are expected.
	Impact: Transit operations – bus service to East Bay. Lack of direct bus service between NSTI and the East Bay is a significant and mitigable impact. *Mitigation:* Establishing direct transit service between NSTI and the East Bay would mitigate this impact to a not significant level. Bus service would need to be at 10-minute headways (the interval between the trips of 2 successive vehicles) throughout the day during the weekday and at 15-munite headways throughout the day during the weekend. Monitor NSTI bus transit demand on an annual basis (or at each phase of development) and ensure that planned services are implemented to meet or exceed demand.	*Impact: Transit operations – bus service to East Bay.* The impact would be similar to that described under Alternative 1. *Mitigation:* Mitigation measures would be the same as those described for Alternative 1. However, at build-out, bus service would need to be at 15-minute headways throughout the day during both weekdays and weekends.	*Impact: Transit operations – bus service to East Bay.* The impact would be less than that described under Alternative 1 but would remain significant but mitigable. *Mitigation:* Mitigation measures would be the same as those described for Alternative 1. However, at build-out, bus service would need to be at 20-minute headways throughout the day during weekdays and 15-minute headways throughout the day during weekends.	No impacts are expected.

Table 2-4
Summary of Potential Significant Environmental Consequences and Mitigation Measures (*continued*)

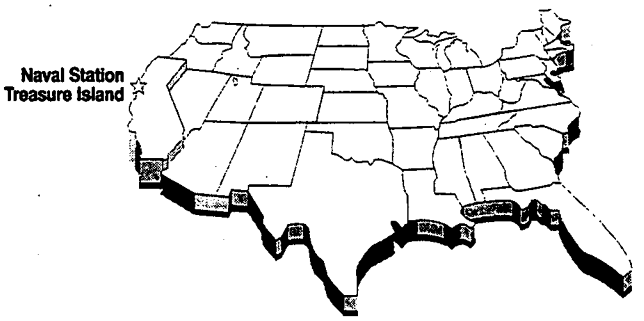
Resource Area	Alternative 1	Alternative 2	Alternative 3	No Action Alternative
	Implement TDM measures to encourage transit rather than auto use.			
Air Quality	No significant impacts are expected.	No significant impacts are expected.	No significant impacts are expected.	No impacts are expected.
Noise	No significant impacts are expected.	No significant impacts are expected.	No significant impacts are expected.	No impacts are expected.
Biological Resources	*Impact: Mudflat Habitat Disturbance.* Significant impacts to mudflat habitat, including eelgrass beds, may occur as a result of increased pedestrian and boating activity around Clipper Cove. Expanding the marina or constructing a yacht harbor, new docks, or other structures that would cover the surface of the water could impact eelgrass areas but would require a permit from the COE.	*Impact: Disturbance to sensitive mudflat habitat.* The impacts on mudflat habitat associated with pedestrians and boating activity would be similar, but reduced, from that described for Alternative 1. Pedestrian impacts would be approximately half of Alternative 1 while boating traffic impacts would be approximately 20 percent higher than Alternative 1.	*Impact: Mudflat Habitat Disturbance.* The impacts on mudflat habitat associated with pedestrians and boating activity would be reduced from that described for Alternative 1 but would remain significant but mitigable.	No impacts are expected.
	Mitigation: Post signs along the shore adjacent to the mudflats and at the marina to inform pedestrians and recreational boaters that the mudflats are a protected sensitive area and that trespassing is not permitted. Buoys would be placed in the bay to identify the restricted mudflat area. A five- mph (8 kph) zone would be established in Clipper Cove to minimize shoreline and mudflat erosion. Any impacts related to construction or fill would be addressed during the COE Section 404 permitting process.	*Mitigation.* Mitigation measures would be the same as those described for Alternative 1.	*Mitigation*: Mitigation measures would be the same as those described for Alternative 1.	
	Impact: Pedestrian and Boating Impacts on Wading Shorebirds. Increased pedestrian and boating activity around Clipper Cove could have a significant impact on shorebirds by affecting mudflats and eelgrass beds where shorebirds forage.	*Impact: Pedestrian and Boating Impacts on Wading Shorebirds.* Increased pedestrian and boating activity around Clipper Cove could have a significant impact on shorebirds by affecting mudflats and eelgrass beds where shorebirds forage. Pedestrian impacts would be approximately half of Alternative 1 while boating traffic impacts would be approximately 20 percent higher than Alternative 1.	*Impact: Pedestrian and Boating Impacts on Wading Shorebirds.* Increased pedestrian and boating activity around Clipper Cove could have a significant impact on shorebirds by affecting mudflats and eelgrass beds where shorebirds forage. These impacts are likely to be reduced under Alternative 3 as there would be less of an increase in boating traffic compared with Alternative 1.	No impacts are expected.
	Mitigation. Post signs along the shore adjacent to the mudflats and at the marina, informing pedestrians and boaters that the mudflats are a protected and sensitive area. Placing buoys in the bay, identifying the mudflat area as restricted, and establishing a five-mph (8 kph) zone in Clipper Cove.	*Mitigation.* Mitigation measures would be the same as described for Alternative 1.	*Mitigation.* Mitigation measures would be the same as described for Alternative 1.	

Table 2-4
Summary of Potential Significant Environmental Consequences and Mitigation Measures (*continued*)

Resource Area	Alternative 1	Alternative 2	Alternative 3	No Action Alternative
	Impact: Pedestrian and Boating Impacts on EFH. Increased boat and pedestrian activity around Clipper Cove could have an indirect significant impact on EFH by degrading eelgrass vegetated areas and shallow water and mudflat areas that provide important fish spawning, rearing, and foraging habitat.	*Impact: Pedestrian and Boating Impacts on EFH.* Increased pedestrian and boating activity around Clipper Cove and along the perimeter of the islands could have a significant impact on EFH, as described under Alternative 1.	*Impact: Pedestrian and Boating Impacts on EFH.* Increased pedestrian and boating activity around Clipper Cove and along the perimeter of the islands could have a significant impact on EFH, as described under Alternative 1.	No impacts are expected.
	Mitigation. Proposed mitigation measures are the same as those discussed under impacts to mudflat habitat above.	*Mitigation.* Mitigation measures would be the same as described for Alternative 1.	*Mitigation.* Mitigation measures would be the same as described for Alternative 1.	
Geology and Soils	No significant impacts are expected.	No significant impacts are expected.	No significant impacts are expected.	No impacts are expected.
Water Resources	*Impact: Exposure of individuals and property to ponding from high tides.* The installation of residential development in low-lying areas on Treasure Island would result in increased exposure of occupants, visitors, and property to ponding hazards due to seepage through the dike during some high tide events.	No significant impacts are expected relative to exposure of individuals and property to ponding from high tides.	*Impact: Exposure of individuals and property to ponding from high tides.* The impact would be similar to that described for Alternative 1.	No impacts are expected.
	Mitigation: Filling low-lying portions of the residential area to at least 9 feet (3 m) National Geodetic Vertical Datum (NGVD) prior to development would mitigate this impact. In addition, other low-lying areas within 500 feet (152 m) of the Treasure Island perimeter should be similarly filled before development is allowed.		*Mitigation:* Mitigation measures for ponding during high tides would be the same as those described for Alternative 1.	
	Impact: Exposure of individuals and property to flooding. Developing and reusing Treasure Island under Alternative 1 could expose occupants, visitors, and property to flooding hazards caused by dike overtopping during storms.	*Impact: Exposure of individuals and property to flooding.* This alternative would subject residents and daily visitors on the northern half of Treasure Island, where a golf course is proposed, to existing flood hazards. Flood hazards on the southern portion of the site would be similar to those described for Alternative 1.	*Impact: Exposure of individuals and property to flooding.* Alternative 3 could subject occupants, visitors, and property to substantial flooding hazards throughout Treasure Island.	
	Mitigation: Set back development inboard of the perimeter dike to allow room for periodic dike raising without substantially increasing Bay fill. Raise the dike as necessary to account for site settlement, changes in maximum tidal heights, and rises in sea levels.. In addition, inspect the dike after each major storm to identify repair needs, and repair the dike promptly.	*Mitigation:* Mitigation measures would be the same as those described for Alternative 1.	*Mitigation:* Mitigation measures would be the same as those described for Alternative 1.	
Utilities	No significant impacts are expected.	No significant impacts are expected.	No significant impacts are expected.	No impacts are expected.

Table 2-4
Summary of Potential Significant Environmental Consequences and Mitigation Measures *(continued)*

Resource Area	Alternative 1	Alternative 2	Alternative 3	No Action Alternative
Public Services	No significant impacts are expected.	No significant impacts are expected.	No significant impacts are expected.	No impacts are expected.
Hazardous Materials and Waste	*Impact: Installation Restoration Program (IRP).* Construction activities at NSTI associated with future development of the housing unit area, including demolition of existing structures, may interfere with remedial actions under CERCLA.	*Impact: Installation Restoration Program (IRP).* Development of a golf course in the northern part of the island would involve demolition of existing structures and the grading and reconfiguring of the soil, which may interfere with remedial actions under CERCLA.	*Impact: Installation Restoration Program (IRP).* If subsequent redevelopment of the housing area involving demolition of existing structures and the grading and reconfiguring of the soil were to occur, it may interfere with remedial actions conducted under CERCLA.	No impacts are expected.
	Mitigation. The Navy is in the process of implementing various remedial actions at NSTI pursuant to and in accordance with the requirements of CERCLA and the NCP that will remove, manage, or isolate any potentially hazardous substances present on the property prior to conveyance. These remedial actions will ensure that human health and the environment will be protected based on continued residential use of the area. If the CERCLA remedy for a particular site includes land use controls, the acquiring entity or entities will be required to comply with the land use controls during construction or operations to ensure continued protection of human health and the environment. Subsequent redevelopment of the housing area which would involve demolition of existing structures and the grading and reconfiguring of the soil would likely be subject to land use controls on the property, including compliance with a City-administered soil management plan that would require soil and groundwater disturbance be permitted subject to proper characterization and management. In addition, deeds conveying the affected property will contain a notice that areas of the property not subject to remediation efforts (such as areas beneath existing foundations) may require additional characterization and possible response actions subject to appropriate regulatory oversight. Adherence to land use controls and regulatory requirements would mitigate potentially significant impacts to an acceptable level.	*Mitigation.* Mitigation measures would be the same as those described for Alternative 1.	*Mitigation.* Mitigation measures would be the same as those described for Alternative 1.	



3. AFFECTED ENVIRONMENT

CHAPTER 3
AFFECTED ENVIRONMENT

Chapter 3 sets forth the affected environment of the proposed action. The affected environment describes the present physical conditions within the area of the proposed action. The area, or region of influence, is defined for each environmental issue based upon the areal extent of physical resources that may be affected directly or indirectly by the proposed action and appropriate guidelines of regulatory agencies or common professional practice. Table 3-1 summarizes the environmental issues and associated region of influence described in the affected environment sections of this EIS.

Table 3-1
Environmental Issues and Region of Influence

Environmental Issue	Region of Influence
Land Use	Reuse plan area
Visual Resources	Reuse plan area and viewshed
Socioeconomics	San Francisco and Alameda Counties
Cultural Resources	Reuse plan area
Transportation	Reuse plan area, SFOBB/I-80 freeway system, and areas adjacent to ferry terminals in San Francisco and Oakland
Air Quality	San Francisco Bay Area air basin
Noise	Reuse plan area
Biological Resources	Reuse plan area and surrounding aquatic habitat within 2-mile radius
Geology and Soils	Geology: San Francisco Bay Area Soils: Reuse plan area
Water Resources	Reuse plan area and receiving waters of Central San Francisco Bay
Utilities	San Francisco and regional utility service areas
Public Services	San Francisco
Hazardous Materials and Waste	Reuse plan area

This section of the EIS describes the baseline conditions for each environmental resource against which the potential impacts of the proposed action will be compared. Generally, the baseline used for the analysis of environmental impacts under NEPA reflects the conditions present at or about the time the EIS is initiated. However, in the case of closures of military installations, EIS documents often are initiated in the trough between full-scale military operations at the former military installation and commencement of the civilian redevelopment project being studied. The trough is temporary, constantly changing, and a wholly artificial situation that cannot provide a stable and meaningful basis for measuring the environmental impact of subsequent redevelopment. It is more appropriate to use the pre-closure conditions during full operations as a baseline to realistically reflect the environmental impact of reuse. The State of California also specifically has recognized that the last operating year of military bases is the most appropriate baseline for Environmental Impact Reports prepared pursuant to the California Environmental Quality Act (California Public Resources Code [Cal. Pub. Res. Code] § 21083.1.8, Cal. Code Regs. tit. 14, § 15229). The environmental baseline year is pre-closure (1993) conditions for most resource areas, which is the year that NSTI was designated for closure. For some resource areas, baselines reflect more recent data (e.g., 1996-1997). The physical conditions present in 1993 are the same as the physical conditions present in later years; the entire infrastructure for NSTI is still physically present on the property and has not been significantly altered since 1993.

As stated previously in Section 1.1, on October 26, 2000, FHWA acquired 97 acres (39 ha) of Navy dry and submerged land on Yerba Buena Island. This land was subsequently conveyed in fee to Caltrans for the SFOBB east spans retrofit project, including a temporary construction easement over a substantial part of Yerba Buena Island and permanent aerial easements over two parcels of land. Because this property was conveyed to Caltrans, the property, including the easements, is not included in the Navy disposal and is excluded from this EIS.

3.1 LAND USE

This section describes regulatory considerations (Section 3.1.1) and land uses in the reuse plan area (Section 3.1.2) and in the surrounding community (Section 3.1.3). Land uses in the reuse plan area reflect baseline (1993) conditions.

3.1.1 Regulatory Considerations

The following subsections discuss the public plans, policies, and regulatory agencies that affect disposal and reuse of NSTI. Planning and regulatory control over NSTI will be exercised by many government agencies, including the City and County of San Francisco, and regional, state, and federal agencies. Agencies that will have jurisdiction over NSTI and a description of the responsibilities of each agency with respect to approval and implementation of the alternatives are discussed below.

City and County of San Francisco

NSTI is within the jurisdictional boundaries of the City and County of San Francisco. As discussed below, upon transfer NSTI will be controlled primarily by San Francisco policies, plans, and regulations, while portions of the islands also will be subject to additional regulations and policies of other agencies. The San Francisco Planning Commission and/or San Francisco Planning Department and TIDA will determine future reuse conformance with city policies and plans. The San Francisco Board of Supervisors must adopt General Plan amendments and approve zoning ordinances. To ensure consistency between the selected reuse alternative and the city's plans, policies, and regulations, existing land use regulatory documents would need to be revised to incorporate the selected development plan for the islands.

San Francisco General Plan

The San Francisco General Plan is relevant to the reuse of NSTI, which is located within San Francisco. The San Francisco General Plan is the comprehensive, long-term plan that contains the land use policies for San Francisco. Elements of the General Plan that provide broad policy guidance to reuse planning include Recreation and Open Space, Urban Design, Transportation, Environmental Protection, Community Safety, Community Facilities, Commerce and Industry, and the Residence Element.

Following conveyance of NSTI to San Francisco or other non-federal entities, future development of most portions of the islands would be under city jurisdiction. San Francisco's existing General Plan land use designation for NSTI (*Military*) does not encompass all the proposed reuse land uses and does not define development opportunities and constraints for the land use designations.

To achieve consistency between the selected reuse alternative and San Francisco policies, it will be necessary to amend the San Francisco General Plan to include land use designations for surplus property on Treasure Island and Yerba Buena Island prior to approving future land use actions. The amendments would need to be based on the goals and policies of the selected reuse alternative while maintaining consistency with the goals, policies, and land use designations in the General Plan.

The San Francisco Planning Department is preparing an Area Plan and amendments to the General Plan to ensure consistency with the Final Reuse Plan. Following certification of San Francisco's EIR for reuse, the city would amend its General Plan and would adopt a Redevelopment Plan to provide land use designations consistent with the Reuse Plan for NSTI lands conveyed out of federal control. These plans would incorporate policies from the Reuse Plan and would guide future development on NSTI.

Planning Code

The San Francisco Planning Code (ordinances enacted through Ordinance 241-01, Approved December 7, 2001) sets forth specific objective standards that define the range of allowable physical characteristics of proposed development, such as the floor area ratio, the height and bulk of buildings, and the land uses permitted within zoning districts. The San Francisco agency responsible for implementing the Planning Code is the Planning Department. NSTI is currently zoned "P" (Public) and would not be rezoned until the Reuse Plan is adopted, at which time the San Francisco Planning Code would be amended. Upon receiving a zoning designation, the area would be subject to the land use and height and bulk regulations established by the zoning designation. These controls would be subject to the Redevelopment Plan and its design for development standards.

The Sustainability Plan for the City of San Francisco

The Sustainability Plan for the City of San Francisco (San Francisco 1997) was endorsed by the Board of Supervisors on July 21, 1997 (Resolution No. 692-97), as a non-binding guideline for policy and practice in San Francisco. The goal of the Sustainability Plan is to enable the city and its people to meet their present needs without sacrificing the ability of future generations to meet their own needs.

Treasure Island Development Authority

TIDA is a nonprofit public benefit corporation established by the City and County of San Francisco and the State of California. It has redevelopment authority to implement the Final Reuse Plan, related General Plan amendments, and any other adopted plans, such as an Area Plan or Redevelopment Plan, via appropriate implementing ordinances subject to final approvals by the San Francisco Board of Supervisors. TIDA also is responsible for administering the Tideland Trust property, discussed below, in lieu of the San Francisco Port Commission insofar as it relates to NSTI.

San Francisco Bay Conservation and Development Commission

The federal Coastal Zone Management Act (CZMA) of 1972 (16 U.S.C. §§ 1451-1465), as amended, grants coastal states with the authority to evaluate projects that could affect the coastline. The Bay Conservation and Development Commission (BCDC), created by the McAteer-Petris Act (Cal. Gov't. Code § 66600 et seq.), functions as the state coastal management agency for the San Francisco Bay, having jurisdiction over all areas subject to tidal action up to the mean high tide line and including all sloughs, tidelands, submerged lands, and marshlands lying between the mean high tide and 5 feet (1.5 m) above mean sea level for the nine Bay Area counties with Bay frontage (BCDC 1969). Its jurisdiction in shoreline areas includes a band measured 100 feet (30.5 m) landward of and parallel to the shoreline of the Bay.

In accordance with its role in implementing CZMA, BCDC reviews federal projects affecting the coastal zone to ensure that they are, to the maximum extent practicable, consistent with the provisions of the approved coastal plans. The Bay Area Seaport Plan and the San Francisco Bay Plan, discussed below, are the approved local coastal plans for complying with CZMA in the San Francisco Bay. Federal property is considered to be outside the state coastal zone, as defined under the CZMA; nevertheless, in compliance with the CZMA, Navy will submit a coastal consistency determination to BCDC before disposing of NSTI, in order to document the effects of disposal on the adjacent coastal zone. (Consistency of reuse with the approved coastal plans is discussed further in the sections on the Bay Plan and the Seaport Plan.)

BCDC activities also include the following:

- Regulating all filling, dredging, and changes in use in San Francisco Bay;
- Regulating new development within the first 100 feet (30.5 m) inland from the shoreline of the Bay to ensure that maximum feasible public access to the Bay is provided;
- Ensuring that the limited amount of available shoreline property suitable for regional high priority water-oriented uses is reserved for these purposes. Priority use areas include ports, water-related industry, water-oriented recreation, airports, and wildlife areas;
- Pursuing an active planning program to study all aspects of the Bay; and

- Participating in the region-wide state and federal program to prepare the Long-term Management Strategy (LTMS), as discussed in Section 3.10 Water Resources, for dredging and disposing of material dredged from the Bay.

San Francisco Bay Plan

The San Francisco Bay Plan, adopted by BCDC in January 1969 and amended through 1997, includes policies that protect the Bay's economic and natural resources, including the designation of shoreline regional priority use areas. BCDC priority designated areas include ports, airports, waterfront parks and beaches, wildlife areas, tidal areas, marinas, fishing piers, recreational ferries, boat-launching ramps, commercial recreation, and vista points. Areas without priority designation in the Bay Plan are subject to the plan's policies detailed under "Other Uses of the Bay and Shoreline"; these policies call for areas without priority designation to be used for any purpose that uses the bay as an asset and that in no way affects the bay adversely.

Although Treasure Island and Yerba Buena Island are federal property and outside the defined coastal zone addressed in the Bay Plan, the Bay Plan does state that, if and when Navy no longer needs Treasure Island, it should be redeveloped for public use and continuous access to San Francisco Bay should be provided. The Bay Plan also states that if and when Navy or Coast Guard no longer needs Yerba Buena Island, it should be redeveloped for recreational use (BCDC 1969, revised 1997).

After property is conveyed out of federal ownership, reuse activities undertaken by nonfederal entities would be subject to BCDC permitting authority and review as to the final determination of proposed reuse consistency with the Bay Plan. Where proposed land uses are not consistent, the Bay Plan could be amended to be consistent with proposed land uses, or these uses could not be developed. BCDC has indicated preliminary support of reuse planning efforts at NSTI because the Reuse Plan "denotes a perimeter public promenade around Treasure Island, including a small park at the proposed ferry dock, and considerable open space on Yerba Buena Island at the connection to the Treasure Island causeway" (BCDC 1996, revised 1997).

BCDC would also require a permit for any fill, materials extraction, or substantial changes in use of any water, land, or structure in the bay. Permits for priority use and water-related industry areas within the 100-foot (30.5-m) shoreline would be granted or denied based on the appropriate Bay Plan policies for ports, water-related industry, water-oriented recreation, airports, and wildlife areas.

San Francisco Bay Area Seaport Plan

The San Francisco Bay Area Seaport Plan was jointly developed by BCDC and the Metropolitan Transportation Commission (MTC) in response to a state law that requires the addition of a maritime element to MTC's regional transportation plan and BCDC's Bay Plan. The Seaport Plan was adopted in 1982, was revised in 1988, and was comprehensively updated in April 1996. The Seaport Plan designates sites for port priority uses, such as marine terminals and water-related industry. The port priority use designation is intended to reserve adequate waterfront areas for future port and water-related development and to prevent unnecessary filling of the Bay. Other shoreline uses, such as public access and public and commercial recreational development may be permitted as long as they do not substantially impair the efficient utilization of the port areas. Treasure Island and Yerba Buena Island, as federal property, are not addressed in the Seaport Plan. Furthermore, these islands do not offer adequate terminal backland or rail and road access and therefore are geographically unsuitable for port development.

State Lands Commission and Public Trust

California received ownership of tidal and submerged lands and the beds of navigable waters within its boundaries upon its admission to the Union in 1850. Under the state constitution, such land is held in trust for the people of California for particular uses of public benefit; these lands commonly are referred to as tidelands trust or public trust lands. In general, if the public trust applies, land subject to it must be used for commerce, navigation, fisheries, water-oriented recreation, preserved in its natural condition for wildlife habitat and study, or other recognized public trust uses. The purpose of the trust is to assure that trust land remains committed to water-oriented uses benefiting the greatest number of people. The public trust generally applies to land that is or was submerged or that is subject to tidal action, including land created by filling tidelands or submerged lands.

The California State Lands Commission is generally the state trustee, which holds title to such property, but public trust lands may be conveyed by state legislative grant to a city, county, or other public agency that then serves as the public trustee over the land. In 1968, jurisdiction over all tidal and submerged land areas within San Francisco was transferred by the State Lands Commission to the City and County of San Francisco under the Burton Act (1968 Cal. Stat. 1333, Assembly Bill [AB] 190) to be managed by the Port of San Francisco.

The State Lands Commission has determined that all former and existing tidal and submerged lands on NSTI, including all of Treasure Island and portions of Yerba Buena Island, is subject to the public trust and, in the absence of any other legislative action, is under the jurisdiction of the Port of San Francisco, pursuant to and subject to the terms and requirements of the Burton Act. In 1997, the Treasure Island Conversion Act (TICA) (1997 Cal. Stat. 898, AB 699) authorized the City and County of San Francisco to establish TIDA as the redevelopment agency responsible for redeveloping NSTI. The act also granted TIDA power to administer and control property at NSTI, which was identified by the State of California as land that will be subject to the public trust upon its release from federal ownership.

Navy has determined that the 1942 condemnation of Treasure Island gave the federal government full fee simple absolute title to NSTI, clear of any public trust restrictions. However, the State Lands Commission maintains that when the federal government acquires title to public trust lands by condemnation, the public trust is not thereby extinguished. The State Lands Commission believes that the Supremacy Clause of the United States Constitution only leaves the federal government free to use the lands in furtherance of federal programs, unfettered by the use limitations of the trust while the land is in federal ownership, but that the lands again become subject to California law, and the trust would limit the types of uses that may be made of the land by the federal government's grantee, when the federal government relinquishes ownership. While the State Lands Commission maintains that Navy does not have authority to convey NSTI lands to any entity that is not a designated public trust trustee, the United States takes the position that whether or not the public trust applies, property held by the United States is freely alienable, or capable of being transferred to any other ownership.

Although the United States and the State of California have divergent views as to whether the federal condemnation of Treasure Island permanently removed the property from the public trust, San Francisco's reuse planning process assumes the public trust applies. Following transfer of NSTI, the reuse entity may pursue one of three possible remedies to address inconsistencies with the public trust: it may seek legislation to extinguish the public trust on NSTI; it may seek to exchange Trust property for other non-Trust property; or it may revise proposed land uses to ensure that no uses inconsistent with the public trust are located in areas subject to the public trust.

Should the reuse entity choose to exchange certain NSTI land in the public trust for land that is not currently in the trust, the State Lands Commission imposes the following conditions on land exchanges:

- The proposed land in which the trust is to be terminated must be filled, must be distant from today's waters, and must no longer be useful for public trust purposes; and
- Land of equal value and useful for Public trust purposes must be brought into the Tidelands Trust.

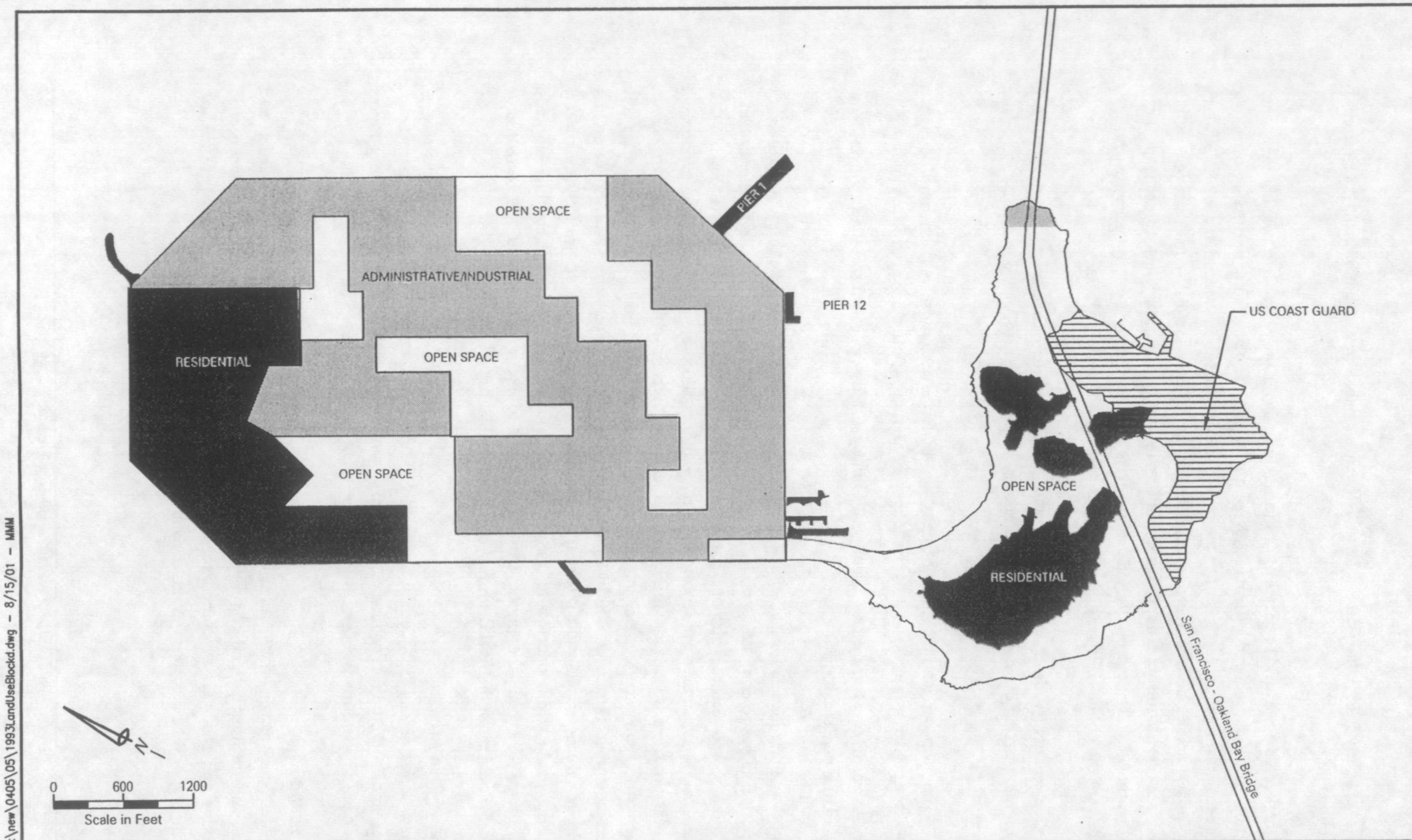
For closing of military installations, the State Lands Commission has allowed existing specialized or single-purpose facilities to continue as nonconforming public trust uses for their useful life. Facilities that are to be reused for the purpose for which they were built, without substantial physical modification, except as required for seismic stability, qualify as allowable nonconforming public trust land uses. Many of the proposed institutional uses (i.e., elementary school, child development center, fire training school, and brig) and existing housing on Treasure Island may be considered allowable nonconforming public trust uses. The wastewater treatment plant, fire station, and police station likely would be considered allowable public trust uses because they are needed to support allowable trust uses, such as the theme park/visitor attraction, golf course, sports complex, amphitheater, and hotels. For areas in which the public trust is deemed to apply, TIDA and the State Lands Commission, would make the final determination of allowable uses.

3.1.2 Reuse Plan Area

Former Navy land use at NSTI consists of residential facilities, recreation and open space areas, institutional and community facilities, commissary and office facilities, industrial and support facilities, and parking and roads. Figure 3-1 illustrates these land uses at NSTI.

Treasure Island

Table 3-2 identifies former Navy land uses at Treasure Island. In 1993, residential, recreation and open space, and institutional and community uses made up the largest percentage of land uses at NSTI; parking and roadways accounted for almost a quarter of the island. Retail and office and industrial and support land comprised the remaining uses.



Land uses in 1993 primarily included recreation/open space, residential, and industrial. Land uses presented are generalized such that, within the areas indicated, there may be small areas of a different use.

Legend:

- Administrative/Industrial
- Open Space and Recreation
- Residential
- US Coast Guard

1993 Land Use

Naval Station Treasure Island, California

Figure 3-1

Source: Navy 1988b

Table 3-2
Treasure Island 1993 Navy Land Uses

Land Use	Area (approximate acres)
Residential	110
Recreation and Open Space	90
Institutional and Community	30
Retail and Office	20
Industrial and Support	20
Parking and Roads	95
Total	**365**

Source: DON 1988b.
Note: Does not include approximately 36-acre (14-ha) parcel granted to Job Corps.

Residential

Housing is a prominent land use at Treasure Island, occupying approximately 110 acres (44.5 ha). The housing area includes family housing and bachelor enlisted quarters (barracks). Family housing occupies the northwest corner of the island, with the barracks located in the center-west part of the island. Approximately 900 family units in 8-unit, 6-unit, and 4-unit buildings are arranged around curving streets and cul-de-sacs with large driveways and lawns. Uses and other features surrounding the family housing area include the Bay to the north and west and open space, institutional, and industrial uses to the south and east. The barracks are star-shaped structures constructed in the late 1960s.

Recreation and Open Space

Recreation and open space uses at Treasure Island include water-related recreation and boating facilities, indoor and outdoor recreation facilities, and a variety of walking and bike trails and picnic areas.

Outdoor marine facilities include an approximate 100-slip recreation marina in Clipper Cove between Treasure Island and Yerba Buena Island. There also are two piers (Piers 11 and 12) on the southern edge of Treasure Island used for small military craft and a fishing pier (Pier 23) on the west side of Treasure Island. Pier 1, on the southeastern side of Treasure Island, was used to moor large military ships.

Indoor recreation facilities include the Shipshape Fitness Center, a gymnasium, a skating rink, a 1,000-seat movie theater, and a 12-lane bowling alley, all on the eastern side of Treasure Island. A youth center and pizzeria are also on the east side of Treasure Island.

Outdoor recreation facilities include baseball fields, a pitching green, a miniature golf course, two tennis courts, basketball courts, and two playgrounds. The outdoor recreation facilities are concentrated in the interior of Treasure Island. Open space areas include four parks and picnic areas and walking and bike trails. The dike around Treasure Island also is used as a jogging trail (San Francisco 1994a; San Francisco 1995a).

Institutional and Community

Institutional uses at Treasure Island include public service, educational, public works facilities, and a chapel. Navy headquarters occupied Building 1, a historic structure built originally for the Exposition. This building presently is occupied by city offices, including a San Francisco Police Department substation, and Navy caretaker site office.

Public service and government facilities include a fire station, a police station, the former brig, the new brig built in 1991, and a post office. Educational facilities include an auto and hobby shop, an elementary school, and a child development center. These facilities are all in the interior of the island in the northwestern quadrant. Public services include the emergency power generator, wastewater treatment plant, steam plant substations, reservoirs, and other utilities.

Retail and Office

Retail and administrative uses comprise a relatively small portion of land use on Treasure Island and include administrative, commissary, conference facilities, food service facilities, and a medical and dental facility.

Industrial and Support

Industrial uses are distributed in buildings in the northeastern and southeastern quadrants of Treasure Island. These include a former tear gas training building, a government printing office, fuel storage facilities, a storm lift station, two hangars, warehouses, a maintenance building, and training facilities.

Parking and Roads

The Treasure Island road system is laid out in a grid with parking areas located throughout the island (Figure 3-1). The only vehicle access to the island is from the on- and off-ramps from the SFOBB. The main access road to Treasure Island is Avenue of Palms. There are a number of on- and off-street parking areas.

Yerba Buena Island

Former Navy land uses at Yerba Buena Island are identified in Table 3-3. Yerba Buena Island primarily is comprised of open space and utilities facilities and military housing, as well as about 10 buildings used by Navy in 1993 for storage, communications, fire safety, and administration. The SFOBB crosses the island. Non-Navy land uses on Yerba Buena Island include the Coast Guard Station.

Table 3-3
Yerba Buena Island 1993 Navy Land Uses

Land Use	Area (approximate dry acres)
Open Space and Utilities	75
Residential	30
SFOBB	**10**
Total	**115**

Source: DON 1988b.
Note: Does not include approximately 11-acre (5-ha) parcel granted to Coast Guard in 1998 or 28-acre (11-ha) parcel granted to FHWA in 2000.

Open Space and Utilities

The steep slopes (up to 75 percent) at Yerba Buena Island preclude development along the northeastern and southwestern edges of the island. These areas are predominantly open space but also included 10 acres to support SFOBB utilities.

Residential

There are approximately 100 existing housing units at Yerba Buena Island, 10 of which are large single-family residences with the remainder being 2-, 4-, and 8-unit buildings, generally single-story, although there are some 2-story buildings. Housing is concentrated in the interior of the island, north of the SFOBB and southeast of Treasure Island Road. Historic officers quarters (Quarters 1-7), including the Nimitz House (Quarters 1), are located on the northern part of the island.

SFOBB

Caltrans currently possesses 97 acres (39 ha) of dry and submerged land on Yerba Buena Island for the SFOBB, including 10 acres of easement property and structures that it previously occupied and maintained in fee. FHWA acquired this land from Navy in 2000 and conveyed it to Caltrans for right-of-way purposes in connection with the construction, operation, and maintenance of the SFOBB east spans retrofit project, which is scheduled to begin by 2004. An EIS for replacement of the east spans has been completed by FHWA and Caltrans (Caltrans and FHWA 2001) and a ROD was issued by FHWA on July 11, 2001 (FHWA 2001).

3.1.3 Surrounding Land Uses

San Francisco Bay waters surround NSTI. Alameda County is approximately 2 miles (3 km) to the east and San Francisco is approximately 2 miles (3 km) to the west. NSTI is within the municipal boundaries of San Francisco. A discussion of non-Navy land uses on NSTI and land uses at the ferry terminals potentially affected by the proposed increase in ferry service at NSTI is presented below.

Non-Navy Land Uses on NSTI

US Department of Labor

As a result of the DoD and federal agency screening process for NSTI, approximately 36 acres (15 ha) of land on Treasure Island and approximately 12 buildings and structures were provided to the US Department of Labor for developing a Job Corps facility. The parcel includes former barracks for officers, constructed in 1958, barracks for Chief Petty Officers, constructed in 1975, a medical and dental clinic on the southern end of the island, and a dining facility. The Job Corps facility trains underprivileged youth to serve local communities. It will provide resident employment training to approximately 850 persons, approximately 750 of which would reside on Treasure Island.

US Coast Guard

An active US Coast Guard Station occupies approximately 30 acres (12 ha) of dry, upland area on the southeast side of Yerba Buena Island. The Coast Guard is responsible for water vessel traffic in and out of the Bay using the vehicle tracking system (VTS) facility on the northwest hillside of the island. The Coast Guard Station includes Coast Guard Group San Francisco facilities, including housing, administrative, open storage and docks, and buoy maintenance facilities. The station also includes a lighthouse built by the US Lighthouse Service in 1872 on the southeastern side of Yerba Buena

Island. Following the DoD and federal agency screening process, approximately 11 acres (5 ha) in the central portion of Yerba Buena Island were granted to the Coast Guard. Another 11 acres of submerged land will be transferred as well.

Existing Off-island Ferry Terminal Land Uses

Future transportation to NSTI may be provided through increased ferry service at the existing San Francisco Ferry Building, Main Street terminal in Alameda, Jack London Square in Oakland, and at two proposed new terminals—Candlestick Point in San Francisco and Golden Gate Fields on the Berkeley and Albany border. A general land use description of existing ferry terminals is provided here. Ferry service from these terminals is described in Section 3.5, Transportation.

San Francisco Ferry Building

The San Francisco Ferry Building, including its ferry terminals, is located at the terminus of Market Street at The Embarcadero. The Ferry Building is used mostly for offices, including the Port of San Francisco administrative headquarters (San Francisco 1996d). It is one of the few remaining water-dependent land uses in the immediate area. The Ferry Building, a San Francisco landmark listed on the National Register of Historic Places, is being expanded and renovated by the Port of San Francisco. A waterfront promenade parallels The Embarcadero and adjoins the Ferry Building.

The Ferry Building is adjoined by commercial and institutional facilities and parking areas. None of the parking areas include spaces designated for ferry users. The San Francisco downtown core is across The Embarcadero to the west and comprises offices, hotels, restaurants, and other retail and commercial uses. The Ferry Building is a transit hub, with service from Bay Area Rapid Transit (BART), San Francisco Municipal Railway (Muni), and several ferry lines nearby. An Amtrak bus connection is provided at the Ferry Building to and from Amtrak's Emeryville and Jack London Square stations.

Alameda Main Street

The Alameda ferry terminal is in the City of Alameda in Alameda County. The ferry pier is at the foot of Main Street adjacent to the former Alameda Naval Air Station. Adjacent land uses include a parking lot, winemaking and storage facilities, warehouses, a commercial self-storage facility, offices, and ship repair facilities.

Jack London Square

The Jack London Square ferry terminal is in the City of Oakland in Alameda County. The ferry pier is in the Alameda Harbor at the terminus of Clay Street. Jack London Square is a destination for entertainment, retail, and waterfront recreation.

Adjacent land uses include a recreational marina with a parking lot and lawn area to the southeast, the Waterfront Plaza Hotel south of the parking lot, a multi-story mixed-use facility to the northeast, and the Franklin D. Roosevelt Pier to the north. The pier provides opportunities for fishing and scenic viewing.

3.2 VISUAL RESOURCES

Visual resources address the appearance of the landscape and the factors influencing how the landscape is perceived by the viewing public. Landscape includes both natural and engineered features. Treasure Island and Yerba Buena Island are two of the Bay Area's prominent scenic resources, seen by millions of residents, commuters, and visitors every year. Prominent visual features and view points of and from NSTI are shown on Figure 3-2.

3.2.1 Visual Character of Reuse Plan Area

The visual character of NSTI, including features and visual characteristics of Treasure Island and Yerba Buena Island, is discussed below.

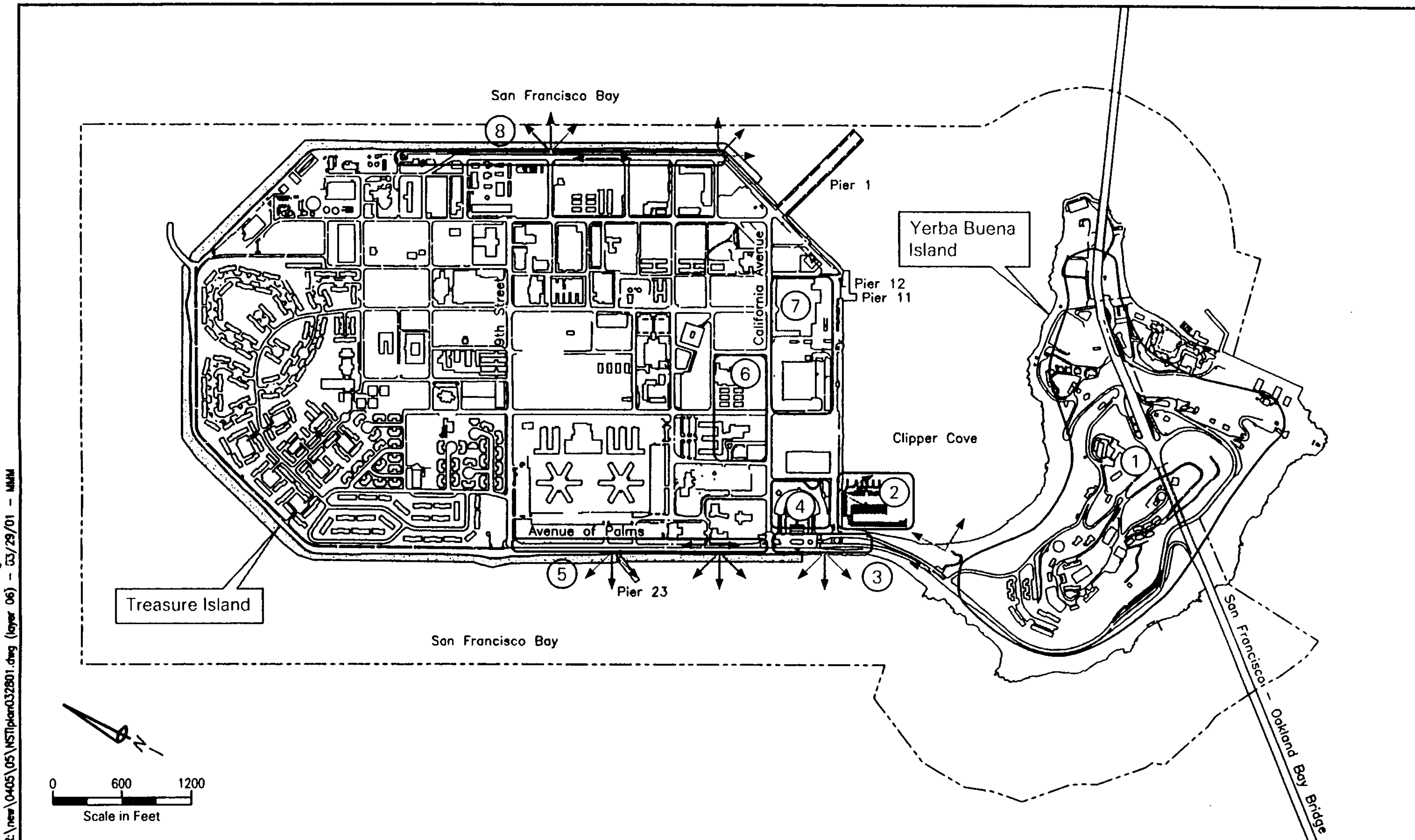
Treasure Island

Treasure Island has a geometric form with straight edges along its shores that produces a seven-sided shape in plan view. Topographic relief is low and flat. Existing Treasure Island development is characterized by various military support facilities, including housing, institutional, commissary, administrative, and industrial facilities of a generally functional appearance without a strong design theme. Buildings are generally two to four stories high (Photos 1 and 3 in Appendix F). Approximately 25 percent of the island is in open space, much of which is dedicated to recreation uses. The extent and distribution of this open space, along with wide streets and generous building setbacks, give the island a feeling of spaciousness.

Treasure Island's approximately 3 miles (5 km) of shoreline is protected by a rock-filled seawall. The seawall height limits ground-based views of the surrounding bay from many Treasure Island locations. Pier 23, a public-access fishing and sightseeing pier, is on the west side of the island across from the northern San Francisco waterfront. Public access is restricted at Piers 1, 11, and 12 on the island's southeast corner, where mooring and maintenance for former Navy vessels was provided. Pier 2 is a floating structure at the Clipper Cove marina and is used by recreational watercraft.

Entering NSTI from the Treasure Island causeway, views include the bay and San Francisco skyline to the left, Building 1 to the right, and Avenue of Palms ahead. Building 1 is a large, striking, Art Deco building with a curved façade that was constructed as the headquarters building for the 1939-1940 Exposition. Painted with light pastel colors, it is visible from points along the San Francisco waterfront.

The west side of Treasure Island is distinguished by the regularly spaced row of palm trees with landscape shrubs and ground cover along the bay side of Avenue of Palms, originally developed as part of the Exposition. Spectacular panoramic views of the bay, the San Francisco waterfront and skyline, the west span of the SFOBB, and the Golden Gate Bridge are available here. East of Building 1, the two largest buildings on Treasure Island, originally constructed as aircraft hangars, dominate the landscape (Photo 5, Appendix F). The similar style and color of Building 1 and the hangars ties the three buildings together visually.



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Situated in San Francisco Bay, NSTI provides panoramic views.

Prominent Visual Features:

1. Wooded Slopes of Yerba Buena Island
2. Clipper Cove Marina
3. Entry to Treasure Island
4. Museum
5. Avenue of Palms
6. Conference Center Complex
7. Hangar Buildings
8. East Side Frontage Road and Shores

← Major Views

Prominent Visual Features and Major Views

Naval Station Treasure Island, California

Figure 3-2

Clipper Cove is in a protected area on the east side of the causeway connecting Treasure Island with Yerba Buena Island (Photos 1 and 6, Appendix F). Densely wooded Yerba Buena Island slopes rise steeply on the cove's south side, with a steep wooden staircase leading down to a narrow sandy beach. From Treasure Island looking toward Yerba Buena Island, the scene appears mostly natural except for glimpses of buildings on the upper slopes of Yerba Buena Island, Building 262, an historic torpedo assembly building on the eastern tip of this island, and the high span of the SFOBB to the east. On the Treasure Island side of the cove are Pier 2 and the marina, where about 100 pleasure craft are moored.

Yerba Buena Island

In contrast to Treasure Island, Yerba Buena Island is a natural island with high topographic relief. Most of the island is steeply sloped with a few low-lying fill areas along the eastern side. Dense vegetation covers much of the island. Considerable soil erosion and disturbance is visible as strong color contrasts in the vicinity of the ramps and causeway on the steep west-facing slopes of the island.

Light and Glare

Light sources in the reuse plan area include street lights, building lighting for safety and security, and parking lot lighting. Glare is reflective light that can be visually unpleasant or possibly unsafe due to the potential for temporary "blindness." Glare is created by light (usually from the sun) reflecting off smooth surfaces such as glass, metal, or polished stone. As a military facility, the buildings and structures at NSTI were primarily designed and constructed for utility rather than aesthetics. There is generally a lack of decorative surfaces, including those that could cause glare. The majority of buildings have nonreflective surfaces.

3.2.2 Visual Characteristics of Surrounding Area

Treasure Island and Yerba Buena Island lie near the center of San Francisco Bay between downtown San Francisco and Oakland. The bay is about 50 miles (80 km) long and from 3 to 12 miles (5 to 19 km) wide. The topography around the bay features prominent hills, such as those to the northwest in Marin County and to the east in Alameda County. These ridges and other hills in the area afford distinctive panoramic views that often include Treasure Island and Yerba Buena Island. The surrounding region features a mixture of dense urban development and relatively extensive natural open space area, dominated by San Francisco Bay. Bay waterfront uses include industrial, commercial, and recreation and open space.

3.2.3 Key Views and Visibility of NSTI

Available views onto a site are affected by distance, viewing angle, and the number or type of visual obstacles, both natural and manmade. Views can be from stationary sources, such as homes and businesses, or from mobile sources, predominantly from motor vehicles. The visibility of an object depends, to a great extent, on the distance from the observer—the further the building is from the viewer, the less distinct the building becomes, and there is a greater possibility of intervening objects blocking some or all of the view of that building. With distance, more objects enter into the viewing panorama and specific features become visually "lost."

For this analysis, viewing distances have been characterized as foreground views (0 to 0.5 miles [0 to 0.8 km], middleground views (0.5 to 3 miles [0.8 to 5 km]), and background views (greater than 3 miles [5 km]). Foreground viewing distances permit perception of detail on individual small-scale landscape features. Middleground viewing distances permit relationships between large and moderately sized objects to be perceived, with some perception of colors, textures, individual forms, and details visible. Background viewing distances generally permit only the broad perception of large features, such as land masses and large-scale landscape patterns, with little distinction of color, texture, and detail.

Foreground Views

The only available close range views of NSTI are from the SFOBB (I-80) and from the immediately surrounding waters. Yerba Buena Island is clearly visible from both the eastbound and westbound directions, but Treasure Island is much less so. The bridge guardrails block views of Treasure Island from most passenger cars. From taller vehicles, such as buses, vans, or trucks, Treasure Island is visible, especially to westbound traffic in the right-hand lane (Photo 11, Appendix F). Several passenger ferry routes provide views of NSTI, and some pass within a mile (1.5 km). Boaters also experience close up foreground views of NSTI.

Middleground Views

Public middleground views of NSTI are available from many San Francisco locations, most notably from The Embarcadero and from the Northern and Central Waterfront areas of the city (from the SFOBB to the Pier 39 area). Other viewing locations include waterfront restaurants, recreational piers (Photo 7, Appendix F), ferry terminals, the Ferry Plaza, and the future Rincon Point Park at The Embarcadero near Folsom Street. Coit Tower is a well-known landmark, which provides a panoramic view of NSTI and Yerba Buena Island at a distance of over 2 miles (3 km) (Photo 8, Appendix F).

Public scenic views of Treasure Island from Alcatraz Island, at a distance of just over 2 miles (3 km), are some of the closest ground-based views available. Angel Island, a state park, provides middleground views of NSTI from the north. The distinctive buildings on Treasure Island, which are found on its south side, are not clearly seen from this viewing point.

Background Views

The Golden Gate National Recreation Area (GGNRA), including the Presidio of San Francisco, and Golden Gate Bridge represent intensively used viewing points. However, NSTI is in the background of these views (over 5 miles [8 km] from Fort Point), which are dominated by more noticeable landscape features, such as the bridge, Alcatraz Island, the Presidio, and the Transamerica Pyramid.

The East Bay shore, extending from the City of Richmond on the north to the City of Oakland on the south, contains a series of parks and open space areas with views to NSTI from distances of approximately 3 to 6 miles (5 to 9.5 km). Under certain lighting conditions, such as morning sunshine, the larger NSTI buildings become quite conspicuous, most notably the former hangar buildings (similar to conditions shown in Photo 9, Appendix F). NSTI is also a prominent landmark in background views from the East Bay hills.

The Emeryville waterfront, about 3 miles (5 km) from NSTI, represents one of the closer East Bay views (Photo 10, Appendix F). The northern half of Treasure Island is seen against the horizon of the Golden Gate.

Background views of NSTI also are available from several major Bay Area highways, including I-80, I-580, I-280, and US 101. In most cases, Yerba Buena Island is readily visible, while Treasure Island, with its low flat profile, is less visible.

A variety of viewers obtain background views of NSTI from urban areas around the bay. The most notable views are obtained from high-rise buildings in San Francisco and Emeryville and from streets within San Francisco that provide view corridors towards the bay (Photo 12, Appendix F). These view corridors, some of which focus viewer attention toward Yerba Buena Island or Treasure Island, are recognized and addressed in the San Francisco General Plan's goals, objectives, and policies.

3.2.4 Views from NSTI

Treasure Island

Public scenic views within NSTI are found at the entrance to Treasure Island (from the northbound direction on Treasure Island Road when leaving Yerba Buena Island), along Avenue of Palms, in the vicinity of the Convention Center and the former hangar buildings, and in the Clipper Cove area. The most scenic views from the site are of the surrounding waters and Bay Area. From Treasure Island these occur from perimeter areas, although at the north end of the island the height of the seawall blocks views of the water. The most distinctive views occur from Avenue of Palms towards the Golden Gate and San Francisco waterfront and skyline. These viewing points are unique within the Bay Area for their panoramic aspect (Photo 13, Appendix F) and proximity to San Francisco. Distinctive views toward the east occur from Avenue N.

Yerba Buena Island

On Yerba Buena Island, public scenic views include views of the steep hillsides and beach at Clipper Cove, and the view of Treasure Island from Macalla Road. From several locations at the higher elevations on Yerba Buena Island, there are sweeping panoramas of the Bay Area.

3.2.5 Viewer Group/Sensitivity

Visual sensitivity is dependent upon viewer attitudes, the types of activities in which people are engaged when viewing the site, and the distance from which the site will be seen. Overall, higher degrees of visual sensitivity are correlated with areas where people live, are engaged in recreational outdoor pursuits, or participate in scenic or pleasure driving. Conversely, visual sensitivity is considered low to moderate in industrial or commercial areas where the scenic quality of the environment does not affect the value of the activity.

There are a number of viewing opportunities onto the site from the surrounding area. These opportunities are available from the SFOBB, from bay waterfront uses, including industrial, commercial, and recreation and open space, from intensively used regional public areas, including Alcatraz Island, the GGNRA, and Angel Island, and from boats on the bay. The waterfront views toward NSTI are important both to tourists and to area residents. Given the unique and distinct character of NSTI and its central location in San Francisco Bay, viewer sensitivity from all of these areas is considered high.

3.3 SOCIOECONOMICS

This section describes the regional socioeconomic setting. Socioeconomics includes employment, population, housing, and schools. Data are presented for San Francisco and Alameda counties, as well as for NSTI. It is expected that most future workers at NSTI would commute from these two counties, which are connected to the site by the SFOBB.

3.3.1 Plans and Policies

Socioeconomic considerations that are applicable to NSTI closure and reuse are addressed in Section 2903(c) of the National Defense Authorization Act for Fiscal Year 1994 (Pub. L. 103-160), and amendments, and in the Report of the California Military Base Reuse Task Force to Governor Pete Wilson: A Strategic Response to Base Reuse Opportunities (Task Force Report) (California Military Base Reuse Task Force January 1994). Generally, the intent is to provide economic stimulus and consider local areas in base disposal. These two aspects are discussed briefly below.

National Defense Authorization Act (Pub. L. 103-160)

Consideration of Economic Needs with Respect to Revitalization and Redevelopment of Closed Military Installations (Pub. L. 103-160 § 2903(c), Nov. 30, 1993, 107 Stat. 1547, 1915) states that economic needs must be considered with regard to reutilization and redevelopment of closed military installations. It goes on to state:

> In order to maximize the local and regional benefit from the reutilization and redevelopment of military installations that are closed, or approved for closure, pursuant to the operation of a base closure law, the Secretary of Defense shall consider locally and regionally delineated economic development needs and priorities into the process by which the Secretary disposes of real property and personal property as part of the closure of a military installation under a base closure law.

California Military Base Reuse Task Force

In the Task Force Report, the task force developed six principles to be considered in the closure and reuse of military bases in the state. These include the following:

- Treat closing military bases as economic engines for job creation.
- The state should assist local officials in the process of base reuse and evaluating potential uses that may have overriding state or regional importance.
- Provide a variety of financing for base reuse.
- Streamline regulatory processes so that the state is not in danger of stifling local efforts to devise workable reuse plans.
- The federal government must clean up closed bases as soon as possible to a level appropriate to the reuse and consistent with long-term protection goals.
- The federal government must assume responsibility for a smooth transfer of military base property to local control.

3.3.2 Economic Trends and Conditions

Economic growth trends and projections for the nine-county Bay Area, and for San Francisco and Alameda counties in particular, provide a context for understanding changes in jobs and employment at NSTI from implementing any of the reuse alternatives under consideration. Economic trend information, provided for 1980 and 1990, is based primarily on US census data. The year 1990 is the closest to the 1993 baseline for which comprehensive socioeconomic data are available that are comparable on a local, regional, and national basis. NSTI census data is from Census Tract 179.02, which encompasses both Treasure Island and Yerba Buena Island. Although this data captures both NSTI and US Coast Guard operations, it is representative of Navy baseline conditions in 1993. Projections, by geographic area, for the number of jobs by sector and the number of employed residents in 2015 are from the Association of Bay Area Governments (ABAG) *Projections '96* (ABAG 1995b). The 1990 annual average unemployment rate by area was obtained from the California Employment Development Department (EDD) and is indicated for each area.

Bay Area

The nine Bay Area counties share a diversified and interconnected regional economy. In general, San Francisco has served as the major financial and commercial center, and East Bay counties have become the industrial and manufacturing center. Silicon Valley in the South Bay has emerged as a world center for computer and electronic technology.

In the context of the past several decades, regional economic growth rates were substantial until the mid-1970s but have been slower since. Through the 1970s, the regional economy was strong and robust. Since that time, however, growth has been moderated, at times, by recessions. Regional economic recessions or slowdowns occurred in 1975-1976, 1982-1983, and during the first half of the 1990s. While the recession of the early 1990s was no deeper than the previous ones, its duration was longer and its effect broader in terms of weaknesses across economic sectors. Regional job loss during this most recent recession was greater than during the recession of the early 1980s.

Regional economic recovery began in the mid-1990s. Between 1990 and 2015, the total number of Bay Area jobs is projected to increase from approximately 3.1 million to approximately 4.0 million, an increase of only 29 percent over the 25-year period (ABAG 1995b).

Jobs by Sector

Between 1980 and 1990, the number of jobs in the Bay Area increased by 23 percent, which was less than half the job growth experienced during the prior decade. In 1990, there were 3,073,000 jobs in the region. Approximately 33 percent of all jobs in 1990 were in services. Manufacturing and wholesale trade represented 22 percent of all jobs, and retail trade accounted for 17 percent of all jobs. Jobs in other sectors represented 27 percent of all Bay Area jobs. Agriculture, forestry, mining, and fisheries accounted for only one percent of Bay Area jobs (ABAG 1995b). Table 3-4 presents census data on the breakdown of Bay Area jobs by sector.

Between 1980 and 1990, the percentage of regional jobs in the services, wholesale, and retail trade sectors increased, while the percentage of jobs in manufacturing and government decreased. During

Table 3-4
Jobs by Sector, 1990

Location	Agriculture, Forestry, Mining, Fisheries	Manufacturing & Wholesale Trade	Retail Trade	Services	Other*	Total
Bay Area	35,220 (1%)	678,800 (22%)	514,920 (17%)	1,019,190 (33%)	824,870 (27%)	3,073,000
San Francisco	2,250 (<1%)	68, 820 (12%)	78,380 (14%)	224, 510 (40%)	192,680 (34%)	566,640
Alameda County	3,760 (1%)	127,080 (21%)	107,560 (17%)	207,650 (33%)	174,930 (28%)	620,980

*Other includes construction, transportation, communications, public utilities, finance, insurance, real estate, and government jobs.
Source: ABAG 1995b.

the 25-year forecast period, only the proportion of jobs in the services sector is expected to increase substantially. By 2015, approximately 38 percent of all Bay Area jobs will be in the services sector, compared to 33 percent in 1990. The percentages of jobs in the retail and wholesale sectors are projected to remain relatively constant over the forecast period—approximately 16 and 6 percent, respectively. The proportions of manufacturing and government jobs are expected to decline slightly between 1990 and 2015 (ABAG 1995b).

Employed Residents

Table 3-5 presents information on the total numbers of employed Bay Area residents in 1980 and 1990, as well as employment projections for 2015. The number of employed residents increased from 2,553,002 in 1980 to 3,151,942 in 1990, an increase of 23 percent. In comparison, according to ABAG projections, during the 25-year forecast period, the number of employed residents in the region is expected to increase from 3,151,942 in 1990 to 3,939,600 in 2015, an increase of 25 percent. According to ABAG projections, the rate of growth in employed residents during the 25-year forecast period is projected to be only slightly higher than the growth rate (23 percent) that took place during the single decade between 1980 and 1990 (ABAG 1995b).

Unemployment

The civilian unemployment rate in the nine Bay Area counties in 1990 ranged from 2.7 percent in Marin County to 5.6 percent in Solano County. The statewide unemployment rate in 1990 was 5.6 percent.

Table 3-5
ROI Employment Trends and Projections, 1980, 1990, and 2015

Location	1980	1990	Percent Change 1980-1990	2015	Percent Change 1990-2015
Bay Area	2,553,002	3,151,942	23%	3,939,600	25%
San Francisco	347,091	391,292	13%	415,400	6%
Alameda County	522,069	648,461	24%	791,500	22%
NSTI	2,202	2,482	13%	N/A	N/A

Note: 1980 and 1990 figures are actual; 2015 figure is projected.
N/A = not applicable
Sources: US Department of Commerce 1980; 1990; ABAG 1995b.

Jobs-Housing Balance

When the number of jobs and the number of available housing units are roughly equal within a certain subregion, people will have an opportunity to live close to where they work. Given proximity, people would not have to commute as far and accordingly, traffic and congestion would be reduced, and air quality would be improved.

To measure the jobs-housing balance, a simple ratio has been formulated, where the number of jobs in a region is divided by the number of households in a region. The result of this process is a number called the jobs-housing ratio. For the entire nine-county Bay Area region, the ratio was 1.36 in 1990 and was projected to increase to 1.42 by 2015 (ABAG 1995b).

San Francisco

The regional economic trends described above also are reflected in San Francisco's economy. San Francisco's economy was affected by the recession of the early 1990s but has been recovering steadily since 1993. Employment increased by roughly 1,000 jobs per year between 1993 and 1995, and revenues from retail sales also began to grow by roughly 6 percent per year during this same period. Construction activity also increased, although as of August 1996 it had not reached pre-recession levels (San Francisco 1996f).

ABAG *Projections '96* states that long-term factors, such as San Francisco's limited labor supply, lack of affordable housing, and high commercial rental rates, are working to slow San Francisco's economic growth. ABAG also expects that the continuing trend of employment decentralization away from San Francisco will not reverse itself, although the decrease in San Francisco's employment share is not expected to represent a net regional loss of jobs but rather an increase in other counties' share of regional jobs (ABAG 1995b).

San Francisco recently developed a 2015 Cumulative Update to the ABAG *Projections '96* land use database. Such data is useful when a project is broadly physically integrated into the larger region. NSTI is connected to the region by one route—the SFOBB/I-80. Since the SFOBB/I-80 is already operating at capacity, the new data would not change the conclusions in this socioeconomics analysis.

Jobs by Sector

Table 3-4 presents data on the number of jobs by sector in San Francisco in 1990. The largest sector at that time was services, with approximately 40 percent of all jobs. An additional 34 percent of jobs were in the category "other," which includes 63,490 government jobs (11 percent of all jobs). Manufacturing and wholesale trade represented 12 percent of all jobs, and less than 1 percent of San Francisco's jobs were in agriculture, forestry, mining, and fisheries. ABAG projects that the services sector will be the only growth sector in San Francisco over the next two decades. By 2015, jobs in the services sector are expected to make up almost 46 percent of all jobs in San Francisco.

Between 1990 and 2015, San Francisco's overall share of the region's jobs is expected to decline from 18.4 percent to 15.9 percent. Major development projects, such as Mission Bay, and reuse of former military facilities could slow the flow of jobs away from San Francisco, but a reversal of the trend toward job decentralization is not anticipated, given regional economic and policy trends (ABAG 1995b).

Employed Residents

Table 3-5 presents data on trends and projections of the number of employed residents in San Francisco. The number of employed residents increased 13 percent between 1980 and 1990. Over the 25-year forecast period, the increase in employed residents is expected to be slower. Between 1990 and 2015, the number of employed residents is projected to increase by only six percent (ABAG 1995b).

San Francisco shares the regional imbalance between the number of jobs and employed residents; however, the imbalance between jobs and employed residents is greater in San Francisco than in any other county in the region. This imbalance is expected to continue throughout the 25-year forecast period. Between 1990 and 2015, approximately 72,000 new jobs are expected to be created in San Francisco. During this same period, however, ABAG projects an increase of only 24,108 employed residents, indicating that San Francisco will continue to be an important job center for the region (ABAG 1995b).

Unemployment

The civilian unemployment rate for San Francisco was 4.2 percent in 1990, compared with a rate of 5.6 percent statewide. Unemployment is particularly a problem among San Francisco's homeless population, which is the second largest homeless population of any city in the nation (TIHDI 1995).

Jobs-Housing Balance

Similar to the regional ratio, a jobs-housing ratio for a subregion also can be formulated. A subregional ratio greater than the regional ratio would indicate that a subregion is, in relative terms, "jobs rich," which is typical of employment centers, such as traditional business districts. Anything less than the regional ratio would indicate that a subregion is relatively "housing rich," which is typical of more suburban bedroom communities.

San Francisco is an important job center in the regional economy. The jobs-housing ratio for the City and County of San Francisco in 1990 was 1.85 and is projected to increase to 1.89 by 2015 (ABAG 1995b).

Job growth in San Francisco is supplied by the labor force of the regional labor market. In 1990, considering only those San Francisco jobs held by people living in the Bay Area, San Francisco residents held 55 percent of the jobs and people living in other parts of the Bay Area held the remaining 45 percent of the jobs (MTC undated in San Francisco 1998b; Keyser Marston Associates and Gabriel Roche 1997 in San Francisco 1998b). ABAG and the MTC project that the percentage of San Francisco employed residents working in San Francisco will stay at about the 1990 level (MTC undated in San Francisco 1998b).

Alameda County

In recent years, Alameda County has experienced a period of continued economic diversification, as well as job growth. The southern portion of the county has attracted numerous high technology industries, while the eastern section has become a center for office employment, communications-related industries, and high technology industries. In the northern portion of the county, the economy has shifted from one dominated by manufacturing industries to a mixture of office employment, government service centers, transportation, and biotechnology.

Jobs by Sector

Table 3-4 shows the breakdown of jobs by sector in Alameda County in 1990. As with San Francisco, Alameda County's services sector was strongest, representing about 33 percent of all jobs at that time. Another 21 percent of the county's jobs were in the manufacturing and wholesale trade sectors, and 28 percent were in other sectors, including 66,280 government jobs (11 percent of all jobs in the county). Between 1990 and 1995, Alameda County experienced negative job growth, due in part to the statewide economic slowdown in California and also to military base closures. The greatest job losses occurred in the cities of Oakland and Alameda (ABAG 1995b).

Although job growth between 1990 and 2015 is expected to be slower than during the previous two decades, growth in the county is projected to be comparable to the regional rate. ABAG projects that between 1990 and 2015, the economic sectors experiencing growth in Alameda County will be services (increasing from 33 percent to 37 percent of all jobs), manufacturing (increasing from 13 percent to 14 percent) and wholesale trade (increasing from 7 percent to 8 percent) (ABAG 1995b).

Employed Residents

Table 3-5 summarizes trends and projections for employment in Alameda County. Between 1980 and 1990, the number of employed Alameda County residents increased by 24 percent. Employment growth for residents is expected to slow considerably between 1990 and 2015, however, with a projected increase of only 22 percent over the 25-year period. Cities in Alameda County that are expected to experience the greatest increase of employed residents during these two decades are Oakland, Livermore, Dublin, and Pleasanton (ABAG 1995b).

Unemployment

Alameda County's unemployment rate in 1990 was 4.2 percent, compared with a 5.6 percent rate statewide.

Jobs-Housing Balance

According to ABAG *Projections '96*, the jobs-housing ratio for Alameda County in 1990 was 1.31 (ABAG 1995b). This number is expected to increase to 1.39 by 2015. The jobs-housing ratio is lower in Alameda County than the region as a whole.

NSTI

During the 1980s, NSTI remained relatively isolated from the rest of San Francisco—not only physically, but also economically and socially. Virtually all employment on the islands was military-related in 1990. Workers were employed either by various branches of DoD or by a small number of nonmilitary organizations providing services to residents, such as banks, the school, and the post office. In 1990, the largest nonmilitary employer at NSTI was the San Francisco Unified School District (SFUSD).

Jobs by Sector

The US census only provides data for civilian (nonmilitary) jobs. The 1988 NSTI Master Plan Update indicates that the following military personnel were employed: 200 officers, 1,215 enlisted, 495 transient, and 975 reserve shipmen, for a total of 2,885 persons (DON 1988b). There were approximately 750 nonmilitary jobs at NSTI in 1990, of which 19 were in manufacturing and wholesale trade, 150 were in retail trade, 31 were in services, and 550 were in various other sectors, including construction, transportation, communications, public utilities, finance, insurance, real estate, and government jobs. The total Navy civilian and military personnel at NSTI was about 3,635 employees.

Employed Residents

Military personnel employed at NSTI did not all necessarily live at NSTI in 1990, as military housing there was available to military personnel from other Bay Area facilities. Census data indicate that in 1990, 40 percent of the workers with jobs at NSTI lived on-site. Another 11 percent lived in other parts of San Francisco and 14 percent lived in Alameda County. Seventeen percent lived in the 7 other Bay Area counties, while 18 percent lived outside the Bay Area (San Francisco 1995a). There were 2,202 NSTI employed residents in 1980 and 2,482 in 1990, an increase of 13 percent over the decade.

Unemployment

Census Tract 179.02, which encompasses both Treasure Island and Yerba Buena Island, had a civilian unemployment rate of 7.4 percent in 1990. This rate is based on 56 persons reported to be unemployed out of a civilian labor force of 750. Using a denominator that includes military personnel and civilians, the unemployment rate would have been 1.5 percent, compared with 4 percent citywide and 5.6 percent statewide (US Department of Commerce 1990).

3.3.3 Population Trends and Projections

This subsection describes population growth trends and projections for the nine-county Bay Area, San Francisco, Alameda County, and NSTI. The information provided below includes population size and distribution, age, household size, and income. Demographic data are not available for 1993. For consistency with other sections of this report, population estimates and projections are provided for each geographic area for the years 1980, 1990, and 2015. Two summary tables are referenced throughout this section. Table 3-6 presents data on regional population trends and projections and Table 3-7 presents information on regional household characteristics. The main sources used to obtain the information presented in this section are census data (US Department of Commerce 1980, 1990) and ABAG *Projections '96* (ABAG 1995b). Racial composition and poverty are discussed in Section 6.4, Environmental Justice.

Bay Area

Population Growth

Table 3-6 presents data on regional population trends and projections. The population of the nine-county region increased from 5,179,759 in 1980 to 6,020,147 in 1990, an increase of 16 percent. This represents a 1.4 percent compounded annual increase over the decade, compared to a compounded annual increase of 1.9 percent from 1960 to 1980.

Over the 25-year forecast period (1990 to 2015), ABAG projects that regional population growth will slow slightly, with 1,700,803 people added by 2015. This would represent a 28 percent increase, or 1.1 percent compounded annually, over the 25-year period. Population distribution within the Bay Area also has undergone substantial change over the past decades, reflecting the decentralization of both population and employment that has occurred within the region.

Household Characteristics

Table 3-7 presents information on household characteristics in the region. The total number of households in the region increased 14 percent between 1980 and 1990. The average household size in the region increased slightly between 1980 and 1990—from 2.57 to 2.61 persons. The median household income in the region increased by 102 percent during the decade, from $20,607 in 1980 to $41,595 in 1990.

Table 3-6
ROI Population Trends and Projections, 1980, 1990, and 2015

Location	1980	1990	Percent Change 1980-1990	2015	Percent Change 1990-2015
Bay Area	5,179,759	6,020,147	16%	7,720,950	28%
San Francisco	678,974	723,959	7%	795,800	10%
Alameda County	1,105,379	1,276,702	15%	1,591,500	25%
NSTI	3,935	4,500	14%	N/A	N/A

Notes: 1980 and 1990 figures are actual; 2015 figure is projected.
N/A = not applicable.
Sources: US Department of Commerce 1980, 1990; ABAG 1995b.

Table 3-7
ROI Household Characteristics, 1980 and 1990

Location	Number of Households			Average Household Size		Median Household Income		
	1980	1990	Percent Change	1980	1990	1980	1990	Percent Change
Bay Area	1,970,551	2,246,242	14%	2.57	2.61	$20,607	$41,595	102%
San Francisco	298,956	305,584	2%	2.19	2.29	$15,866	$33,414	111%
Alameda County	426,093	479,518	13%	2.53	2.59	$18,700	$37,544	101%
NSTI	801	962	20%	3.76	3.71	$14,712	$27,909	90%

Sources: US Department of Commerce 1980, 1990.

San Francisco

Population Growth

San Francisco's population increased by about 7 percent between 1980 and 1990, from 678,974 to 723,959 persons (Table 3-6). This was the second slowest rate of growth of any county in the Bay Area and only a fraction of California's growth rate of 26 percent (EDD 1994). ABAG projects that San Francisco's population growth will be equally slow over the next 25 years, increasing by only 10 percent during the forecast period.

Household Characteristics

The number of San Francisco households increased by only two percent between 1980 and 1990 (Table 3-7). Although the average household size in San Francisco rose from 2.19 to 2.29 during this decade, the citywide average was still substantially smaller in 1990 than the regional average of 2.61. The median household income in San Francisco increased by 111 percent between 1980 and 1990, from $15,866 in 1980 to $33,414 in 1990.

Alameda County

Population Growth

In 1990, Alameda County had a total population of 1,276,702, making it the most populous county in the Bay Area after Santa Clara County. Alameda County was the only county in the nine-county region to have four cities with 1990 populations of more than 100,000 residents—Oakland, Fremont, Hayward, and Berkeley.

Alameda County's population grew 15 percent between 1980 and 1990, and it is projected to increase by an additional 25 percent between 1990 and 2015 (Table 3-6). Most of this growth is expected in the eastern portion of the county, especially in the communities of Dublin, Livermore, and Pleasanton. Growth in the western portion of the county, with the exception of Emeryville, is expected to be slow during this period, as the communities bordering San Francisco Bay approach full buildout (ABAG 1995b).

Household Characteristics

The number of households in Alameda County increased by 13 percent between 1980 and 1990 (Table 3-7). The average household size in Alameda County was 2.59 persons in 1990, slightly higher than the 1980 average of 2.53 persons but still below the regional average of 2.61 persons. Similar to the region and to San Francisco, the median household income in Alameda County increased by 101 percent between 1980 and 1990, from $18,700 to $37,544.

NSTI

While still an active military base, the resident population at NSTI was approximately 3,935 in 1980. By 1990, the resident population at NSTI had increased to approximately 4,500 (Table 3-6). Between 1980 and 1990, the number of NSTI households increased 20 percent, while the median household income increased by approximately 90 percent during this same period (compared with more than 100 percent in most of the rest of the region (Table 3-7).

3.3.4 Housing Characteristics

This subsection presents information about the housing stock in the Bay Area, San Francisco, and Alameda County. Because housing affordability is a critical issue in the region and because reuse could affect the local supply of (and demand for) affordable housing, housing supply and housing costs are described for each geographic location. The data source used is the US Department of Commerce census data. Table 3-8 summarizes housing information that is referenced throughout this section.

Table 3-8
ROI Housing Characteristics, 1980 and 1990

Location	Number of Housing Units			Percentage of Single-family Units			Vacancy Rate	
	1980	1990	Percent Change	1980	1990	Percent Change	1980	1990
Bay Area	2,061,343	2,365,323	15%	56	61	9%	4.2	5.0
San Francisco	316,608	328,471	4%	46	32	-30%	5.7	7.0
Alameda County	444,607	504,109	13%	51	59	16%	4.1	4.9
NSTI	809	1,045	29%	N/A	N/A	N/A	0.9	7.9

Note: N/A = not applicable.
Sources: US Department of Commerce 1980; 1990.

Bay Area

Census data indicate that the region's housing stock increased by 15 percent between 1980 and 1990. The housing vacancy rate in the region was five percent in 1990. The region's housing stock in 1990 included single-family units (61 percent), multi-family units (35 percent), mobile homes (3 percent), and other types of residences, such as houseboats (1 percent). Of the occupied housing units in the region in 1990, 56 percent were owner-occupied, and 44 percent were renter-occupied.

At the time of the 1990 census, housing costs in the Bay Area were among the highest in the nation. In 1990, the median value for an owner-occupied unit in the Bay Area was $255,476. Housing prices in the region increased by more than 160 percent from 1980, when the median value for an owner-occupied unit was $98,100.

San Francisco

San Francisco had 328,471 housing units in 1990 (Table 3-8), or approximately 14 percent of the region's housing supply. San Francisco's housing stock increased by approximately four percent between 1980 and 1990. The vacancy rate in San Francisco in 1990 was 7.0 percent, up from 5.7 percent in 1980.

In 1990, 32 percent of San Francisco's housing stock was single-family units—about half the percentage of single-family units in the region. Single-family units are relatively scarce in San Francisco due to the relatively high cost and limited supply of land available for residential development. Two-thirds of San Francisco's housing stock in 1990 was composed of multi-family units. Less than one percent of all units were mobile homes, and two percent were other types of housing units.

In 1990, approximately 35 percent of the housing units were owner-occupied—considerably lower than the regional figure of 56 percent. The median value for an owner-occupied dwelling in San Francisco was $298,900 in 1990, which was 17 percent higher than the regional median value. This is consistent with information published by the San Francisco Planning Department that states the median value for a three-bedroom home in San Francisco in 1990 was $290,250 (San Francisco 1995c). While the median household income increased by 111 percent between 1980 and 1990, the median housing price increased by 188 percent, exacerbating San Francisco's housing affordability problems.

Alameda County

Alameda County had 504,109 housing units in 1990 (Table 3-8), approximately 21 percent of the Bay Area's housing supply. The county's housing stock had increased by 13 percent since 1980, when there were 444,607 housing units. In 1990, 4.9 percent of the housing units were vacant, similar to the regional vacancy rate of 5.0 percent.

The composition of Alameda County's housing stock is similar to that of the region as a whole. In 1990, 59 percent of the housing units in Alameda County were single-family units, 38 percent were multi-family units, and the remainder were mobile homes and other types of housing units, such as houseboats. The rate of owner-occupancy in Alameda County in 1990 was 53 percent, similar to the regionwide rate. The median home value in Alameda County was $225,300, which was also similar to the regional median value. Home values in Alameda County increased by more than 165 percent from 1980, when the median home value was $84,900.

NSTI

In 1990, while still an active military base, there were 1,045 housing units at NSTI (Table 3-8). The 1990 housing vacancy rate was 7.9 percent, a substantial increase from the vacancy rate of 0.9 percent reported in 1980.

3.3.5 Schools

The information presented in this section is based on interviews with SFUSD personnel.

San Francisco

NSTI is within the boundaries of the SFUSD, where enrollment has remained constant since 1990, averaging approximately 63,000 to 64,000 students. Enrollment at elementary schools throughout the school district is at or near capacity (San Francisco Unified School District 1996b). At the middle school and high school levels, some schools are at capacity or are experiencing overcrowding, while others are underenrolled. Overcrowding at the middle school and high school level is primarily a problem in schools in the western portion of San Francisco.

The San Francisco school system receives annual funding from the federal government under the provisions of Public Law 101-874. The amount of funding is determined annually by the US Department of Education, then appropriated by the Senate for allocation to schools attended by the children of military personnel who reside on federal property. Receipt of such funds does not alter the per capita funding contributed by California to the school district. In the 1990-1991 school year, money was allocated for the 1,470 eligible students who attended San Francisco public schools and resided either at NSTI or the Presidio. (Roughly two-thirds of the eligible students were from NSTI and one-third were from the Presidio.)

NSTI

Elementary school-aged children that lived at NSTI attended the Treasure Island Elementary School. The school property was leased from Navy by the school district, and the school was staffed by district employees. While most Treasure Island Elementary School students lived at NSTI, some other San Francisco children were taken by bus to the school to achieve court-mandated racial balance.

In 1990, there were 1,134 school-aged children (5 to 19 years of age) at NSTI, representing 25 percent of the NSTI population, about double the citywide ratio. Enrollment projections for the elementary school were not available because the school district's annual enrollment projections are district-wide only. Individual school enrollments are not projected (San Francisco Unified School District 1996c).

Enrollment at Treasure Island Elementary School was 852 in October 1990. Approximately two-thirds of the enrolled students were children from military families living at NSTI, and one-third were students who were bussed from other parts of San Francisco (Treasure Island Elementary School 1996). Since there is no middle school or high school at NSTI, these students were bussed to schools in San Francisco. Most middle school-aged children at NSTI were bussed to the Potrero Hill Middle School. Most high school students from NSTI were bussed to Galileo High School. Many of the middle school students at NSTI elected to attend the Everett Middle School, as well as the Horace Mann and Martin Luther King Alternative Middle Schools. Some high school students chose to attend the Thurgood Marshall Academic High School or the Phillip and Sala Burton High School (San Francisco Unified School District 1996d).

The school district continues to lease and operate the Treasure Island Elementary School, which serves students bussed in from other parts of San Francisco (DON 1998f).

3.4 CULTURAL RESOURCES

"Cultural resources" is a generic term that describes archaeological, architectural, and historical objects, sites, buildings, structures, or districts. Some of these are listed in or eligible for listing in the National Register of Historic Places (NRHP). To qualify as an eligible property, the resource must meet specific criteria established in the National Historic Preservation Act (NHPA), Section 106 of which requires federal agencies to consider the effects of their actions on properties listed in or eligible for listing in the NRHP. The Section 106 process requires federal agency consultation with the State Historic Preservation Officer (SHPO), Native American tribes, and other appropriate agencies and parties and input from the Advisory Council on Historic Preservation (ACHP).

Cultural resources can be divided into three broad categories: prehistoric, Native American, and historic. Prehistoric resources consist of the physical evidence (often buried) resulting from human activities that occurred before the time of written records. Native American resources are sites, areas, or materials important to living Native Americans for religious, spiritual, ancestral, or traditional reasons. Historic resources can consist of physical properties, archaeological sites, structures, or built items resulting from human activities since the time of written records. Cultural resources that are under water are called maritime or submerged cultural resources, and they can be prehistoric, Native American, or historic. Maritime sites can include inundated cities, harbors, shore installations, shipwrecks, or sunken aircraft.

In addition to the NHPA, cultural resources and Native American resources are protected by the Archaeological Resources Protection Act of 1979 (16 U.S.C. §§ 469-469c), the American Indian Religious Freedom Act of 1978 (42 U.S.C. §§ 1996-1996a), and the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) (25 U.S.C. §§ 3001-3013). NAGPRA provides for the return of human remains and burial items to identified Native American descendants.

Cultural resources at NSTI have been identified through a number of previous investigations. These investigations identified cultural resources throughout NSTI, including some resources in areas that have since been transferred to other federal agencies and are no longer under Navy control.

In 1988, land on Yerba Buena Island, including two historic buildings, was transferred to the US Coast Guard. In 2000, the FHWA also acquired land on Yerba Buena Island. This land was subsequently conveyed in fee to Caltrans for the SFOBB east spans retrofit project, including a temporary construction easement over a substantial part of Yerba Buena Island and permanent aerial easements over two parcels of land. Because this property was conveyed to Caltrans, the property, including the easements, is not included in the Navy disposal and is excluded from this EIS

Cultural Background of NSTI

The cultural background for NSTI consists of an overview of the history of the area from prehistoric times to the present. Summarized here, cultural backgrounds are used as contexts for developing significance criteria to help determine if specific properties are eligible for the NRHP. Specific contexts have been developed for NSTI's prehistoric, Native American, and historic resources (DON 1997f).

Prehistoric

Not much is known about the region's first human inhabitants or when the area became home to the ancestors of modern Native Americans. Several recent discoveries in South America have seriously questioned the theory that the first people on the continent crossed the Bering Straight only 10,000 years ago. Some of the earliest sites recorded in the vicinity, south of the project area in San Jose and Scotts Valley, are dated to as early as 8,000 BC (Moratto 1984). Based on dates and material gathered from extensive archaeological excavations conducted at several large prehistoric shellmounds (i.e., sites where marine resources were consumed), it appears that human occupation of the San Francisco Bay Area also goes back many thousands of years. Evidence suggests that between 5,000 and 2,000 BC, the bay was used by groups of hunters and gatherers who subsisted on a wide variety of land, bayshore, and marsh resources. As time progressed, later groups who occupied the region are believed to have relied primarily on shellfish (Breschini and Haversat 1980; Moratto 1984). Although the aboriginal populations may have been affected by fluctuating sea levels, use of the region appears to have been continual until the historic period.

Native American (Ethnography)

At the time of Euro-American contact (around 1769), Native American groups of the Costanoan language family occupied the area, from San Francisco Bay to southern Monterey. The large area that the Costanoans occupied was subdivided among several individual groups occupying specific territories. Shells, pine nuts, and obsidian for making stone tools were likely traded between coastal and inland groups, as evidence from excavated sites indicates. Costanoans used several semipermanent camp areas, depending on where food was available during each season, moving locations to take advantage of both marine and land resources. The Ohlone, a Costanoan group that lived along the ocean shore, once occupied the project area. Like most California aboriginal groups, the Ohlone practiced a transient lifestyle and relied heavily on hunting and gathering. With the onset of Euro-American immigration to the area, their traditional way of life essentially had disappeared by the mid-1800s (NPS 1976).

Historical Setting of NSTI

Although Navy has managed Yerba Buena Island and Treasure Island as a single facility since 1940, the islands have different histories. Yerba Buena is a natural island that has been used by private parties and by the Army and Navy since the 1840s. Treasure Island is an entirely engineered island, constructed in 1936 and 1937.

Yerba Buena Island. Various parties claimed ownership of Yerba Buena Island (also known as Goat Island) through the Spanish-Mexican era of California history and through the early decades of American control. The Army asserted the right to occupy and use Yerba Buena Island in 1866, and in 1867 it took possession of the island. Troops were stationed on the southeastern part of the island, in a cove near the modern Coast Guard station. In 1879, the Army reassigned artillery units to the Presidio of San Francisco and abandoned the Yerba Buena Island garrison. In 1891, the Army Coast Artillery Corps took control of the island to erect a torpedo (i.e., underwater mine) depot.

In 1898, the Navy established a Naval Training Station in the East Cove area, in the location of the 1870s Army base, but the Army retained control of the eastern tip of the island until 1960. The

Naval Training Station was active from 1900 until 1923, when Navy relocated it to the Naval Training Center in San Diego, and the Navy facility on Yerba Buena Island became a receiving ship facility. In the mid-1930s the SFOBB was constructed. Yerba Buena Island became the center anchorage for the SFOBB (anchoring the suspension spans on the west and the cantilever spans on the east), and a tunnel traversed the central hill.

Treasure Island. Treasure Island is an entirely engineered island, consisting of rock and mud fill placed over shallow areas at the northern shore of Yerba Buena Island. The COE constructed the approximately 400-acre (162-ha) island during 1936 and 1937 to provide a short-term site for the Golden Gate International Exposition, with the intent of converting the site into a permanent airport for San Francisco when the exposition closed. The exposition was conceived to celebrate construction of the Golden Gate Bridge and the SFOBB. Most of the buildings constructed for the exposition were built to be temporary, with only three planned to be permanent.

In February 1941, Navy took possession of Treasure Island from San Francisco in exchange for land on the mid-peninsula. The peninsula property would become the site of the San Francisco International Airport. Following the bombing of Pearl Harbor in December 1941, the Navy built several hundred new buildings on the island, between 1942 and 1945. Most construction at Treasure Island during World War II was designed to function only for the duration of the war. Following World War II, Navy transformed Treasure Island into a training facility and unified various specialized technical schools from throughout the Bay Area into a consolidated facility on the island. Navy demolished dozens of World War II-era temporary structures during the 1960s and 1970s, making way for more modern residential and classroom buildings suited to its instructional needs.

3.4.1 Summary of Previous Investigations

In accordance with Section 106 of the NHPA, Navy conducted cultural resource investigations to determine the presence of cultural resources within the area of potential effect (APE).

Previous studies of buildings and structures at NSTI fall into two categories—those conducted before 1996 and those supporting a comprehensive inventory conducted by JRP Historical Consulting Services in 1996 and 1997. Pre-1996 studies of buildings and structures at Yerba Buena Island are restricted to studies of senior officers' quarters (DON 1982b) and a historical investigation by staff from Mare Island Naval Shipyard conducted in 1995 (DON 1995a). The National Park Service (NPS) inspected and analyzed data from the exposition buildings at Treasure Island in 1987 for potential National Historic Landmark (NHL) status, as part of a thematic study of world's fair sites in the United States (NPS 1987). The intent of the NPS study was to determine whether any exposition buildings would qualify for listing in the NRHP, individually or as a historic district.

In 1996-1997, JRP Historical Consulting Services conducted a comprehensive inventory of all buildings and structures at NSTI (DON 1997a). That inventory effort included preparing a historic context for evaluating historic significance, as well as an inspection of all buildings on both islands.

Also in 1996, PAR Environmental Services, Inc., conducted archaeological investigations within NSTI (DON 1997f). In addition to a field survey, personnel of the Northwest Information Center

(NWIC) of the Historical Resources File System, Sonoma State University, Rohnert Park, completed a prehistoric and historic site record and literature search (NWIC File No. 96-227).

The California State Lands Commission Shipwreck database was reviewed for reported shipwrecks in the vicinity of NSTI. The SFOBB retrofit project also has been investigated to identify eligible and potentially eligible sites within the APE.

Background studies conducted at both Treasure Island and Yerba Buena Island identified significant archaeological properties and historic buildings and structures that are within the areas that Navy transferred to the Coast Guard and the FHWA. Because these properties are no longer under Navy control, they are considered only in the cumulative analysis of this EIS. Discussions of some transferred resources are included to assist the reader in understanding the project.

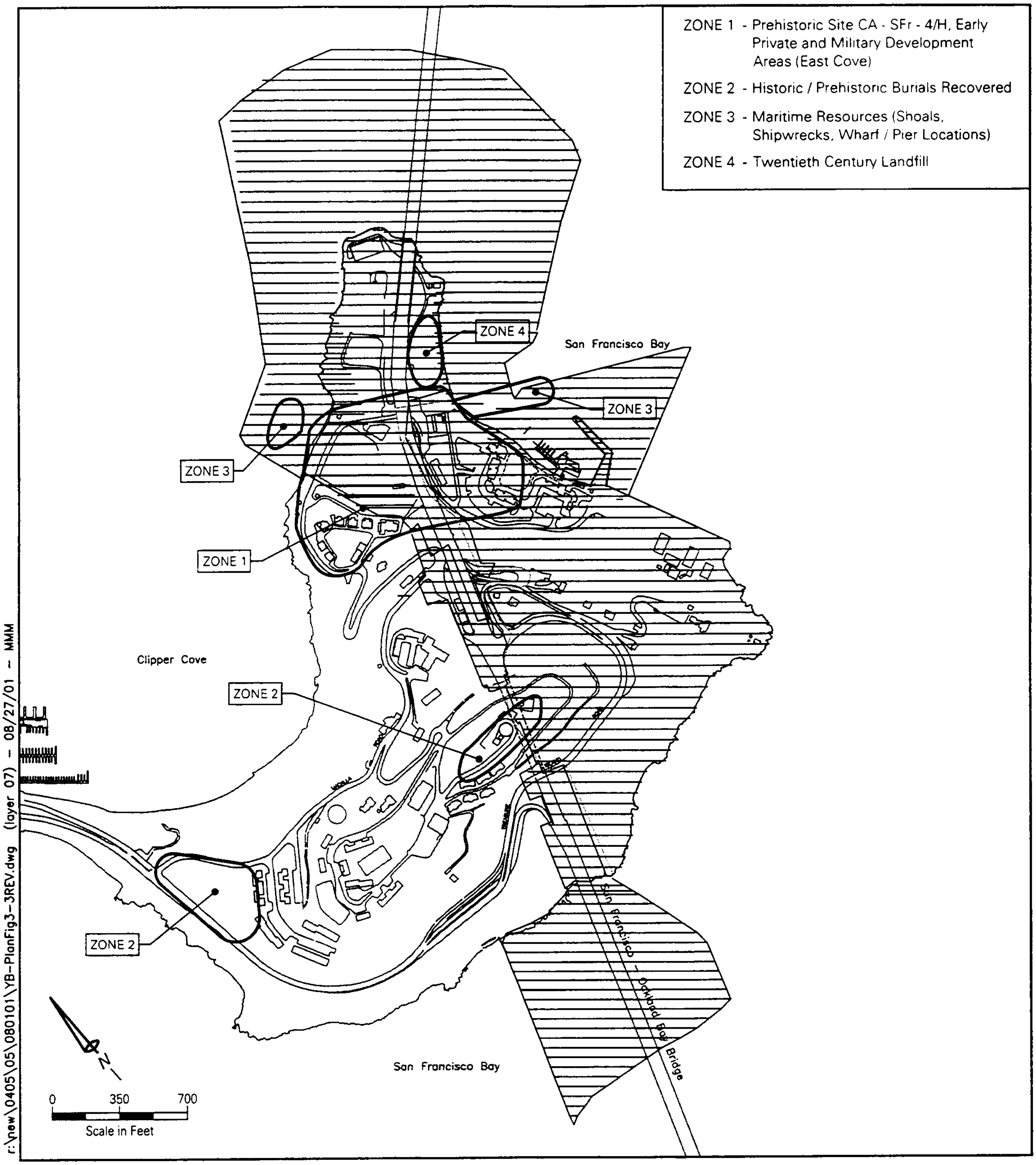
3.4.2 Summary of Known Resources

Status of Cultural Resources at Yerba Buena Island

The 1996 cultural resource investigations identified archaeological and historic resources on Yerba Buena Island. Four areas, or zones, of subsurface archaeological sensitivity on Yerba Buena Island were defined and are discussed further below (Figure 3-3). Due to the transfer of Navy property to the US Coast Guard and FHWA, much of Zone 1 and Zone 2, all of Zone 3, and much of Zone 4 are no longer Navy property and are not part of the proposed disposal and reuse action considered in this EIS.

Zone 1. Zone 1 contains a prehistoric site with a historic component (CA-SFr-4/H) and early private and military development. The prehistoric component of site CA-SFr-4/H contained burials reportedly removed from the site in 1934 (DON 1997f). The remains are housed at the Phoebe Hearst Museum in Berkeley, California. Following the FHWA transfer, Caltrans conducted additional work was conducted at the prehistoric site, including Native American consultation, additional site testing, and development of treatment plans to comply with the NHPA (Caltrans and FHWA 2001). Caltrans determined the historical component of site CA-SFr-4/H to be a noncontributing element for eligibility to the NRHP, although other historic remains in the transferred portion may have the potential for eligibility (Caltrans and FHWA 2001). Caltrans developed treatment plans for the resources, as part of the SFOBB retrofit project (Caltrans and FHWA 2001).

There appear to be no remnant buildings or structures associated with pre-1867 occupation of the island, even though it had been occupied since the 1840s (DON 1996p). The only building remaining from this period of occupation is the lighthouse, built by the Army in 1872 and still used by the US Coast Guard. The lighthouse is not on Navy property and would not be affected by the disposal action. The only remaining structure on Yerba Buena Island from this early period is the reinforced concrete Building 262, the torpedo building, constructed in 1891 as the mine assembly building. It is



There are four zones of predictable archeological sensitivity where the likelihood of unexpected discoveries of significant archeological and historical resources is judged high.

Legend

Areas Excluded from Proposed Navy Disposal

Archeologically Sensitive Zones Yerba Buena Island

Figure 3-3

north of and almost directly beneath the SFOBB, at the eastern water's edge and is unoccupied. Building 262 is within the area transferred to FHWA and is not part of the proposed disposal and reuse of NSTI.

Also within Zone 1 are the foundation remnants of the Naval Training Station's original administration complex, its associated outbuildings, and seven unmodified Senior Officers Quarters (quarters 1 through 7). Other buildings remaining from this period include quarters 8 and 9, which were constructed between 1900 and 1905. One historic district and three individual buildings that meet the criteria for listing in the NRHP were identified as part of the comprehensive 1996 investigation. As a result of the transfer of NSTI Property to FHWA, only the Senior Officers Quarters Historic District remains under Navy control.

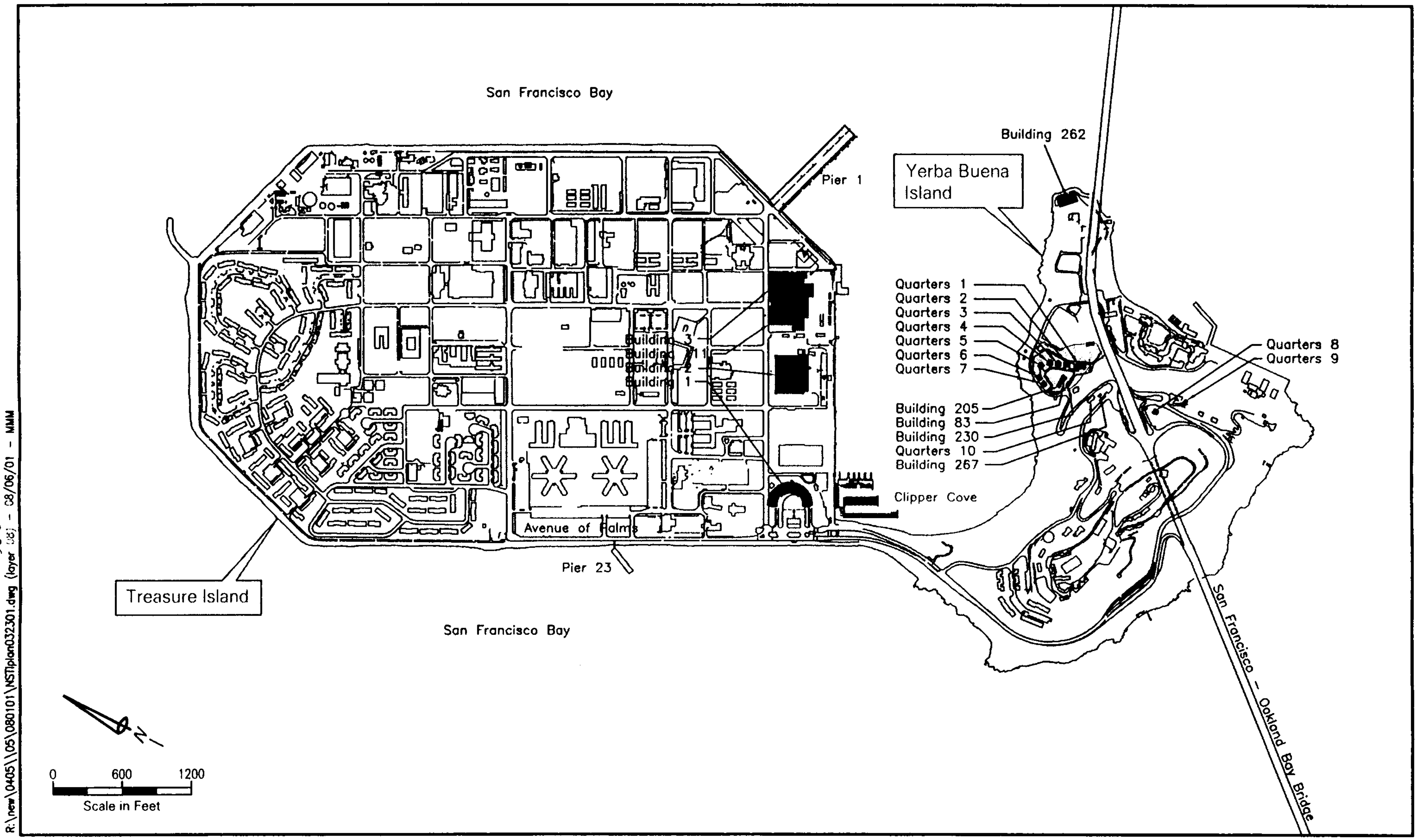
This Senior Officers Quarters Historic District includes seven senior officers quarters, quarters 1 through 7, all built between 1900 and 1905 (Figure 3-4). The district also includes three associated garages, buildings 83, 205, and 230, and formal landscaping elements. In 1997, the SHPO agreed in concept on the proposed historic district. One building within the group, Quarters 1, the Nimitz House, was individually listed on the NRHP in 1991.

Zone 2. Zone 2 is broken into two areas, one that contains prehistoric burials, and one where there were burials from the original historic cemetery site dated to 1849 (DON 1997f).

The first part of Zone 2 is an area of reported prehistoric and historic archaeological deposits, including Native American remains removed in the 1930s from the top of the island where the signal tower now stands (DON 1997f). The area where the reported human remains were found was within the area transferred to FWHA.

The second part of Zone 2 is reported as the early cemetery of the island, dated to 1849. Although all known burials were relocated to San Francisco in the 1930s, the zone is considered sensitive because of the possibility of additional unmarked graves (DON 1997f).

Zone 3. Zone 3 contains potential historic maritime resources from before 1835 through 1923 (DON 1997f). Maritime traffic both in prehistoric and historic times seems likely, due to the strategic location of the island. A review of reported shipwrecks using the California State Lands Commission Shipwreck database did not reveal any shipwrecks in the waters surrounding Yerba Buena Island; however, four shipwrecks were reported in the vicinity (Caltrans and FHWA 2001). In investigations conducted for the SFOBB retrofit project EIS, Caltrans included a maritime archaeological survey that extended 1,200 feet on either side of the bridge, within Clipper Cove, and in an area east of Building 262 (Caltrans and FHWA 2001). This survey did not reveal the presence of any shipwrecks. The *Utica*, a boat that burned and sank in 1850, is plotted (using latitude and longitude provided by the shipwreck database) on what would have been the shoals to the north of Yerba Buena. This area has since been filled and is now Treasure Island.



Historic sites at NSTI include Buildings 1, 2, 3, and 111 on Treasure Island and Building 262 and Quarters 8, 9, and 10 (and its garage, Building 267) on Yerba Buena Island. The Senior Officers Quarters Historic District is composed of Quarters 1-7 and Buildings 83, 205, and 230, as well as associated landscaping in and around these buildings.

Legend:

National Register Listed and Eligible Buildings and Structures

National Register Listed Buildings and Eligible Properties on NSTI

Naval Station Treasure Island, California

Figure 3-4

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Zone 3 also contains areas where historic wharves were constructed, as shown on archival maps from 1871 that depict a wharf within the East Cove off Yerba Buena (DON 1997f). The Navy transferred all property within Zone 3 to FWHA as part of the SFOBB retrofit project.

Zone 4. Zone 4 is an area along East Cove that includes the site of a historic dump dated to the 1920s through the 1930s associated with the Yerba Buena Naval Training School (DON 1997f). The Navy transferred all property within Zone 4 to FHWA as part of the SFOBB retrofit project.

In addition to those resources identified for each of the zones on Yerba Buena Island, the SFOBB is also within Yerba Buena Island. The State Historical Resources Commission nominated the SFOBB for listing in the NRHP on August 6, 1999 (Caltrans and FHWA 2001). Completed in 1937, the SFOBB was first determined as eligible for NRHP listing in 1983. The bridge held numerous records when it opened, and it remains a Bay Area centerpiece. (The Navy transferred the land supporting and immediately adjacent to the SFOBB to FWHA, and it is not part of the NSTI disposal and reuse action.)

Yerba Buena Consultation and Affected Properties

The SHPO concurred with the Navy that the Senior Officers Quarters Historic District, quarters 8 and 9, and Building 262 were eligible for listing in the NRHP and that zones 1 through 4 may have properties that qualify for listing (SHPO letter October 15, 1997). The SHPO also commented that further information was needed on several historic features before determinations of eligibility were possible. In response, Navy provided additional information (Navy letter dated March 2, 1998) supporting the argument that the features would not qualify under eligibility criteria. Navy and the SHPO have completed a draft memorandum of agreement (MOA) in which it is determined that the eligible properties that will be affected by the undertaking are limited to Quarters 1, which is individually listed on the NRHP, quarters 2 through 7 and their garages (Building 83, Building 205, Building 230), the formal landscaping elements of the area, and any potential undiscovered prehistoric and historic sites on Yerba Buena Island (the draft MOA is discussed further in Section 4.4 and a copy is included as Appendix H).

Status of Cultural Resources at Treasure Island

Because most of Treasure Island consists of fill material, the potential for buried prehistoric or historic archaeological resources related to pre-Navy occupation is considered to be extremely low. The potential for paleontological resources also is considered to be low, based on the soil composition and geological formation of the Treasure Island project area lands. Any marine or submerged cultural resources, such as shipwrecks, also would have been covered by the dredge-and-fill used to create the island.

Treasure Island itself is an engineered island and is over 50 years old. In a letter, the SHPO asked the Navy to consider the potential eligibility of the entire island, specifically the engineering achievements of the San Francisco Army Corps of Engineers in 1936 (SHPO letter October 15, 1997). In response, JRP Historical Consulting Services and Navy evaluated the significance of Treasure Island in the field of engineering but concluded that it did not appear to be a significant example of the dredge-and-fill techniques of the Corps of Engineers, which had been doing similar work throughout the Bay Area, California, and the United States decades before the island was built (Navy letter to SHPO dated March 2, 1998).

Three historic features containing a number of structural foundations built during World War II were encountered on Treasure Island during the 1996 survey. These foundations were clustered on the north end of the island, and, except for the Brig Overflow that was constructed in 1943, all date to 1944. They include buildings 207 (barracks), 222 (brigade guard house), 228 (bachelor officers quarters), 236 (administration and classrooms), 237 (oil tank), 238 (boiler house and shop), 239 (oil separating pit), 240 (forecastle mock-up), 241 (boiler room), 242 (engine room), 243 (flight deck), 244 (diving tank), and 245 through 257 (oil and gas tanks and pits). Though 50 years old, these foundations are from a well-documented phase of Treasure Island's history. The historic remains are limited to surface foundations that are documented on maps and do not contribute significant information for interpreting the island's history. It was recommended that the foundations do not qualify for inclusion in the NRHP.

Of the Golden Gate Exposition buildings that the Navy used during World War II (DON 1995a), five still exist (in whole or in part), with only Building 1 (the Administration Building), Building 2 (the Hall of Transportation), and Building 3 (the former Palace of Fine and Decorative Arts) remaining in relatively unaltered condition. In 1982, a cultural resources inventory of buildings and structures on Treasure Island (DON 1982b) concluded that these three remaining buildings individually meet the criteria for the NRHP. Building 111 also was considered eligible as a structural component of Building 3. The National Park Service analysis in 1987 concluded that insufficient resources from the exposition existed at Treasure Island to warrant additional eligibility recommendations.

Treasure Island Consultation and Affected Properties

In 1984, the SHPO concurred with the Navy's finding that Building 1 was eligible for the NRHP (California Office of Historic Preservation 1984), and in 1992 the SHPO made this same determination for Building 2 and Building 3 (California Office of Historic Preservation 1992). Building 111 also qualifies for the NRHP as a structural element of Building 3 (California Office of Historic Preservation 1992). The SHPO, Navy, and ACHP in their MOA determined that the eligible properties that will be affected by the undertaking are limited to buildings 1 and 2, Building 3 with its associated Building 111, and any potential undiscovered prehistoric and historic sites on Treasure Island.

3.5 TRANSPORTATION

This section describes the existing roadway network, traffic volumes and level of service, public transportation (including ferry service), pedestrian and bicycle circulation, parking, and goods movement on and around NSTI.

3.5.1 Roadway Network

Regional Roadway System

Yerba Buena Island connections to and from the SFOBB/I-80 are provided by one off-ramp and two on-ramps in the westbound direction and two off-ramps and one on-ramp in the eastbound direction. The SFOBB/I-80 contains two traffic levels, each with five lanes, with the upper level carrying westbound traffic and the lower level carrying eastbound traffic. Access to Treasure Island is from Yerba Buena Island via a causeway (Treasure Island Road).

The SFOBB/I-80 structure, completed in 1937, is owned by Caltrans. The access ramps to and from Yerba Buena Island are owned by Navy. Figure 3-5 shows the locations of the six ramps and the Caltrans easement across Yerba Buena Island.

Southwest of the SFOBB/I-80, I-80 links NSTI to San Mateo and Santa Clara counties via US 101 and I-280. Through downtown San Francisco, I-80 is generally three to four lanes, with additional lanes added between on-ramps and off-ramps. I-80 connects with US 101 south of the 7th and 8th Street ramps, and US 101 connects with I-280 south of Cesar Chavez Street, near Alemany Boulevard. Northeast of the SFOBB, I-80 connects NSTI to Alameda and Contra Costa counties via I-80 and I-580 north of the toll plaza area. The Cypress structure freeway connection between I-80 and I-880, demolished following the 1989 Loma Prieta earthquake, was reconstructed by Caltrans. A portion of this new freeway connecting I-880 and the SFOBB opened in July 1997. The final link of this new freeway opened at the end of September 1998.

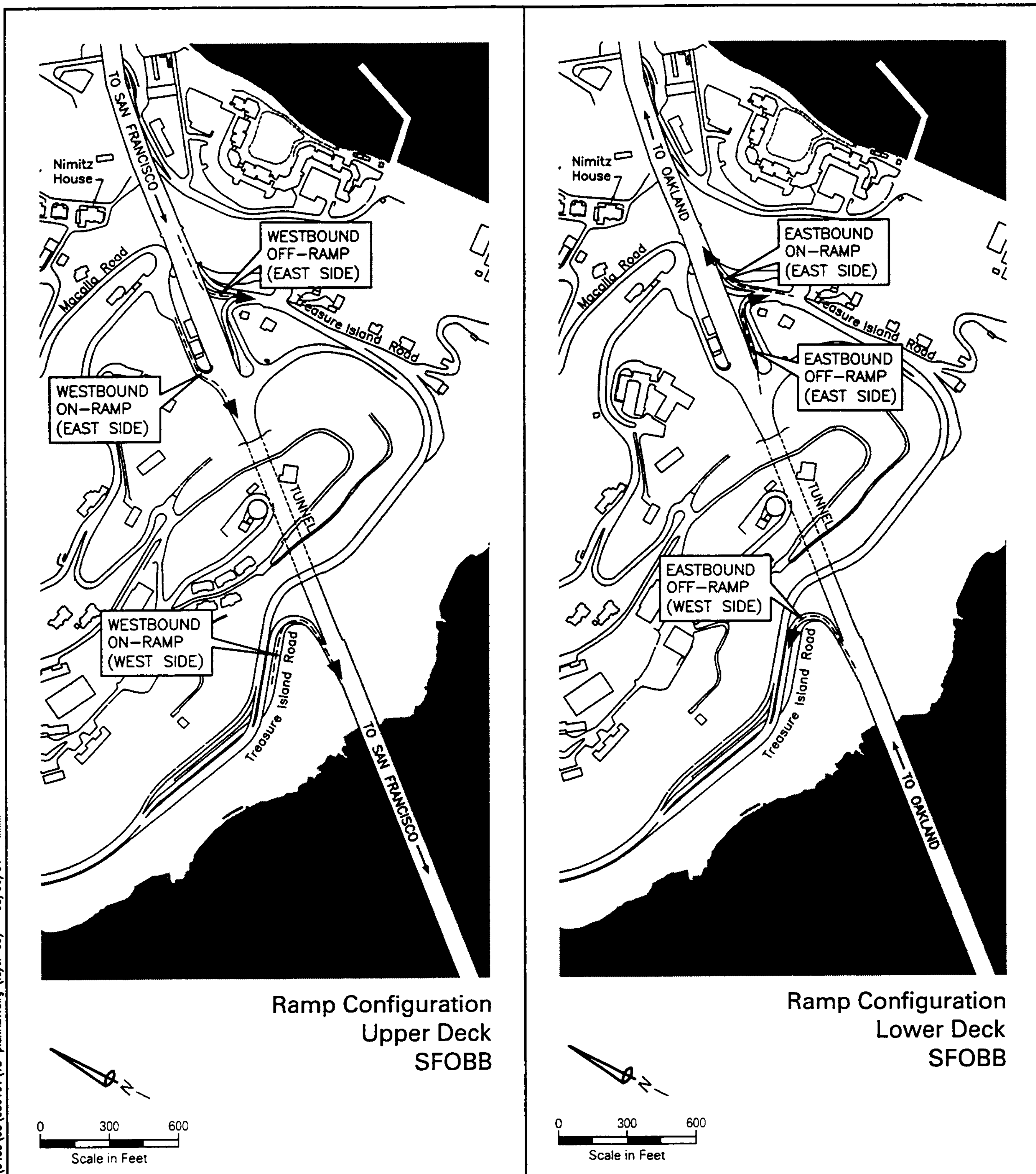
NSTI Roadway System

The following describes existing roadways on Treasure Island and Yerba Buena Island.

Treasure Island

Roadways on Treasure Island are classified collector or local. Collector roads provide for traffic movement between major streets and local streets.

Local roads provide direct access for local traffic movements. As shown in Figure 3-6, the collector system for Treasure Island is a basic grid. There are two main collector roads serving the east-west direction, California Avenue and 9th Street. Five collector roads carry traffic in the north-south direction—Avenues N, M, H, D, and Avenue of Palms. Avenue of the Palms is the only access road onto Treasure Island from the causeway (Treasure Island Road). The remaining roads on Treasure Island are considered local.



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Caltrans has aquired about 97 acres on Yerba Buena Island for existing and proposed SFOBB structures. Six ramps (three on both the upper and lower decks) access the SFOBB. Four ramps are on the east side of the SFOBB tunnel structure, and two ramps are on the west side.

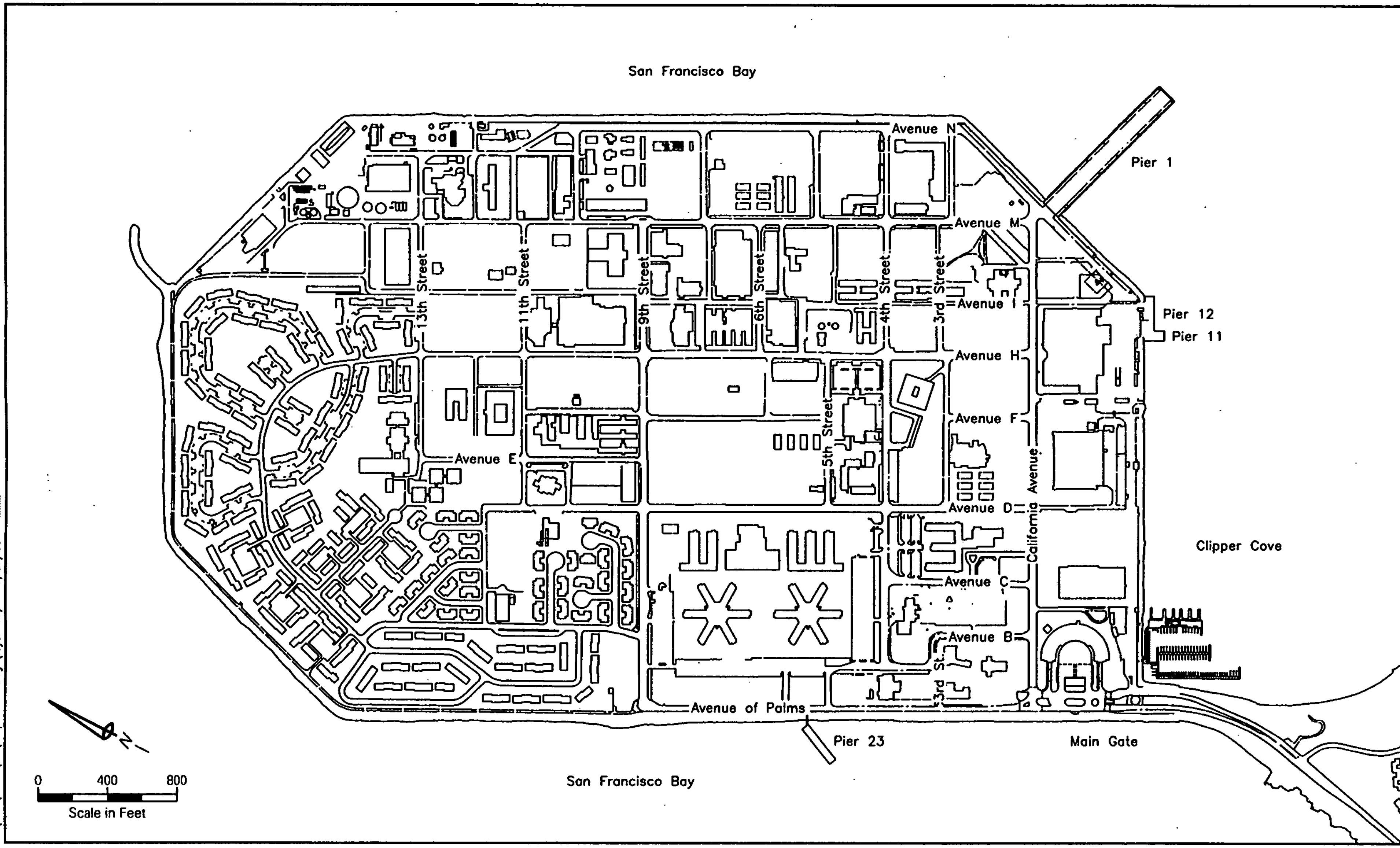
Legend

Tunnel Structure

SFOBB Ramp Configuration through Yerba Buena Island

Figure 3-5

Source: Caltrans 1993, 1994



The roadway network at Treasure Island is a basic grid.

Roadway Network at Treasure Island

Source: DON 1988b

Figure 3-6

3-41

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California Avenue is a four-lane two-way roadway. The only traffic control devices on California Avenue are stop signs controlling incoming traffic from the north-south collectors and local roads onto California Avenue. Ninth Street runs from Avenue M to Avenue D as a two-lane roadway and from Avenue D to Avenue of Palms as a four-lane roadway. Ninth Street is controlled by four-way stop signs at its intersections with Avenue M and Avenue H and by a two-way stop sign at its intersection with Avenue D. All five of the north-south collectors are two-lane, two-way roadways. Avenues N, M, H, and D have one curb lane for parking in each direction. Intersections with these collector roads are either two-way or four-way stop sign-controlled. Avenue of Palms does not contain any traffic control devices, except for a stop sign at the Main Gate.

The basic speed limit on Treasure Island roads is 25 miles per hour (mph) (40 km/hour). In the housing areas and school zones the travel speed is 15 mph (24 km/hour). The four-lane roadways have a 35 mph (56 km/hour) speed limit.

The widths of the major four-lane collector streets, such as California Avenue and 9th Street, range from approximately 55 to 75 feet (17 to 23 m) (not including the road right-of-way). The widths of local roads providing access between residential, commercial, and industrial areas range from approximately 25 to 40 feet (7.5 to 12 m).

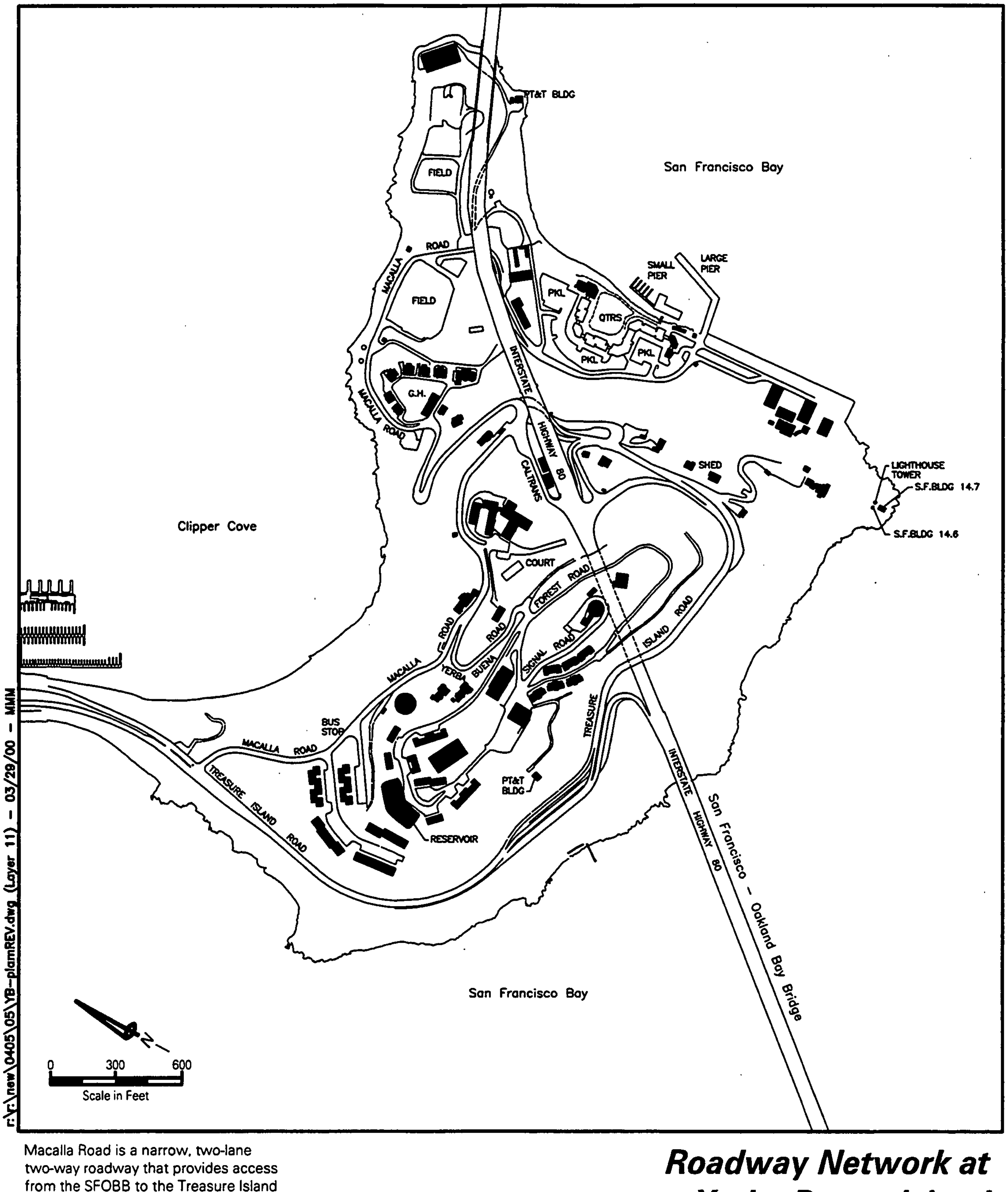
Yerba Buena Island

The roadway network on Yerba Buena Island consists primarily of Treasure Island Road and Macalla Road (Figure 3-7). Treasure Island Road is the primary access road for the SFOBB/I-80 ramps. Macalla Road provides access to the former Navy housing area. Minor streets leading from these two roads provide access to the Coast Guard Station.

Treasure Island Road, a two-lane two-way roadway that links Treasure Island with Yerba Buena Island, traverses the west and southeast sides of Yerba Buena Island. It provides access for the SFOBB/I-80 ramps, except for the westbound on-ramp at the east side of the tunnel. As it crosses over the SFOBB/I-80 tunnel from west to east, it has a grade of approximately 17 percent. The speed limit on Treasure Island Road varies from 25 to 35 mph (40 to 56 km/hour).

Macalla Road is a narrow two-lane two-way roadway that provides access to the former military housing on Yerba Buena Island and to the Coast Guard Station. It connects with Treasure Island Road, at which point its grade is approximately 20 percent. Macalla Road provides access to the westbound on-ramp on the east side of Yerba Buena Island at an approximate 12 percent grade. It continues downhill toward former Navy housing and the Coast Guard Station; access to the Coast Guard Station is restricted. The speed limit ranges from 10 to 25 mph (16 to 40 km/hour).

Other roadways include Yerba Buena Road, a narrow two-lane two-way roadway; Signal Road, a two-lane two-way roadway; and Forest Road, a narrow one-lane one-way roadway circling the top of the island. Speeds on these roadways are from 10 to 25 mph (16 to 40 km/hour), and there are a number of sharp turns. Roadway grades on portions of these roadways approach approximately 15 percent. Roadways range from approximately 19 to 32 feet (6 to 10 m) wide, and have no or very narrow (1 to 2 feet [0.3 to 0.6 m] wide) shoulders.



Macalla Road is a narrow, two-lane two-way roadway that provides access from the SFOBB to the Treasure Island causeway.

Roadway Network at Yerba Buena Island

Source: DON 1988b

Figure 3-7

Emergency Access

Emergency access to NSTI in the event of a bridge or causeway failure could be provided by boat or ferry. The San Francisco Fire Department can access the perimeter of Yerba Buena Island and Treasure Island by fireboat.

Treasure Island has a designated helipad in the vicinity of Pier 1. Air transportation via helicopter is also available to Yerba Buena Island in cases of emergency. The Coast Guard maintains a designated emergency landing and takeoff area for helicopters on Coast Guard property (US Coast Guard 1995b).

3.5.2 Traffic Volumes and Level of Service

This analysis and description of existing traffic conditions has been based on traffic data for key freeway access points from Caltrans. The bridge and freeway analysis conducted as part of the September 1996 Alternatives to Replacement of the Embarcadero Freeway and the Terminal Separator Structure EIS/EIR (San Francisco 1996g) has been used to describe existing travel conditions on the SFOBB/I-80.

Existing operating conditions on the SFOBB/I-80 were calculated using the FREQ11 software program. This program evaluates the basic freeway segments, ramp junctions, and weaving areas. The model for the SFOBB/I-80 and I-80/US 101 in downtown San Francisco was developed as part of the Alternatives to Replacement of the Embarcadero Freeway and the Terminal Separator Structure EIS/EIR (San Francisco 1996g). Caltrans 1993 and 1994 traffic data were used for the mainline freeway sections, and 1993 and 1994 traffic data collected for the Alternatives to Replacement of the Embarcadero Freeway EIS/EIR were used for the ramps.

FHWA and Caltrans have approved the proposal to construct a 11,526 foot (3,514 m) new east span of the SFOBB. The new span would be north of the existing east span and the old existing structure would be dismantled (FHWA 2001). This alternative involves constructing a new bridge with two side-by-side bridge decks, each consisting of five lanes. Approximately 1,968 feet (600 m) east of the tunnel on Yerba Buena Island the alignment would transition from a double-deck viaduct structure to two parallel structures. The eastbound on-ramp to the SFOBB would be replaced with a ramp that provides a standard acceleration lane as opposed to the current stop-sign design, resulting in improved eastbound access to the bridge from Yerba Buena Island. The replacement alternative would not increase the SFOBBs vehicular capacity. Shoulders would be added and may improve traffic operations but congestion is unlikely to be affected (Caltrans and FHWA 2001).

Freeway Volumes

Level of Service

Operating characteristics of roadway facilities are described using the term level of service (LOS). LOS designations are a qualitative description of a facility's performance, based on travel speeds, delays, and density (number of cars per unit of lane). The designation for a facility could range from LOS A, representing free-flow conditions, to LOS F, representing severe traffic congestion (Transportation Research Board 1994). See Appendix F, SFOBB/I-80 Analysis and Intersection

Analysis, for a detailed description of the LOS operating conditions for the various transportation facilities.

Weekday SFOBB/I-80 Traffic Volumes

Westbound traffic on the SFOBB/I-80 is regulated by metering lights west of the toll plaza in Oakland during the peak periods. Two inside and two outside high occupancy vehicle (HOV) bypass lanes for carpools and vanpools with three or more passengers and buses are available upstream of the metering lights on weekdays between 6:00 and 10:00 AM and between 3:00 and 6:00 PM. In the eastbound direction, buses approaching the bridge from San Francisco's Transbay Terminal also receive priority treatment in the form of a dedicated lane that merges downstream with the Essex Street on-ramp traffic, and the Sterling Street on-ramp is dedicated to HOV vehicles only on weekdays between 3:30 and 7:00 PM.

During the peak hour of the peak period between 6:00 AM and 9:00 AM, the peak direction (westbound) volume is approximately 10,800 vehicles per hour (vph), and the nonpeak direction (eastbound) volume is approximately 8,400 vph (see Appendix F, Freeway Volumes, for 24-hour volumes and average daily vehicle trips). During the peak period of 3:00 PM to 7:00 PM, the peak traffic flow in the eastbound direction is approximately 10,300 vph. Similar to the AM eastbound direction, the PM peak westbound volume is approximately 8,500 vph. During the nonpeak period of 11:00 AM to 2:00 PM, the traffic volumes drop to approximately 6,500 to 7,000 vph for both the eastbound and westbound directions, resulting in an available capacity on the SFOBB/I-80 of approximately 3,500 to 4,000 vph (total SFOBB/I-80 capacity is 10,500 vph) (Caltrans 1993).

Weekend SFOBB/I-80 Traffic Volumes

In the westbound direction of I-80, the Saturday (weekend) peak period of 10:00 AM to 1:00 PM has a volume of approximately 8,900 vph. In the eastbound direction, the weekend peak period of 5:00 PM to 7:00 PM has a volume of approximately 9,600 vph. In both directions, the peak period occurs later in the morning and afternoon than during the weekday peak periods, and additional traffic volume can be accommodated during all times on the mainline because of the lower traffic volumes during all weekend periods.

Congestion Management Network (Weekday SFOBB/I-80 Traffic Volumes)

The segment of the SFOBB/I-80 between San Francisco's Fremont Street and NSTI is within the San Francisco Congestion Management Network. The LOS on this segment (1993 conditions) during the AM peak period was LOS E in the westbound direction and LOS D in the eastbound direction, while during the PM peak hour it was LOS F in the westbound direction and LOS E in the eastbound direction (SFTA 1993). The segment of the SFOBB/I-80 between the toll plaza and the Alameda and San Francisco county line is within the Alameda County Congestion Management Program's network. The LOS on this segment during the PM peak period (1993 conditions) was LOS E in both the westbound and eastbound directions. In 1995, the eastbound segment continued to operate at LOS E, while the westbound segment operated at LOS F (County of Alameda, Congestion Management Agency 1995).

Ramp Volumes

The morning peak hour for traffic on the NSTI ramps is different from the mainline peak hour. In both the westbound and eastbound direction, the morning peak hour for the ramps is between 6:00 and 7:00 AM (with a volume of approximately 470 vph for the westbound off-ramp and approximately 170 vph for the eastbound off-ramps), while the mainline peak period is between 7:00 AM and 9:00 AM (see Appendix F, Ramp Volumes). Similarly, the evening peak for the ramps is earlier than the mainline; the NSTI peak is between 3:00 PM and 4:00 PM, while the mainline peak period is between 4:00 PM and 7:00 PM. The total volume during the peak hour for the two westbound on-ramps is approximately 225 vph, while the volume for the eastbound on-ramp is approximately 310 vph (Caltrans 1994).

Ramp Operations

The SFOBB and NSTI ramps, built in 1937, and especially the westbound and eastbound on-ramps, are substandard by today's requirements. The on-ramp merging distance ranges between approximately 30 and 200 feet (9 and 61 m), far below the Caltrans standard of approximately 600 feet (183 m). The off-ramps are also substandard, primarily in the deceleration lengths provided between the exit point and the first curve (approximately 150 feet [46 m] [existing] versus 300 feet [91.5 m] under today's standard). The radii of the ramps, ranging from approximately 30 feet (9 m) to 100 feet (30.5 m), are less than the desirable 150-foot (46 m) radius currently specified by Caltrans for freeway ramps (Caltrans 1995). The off-ramps do not pose substantial constraints to auto traffic operations but could affect the operation of trucks and buses.

Table 3-9 presents a summary of ramp information and identifies the radius of the curve at the tightest point, the approach grade to or from the ramp, and the number and primary causes of accidents reported between January 1992 and April 1995, when use of NSTI by Navy was ending, that is, when the base was not at full activity levels.

Traffic volumes on the Macalla Road westbound on-ramp on the east side of Yerba Buena Island are low, generally less than 50 vph. The westbound on-ramp on the west side of the island carries approximately 140 vph at its peak between 3:00 PM and 4:00 PM. Due to the lower demand in the westbound direction, queues are not substantial during peak periods. These volumes and queues were based on military (former Navy and Coast Guard) use of the island.

The merging distance for the eastbound on-ramp to Oakland cannot be fully utilized due to the bridge piers that severely restrict sight distance for drivers trying to get onto the bridge. This eastbound on-ramp to the SFOBB/I-80 has an effective merging distance of less than approximately 50 feet (15 m). This is substantially below the design standards (600 feet [183 m]) and severely reduces the number of vehicles that can access the SFOBB/I-80. Based on field observations during site visits, a queue of approximately 1,000 feet (305 m) was reported on Yerba Buena Island during the peak period of 3:00 PM to 4:00 PM.

Table 3-9
Summary of Ramp Information

Ramp	Radius	Approach Grade	No. of Accidents January '92 to April '95
westbound on-ramp east side of tunnel	60 feet	6.0%	0
westbound on-ramp west side of tunnel	90 feet	6.6%	7 rear-end collisions
westbound off-ramp east side of tunnel	30 feet	10.0%	1
eastbound off-ramp west side of tunnel	53 feet	7.6%	13 hit object collisions (alcohol-related)
eastbound off-ramp east side of tunnel	65 feet	14% at steepest location crossing over tunnel	1
eastbound on-ramp east side of tunnel	100 feet	14% at steepest location crossing over tunnel	14 rear-end collisions

Note: Caltrans Design Manual indicates that the "ramp profile grades should not exceed 8 percent with the exception of descending entrance ramps and ascending exit ramps, where a 1 percent steeper grade is allowed. However, the 1 percent steeper grade should be avoided on descending loops to minimize overdriving of the ramp."

Source: Caltrans 1994.

Freeway Operations

For the mainline section of I-80 between NSTI and San Francisco, travel speeds were used as the evaluation criteria. During the AM peak hour, travel speeds are approximately 35 mph (56 km/hour) in the westbound direction approaching downtown San Francisco, indicating congested travel conditions on the mainline section. Travel speeds in the eastbound direction approaching Treasure Island are approximately 52 mph (84 km/hour).

During the PM peak hour, the average mainline travel speeds are somewhat lower than during the AM peak hour. Travel speeds in the westbound direction are similar to AM peak hour conditions (approximately 33 mph [53 km/hour]), reflecting the congestion on I-80/US 101 that extends upstream onto the SFOBB/I-80. In the eastbound direction, the travel speeds are approximately 47 mph (75.5 km/hour), indicating congested operating conditions (San Francisco 1994b).

Local Intersection Operations

Traffic volumes on NSTI are low throughout the day. Based on field observations, local intersections on Treasure Island and Yerba Buena Island operate with minimal or no delay (LOS A) during both the AM and PM peak hours.

3.5.3 Public Transportation

San Francisco is a transit hub served by local and regional operators throughout the Bay Area. Limited service is provided to Treasure Island and Yerba Buena Island. The following describes the service provided by Muni, the school bus service for students between NSTI and San Francisco, and the regional ferry service.

Muni Line 108 Service

Muni currently operates the only public transit service to Treasure Island and Yerba Buena Island. This service is designated as Line 108 (Figure 3-8). Muni assumed responsibility and operation of the "T" Route in December 1996 from the Alameda-Contra Costa Transit District (AC Transit), which formerly ran the T service between Alameda and San Francisco via Treasure Island, and renamed it Line 108. Line 108 now operates bidirectional service between Treasure Island and Yerba Buena Island and the Transbay Terminal in San Francisco only; direct service is no longer provided between NSTI and the East Bay. Bus shelters are provided at a number of stops on the islands.

The Line 108 service operates at 40-minute frequencies in the morning and afternoon peak periods. Between 10:00 AM and 2:00 PM, the service operates every 60 minutes. The last run leaves San Francisco for Treasure Island at 9:30 PM. There is no service on Saturdays, Sundays, or holidays. There are 18 bus trips per weekday to the island from the San Francisco Transbay Terminal. Weekday daily ridership is about 120 one-way passenger trips (San Francisco MUNI 1997).

School Bus Service

The SFUSD provided transportation for students who lived in San Francisco and on Treasure Island and attended the Treasure Island Elementary School and for students that lived on the island and attended middle and high schools in San Francisco. Approximately 240 students were transported to and from the elementary school on Treasure Island. Five buses were used in this service. Five buses arrived on the island during the 7:00 AM hour, two during the noon hour, and five during the 2:00 PM hour.

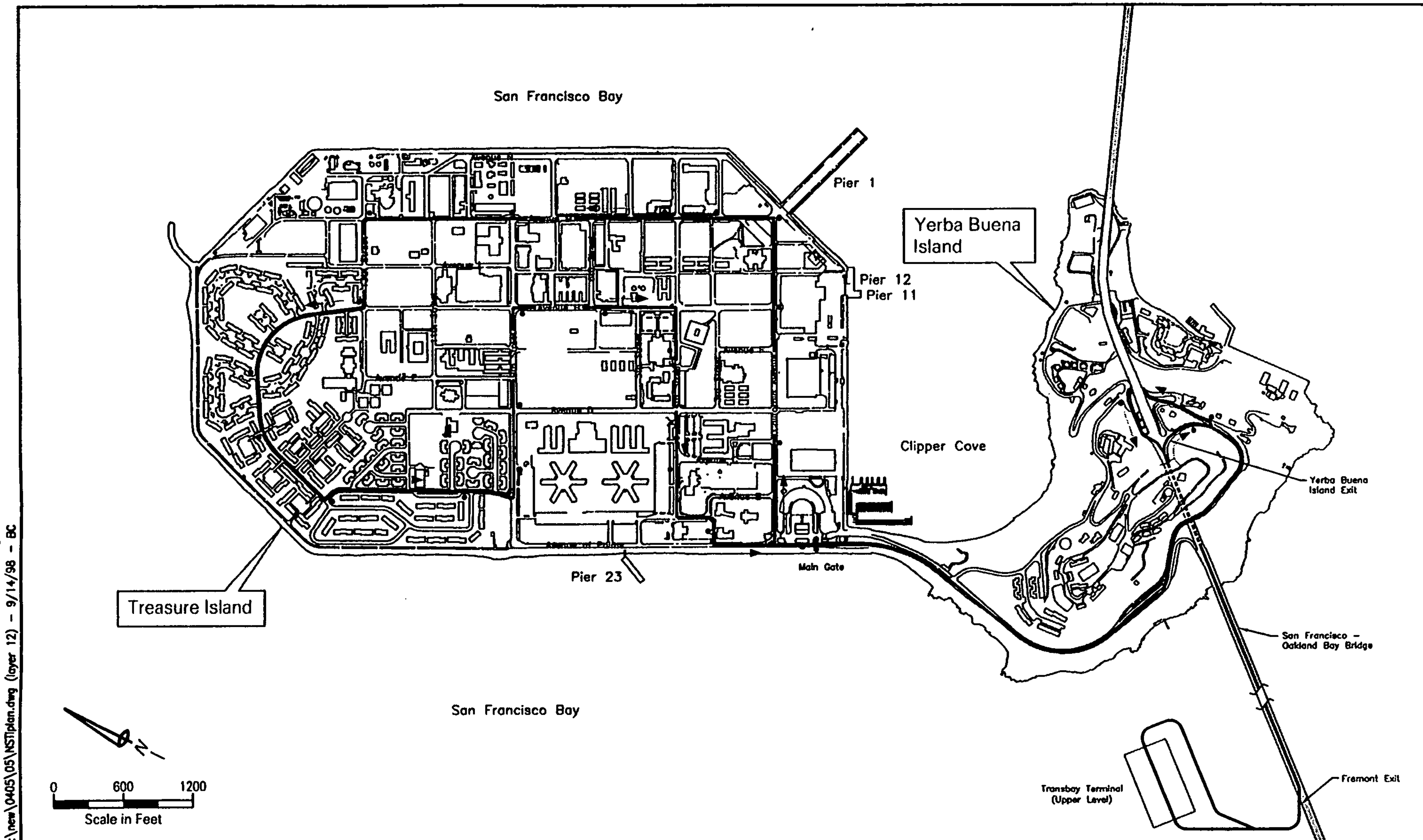
Approximately 228 middle and high school students were transported from the island to various school locations in San Francisco. Six buses accessed the island between 7:00 AM and 8:00 AM, and one accessed the island around 9:00 AM. Five buses accessed the island in the 3:00 PM hour, three in the 4:00 PM hour, and two in the 5:00 PM hour. In addition, seven elementary and three high school special education students were transported at various times of the day on and off the island in vehicles equipped with wheelchair lifts.

Other Land-based Transit Services

Airport shuttle services, taxis, and other private transportation services access the island on an as-called basis. There are no schedules for these services or statistics outlining the frequency they are used.

Ferry Service

None of the regional ferry carriers currently stop at Treasure Island or Yerba Buena Island. The Red and White Fleet provided service following the Loma Prieta Earthquake in 1989 when there was no bridge access to the East Bay. In late March 1995, Harbor Bay Maritime initiated a shuttle service between Naval Air Station Alameda and Treasure Island. Within the first 2 weeks of service, approximately 40 passengers a day were carried on two AM peak and two PM peak trips.



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Muni line 108 was established in December 1996 to service Treasure Island. It is currently the only public transit service to Treasure Island.

Legend:

• Bus Stop

—— Route

Muni Line 108

Naval Station Treasure Island, California

Figure 3-8

Source: Developed by Korve 1997

The Coast Guard Station on the southeast side of Yerba Buena Island has both fixed piers and floating docks. On Treasure Island, piers 11 and 12 consist of wooden decking at the parking lot level, supported by deteriorating wood piles. A narrow gangway that does not meet the Americans with Disabilities Act (ADA) access requirements connects the fixed piers to anchored floating barges (no pilings), which are attached to the pier. The piers cannot be used by vessels because they barely extend beyond the riprap shore. Vessels tie up to the floating barges.

Pier 1 is a fixed concrete pier 930 feet (283 m) long by 125 feet (38 m) wide that is in good condition. Large vessels can tie up to Pier 1. However, the vessels must have a long gangway suitable of reaching the 10- to 13-foot (3- to 4-m) freeboard (height of the deck above the water) of this pier at mean low tide. None of the ferries presently operating in the Bay have this capability, although several large excursion vessels might be able to use the facility during some tidal conditions with a second deck gangway. The current service uses a float with a gangway attached to Pier 1.

There are six active ferry routes in the Bay Area, all of them connecting the San Francisco downtown to Sausalito, Tiburon, Larkspur, Vallejo, Alameda and Oakland, and Bay Farm Island (Figure 3-9). Several of the routes operate to the Fisherman's Wharf/Pier 39 area during off-peak hours. This includes the Sausalito and Tiburon service, and the Vallejo and Alameda and Oakland services. Besides these routes, there is a recreation service providing trips to Angel Island State Park from Tiburon and from San Francisco's Fisherman's Wharf and Pier 39. A summary description of each of the routes and existing conditions at the ferry terminals is included in Table 3-10 and Table 3-11. Of these existing six routes, only the Alameda and Oakland to San Francisco route would be affected by the proposed action and is described in more detail below.

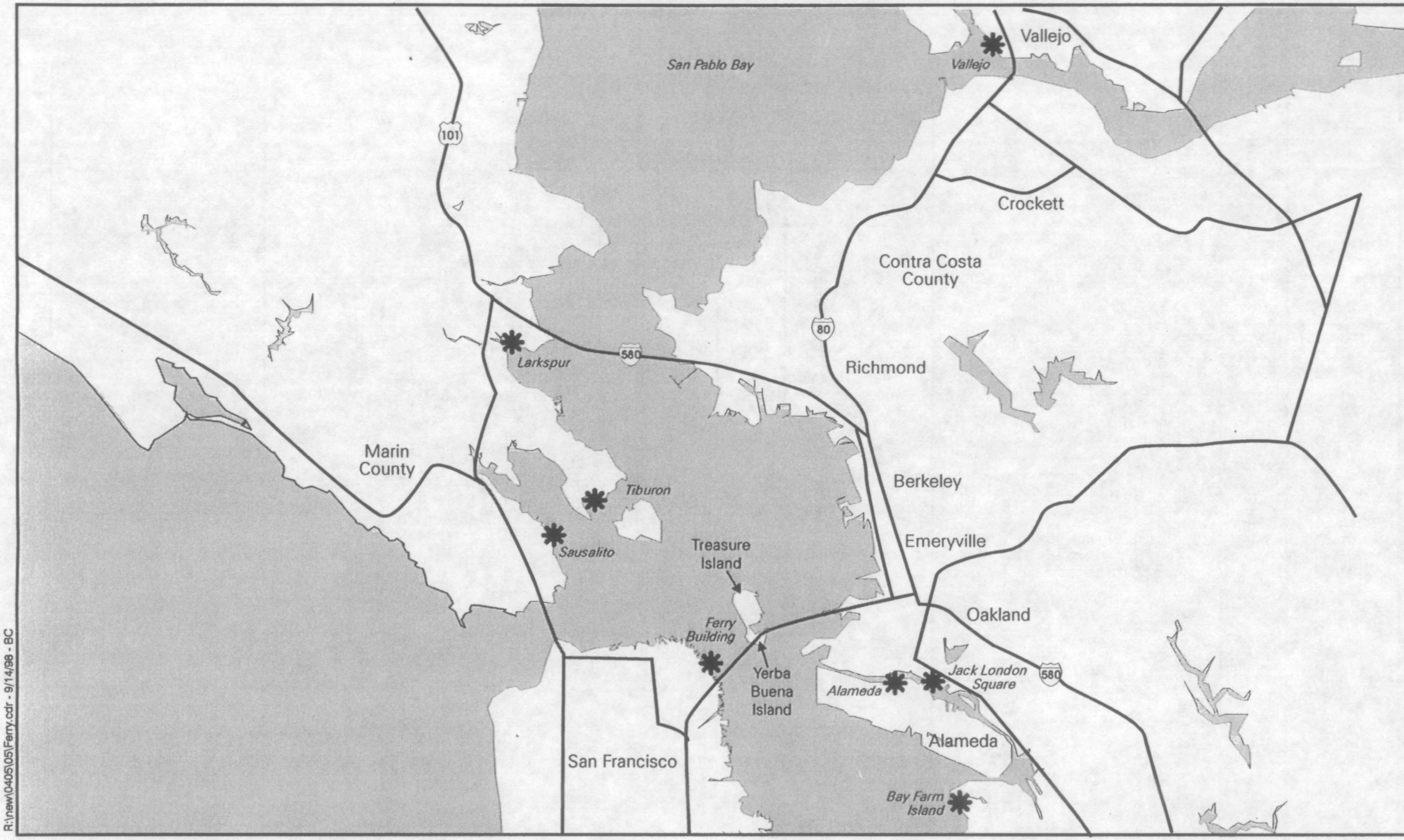
San Francisco Ferry Building and Pier ½

This location is the primary ferry docking facility in San Francisco. The Golden Gate Bridge, Highway, and Transportation District has a two-berth terminal behind the building with a sheltered waiting room and hydraulic ramps. A small driveway on the south side of the Ferry Building provides vehicular access for autos and shuttle vans; buses provide connecting service along The Embarcadero in front of the building.

All other ferry services use the floating dock at Pier ½, between the north end of the Ferry Building and Pier 1. The parking spaces north of the Ferry Building are reserved for long-term users (Port of San Francisco parking permit required). Transit service is available at the foot of Market Street approximately 800 feet (244 m) from the terminals, with access to many Muni lines. Muni Metro and BART are available at the corner of Market and Drumm Streets, about two blocks away. An Amtrak bus connection also is provided at the Ferry Building, providing service to and from Amtrak's Emeryville and Jack London Square stations.

Alameda-Oakland to San Francisco

The Alameda terminal at the foot of Main Street has approximately 250 parking spaces for ferry patrons, and the Jack London Square facilities have approximately 1,100 undedicated parking spaces. Both Oakland and Alameda have floating docks with covered, accessible piers and gangways.



There are six active ferry routes in the Bay Area, all of them connecting to the San Francisco Ferry Building. The Jack London Square terminal in Oakland and Alameda terminal are considered one route.

LEGEND:

✱ Ferry Terminal Site

Ferry Terminal Locations

Bay Area, California

Figure 3-9

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Table 3-10
Profile of Existing Bay Area Ferry Services

Route	Operator	Daily Ferry Round-trips (Weekday)	1994 Annual Riders
Larkspur - San Francisco Ferry Building	Golden Gate Transit	13 – 15	940,000
Sausalito – San Francisco Ferry Building	Golden Gate Transit	9 – 11 (seasonal)	465,000
Sausalito – San Francisco Ferry Fisherman's Wharf	Red & White *	4	354,000
Tiburon – San Francisco Ferry Ferry Building / Fisherman's Wharf	Red & White *	9	301,000
Vallejo - San Francisco Ferry Building / Fisherman's Wharf	Blue & Gold	4	209,000
Alameda/Oakland - San Francisco Ferry Building / Fisherman's Wharf	Blue & Gold	12	278,000
Alameda (Bay Farm) – San Francisco Ferry Building	Harbor Bay Maritime	6	94,000

* Operator changed to Blue and Gold in 1997

Source: San Francisco 1995a.

Table 3-11
Traffic Conditions and Parking Supply at Existing Ferry Terminals

Location	Traffic Conditions[1]		Parking Supply	Parking Occupancy	
	Weekday (PM)	Weekend (Midday)		Weekday (PM)	Weekend (Midday)
Larkspur	heavy	medium	dedicated supply of 1,150 spaces park & ride: 20 spaces 8 bus bays	85-90%	15%
Sausalito	heavy	heavy	around 265 spaces - not dedicated for ferry use	50%	100% (not all ferry passengers)
Tiburon	medium	medium	limited private parking (about 220 spaces) located 300 to 500 feet from dock - not dedicated for ferry use	50%	40-50%
Vallejo	light	light	dedicated supply of 500 spaces	50%	5-10%
Oakland – Jack London Square	medium	medium	Jack London Square area lot and garage total long-term supply of 1,100 spaces - not dedicated for ferry use	80-90% (15% ferry passengers)	10%
Alameda - Main St.	medium	light	dedicated supply of 250 spaces	70-80%	10%
Alameda - Bay Farm Island	light	-	dedicated supply of 250 spaces	30-40%	-
San Francisco - Pier 39 / Fisherman's Wharf & Pier 43 ½ / Fisherman's Wharf	light	medium	total supply of 1,525 spaces directly adjacent to the piers - not dedicated for ferry use	50-60%	70-80%
San Francisco - Pier ½ / Ferry Building	heavy	heavy	no ferry parking available	N/A	N/A

[1]Traffic conditions are defined as follows:
Light: low to moderate traffic volumes on roadway, with minimal delays at intersections. Medium: higher traffic volumes on roadways, with some waiting at intersections. Heavy: roadways are crowded, with moderate to long delays at intersections.
N/A = not applicable

Source: San Francisco 1995a; revised by Korve 1997.

The 5-mile (8-km) route connecting Jack London Square on the Oakland Estuary with the Ferry Building and Pier 39 (off-peak) includes a stop at a terminal at the foot of Main Street adjacent to the former Alameda Naval Air Station. Approximately 2 miles (3 km) of the route are in the estuary, and 3 miles (5 km) are in open water. Travel time from Oakland to San Francisco is approximately 22 to 25 minutes with the Alameda stop. Travel from the Alameda Terminal to the Ferry Building is about 12 to 15 minutes. A 12-daily round-trip schedule is operated on weekdays, hourly during peak periods, and every other hour during the off-peak. Weekend service includes six to eight ferry round-trips, depending on the season.

Ridership has grown on this route, with 278,000 passenger trips in 1994 compared to about 202,000 in 1990. The introduction of a larger faster vessel, allowing more ferry and passenger trips, led to a 24 percent increase in ridership. Weekday ridership averages 800 to 900 passengers per day, with most commuters traveling between Alameda and San Francisco. Off-peak travelers use the Oakland Terminal to a greater degree. Summer weekend patronage can be upwards of 1,000 passengers a day, and both weekend and afternoon peak ferry trips from San Francisco often approach or exceed the vessel capacity of 250 people.

In Alameda, AC Transit provides a dedicated shuttle (Route 325) between central Alameda and the ferry terminal. The Oakland Terminal, at the foot of Clay Street, uses the Port of Oakland garage one block from the terminal. A number of AC Transit routes provide service within 2 blocks of the ferry terminal, including connections to the 12th Street City Center BART Station, approximately 12 blocks from the terminal. The City of Oakland also operates a midday shuttle service on Broadway, connecting downtown Oakland, including the 19th and 12th street BART stations, to Jack London Square during weekdays.

3.5.4 Pedestrian and Bicycle Circulation

Treasure Island

There are no designated bicycle facilities on Treasure Island, but there is a sidewalk network throughout the island. Sidewalks are provided on at least one side of all the roads on the island, with some streets having sidewalks on both sides. Sidewalks and crosswalks meet ADA standards in nonresidential areas but are not ADA-accessible in residential areas. In addition, crosswalks are available at all intersections. In most cases, landscaping separates the sidewalk and the street curb. On several streets, the sidewalk is not aligned along the road, and the sidewalk distance from the curbside varies from block to block.

Yerba Buena Island

Sidewalks are not provided except on one side of Macalla Road between Treasure Island Road and the Macalla Court former Navy housing. Throughout Yerba Buena Island, concrete stairs provide pedestrian access between facilities and roadways. There are no designated bicycle facilities, but several of this island's narrow roadways are closed to vehicle traffic.

3.5.5 Parking

Treasure Island

On most of the major and minor collector roadways on Treasure Island, 90-degree parking is available, except on the perimeter roads and California Avenue. Parking restrictions are in effect at a number of industrial and retail locations on the island that have allocated parking spaces. Other parking restrictions include painted red zones near bus shelters, most residential areas, and collector streets, such as California and Avenue of Palms. Figure 3-10 presents the locations where on-street parking is allowed.

In the residential areas, covered and uncovered off-street parking spaces are available. Some housing units have garages. The older apartments have parking stalls. On the rest of the island, off-street parking lots are available (Figure 3-10).

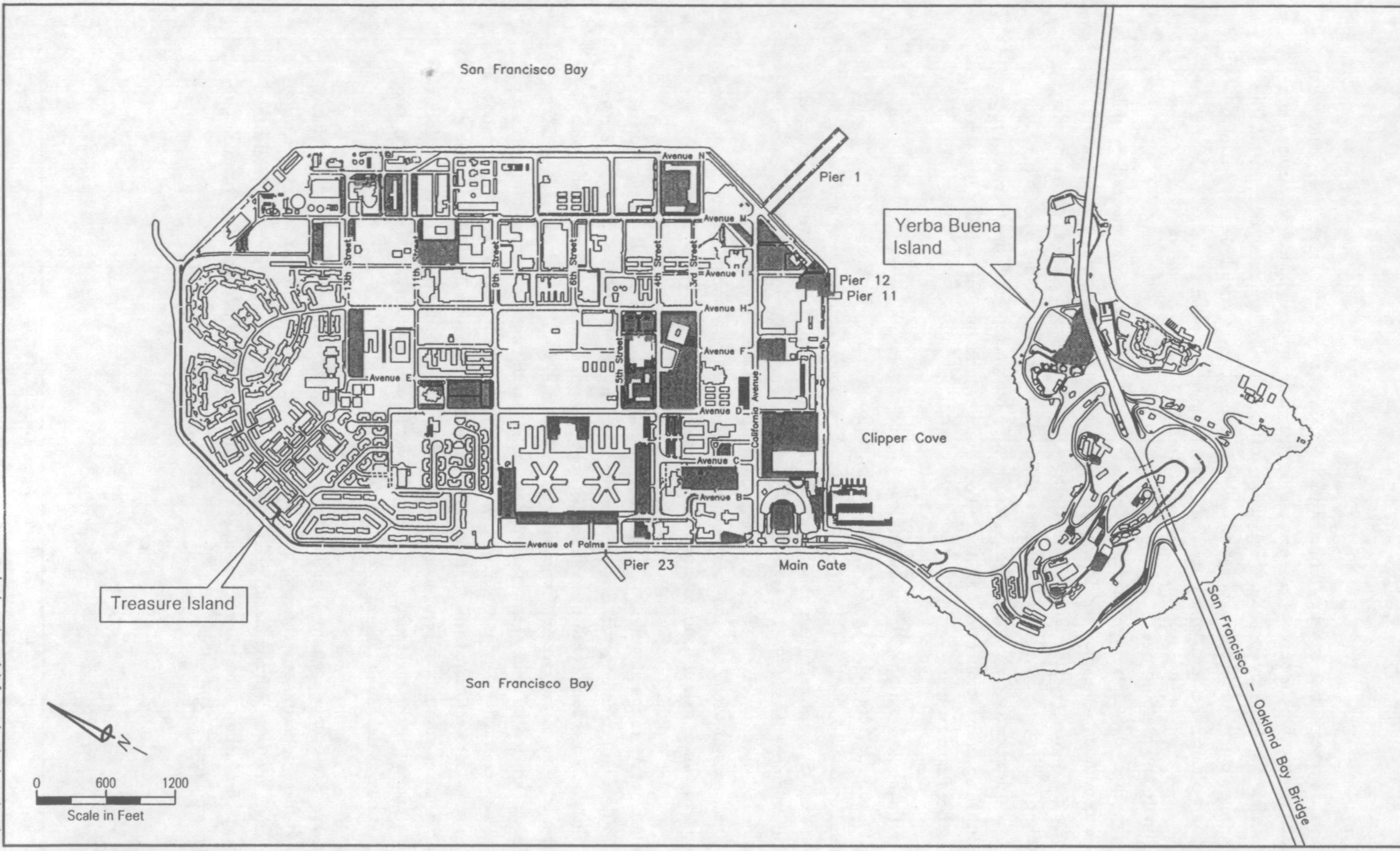
A public viewing area, with views of the downtown San Francisco skyline, is directly outside the base entrance. There are approximately seven parking spaces, including one space for disabled persons, and a yellow zone for bus parking.

Yerba Buena Island

On-street parking is not permitted on Yerba Buena Island roads. Residential areas include off-street parking (Figure 3-10).

3.5.6 Goods Movement

Freight service deliveries to Treasure Island are primarily by truck. The eastbound off-ramp at the east side of the tunnel has a 12-foot (3.5-m) height restriction.



Parking is available on most of the major roadways on Treasure Island, except on the perimeter road and California Avenue. Limited off-street parking is available on Yerba Buena Island.

Legend:

On-street Parking

Off-street Parking

Parking at NSTI

Naval Station Treasure Island, California

Figure 3-10

Source: DON 1988b

3.6 AIR QUALITY

Air pollutants are characterized as being "primary" or "secondary" pollutants. Primary pollutants are those emitted directly into the atmosphere (e.g., carbon monoxide, sulfur dioxide, lead particles, and hydrogen sulfide). Secondary pollutants are those formed through chemical reactions in the atmosphere (e.g., ozone, nitrogen dioxide, and sulfate particles); these chemical reactions usually involve primary pollutants, normal constituents of the atmosphere, and other secondary pollutants.

3.6.1 Climate and Meteorology

The San Francisco Bay Area experiences a Mediterranean-type climate, characterized by mild temperature conditions. Weather conditions are monitored at major airports and a few other locations in the Bay Area (WeatherDisc Associates 1990a, 1990b, 1990c, 1990d). Daily temperature variations are typically 44 to 58 degrees Fahrenheit (°F) during the winter and 54 to 66 °F during the summer. Annual precipitation averages about 20 inches (51 centimeters [cm]) per year, with most precipitation falling from October through April. Poor visibility, primarily due to heavy fog, is most likely during late fall and winter.

3.6.2 Applicable Regulations, Plans, and Policies

The federal Clean Air Act (42 U.S.C. §§ 7401-7671q, as amended in 1977 by Pub. L. 95-95, 91 Stat. 685-796 and Pub. L. 95-190, 91 Stat. 1399-1404) requires the adoption of national ambient air quality standards (NAAQS) to protect the public health, safety, and welfare from known or anticipated effects of air pollution. The NAAQS have been updated occasionally. Current standards are set for sulfur dioxide (SO_2), carbon monoxide, nitrogen dioxide (NO_2), ozone, particulate matter equal to or less than 10 microns in size (PM_{10}), fine particulate matter equal to or less than 2.5 microns in size ($PM_{2.5}$), and lead. These federal standards are shown in Table 3-12.

The Clean Air Act Amendments of 1990 (Pub. L. 101-549, 104 Stat. 2399 codified as amended at 42 U.S.C. §§ 7401-7671q) require the US Environmental Protection Agency (EPA) to promulgate rules to ensure that federal actions conform to the appropriate state implementation plan (SIP). These rules, known together as the General Conformity Rule (40 C.F.R. §§ 51.850-51.860 and 40 C.F.R. Part 93), require any federal agency responsible for an action to determine if its action conforms with pertinent guidelines and regulations. Certain actions are exempt from conformity determination, including those actions associated with transfers of land or facilities where the federal agency does not retain continuing authority to control emissions associated with the properties. Federal actions also may be exempt if the projected emissions rates would be less than specified emission rate thresholds, known as de minimis limits.

The Clean Air Act defines a group of pollutants called "toxic air contaminants" or "air toxics." Exposure to these pollutants is a concern, as they can cause or contribute to cancer, birth defects, genetic damage, and other adverse health effects. The source and effects are generally local rather than regional. Evaluation is based on case studies, not standards for concentrations. Examples of air toxics include benzene and asbestos.

Table 3-12
Federal Ambient Air Quality Standards

Pollutant	Symbol	Averaging Time	Standard, as parts per million (ppm) by volume National	Standard, as micrograms per cubic meter (μg/m³) National	Violation Criteria National
Ozone	O_3	1 Hour	0.12	235	If exceeded on more than 3 days in 3 years
		8 Hours	0.08	157	If exceeded by the mean of annual 4th highest daily values for a 3-year period
Carbon Monoxide	CO	8 Hours	9.0	10,000	If exceeded more than 1 day per year
		1 Hour	35	40,000	If exceeded more than 1 day per year
Inhalable Particulate Matter	PM_{10}	Annual Geometric Mean[1]	---	---	---
		Annual Arithmetic Mean[2]	---	50	If exceeded as a 3-year single station average
		24 Hours	---	150	If exceeded by the mean of annual 99th percentile values over 3 years
Fine Particulate Matter	$PM_{2.5}$	Annual Arithmetic Mean	---	15	If exceeded as a 3-year spatial average of data from designated stations
		24 Hours	---	65	If exceeded by the mean of annual 98th percentile values over 3 years
Nitrogen Dioxide	NO_2	Annual Average	0.053	100	If exceeded
		1 Hour	---	---	---
Sulfur Dioxide	SO_2	Annual Average	0.03	80	If exceeded
		24 Hours	0.14	365	If exceeded more than 1 day per year
		3 Hours	0.5	1,300	If exceeded more than 1 day per year
		1 Hour	---	---	---
Lead Particles	Pb	Calendar Quarter	---	1.5	If exceeded more than 1 day per year
		30 Days	---	---	---
Sulfate Particles	SO_4	24 Hours	---	---	---
Hydrogen Sulfide	H_2S	1 Hour	---	---	---
Vinyl Chloride	C_2H_3Cl	24 Hours	---	---	---

Notes: All standards except the national PM_{10} and $PM_{2.5}$ standards are based on measurements corrected to 25 degrees Celsius and 1 atmosphere pressure.
The national PM_{10} and $PM_{2.5}$ standards are based on direct flow volume data without correction to standard temperature and pressure.
Decimal places shown for standards reflect the rounding precision used for evaluating compliance.
Except for the 3-hour sulfur dioxide standard, the national standards shown are the primary (health effects) standards.
The national 3-hour sulfur dioxide standard is a secondary (welfare effects) standard.
EPA adopted new ozone and particulate matter standards on July 18, 1997; the new standards became effective on September 16, 1997.
The national 1-hour ozone standard will be rescinded for an area when EPA determines that the standard has been achieved in that area.
Previous national PM_{10} standards (which had different violation criteria than the September 1997 standards) will remain in effect for existing PM_{10} nonattainment areas until EPA takes actions required by Section 172(e) of the Clean Air Act or approves emission control programs for the relevant PM_{10} state implementation plan.
Violation criteria for all standards except the national annual standard for $PM_{2.5}$ are applied to data from individual monitoring sites.
Violation criteria for the national annual standard for $PM_{2.5}$ are applied to a spatial average of data from one or more community-oriented monitoring sites representative of exposures at neighborhood or larger spatial scales, 40 C.F.R. Part 58.
The "10" in PM_{10} and the "2.5" in $PM_{2.5}$ are not particle size limits; these numbers identify the particle size class (aerodynamic equivalent diameters in microns) collected with 50 percent mass efficiency by certified sampling equipment. The maximum particle size collected by PM_{10} samplers is about 50 microns aerodynamic equivalent diameter; the maximum particle size collected by $PM_{2.5}$ samplers is about 6 microns aerodynamic equivalent diameter, 40 C.F.R. Part 53.

[1] The annual geometric mean is defined as the "nth" root of the product of "n" observations.
[2] The annual arithmetic mean is defined as the sum of "n" observations divided by the number of observations.

Sources: National Ambient Air Quality Standards (ARB Fact Sheet 39); 40 C.F.R. Parts 50, 53, and 58.

The regional authority for air quality matters is the Bay Area Air Quality Management District (BAAQMD), which promulgates rules and regulations that govern the permitting and enforcement processes for emitters of air pollutants. BAAQMD is also responsible for the preparation of the planning documents that guide the efforts necessary to achieve the NAAQS, as required by federal legislation. The principle planning document is the Clean Air Plan (CAP), which functions as that part of the SIP applicable to the BAAQMD. The current EPA-approved CAP was adopted by the BAAQMD in 1977. The 1994 SIP was amended in 1999 because of ozone violations in 1998. The 1999 SIP amendment anticipates achieving attainment status by 2003.

At the federal level, Title III of the Clean Air Act provides a program for the control of 189 Hazardous Air Pollutants (HAPs). The first stage of the program involves the promulgation of National Emissions Standards for HAPs (NESHAPs) to reduce HAP emissions from new and existing sources. Major sources will be required to implement Maximum Available Control Technology. Area sources will be required to implement general achievable control technology. This will be followed by a second phase in which residual risks will be evaluated, and further controls will be considered.

3.6.3 Regional and Local Air Quality

Bay Area

With respect to federal ambient air quality standards, specific geographic areas are classified by the EPA as either nonattainment, attainment, or unclassified for each pollutant. For most air pollutants, initial federal status designations are made as either nonattainment or unclassified. In the federal usage, the unclassified designation includes attainment areas that comply with federal standards and areas for which monitoring data are lacking. Unclassified areas are treated as attainment areas for most regulatory purposes. Federal attainment designations generally are used only for areas that change from a nonattainment status to an attainment status.

In June 1998, the San Francisco Bay Area was reclassified from an attainment/maintenance area to an unclassified nonattainment area for the federal one-hour ozone standard. The urbanized portions of the San Francisco Bay Area are categorized presently as attainment areas for the federal carbon monoxide standards. The Bay Area is currently designated as unclassified for the federal PM_{10} standard (BAAQMD 1998).

Ozone, carbon monoxide, and PM_{10} are the major pollutants of concern in the Bay Area and are monitored at a number of locations. The monitoring station at Arkansas Street in San Francisco (between US 101 and I-280, south of Sixteenth Street) is the major monitoring location for the city. Carbon monoxide levels in San Francisco also are monitored at the Bay Area Air Quality Management District (BAAQMD) office on Ellis Street. Table 3-13 summarizes recent (1990-1999) monitoring data for ozone, carbon monoxide, and PM_{10}.

Table 3-13
Summary of Recent Air Quality Monitoring Data for San Francisco Monitoring Stations

Monitoring Station	Air Quality Indicator	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
	OZONE										
San Francisco - Arkansas St.	Peak 1-hour value (ppm)	0.06	0.05	0.08	0.08	0.06	0.09	0.07	0.07	0.05	0.08
	Days above federal standard	0	0	0	0	0	0	0	0	0	0
	CARBON MONOXIDE										
San Francisco - Arkansas St.	Peak 1-hour value (ppm)	8.0	9.0	8.0	7.0	6.0	5.0	5.0	5.0	N/A	N/A
	Peak 8-hour value (ppm)	5.6	6.5	6.4	5.1	4.5	4.4	3.9	3.5	4.0	3.7
	Days above federal standard	0	0	0	0	0	0	0	0	0	0
San Francisco - Ellis St.	Peak 1-hour value (ppm)	12.0	14.0	10.0	10.0	8.0	9.0	9.0	8.0	N/A	N/A
	Peak 8-hour value (ppm)	6.9	8.4	7.4	6.9	5.4	5.5	5.6	5.8	5.7	3.8
	Days above federal standard	0	0	0	0	0	0	0	0	0	0
	INHALABLE PARTICULATE MATTER, PM_{10}										
San Francisco - Arkansas St.	Peak 24-hour value ($\mu g/m^3$)	165	109	81	69	93	50	71	81	52	78
	Annual geometric mean ($\mu g/m^3$)	27.8	29.7	27.6	25.1	24.7	22.1	21.4	22.5	20.1	N/A
	Annual arithmetic mean ($\mu g/m^3$)	34.0	34.9	31.6	28.8	28.0	24.9	24.3	25.0	N/A	N/A
	Number of 24-hour samples	61	60	61	61	61	61	61	61	61	61
	% of samples above federal standard	1.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Notes: ppm = parts per million by volume.
$\mu g/m^3$ = micrograms per cubic meter.
N/A = Data not available.
Federal 1-hour ozone standard is 0.12 ppm.
Federal 1-hour carbon monoxide standard is 35 ppm.
Federal 8-hour carbon monoxide standard is 9 ppm.
Federal PM_{10} standards: 50 $\mu g/m^3$, annual arithmetic mean; 150 $\mu g/m^3$, 24-hour average.
PM_{10} samples are collected approximately once every six days. Other pollutants are monitored continuously (except for instrument calibration and maintenance periods).

Source: CARB 1990-1997; CARB 2000.

The federal 1-hour ozone standard is 0.12 ppm. The federal 1-hour carbon monoxide standard is 35 ppm, while the federal 8-hour standard is 9.0 ppm. Federal standards for ozone and carbon monoxide were not violated in San Francisco from 1990 to 1999. Several violations of the federal ozone standard occurred in other parts of the Bay Area during 1995, 1996, and 1998 (in Contra Costa, Alameda, and Santa Clara counties) (CARB 1995, 1996; BAAQMD 1997; BAAQMD et al. 1999).

The federal 24-hour average PM_{10} standard is 150 $\mu g/m^3$. The federal PM_{10} standard has not been exceeded since 1990.

NSTI

Air emission sources at NSTI included stationary sources, where emissions from a source are generated at a fixed point, and mobile sources, where emissions from a source may be generated at multiple locations.

Stationary Sources

Stationary emission sources at NSTI included boilers, fuel storage tanks, gasoline dispensing islands, individual fuel dispensing facilities, a gasoline truck loading rack, an incinerator, a paint spray booth, a sandblasting machine, miscellaneous welding and sheet metal equipment, an electric heating oven, a fire fighter training facility, and a wastewater treatment system.

Approximately 82 percent of the stationary sources at NSTI operated under air quality permits issued by the BAAQMD. Exempt sources are those not requiring permits because the sources are indicated explicitly in relevant BAAQMD rules as exempt from permit requirements. The permit exemption can be based on equipment capacity, material usage, or emissions below certain thresholds. At closure of NSTI, Navy had 32 permitted stationary sources and 7 exempt sources (DON 1997j). As shown in Table 3-14, some permitted and exempt sources have been retained by Navy to meet DoD needs, some have been shut down, and some, based on Navy's preliminary allocation plan, may be transferred to the LRA.

Table 3-14
Stationary Emission Source Status at NSTI

Sources and Disposition Status	Number of Sources
Number of stationary sources	
With BAAQMD permits	32
Exempt from permit requirements	7
Total	**39**
Permitted sources banked by Navy to meet DoD needs	1
Permits or exempt sources that may be transferred to the LRA	13
Permitted sources shut down or transferred to other agencies	25

Source: DON 1997j.

The BAAQMD has an emissions banking program to credit facilities that close or reduce emissions from permitted sources. The emissions reduced may be deposited into the banking program as offsets to meet future permit requirements at DoD facilities. NSTI had one banking certificate as of February 1997.

Mobile Sources

Mobile sources at NSTI included private and government vehicles, heavy trucks, lawn maintenance equipment, ships, and aircraft. The mobile source emission inventory for NSTI documented 1992 emission levels from on-road vehicles and off-road mobile sources, such as marine vessels and ground support equipment. These emissions are shown in Table 3-15. Navy will hold these mobile source emissions in reserve and will make them available for future conformity determinations, according to Navy policy. Future uses may include transfer to satisfy conformity offset requirements at another DoD facility within the BAAQMD, such as Travis Air Force Base, use by another federal agency for conformity purposes, or reuse of NSTI where a federal approval is necessary subject to a conformity determination.

Table 3-15
NSTI Mobile Source Emissions Summary

Activity Type or Vehicle Class	Emissions in tons per year ROG	CO	NO_x	PM_{10}	SO_x
Privately Owned Vehicles	6.5	54.8	4.9	1.9	0.1
Government-owned Vehicles	0.9	7.6	1.6	0.2	0.0
Commercial Vehicles and Visitors	9.1	65.8	12.5	3.7	0.3
Off-road Equipment	1.7	6.6	0.5	0.0	0.0
Ship Operations	17.0[1]	20.5	88.5	3.0[2]	12.8
Totals	35.3	155.3	107.9	8.9	13.2

[1] Emissions provided as hydrocarbons
[2] Assumes all particulate emissions are equal to PM_{10}
ROG= reactive organic gases
CO= carbon monoxide
NO_x= nitrogen oxides
PM_{10}=inhalable particulate matter
SO_x= sulfur oxides

Source: DON 1996s.

3.7 NOISE

Most sound consists of a broad range of sound frequencies. Because the human ear is not equally sensitive to sound at all frequencies, noise is measured using the "A-weighted" decibel scale (dBA), which estimates the way the human ear responds to noise levels.

Average noise exposure over 24 hours often is presented as a day-night average sound level (L_{dn}) or a community noise equivalent level (CNEL). L_{dn} values are calculated from hourly equivalent noise level (Leq) values, with the Leq values for the nighttime period (10:00 PM to 7:00 AM) increased by 10 dB to reflect the greater disturbance potential from nighttime noises. Leq values are used to develop single-value descriptions of average noise exposure over various periods. CNEL values are very similar to L_{dn} values but include a 5 dB annoyance adjustment for the evening period (7:00 PM to 10:00 PM) in addition to the 10 dB adjustment for nighttime Leq values. Unless otherwise noted, L_{dn} and CNEL values are assumed to be based on dBA measurements.

3.7.1 Noise Standards

Community noise consists of a wide variety of sounds, some near and some far away, that vary over the 24-hour day. Scientists and planners have found that humans respond generally to the 24-hour variation in noise based on the total energy content of the sound over the day, with a greater sensitivity to noise in the evening and at night.

State of California

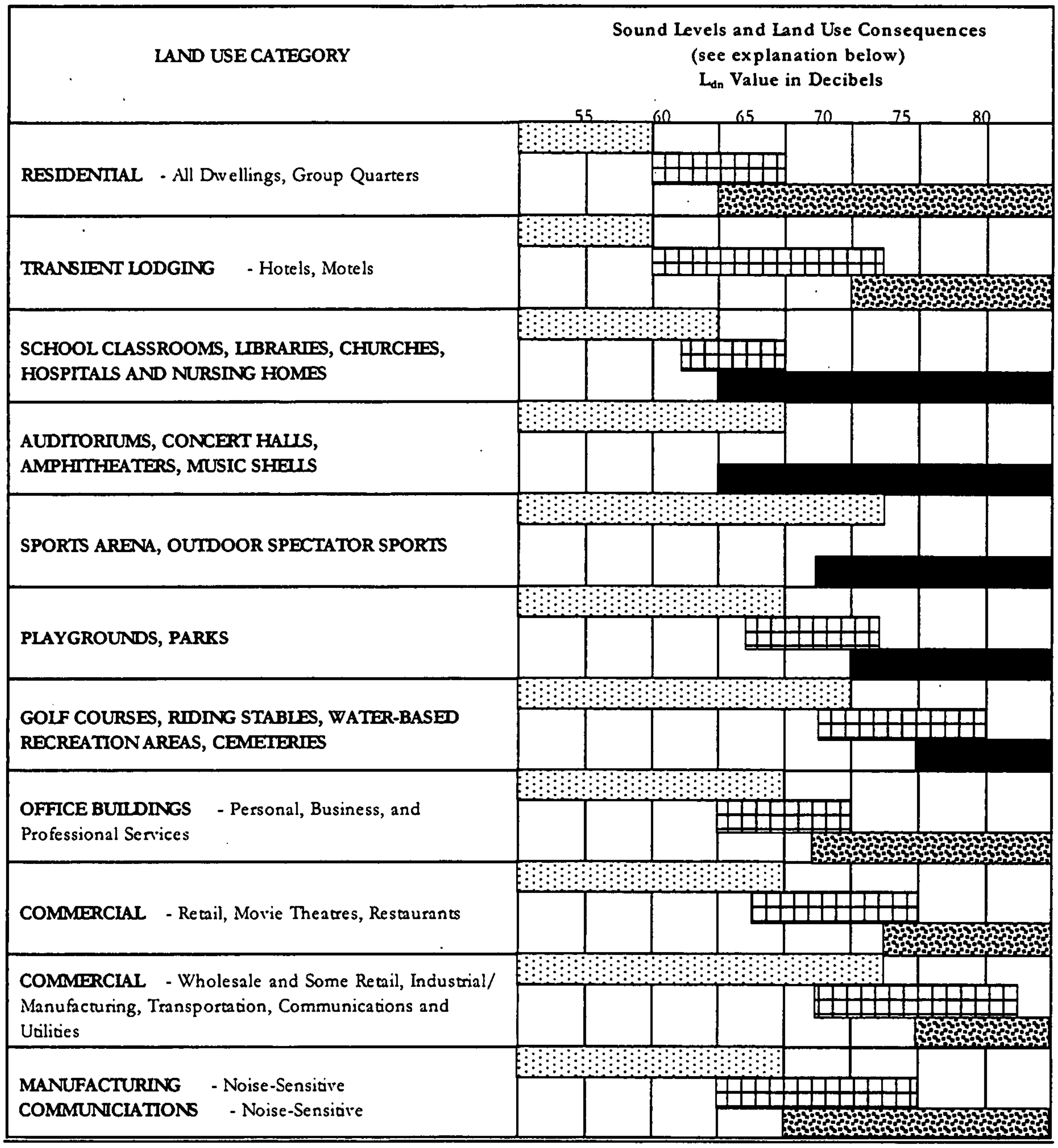
The California Department of Housing and Community Development has adopted noise insulation performance standards for new hotels, motels, and dwellings other than detached single-family structures (Cal. Code Regs. Title 25, § 4370). These standards require that hotels, motels, and multiple-unit dwellings be constructed so that outdoor noise sources will not cause interior noise levels to exceed an annual average CNEL value of 45 dB with the windows closed.

City and County of San Francisco

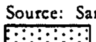
The noise element for the San Francisco General Plan is in the Environmental Protection Element. The noise element includes a land use compatibility chart (Table 3-16). An Ldn of 60 dB is identified as the upper limit of satisfactory noise conditions for residential and transient lodging land uses. Ldn levels of 65 to 70 dB are generally satisfactory for most office and retail commercial land uses.

In addition to general policy guidance provided by the General Plan, San Francisco has adopted a noise ordinance (Article 29 of the Police Code) to regulate noise from fixed sources, portable equipment, garbage collection equipment, construction activities, motor vehicle operation when not on a public street or highway, and other sources of unnecessary, excessive, or offensive noise. The noise ordinance contains general nuisance abatement provisions and specific noise limitations that vary by zoning district, time of day, and type of noise source. The general noise limitations specified in the noise ordinance are summarized in Table 3-17. The noise ordinance contains provisions for emergency work, emergency and safety signaling devices, and various types of impact tools, pavement breakers, and jackhammers. The ordinance provides for a variance process and a permit process for nighttime construction work.

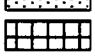
Table 3-16
Land Use Compatibility Chart for Community Noise



Source: San Francisco 1974, 1991.



Satisfactory, with no special noise insulation requirements.



New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design.

New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the

New construction or development should generally not be undertaken.

Table 3-17
Summary of Noise Limits Established in the San Francisco Noise Ordinance

Noise Source	Applicable Zoning District	Time Period	Noise Limits
Construction Equipment, Except Impact Tools	All Zoning Districts	7 AM – 8 PM	80 dBA at 100 feet; limit does not apply to impact tools and equipment
		7 AM – 8 PM	5 dBA above ambient at property line without special permit
Solid Waste Collection Equipment	All Zoning Districts	Any time	75 dBA at 50 feet
Off-highway Vehicle Use	Public Zones	Any time	
Off-highway Vehicles			70 dBA at 50 feet
Heavy Duty Vehicles			82 dBA at 50 feet
Motorcycles			77 dBA at 50 feet
Other Highway Vehicles			74 dBA at 50 feet
Fixed Noise Sources	Low- and Medium-density Residential Zones	7 AM – 10 PM 10 PM - 7 AM	55 dBA at property line 50 dBA at property line
	High-density Residential, Neighborhood Commercial, and Residential Commercial Zones	7 AM – 10 PM 10 PM - 7 AM	60 dBA at property line 50 dBA at property line
	Commercial Zones	7 AM – 10 PM 10 PM - 7 AM	70 dBA at property line 60 dBA at property line
	Light Industrial Zones	Any time	70 dBA at property line
	Heavy Industrial Zones	Any time	75 dBA at property line
Engine-powered Model Vehicle Use	Low- and Medium-density Residential Zones	7 AM – 10 PM 10 PM - 7 AM	55 dBA at 50 feet 50 dBA at 50 feet
	High-density Residential, Neighborhood Commercial, and Residential Commercial Zones	7 AM – 10 PM 10 PM - 7 AM	60 dBA at 50 feet 50 dBA at 50 feet
	Commercial Zones	7 AM – 10 PM 10 PM - 7 AM	70 dBA at 50 feet 60 dBA at 50 feet
	Light Industrial Zones	Any time	70 dBA at 50 feet
	Heavy Industrial Zones	Any time	75 dBA at 50 feet
	Public Zones	Any time	80 dBA at 50 feet

Note: The noise ordinance provides for certain exceptions and variances from these limits.
Source: San Francisco Police Code, Article 29.

3.7.2 Existing Treasure Island Noise Conditions

Most of Treasure Island is more than half a mile (0.8 km) from the open portions of the SFOBB. Consequently, wind, occasional aircraft fly-over, and local traffic are the primary noise sources affecting Treasure Island.

Limited ambient noise monitoring conducted at NSTI during 1986 showed afternoon noise levels of 55 to 58 dBA at each of four different locations on Treasure Island (DON 1987). The noise monitoring locations on Treasure Island included the east side of Building 257 at 9th Avenue and

Avenue E, the corner of 9th Avenue and Avenue B, in front of Building 369 (bachelor officer quarters), and the parking lot for Building 3.

Short-term (10-minute) noise measurements conducted in the parking lot of a film studio near piers 11 and 12 on Treasure Island in 1998 showed a measured noise level of 62 dBA. Noise modeling performed to predict the highest noise period and level for existing SFOBB traffic conditions indicated a peak noise-hour level of 67 dBA at this location (Caltrans and FHWA 1998).

3.7.3 Existing Yerba Buena Island Noise Conditions

SFOBB traffic is the dominant noise source affecting Yerba Buena Island. During 1986 noise monitoring at NSTI, a noise level of 67 dBA was recorded at the north end of Yerba Buena Island near Building 213 (Former Fire Station No. 2), about 300 feet (91 m) from the SFOBB (DON 1987).

Noise monitoring also was conducted on Yerba Buena Island during January 1996 (DON 1996h). One location was monitored for a 24-hour period, and 12 locations were monitored for 15-minute periods. The 24-hour monitoring site was at the eastern end of Yerba Buena Island, approximately 80 feet (24 m) below the SFOBB. The Ldn measurement at this site was 76 dB, with a peak 1-hour noise level of 74 dBA (3:00 PM to 4:00 PM) and a minimum 1-hour noise level of 65 dBA (4:00 AM to 5:00 AM). A noticeable decrease in noise levels occurred during the afternoon rush hour due to reduced vehicle speeds caused by traffic congestion.

Noise levels measured at the short-term monitoring sites depended on proximity to the SFOBB and the extent that terrain shielded the noise source. The noisiest areas were close to the east and west side tunnel openings. Noise levels during the late morning and early afternoon were generally 65 to 73 dBA for sites near the SFOBB and 52 to 58 dBA for distant locations or locations shielded by buildings or terrain.

Additional noise monitoring conducted in 1998 at Yerba Buena Island showed that with the exception of noise measurements taken on Coast Guard property south of the existing SFOBB, noise levels ranged from 66 to 74 dBA. Twenty-four hour noise measurements at Yerba Buena Island ranged from 59 dBA to 72 dBA (Caltrans and FHWA 1998).

3.8 BIOLOGICAL RESOURCES

Biological resources include plant and animal species and the habitats or communities in which they occur. This section is divided into discussions of regulatory considerations, vegetation, wildlife species, sensitive or special status species, sensitive habitats, essential fish habitats, and wetlands. The ROI for biological resources includes Treasure Island and Yerba Buena Island and surrounding aquatic habitat within a half-mile (0.8-km) radius. This radius of the surrounding bay was selected because it includes potential sensitive species and habitats that could be affected by NSTI reuse activities, such as dredging and ferry service to and from NSTI.

Biological data were collected from numerous sources, including the California Department of Fish and Game (CDFG) Natural Diversity Database (CDFG 2001), the California Native Plant Society (CNPS), and environmental documents cited in this section. Data from a November 1996 plant survey of Yerba Buena Island also is included in this section (DON 1996r). Field surveys were conducted on April 12, 22, and 30, May 13 and 28, June 17, and October 4, 18, and 20, 1996, and August 14, 2001, to identify the natural resources at NSTI and to check for the presence of sensitive species. Sensitive species are those that the US Fish and Wildlife Service (USFWS) has proposed for listing as endangered, threatened, or candidates for listing or as species of special concern. USFWS and National Marine Fisheries Service (NMFS) personnel were consulted regarding the likelihood of finding listed species at NSTI (see Appendix C for copies of correspondence).

3.8.1 Regulatory Considerations

Natural resources in the project area were evaluated in accordance with the applicable provisions of the following statutes, executive orders, permits, and regulations.

Endangered Species Act

The Endangered Species Act of 1973 (ESA) (16 U.S.C. §§ 1531-1534) protects plant and animal species (and their habitats) that are listed under the act as threatened or endangered. Species are listed as endangered if found to be in danger of extinction throughout all or a significant portion of their ranges. Threatened species are those likely to become endangered within the foreseeable future. The ESA also protects designated critical habitat for listed species. This consists of areas on which are found those physical or biological features essential to the conservation of the species, which may require special management considerations. The ESA requires federal agencies to consult with the USFWS or NMFS, as applicable, before initiating any action that may affect a listed species.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918 (MBTA) (16 U.S.C. §§ 703-712) is domestic legislation implementing international agreements made among the United States and England, Mexico, the former Soviet Union, and Japan to protect migratory bird populations. It protects species of birds that live, reproduce, or migrate within or across international borders at some point during their life cycles.

Marine Mammal Protection Act

The Marine Mammal Protection Act (MMPA) (16 U.S.C. §§ 1361-1421h) protects and conserves marine mammal species by placing a moratorium on harassing, hunting, capturing, or killing any marine mammal or attempting any of these. If a project proponent determines that an action could incidentally harass marine mammals, the proponent shall consult with either the USFWS or NMFS to determine if a permit to take a marine mammal is required.

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) (amended by the Sustainable Fisheries Act of 1996, Pub. L. 104-267, as codified in scattered sections of 16 U.S.C. § 1801 et seq.) applies to fisheries resources and fishing activities in federal waters that extend to 200 miles (322 km) offshore. It addresses conserving and managing US fisheries, developing domestic fisheries, and phasing out foreign fishing activities. It also establishes regional fisheries management councils that set fishing quotas and restrictions in US waters in the form of fish management plans (FMPs). All fish included in a FMP are assigned essential fish habitat (EFH)—those waters and substrate necessary for fish to spawn, breed, feed, or grow to maturity. Federal agencies must consult with the NMFS on proposed actions authorized, funded, or undertaken by the agency that may adversely affect EFH. The act sets forth the enforcement actions that authorized officers may take, including making arrests, boarding, searching, and inspecting fishing vessels and seizing fishing vessels, fish, and other evidence. For more detailed information on FMPs and EFH, refer to Section 3.8.6.

Clean Water Act/Federal Water Pollution Control Act

The CWA/Federal Water Pollution Control Act (33 U.S.C. §§ 1251-1387) sets the basic structure for regulating discharges of pollutants to waters of the US. This includes those waters used for navigation or those leading to navigable rivers or waters used for interstate commerce (including lakes) and wetlands bordering streams or other waterbodies. The CWA states that it is unlawful for any person to discharge any pollutant from a point source into navigable waters in the absence of a permit. The CWA also regulates the placement of dredged or fill materials into the waters of the United States (33 U.S.C. § 1344).

- Wetlands are defined under the CWA regulations as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas." (33 C.F.R. 328.3). Jurisdictional wetlands exist when the following three criteria are present: wetlands hydrology, hydric soils, and hydrophytic vegetation (COE 1987).

Section 404 of the Clean Water Act (33 U.S.C. § 1344) requires approval prior to discharging dredged or fill material into the waters of the United States. Typical activities requiring Section 404 permits are depositing fill or dredged material in waters of the US or adjacent wetland, developing a site, and depositing fill for residential, commercial or recreational developments. The landward regulatory limit for nontidal waters (in the absence of adjacent wetlands) is the "ordinary high water mark," which is the line on the shores established by the fluctuations of water and indicated by physical characteristics.

Water quality on and around Treasure Island is regulated by the San Francisco Regional Water Quality Control Board (RWQCB), which operates under authority delegated to it by the EPA and the State Water Resources Control Board (SWRCB). The RWQCB is the local agency that implements the CWA and (the State Porter-Cologne Water Quality Act (Cal. Water Code §§ 13000-13999.19). The RWQCB regulates discharges under the National Pollutant Discharge Elimination System (NPDES) permit regulations. NPDES permitting requirements cover runoff discharged from point sources (e.g., industrial outfall discharges) and specific nonpoint sources (e.g., stormwater runoff), including construction and industrial sites. The RWQCB implements the NPDES program by issuing construction and industrial discharge permits.

The RWQCB, EPA, COE, and BCDC also participate in the region wide long-term management strategy (LTMS) program for dredging and disposing of material from San Francisco Bay. The LTMS study is intended to identify long-term solutions to the problem of regional dredge material disposal for a 50-year planning period. An estimated average of approximately 300 million cubic yards (229 million m^3) per year of dredge materials will require disposal through the planning period (1995 to 2045). The LTMS provides for disposing of, rehandling, and reusing dredge material in both construction and fill activities. Under the proposed reuse alternatives, dredged material would be required to be disposed of in compliance with the LTMS plan.

Rivers and Harbors Appropriations Act of 1899

Section 10 of the Federal Rivers and Harbors Appropriations Act of 1899 (RHA) (30 Stat. 1151, codified at 33 U.S.C. §§ 401, 403) prohibits the unauthorized obstruction or alteration of any navigable water (33 U.S.C. § 403). Navigable waters under the RHA are those "subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce" (33 C.F.R. § 3294). Typical activities requiring Section 10 permits are construction of piers, wharves, bulkheads, marinas, ramps, floats, intake structures, cable or pipeline crossings, and dredging and excavation.

National Environmental Policy Act

NEPA requires federal agencies to evaluate the environmental impacts of proposed projects, programs, and policies that could significantly affect the quality of the human environment.

California Endangered Species Act

Under the California Endangered Species Act (CESA) (Cal. Fish & Game Code §§ 2050-2116), CDFG maintains a list of threatened and endangered species at the state level and a list of candidate species, which are those under review for being added to the state list of endangered or threatened species. The CDFG also maintains watch lists of species of special concern. Pursuant to the requirements of CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any state-listed endangered or threatened species could be present in the project area and must determine whether the proposed project will have a potentially significant impact on such a species. In addition, the CDFG encourages informal consultation on any proposed project that could affect a candidate species. The CESA applies to state and local government agencies only and not the federal government.

McAteer-Petris Act

The McAteer-Petris Act (Cal. Gov't Code §§ 66600-66682) created BCDC, which regulates dredging and filling and public access within 100 feet (30 m) of the mean high tide line within San Francisco Bay. Under the McAteer-Petris Act, BCDC has jurisdiction over all areas of the bay that are subject to tidal action, including subtidal areas, intertidal areas, and tidal marsh areas that are between mean high tide and five feet above mean sea level. In addition, BCDC has jurisdiction over a 100-foot (30-m) shoreline band surrounding the bay from the mean high tide line. BCDC's jurisdiction does not extend to federally owned areas, such as the Navy or USCG property on Yerba Buena Island, because they are excluded from state coastal zones pursuant to the Coastal Zone Management Act.

Coastal Zone Management Act

The CZMA (16 U.S.C. §§ 1451-1465) encourages states to preserve, protect, develop, and, where possible, restore or enhance valuable natural coastal resources, such as wetlands, floodplains, estuaries, beaches, dunes, barrier islands, and coral reefs, as well as the fish and wildlife using those habitats. To encourage states to participate, the CZMA makes federal financial assistance available to any coastal state or territory that is willing to develop and implement a comprehensive coastal management program. Federal agencies are required to carry out activities that affect any land or water use or natural resource of a state's coastal zone in a manner consistent with the enforceable policies of an approved state management plan.

Executive Order 11990

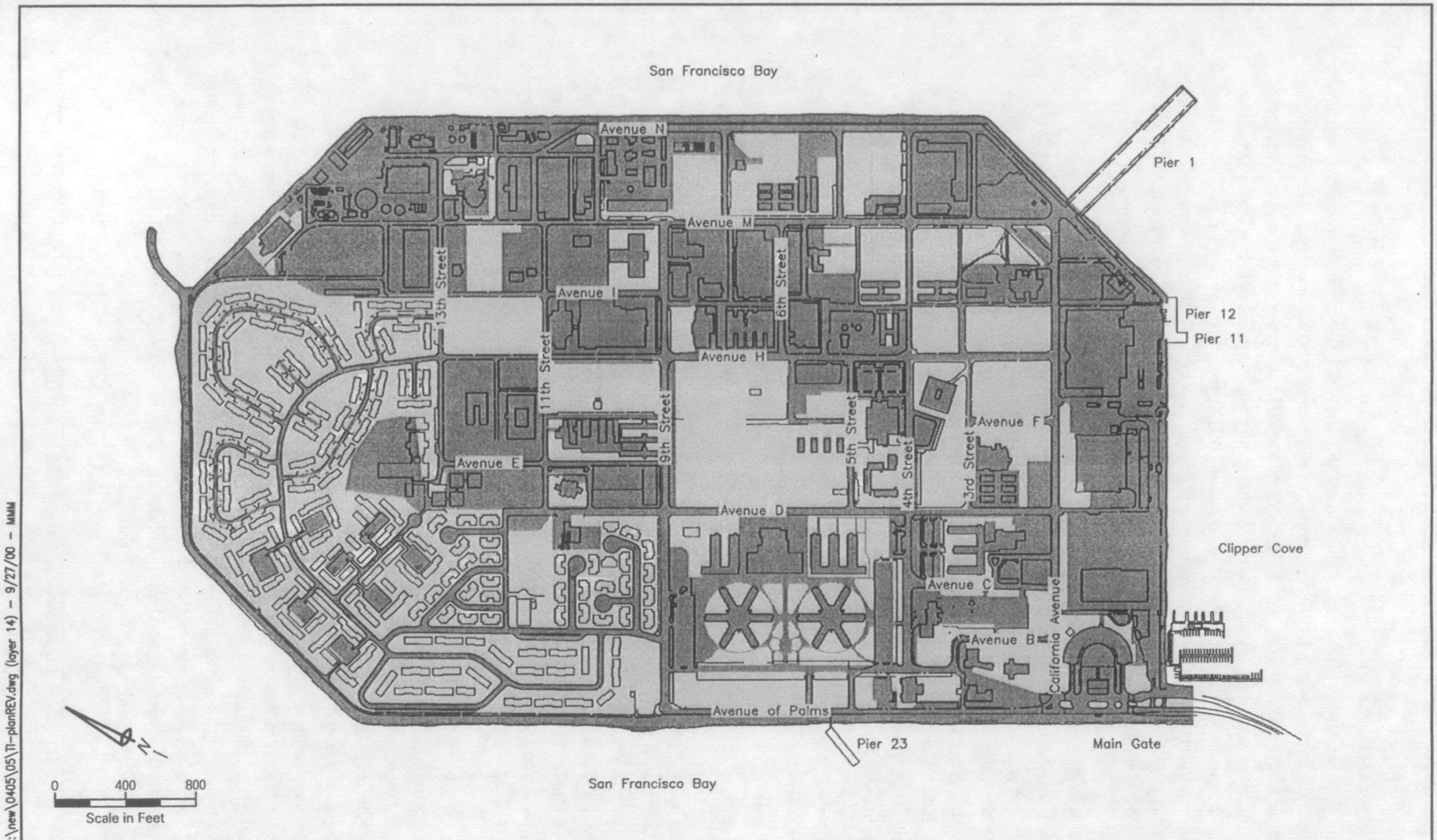
Executive Order 11990, Protection of Wetlands (42 Fed. Reg. 26961, May 24, 1977), was signed by President Carter in 1977 to avoid the adverse impacts associated with destroying or modifying wetlands.

US Coast Guard Aid to Navigation Permit

The Coast Guard's primary responsibility is to preserve and enhance the navigability and safety of navigable waters of the US. Placing buoys in the bay to limit access to sensitive mudflat habitat at Clipper Cove (see Section 4.8, Biological Resources) would require an aid to navigation permit from the Coast Guard to ensure that the buoys do not interfere with safe navigation through these parts of the bay (14 U.S.C. § 83).

3.8.2 Vegetation/Habitat Types

Figures 3-11 and 3-12 illustrate the location of the terrestrial habitats on Treasure Island and Yerba Buena Island. Treasure Island is an engineered island and contains little native habitat. Habitat types on Treasure Island are landscaped and developed areas. Landscaped areas include mature ornamental trees, shrubs, and grasses (Figure 3-11). The only undeveloped areas on NSTI are on Yerba Buena Island, where eucalyptus woodlands represent the largest habitat. Yerba Buena Island has a mix of five habitat types of predominantly native species, four habitat types of predominantly nonnative species, and developed areas with little or no vegetation, forming a mosaic pattern of habitat types (Figure 3-12) (San Francisco 1995a). The native habitat types are coast live oak woodland, northern coastal scrub, valley wild-rye grassland, central coast riparian scrub, and northern coastal salt marsh. The nonnative habitat types are eucalyptus woodland, nonnative scrub-shrub land (i.e., nonnative invading garden species), ruderal (i.e., weedy), and landscaped (San Francisco 1995a).



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Treasure Island is an engineered island composed of artificial fill. Habitat types on Treasure Island are landscaped areas and developed areas. These areas correspond with landscaped and developed areas, respectively, on the terrestrial habitat type map of Yerba Buena Island.

Legend:

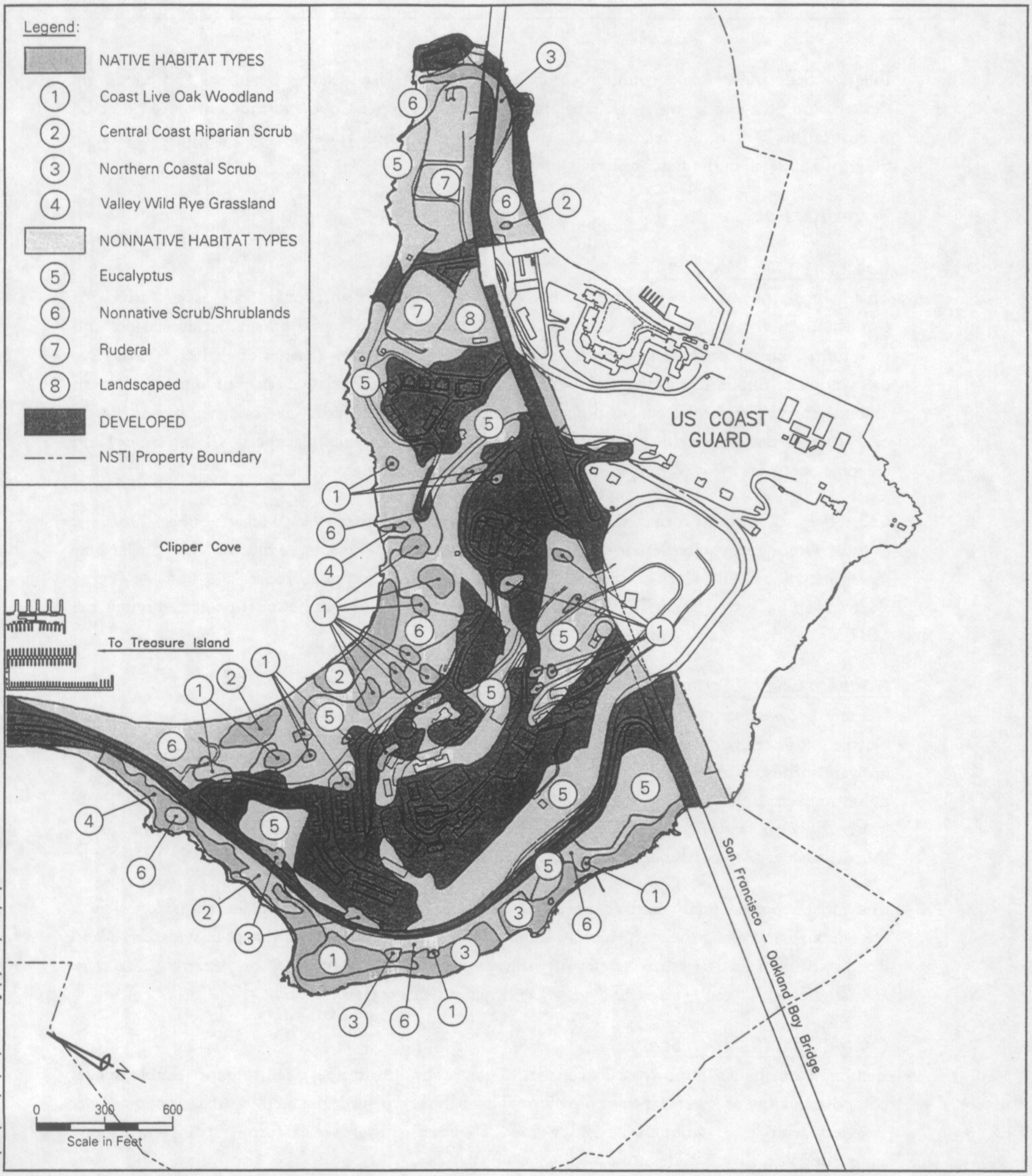
Non-native Habitat Types - Landscaped

Developed

Terrestrial Habitat Types Treasure Island

Sources: DON 1987; 1996c

Figure 3-11



Habitat types at Yerba Buena Island consist of large areas of nonnative plant communities and developed areas with smaller areas dominated by native vegetation. This figure reflects habitats identified during a series of focused special status plant surveys at the portion of Yerba Buena Island controlled by the Navy.

Terrestrial Habitat Types Yerba Buena Island

Sources: DON 1987; 1996c; 1996r

Figure 3-12

Eelgrass beds (*Zostera* sp.), common to sheltered areas of water, such as harbors and coves, are located along the north shore of Yerba Buena Island at Clipper Cove and the east shore of Yerba Buena Island. No other eelgrass beds in the area have been documented. Eelgrass habitat is described in detail in the Estuarine Habitat section below.

Terrestrial Habitats

Coast Live Oak Woodland

This habitat type is dominated by coast live oak *(Quercus agrifolia)* and consists almost exclusively of closed canopy forests. Coast live oak communities are frequently found on shady clay hillsides and may form a buffer between grasslands and mixed evergreen forests (Zeiner et al. 1990). Coast live oak woodland differs from other oak woodland subclasses in the relative rarity of annual grasses in its understory. The most frequent dominant plant found beneath coast live oak canopies is poison oak *(Toxicodendron diversilobum),* but other species, such as California blackberry *(Rubus ursinus)* and creeping snowberry *(Symphoricarpus mollis),* are frequently found there as well.

Coast live oak woodland may offer habitat to such wildlife species as pocket gopher *(Thomomys bottae),* western gray squirrel *(Sciurus griseus),* western fence lizard *(Sceloporus occidentalis),* and Steller's jay *(Cyanocitta stelleri).* The black-crowned night heron *(Nycticorax nycticorax)* roosts and nests on Yerba Buena Island oak woodland (FHWA 2001). The black-crowned night heron is protected under the MBTA.

Northern Coastal Scrub

Northern coastal scrub is a dense shrub-dominated community that commonly occurs as a buffer between northern oak woodland and southern oak woodland. This habitat type is composed of low-growing shrubs that are able to grow where tree growth is prevented by strong onshore winds and is therefore frequently found on steep slopes with strong prevailing winds (Heady et al. 1977). Coyote brush *(Baccharis pilularis)* is the dominant shrub species, with others being sticky monkey flower *(Mimulus aurantiacus),* coffeeberry *(Rhamnus californica),* and poison oak.

The most representative stand of northern coastal scrub on Yerba Buena Island is found in a continuous band along the steep bluffs on the islands western edge, mostly west of Treasure Island Road. Northern coastal scrub habitat often hosts such wildlife species as song sparrow *(Melospiza melodia),* Bewick's wren *(Thryomanes bewickii),* and vagrant shrew *(Sorex vagrans).*

Central Coast Riparian Scrub

Central coast riparian scrub typically consists of a scrubby, streamside, open to impenetrable thicket composed of any of several species of willow. This habitat type is dominated by arroyo willow (*Salix lasiolepis*), with lesser amounts of red willow. Together, these species form a complete canopy supporting virtually no understory.

The most representative growth of central coast riparian scrub on Yerba Buena Island is found at lower elevations of the steep north-facing slope adjacent to Clipper Cove where the water table nears the surface. There is also a single stand on the western side of the island. Wildlife species that may be found in this habitat include white-crowned sparrow *(Zonotrichia leucophrys)* and Steller's jay *(Cyanocitta stellari).*

Valley Wild Rye Grassland

Valley wild rye grassland typically forms dense patches dominated by creeping ryegrass (*Leymus triticoides*). This plant community typically occurs on moist sites at low elevations, often adjacent to riparian or freshwater marsh habitat.

On Yerba Buena Island, valley wildrye grassland can be found above the western shoreline near the causeway connecting Yerba Buena Island and Treasure Island (Figure 3-12). This habitat forms a dense band on the bluffs above the northern coastal scrub and extends into the eucalyptus trees.

Ruderal

Ruderal vegetation is found in heavily disturbed areas, such as roadsides and abandoned dirt lots. Plant species found in these areas are generally weedy species, such as French broom *(Genista monspessuliana),* wild mustard *(Brassica kaber),* and wild radish *(Raphanus raphanistrum).* In general, this habitat is of little value from an ecological standpoint; however, it may provide temporary cover and foraging area for small animal species.

Ruderal habitat may be used on Yerba Buena Island by birds, such as the western sandpiper *(Calidris mauri),* killdeer *(Charadrius vociferous),* and dunlin *(Calidris alpina),* as they escape tidal inundation.

Landscaped, Nonnative

Much of the vegetation found on Treasure Island consists of introduced species, such as blue gum eucalyptus *(Eucalyptus globulus),* Monterey pine *(Pinus radiata),* and Monterey cypress *(Cupressus macrocarpa).* Native plant species are not likely to be found in landscaped areas due to frequent disturbance, human control, and lack of proper soils. For these reasons, this habitat type is of little value to wildlife.

Estuarine Habitats

This section discusses habitat types that fall within the general classification of estuarine, as defined by Cowardin (US Department of Interior 1979). Cowardin defines the estuarine system as "consisting of deepwater habitats and adjacent tidal wetlands that are usually semi-enclosed by land but have open, partly obstructed, or sporadic access to the open ocean and in which ocean water is at least occasionally diluted by freshwater runoff from the land." Subsystems of estuarine habitat are classified as subtidal, which is continuously submerged, and intertidal, which is alternately exposed and flooded by tides and includes the associated splash zone (US Department of Interior 1979). NSTI and the ROI of the proposed action encompass all of these habitat types.

Estuaries are some of the most productive habitats on earth. Varying degrees of salinity, differences in current velocities, a gradient of depths and temperatures and a diversity of intertidal habitat types contribute to this productivity, making estuaries extremely important habitat. The San Francisco Bay is the largest estuary on the West Coast and is very important in terms of fisheries and other wildlife habitat values.

San Francisco Bay has a surface area of approximately 820 square miles (1,312 square km) (Cloern and Nichols 1985), and salt waters extend approximately 40 miles (64 km) inland at some times of the year. The bay is divided into four main sections: Suisun Bay, San Pablo Bay, the Central Bay, and the South Bay (Figure 3-13). Suisun Bay, which is the northeastern portion of San Francisco Bay, supports the prime mixing zone for fresh and salt waters and is lower in salinity than other parts of the bay such as the Central or South bays. NSTI is within the Central Bay.

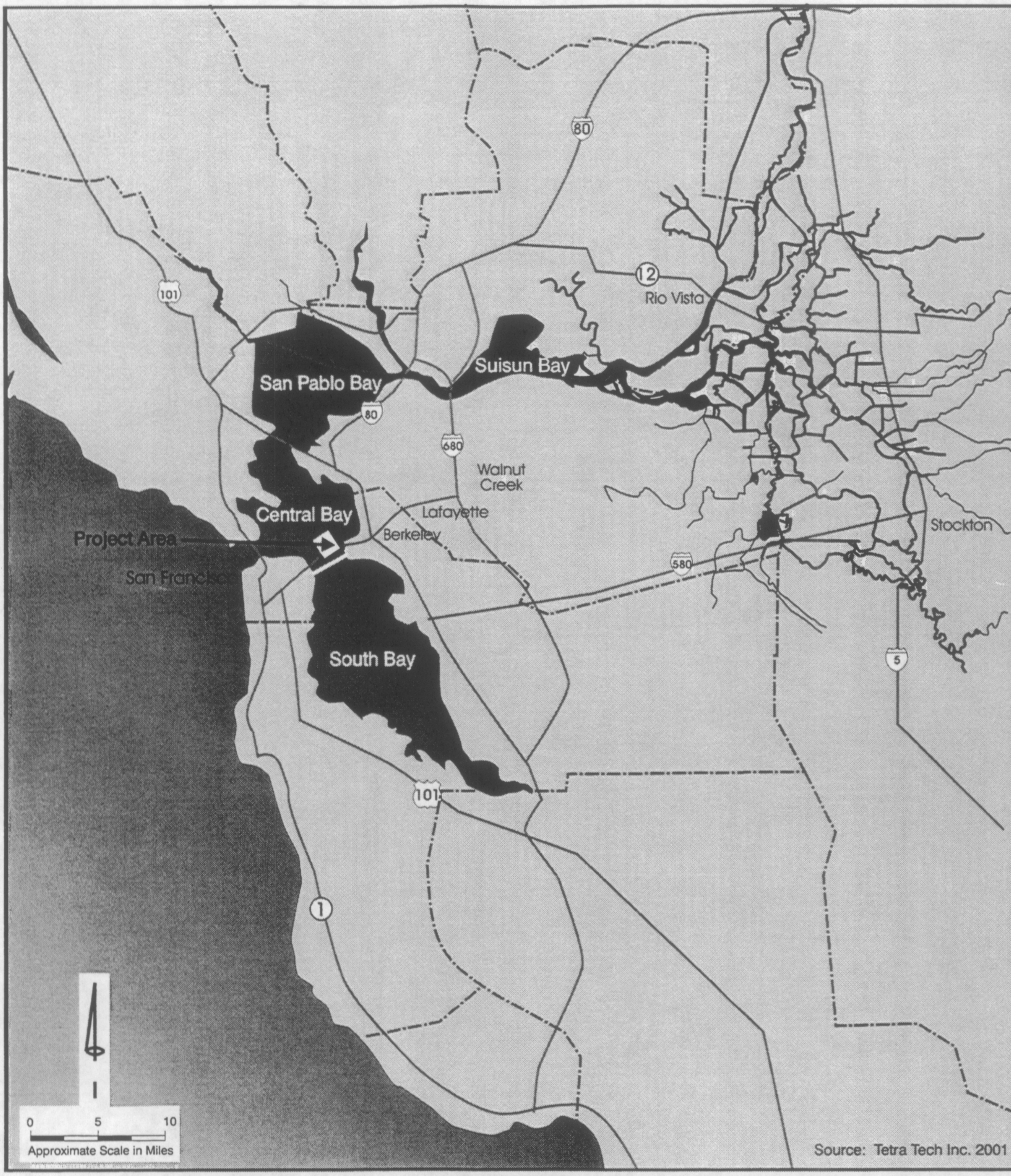
The Central Bay, including NSTI, delineated in this report by Point Richmond in the north and Candlestick Point in the south, is largely deep bay and channel habitat. Deepwater habitat is found on the western side of NSTI, with water depths growing increasingly shallower to the east. Waters are cold and saline in this portion of the bay and are heavily influenced by tidal action. As the Central Bay is the entrance to the bay, all anadromous and pelagic fish species that occasionally visit the bay pass through the Central Bay.

The predominant aquatic habitat around Treasure Island and Yerba Buena Island is subtidal, with unconsolidated mud (silt and clay) bottom substrate. Water depths around NSTI range from about 7 to 33 feet (2 to 10 m), with the exception of the southeastern tip of the facility, where depth increases to more than 66 feet (20 m). There are no freshwater or wetland habitats on Treasure Island, although a small salt marsh is found on Yerba Buena Island (DON 1990a). There is rocky intertidal shoreline with mudflats on the western side of the cove between Yerba Buena Island and Treasure Island. There is limited intertidal habitat, consisting of concrete riprap and dock and pier pilings, along most of the shoreline surrounding Treasure Island. Yerba Buena Island has a rocky intertidal shoreline, with mudflats extending to the north between it and Treasure Island. Cobble gravel substrate is found off the southern and western edges of Yerba Buena Island (Figure 3-14).

Tidal Salt Marsh

The existing bay habitat type (referred to by Cowardin as persistent emergent wetland) is dominated by pickleweed *(Salicornia virginica)* and saltgrass *(Distichlis spicata)*. Cordgrass *(Spartina foliosa)* is often found at the lower edges of this habitat. Tidal marsh also once ringed San Francisco Bay but is now confined to a few large contiguous areas and remnant marshes in a variety of locations. This habitat type is generally found along the margins of bays, lagoons, and estuaries sheltered from excessive wave action (Macdonald and Barbour 1974). There are significant expanses of salt marsh in the Napa River salt marsh in San Pablo Bay, in Montezuma Slough in Suisun Bay, and at the Hayward Area Reclamation District marsh in the South Bay. No salt marsh is found on Treasure Island, but there is a narrow band of it on the eastern side of Clipper Cove on Yerba Buena Island (FHWA 2001).

Distinct gradation within most marshes leads to a relatively high degree of biodiversity within these ecosystems. Common marsh plants, such as pickleweed *(Salicornia subterminalis)*, cordgrass *(Spartina foliosa)*, alkali heath *(Frankenia salina)*, and saltgrass *(Distichlis spicata)*, are found in distinct zones created by regular tidal inflow. Wildlife species found in salt marshes in the bay may include the federally listed endangered California clapper rail *(Rallus longirostris)*, the state-listed threatened California black rail *(Laterallus jamaicensis)*, and the federally listed endangered salt marsh harvest



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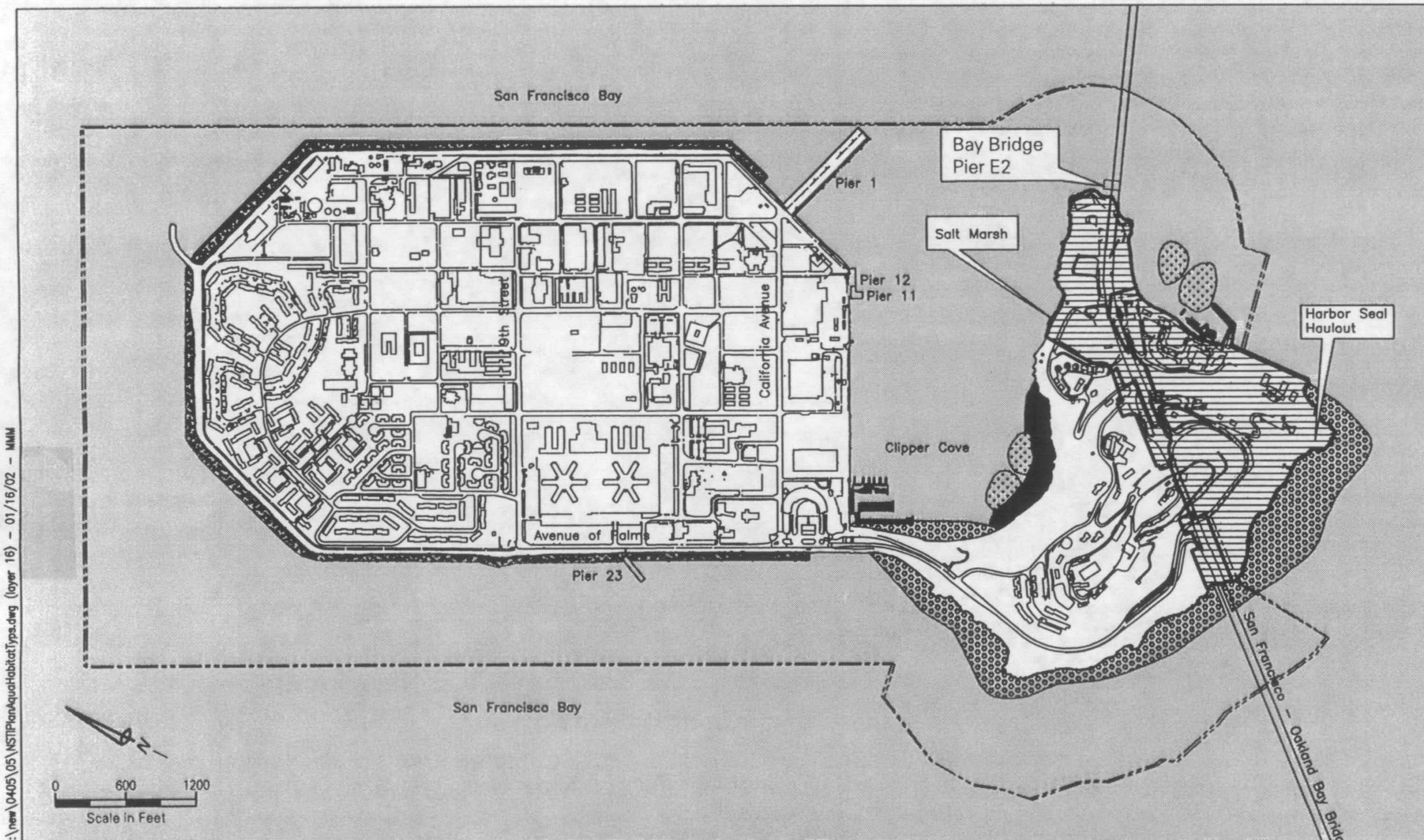
San Francisco Bay is divided into four major regions; South Bay, Central Bay, San Pablo

Major Regions of San Francisco Bay

Naval Station Treasure Island, California

Tetra Tech, Inc.

Figure 3-13



Yerba Buena Island has a variety of aquatic habitat types, whereas Treasure Island is limited to rocky areas. Harbor seals haul out on the southeastern shoreline of Yerba Buena Island under the SFOBB.

Legend:

- Eelgrass
- Mud bottom
- Rocky
- Mud flat
- Cobble gravel bottom
- Naval Station Treasure Island Boundary

Aquatic Habitat Types

Naval Station Treasure Island, California

Sources: DON 1987; 1996c

Figure 3-14

R:\new\0405\05\NSTIPlanAquaHabitatTypes.dwg (layer 16) – 01/16/02 – MMM mouse *(Reithrodontomys raviventris)*. None of these species are likely to occur at NSTI. Great blue herons *(Ardea herodius)*, great egrets *(Ardea alba)*, coots *(Gymnopgyps californicus)*, ducks, and shorebirds are also found in tidal salt marshes.

The vegetative composition of tidal marsh varies depending on the part of the bay and the topography of the area in which it is found. Tidal marsh in areas where salt water and freshwater meet (brackish) may have tall tules *(Scirpus* spp.*)* and cattails *(Typha latifolia)*, while marsh areas with more saline water may support dense stands of pickleweed and cordgrass. There are about 40,000 acres (16,194 ha) of tidal marsh in San Francisco Bay (Goals Project 1999), although very little of this habitat exists in the project area.

Intertidal Mudflats

There are about 200,000 acres (80,980 ha) of shallow subtidal habitat and tidal flats in San Francisco Bay (Goals Project 2000). Shallow subtidal areas and tidal flats are defined by their elevation in relation to tidal height. Tidal flats generally occur between the mean tide level (MTL), or the lower elevation limit of cordgrass flats, to about 2.5 feet (0.7 m) below mean lower low water (MLLW). Daily tidal cycles submerge and expose tidal flat surfaces about every 24 hours. There are approximately three acres (1.2 ha) of intertidal mudflats in the project area along the southeasterly edge of Clipper Cove (Figure 3-14).

Shallow subtidal areas and tidal flats of the bay support few plant communities, compared to other estuaries, such as Humboldt Bay and Tomales Bay. These plant communities include microalgae (such as diatoms), macroalgae (i.e., seaweed), and eelgrass *(Zostera marina)*. Microalgae form the basis for the estuarine food chain, providing a readily available food source for such organisms as worms and clams, which are then consumed by shorebirds and waterfowl. Macroalgae are found throughout the bay, primarily in the more saline areas, such as the Central Bay.

Eelgrass

Although often thought of as seaweed or grass, eelgrass is actually a flowering plant that has adapted to living submerged in the shallow waters of protected bays and estuaries in temperate regions of the world (Phillips and Menez 1988). Eelgrass is the only seagrass in the bay (Phillips and Menez 1998) and is found in intertidal zones that become exposed during the lower spring tides. It is also found in subtidal areas at depths of less than 7 feet (2 m). Eelgrass provides food, shelter, and spawning grounds for many fish and invertebrates, including the Pacific herring *(Clupea harengus)*, which prefers eelgrass beds for spawning (Spratt 1981). Eelgrass provides forage for the black brant *(Branta nigricans)*, which relies on it almost exclusively during migration along the Pacific flyway (Einarsen 1965). Eelgrass provides many important ecological functions, such as stabilizing unconsolidated sediments, providing shelter for many organisms, and improving water quality by reducing nutrients, sediments, and pollutant inputs from land (Williams and Davis 1996).

Surveys in 1999 and 2000 identified eelgrass beds in the project area, four near Yerba Buena Island (FHWA 2001). Two of these were within Clipper Cove on the north side of Yerba Buena Island and two within Coast Guard Cove on the east side of Yerba Buena Island (Figure 3-14). Eelgrass beds are highly dynamic and fluctuate in size, as such variables as light availability and nutrient load change. The most recent surveys indicated that total area of eelgrass beds in the project area is approximately 1.8 acres (0.75 ha) (FHWA 2001). Eelgrass beds in these areas occur along the edges of the shoreline and extend to areas no greater in depth than 4 to 6 feet (1.1 to 1.8 m) (FHWA 2001).

Open Waters

Open waters, also referred to as deep bay and channel habitat, are those parts of the bay that are deeper than 18 feet (5.2 m) below MLLW. Open waters are saline and, where they surround the project area, are strongly influenced by tidal currents. There are about 82,000 acres (33,198 ha) of this habitat in the bay (Goals Project 1999). Approximately 950 acres (384 ha) of open water habitat lies within the project area, mostly to the west of NSTI. Large aquatic invertebrates, such as crab and shrimp, and fish, such as sturgeon and rockfish, are found in this habitat. Anadromous fish, such as chinook salmon *(Onchorhynchus tshawytscha)* and steelhead *(Onchorhynchus mykiss)*, use open water habitat as migratory corridors. Resting and foraging habitat is found in the open water habitat for such species as the brown pelican, double-breasted cormorant *(Phalacrocorax auritus)*, and the Caspian tern *(Sterna caspia)*. Marine mammals, such as harbor seals *(Phoca vitulina richardsi)* and California sea lion *(Zalophus californianus)*, are also found in the open water habitat. The species that are likely to be found in the open water habitat surrounding the project area are discussed in detail below in the Sensitive Wildlife Species section.

3.8.3 Wildlife

Wildlife found in the region, including on NSTI, includes terrestrial and aquatic species of birds, mammals, invertebrates, amphibians, and reptiles. Treasure Island is developed and landscaped and provides little habitat for wildlife, while the habitats on Yerba Buena Island are more diverse and provide greater wildlife value. The entire Bay Area is a crucial resting and foraging area and wintering ground for thousands of birds in the Pacific Flyway, which extends from South America to the Arctic Circle (DON 1986).

Terrestrial Wildlife

Observed bird species on Yerba Buena Island include Lewis's woodpecker *(Melanerpes lewis)*, Steller's jay, white-breasted nuthatch *(Sitta carolinensis)*, and American robin *(Turdus migratorius)*. Birds known to inhabit the brushland habitats on Yerba Buena Island are California quail *(Callipepla californica)*, northern mockingbird *(Mimus polyglottos)*, savannah sparrow *(Passerculus sandwichensis)*, and white-crowned sparrow *(Zonotrichia leucophrys)*. More common bird species on the landscaped or developed regions of NSTI include European starling *(Sturnus vulgaris)*, pigeon *(Columba livia)*, American robin, house sparrow *(Passer domesticus)*, mourning dove *(Zenaida macroura)*, scrub jay *(Aphelocoma coerulescens)*, and flicker *(Colaptes auratus)*. Great blue heron *(Ardea herodias)*, black-crowned night heron, and great egret *(Casmerodius albus)* have been observed foraging along the riprapped shoreline (San Francisco 1995a). Other common species not observed but likely to be found include the California brown pelican and several grebe, cormorant, and gull species. Yerba Buena Island also provides habitat for two small mammal species; the pocket gopher and the California ground squirrel *(Citellus beecheyi)*.

Maritime Wildlife

Mudflats occupy the intertidal zone, separating the adjacent developed lands from open waters. The mudflats contain substantial surface and subsurface microalgal and macroalgal growth and diverse invertebrate fauna. These invertebrate faunas, consisting of worms, small mollusks, and arthropods, are an important food source for a variety of wintering shorebirds. When the mudflats are exposed at low tide, large congregations of shorebirds gather on them to feed. These feeding areas are important in the yearly migration and winter residence cycle of most of these bird species.

Native benthic species most abundant in the nearshore environment include mollusks, such as the bay mussel *(Mytilus edulis)*, California mactra *(Mactra californica)*, and common littleneck *(Protothaca staminea)*, as well as crustaceans, such as amphipods, copepods, shrimp, graceful rock crab *(Cancer gracilis)*, and Dungeness crab *(C. magister)*. However, most of the species of benthic organisms (those living in or on the floor of a waterbody) in San Francisco Bay are introduced species, such as the Amur River clam *(Potamocorbula amurensis)* and the Chinese mitten crab *(Eriocheir sinensis)*, which are generally better adapted to changes in bay water quality than native species. Many of these exotic species have been released to the bay in water from cargo ship ballast.

Phytoplankton is found throughout the water column in the bay and is prey for such species as clams, mussels, and barnacles. Copepods, such as ghost shrimp and euphasiids, also known as krill, prey on phytoplankton and are in turn an important food source for juvenile fish. The amount of phytoplankton in an area is influenced by such factors as water depth and transparency, river inflow and water salinity, or any other factors that influence the amount of light available for phytoplankton to use in photosynthesis. In the Central Bay, phytoplankton levels generally remain relatively low due to tidal mixing. Seasonal variation in degree of turbidity, changes in nutrient load, and filtering organisms influences the amount of phytoplankton.

A wide variety of fish species reside in and migrate through San Francisco Bay. Typical species include the staghorn sculpin *(Leptocottus armatus)*, chameleon goby *(Tridentiger trigonocephalus)*, topsmelt *(Atherinops affinis)*, bay pipefish *(Syngnathus leptorhynchus)*, and Pacific herring *(Clupea pallasii)*. Pacific herring is not listed under ESA, but it is the most important commercial species in the ROI. This species also has significant spawning grounds in the project area. Pacific herring swim in the middle to surface level of the water column. They spend most of their adult lives in coastal waters but use estuaries for spawning and rearing. The Pacific herring feeds on zooplankton and lives in schools.

Adult herring, age two or three, begin their migration into the bay in November (ABAG 1996), and spawning occurs mainly from January to March in intertidal and subtidal habitat (Miller and Schmidtke 1956; Hardwick 1973). Some documented Pacific herring spawning grounds include Angel Island, Alcatraz Island, and Treasure Island (Miller and Schmidtke 1956). Pacific herring are known to spawn in much of the project area, including the shallow water off NSTI. They deposit their eggs on eelgrass, algae, rocks, sand, and other submerged objects off these islands. In San Francisco Bay, the Pacific herring eggs have been shown to hatch in six to eleven days (Miller and Schmidtke 1956). The larvae tend to move out to the coast immediately, but some may remain for longer periods in the surface water of the bay (Eldridge et al. 1973; Wang 1986). Much of the larvae that remain inhabit the shallow waters of the South Bay as juveniles.

Marine mammals have been observed at or near NSTI. The harbor seal is routinely seen in the San Francisco Bay waters at NSTI. The San Francisco Bay harbor seal population of approximately 700 has remained constant since the early 1970s (San Francisco Estuary Project [SFEP] 1993). From December to April, several hundred harbor seals go ashore at "haulout" areas on the southeast shoreline of Yerba Buena Island, near the SFOBB. This area is within the ROI but not within the boundaries of the property for disposal (see Figure 3-14) (SFEP 1993; DON 1990a; Green 2001). Seals typically haul out to rest, sleep, or give birth (pup).

3.8.4 Sensitive Species

This section identifies special status, or sensitive, species that may occur in the project area. Sensitive species include those species that the USFWS or the CDFG lists or has proposed for listing as endangered, threatened, or candidate species. Plants that the CNPS lists as rare or threatened are also considered sensitive. Potential sensitive species at NSTI were identified from USFWS (USFWS 2001), CDFG (CDFG 2001), and the CNPS. USFWS personnel were consulted regarding the likelihood of finding listed species at NSTI (USFWS 2001).

A current list of all sensitive species and any critical habitat found in the region, according to USFWS records, is provided in Appendix C. An assessment of the likelihood of a species occurring at NSTI was made based on the habitat requirements and geographic distribution of the species, existing on-site habitat quality, and the results of biological surveys of NSTI (DON 1993a, 1996b; FHWA 2001).

The following discussion includes a profile of only those sensitive or special status species that are considered likely to be found in the project area.

Sensitive Plant Species

All sensitive plant species listed as potentially occurring in the project area are listed in Table 3-18. Of these species, only marsh gumplant *(Grindelia stricta)* is confirmed to occur within the ROI. This species is considered a sensitive plant species because of its limited range and increasing destruction of its habitat. This species is found on the northern portion of Yerba Buena Island, outside of the proposed disposal area (FHWA 2001).

Table 3-18
Sensitive Plant Species that may occur within the Project Area

Common Name *Scientific Name*	Status[1] F/S/CNPS	Preferred Habitat	Likelihood of Occurrence in Project Area[2]	Comments
Marsh gumplant *Grindelia stricta*	-/-/1B	Northern coastal salt marsh	C	Northern portion of Yerba Buena Island
San Francisco gumplant *Grindelia hirsutula* var. *maritima.*	-/-/1B	Coastal scrub, coastal bluff scrub, valley and foothill grassland	P	Potential habitat occurs on northwestern edge of Yerba Buena Island

Source: CDFG 2001; USFWS 2001; CNPS 2001; FHWA 2001.

[1]**Status**
F = Federal
S = State
CNPS = California Native Plant Society Listing
1B = Plants, rare, threatened or endangered in California

[2]**Likelihood of occurrence on the project site**
C = Confirmed
P = Potentially may occur

Marsh Gumplant. Although it has no federal or state status, marsh gumplant is considered locally significant because of its association with wildlife species of concern and has been included in the CNPS list of species that have limited distribution. This species was observed during botanical surveys on the northern portion of Yerba Buena Island (FHWA 2001).

Marsh gumplant is a host species for the Alameda song sparrow, a federal species of concern. However, the portion of Yerba Buena Island in which it is found is not within the proposed disposal area.

San Francisco Gumplant *(Grindelia hirsutula* var. *maritima).* Suitable habitat for the San Francisco gumplant exists on Yerba Buena Island in proximity to marsh gumplant; however, this species was not reported on the island during field surveys.

Sensitive Wildlife Species

Several sensitive animal species may use or are known to use NSTI (USFWS 1994a; CDFG 1996a, 1996b). Numerous other wildlife species that the USFWS and NMFS classified as threatened or endangered are known to occur in the Bay Area and historically have been reported to intermittently forage or roost at NSTI (DON 1990a). These latter species include Sacramento winter-run and Central Valley spring-run chinook salmon, central California coast and Central Valley steelhead, and the California brown pelican.

Sensitive (ESA) Fish Species

Salmonids

For salmonids, a population (or group of populations) is considered distinct (and hence a species) for purposes of the ESA if it represents an evolutionarily significant unit (ESU) of the biological species. To be considered an ESU, a population must be reproductively isolated, such that evolutionarily important differences accrue, and must contribute substantially to the ecological and genetic diversity of the species as a whole. Table 3-19 lists special status fish species that may occur within the project area.

Salmonids are members of the Salmonidae family and include trout and salmon. The salmonids that occur in the San Francisco Bay include chinook salmon,. coho salmon, and steelhead trout. Salmonids are anadromous, meaning they are ocean dwellers that migrate to freshwater streams to spawn (lay and fertilize their eggs). There are four runs of chinook salmon that use San Francisco Bay: the Sacramento winter-run, Central Valley spring-run, Central Valley fall-run, and the Central Valley late fall-run chinook salmon. These runs are distinguished by the time of year that they spawn. The central California coast coho salmon, Central Valley steelhead, and the central California coast steelhead are also known to use San Francisco Bay for migrating and rearing. These salmonids share a similar life cycle and use of the bay.

Table 3-19
Special Status Fish Species that may occur within the Project Area

Common Name *Scientific Name*	Status[1] F/S	Preferred Habitat	Likelihood of Occurrence in Project Area[2]	Comments
Central California coast coho salmon *Oncorhynchus kisutch*	T/E	Migrates from ocean through estuaries to freshwater streams	P	Migrates through bay
Central California coast steelhead trout *O. mykiss*	T/-	Migrates from ocean through estuaries to freshwater streams	P	Migrates through bay
Central Valley fall-run/late fall-run chinook salmon *O. tshawytscha*	C/-	Migrates from ocean through estuaries to freshwater streams	P	Migrates through bay
Central Valley spring-run chinook salmon *O. tshawytscha*	T/-	Migrates from ocean through estuaries to freshwater streams	P	Migrates through bay
Central Valley steelhead trout *O. mykiss*	T/-	Migrates from ocean through estuaries to freshwater streams	P	Migrates through bay
Green sturgeon *Acipenser medirostris*	SC/SC	Marine and estuarine environments	C	Anadromous, migrates into Central Bay
Longfin smelt *Spirinchus thaleichthys*	SC/SC	Open waters of the bay	P	Found throughout open water areas
Sacramento River winter-run chinook salmon *Oncorhynchus tshawytscha*	E/E	Migrates from ocean through estuaries to freshwater streams	P	Migrates through bay

Source: NMFS 2001; CDFG 2001; USFWS 2001; FHWA 2001.

[1]Status
F = Federal
S= State
E = listed as endangered
T = listed as threatened
SC = species of concern
C = candidate

[2]Likelihood of occurrence on the project site
C = Confirmed
P = Potentially may occur

Adult salmonids leave the ocean and migrate to freshwater streams when they are two or three years old, though this varies according to the species. They follow a migratory route that takes them to deep pools along a river where they may wait several months until they are sexually mature. In order to successfully reproduce, salmon need clean cold water, flowing over a gravel bed. Females search out these conditions and will lay their eggs in a gravel depression they dig, called a redd. Adult chinook and coho salmon die within one to two weeks after spawning. Steelhead, however, do not necessarily die but may live to spawn another year. Salmonid eggs hatch in one to two months and remain in the stream, absorbing essential nutrients from their yolk. Once the hatchlings surface from their gravel covering, they are known as juveniles and feed on larvae and other planktonic (drifting) organisms in the river. The amount of time that juvenile salmonids remain in the bay varies, with some emigrating immediately and others remaining for several months or years. Steelhead juveniles, for example, rear in freshwater streams for up to three years, far longer than Pacific salmon. Once juvenile salmonids have migrated to the ocean they will remain there until they are two to four years of age, and then they will begin their spawning migration.

Sacramento River Winter-Run Chinook Salmon *(Oncorhynchus tshawytscha).* Sacramento River winter-run chinook salmon is federally and state-listed as endangered. Winter-run chinook salmon migrate and spawn from mid-December to August, along the Sacramento River, up to Keswick Dam in Shasta County.

Adult winter-run chinook salmon can be found in San Francisco Bay beginning November through December, with individuals remaining only a few days (Herbold et al. 1992). Juveniles emigrate from their initial upstream habitat to the bay in the fall. Although most individual juveniles remain in the bay only for 4 to 10 days (USFWS 1987) some may stay for several months (Myers et al. 1998), using the habitat for rearing (Healey 1991). Winter run chinook may occur in the Central Bay and in the project area in low numbers (Woodbury 2001).

The primary threats to winter-run chinook salmon are the changes to the Sacramento River basin, which include the presence of dams and other water diversions, increasing water temperatures, agricultural and industrial pollution, and drought conditions (CDFG 2001).

Winter-run chinook salmon critical habitat includes all waters of San Francisco Bay north of the SFOBB. The project area lies partially within this critical habitat area, with the water surrounding NSTI north of SFOBB qualifying as winter-run chinook critical habitat (National Marine Fisheries Service Northwest Region [NMFS NWR] 2000a). Figure 3-15 depicts critical habitat and EFH for this ESU in the project area.

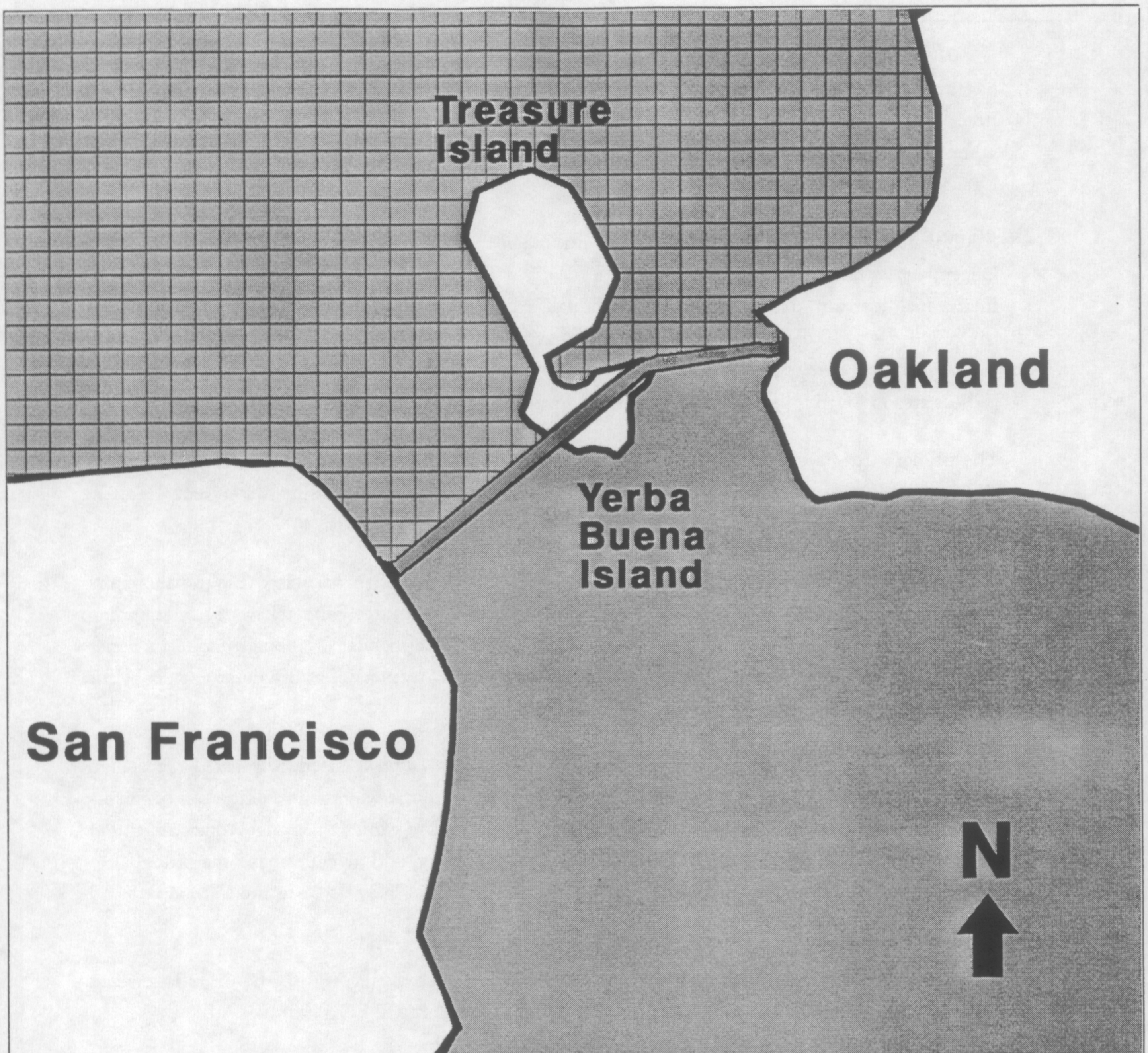
Central Valley Spring-Run Chinook Salmon *(O. tshawytscha).* A federally listed threatened ESU, the spring-run chinook salmon has a similar life history to the winter-run salmon but begins its spawning migration to the Sacramento/San Joaquin Delta in late winter to spring. Adults are found in San Francisco Bay during the migratory period in the spring, and juveniles have the potential to inhabit the bay in the fall, winter, and spring. Spring-run chinook may occur in the Central Bay and in the project area in low numbers (Woodbury 2001).

The decline of spring-run chinook is mainly attributed to over fishing and to the degradation and loss of upstream habitat due to development and water diversion (CDFG 1995).

Critical habitat for the Central Valley spring-run chinook salmon includes all waters of San Francisco Bay north of the SFOBB (NMFS NWR 2000a). The project area lies partially within this critical habitat area, with the water surrounding NSTI north of SFOBB qualifying as spring-run chinook critical habitat. Figure 3-15 depicts critical habitat and EFH for this ESU in the project area.

Central Valley Fall-Run/Late Fall-Run Chinook Salmon *(O. tshawytscha).* The Central Valley fall-run/late fall-run chinook salmon is a federally and state-designated candidate ESU. This ESU constitutes the largest number of chinook salmon in San Francisco Bay (NMFS NWR 2000b).

Adult fall-run/late fall-run chinook salmon begin their migration toward their spawning grounds in June, with a peak in September. They spawn in the Sacramento/San Joaquin Delta during December



Source: NMFS 2001; NMFS SWR 1998

Critical habitat for Sacramento River winter-run chinook salmon and Cental Valley spring-run chinook salmon and central California coast coho salmon

EFH for Sacramento River winter-run chinook salmon, Central Valley spring-run chinook salmon, Central Valley fall-run/late fall-run chinook salmon and central California coast coho salmon

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Critical Habitat and EFH for Chinook and Coho ESUs

Central San Francisco Bay, California

Figure 3-15

Tetra Tech, Inc.

and January (USFWS 1999). Juvenile salmon potentially occur in San Francisco Bay in the late winter through summer. This ESU can occur in the Central Bay, and in the project area, in low numbers (Woodbury 2001).

The primary threats to the fall-run/late fall-run chinook salmon are the impacts from high hatchery production and harvest levels and from the loss of 40 to 50 percent of spawning and rearing habitat (NMFS 1999).

There is no critical habitat designated for this species. Figure 3-15 depicts EFH for this ESU in the project area.

Central California Coast Coho Salmon *(O. kisutch).* The Central California coast coho salmon is a federally listed threatened and state-listed endangered ESU. Adult coho migrate through San Francisco Bay after heavy late fall or winter rains to spawn in the Sacramento/San Joaquin Delta. Juvenile coho potentially occur in the San Francisco Bay in the spring, summer, and fall. Central California coast coho may occur in the Central Bay, and therefore in the project area, in low numbers (Woodbury 2001).

The primary threats to this ESU are habitat degradation and unfavorable climate conditions in the last few decades, such as droughts and floods (CDFG 2000).

Central California coast coho critical habitat includes all river reaches, including estuarine areas and tributaries accessible to listed coho salmon, from Punta Gorda in northern California south to the San Lorenzo River in central California (NMFS NWR 2000c). The project area lies partially within this critical habitat area, with the water surrounding NSTI north of SFOBB qualifying as Central California coast coho critical habitat (Bybee 2001). Figure 3-15 depicts critical habitat and EFH for this ESU in the project area.

Central California Coast Steelhead Trout *(O. mykiss).* The Central California coast steelhead trout is federally listed as a threatened ESU but has no state status. Steelhead are rare in most streams that are tributary to San Francisco Bay.

Central California coast steelhead migrate from the Pacific coast through San Francisco Bay to spawn in freshwater in the upper Sacramento River. They are also known to migrate to the South Bay, where they spawn in the Guadalupe River, Coyote Creek, and San Francisquito Creek (Woodbury 2001). Upstream migration occurs from December through May, and peak spawning occurs in April. Juveniles may spend a year or more in San Francisco Bay before moving on to the ocean. This ESU is known to occur in the Central Bay, and in the project area, in moderate numbers (Woodbury 2001). The Central California coast steelhead may be present in the ROI at any time of the year.

The primary threats to Central California coast steelhead are degradation and loss of critical spawning and rearing grounds, due to development and water diversions (CDFG 2000).

Critical habitat includes all river reaches and estuarine areas accessible to listed steelhead in coastal river basins, from the Russian River to Aptos Creek (inclusive), and the drainages of San Francisco and San Pablo bays. Also included are adjacent riparian zones, all waters of San Pablo Bay west of the Carquinez Bridge, and all waters of San Francisco Bay (USFWS 2000). All of the project area falls within this critical habitat range. Figure 3-16 depicts critical habitat for this ESU in the project area.

Central Valley Steelhead Trout *(O. mykiss)*. The Central Valley steelhead is federally listed as threatened ESU and has no state status. Central Valley steelhead migrate between the ocean and the Sacramento and San Joaquin rivers and their tributaries via the San Francisco and San Pablo bays. Upstream migration occurs in the winter, with peak spawning occurring December through April (McEwan and Jackson 1996). Historically, adults may have remained in the delta for several years after spawning, but recent changes to the hydrology of the delta has limited this time frame (Interagency Ecological Program [IEP] 1998). Most Central Valley steelhead juveniles rear in freshwater for one to two years. They can be found migrating downstream at any time of the year, with peak emigration occurring in the spring (IEP 1998). This ESU has the potential to occur in the Central Bay, and therefore in the project area, in low numbers (Woodbury 2001).

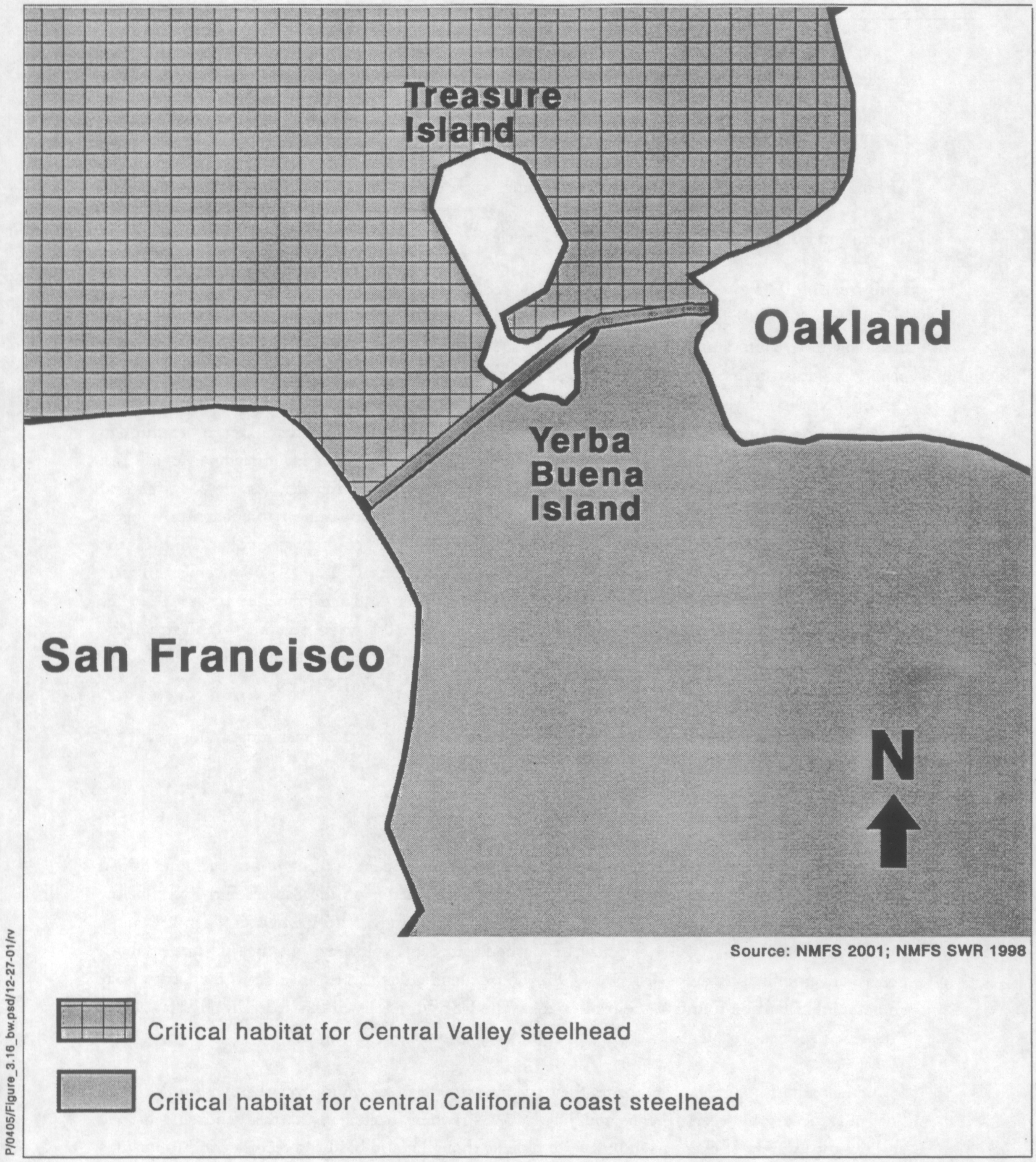
The primary threats to Central Valley steelhead are degradation and loss of critical spawning and rearing grounds due to development and water diversions (CDFG 2000).

Critical habitat for Central Valley steelhead includes waters of San Francisco Bay north of SFOBB (NMFS NWR 2000e). This includes the waters around NSTI north of SFOBB. Figure 3-16 depicts critical habitat for this ESU in the project area.

Other Fish Species

Green Sturgeon *(Acipenser medirostris)*. The green sturgeon is a federal species of special concern. Green sturgeon are bottom dwelling fish. Locally they are found in San Francisco Bay, San Pablo Bay, the lower San Joaquin River, and the delta (Wang 1986). This species may occur in the ROI.

Although little is known about the green sturgeon's life history, it does differ from that of the salmonid species. Green sturgeon are characterized as slow growing and late maturing fish that spawn every 4 to 11 years (Pacific States Marine Fisheries Commission [PSMFC] 1996) and rely on streams, rivers, estuarine habitat, and marine waters during their lifecycle. They prefer to spawn in lower reaches of large rivers with swift currents and large cobble. Adults broadcast eggs into the water column. The fertilized eggs sink and attach to the bottom, where they hatch. Local spawning occurs in the upper Sacramento River (Fry 1973) in the spring to early summer (Moyle 1976). The green sturgeon spends limited time in freshwater, only while young and spawning. Juveniles migrate downstream before they are two years old. While young, green sturgeon feed on algae and small invertebrates (organisms without internal backbones). In general, juveniles remain in estuaries for a short time and migrate to the ocean as they grow larger. However, adult green sturgeon are known to inhabit or forage in estuaries (PSMFC 1996). Adult green sturgeon feed on benthic (bottom



Critical Habitat for Steelhead ESUs

Central San Francisco Bay, California

Figure 3-16

Tetra Tech, Inc.

dwelling) invertebrates and small fish. Green sturgeon are potentially found in the Central Bay at any time of the year, but adults are more likely found in spring and summer, when they migrate to freshwater for spawning and then return to the ocean.

The primary threats to this species are over fishing, water diversions, and pollution (CDFG 2000).

There is no critical habitat designated for this species.

Longfin Smelt *(Spirinchus thaleichthys).* A federal and state species of special concern, the longfin smelt is a pelagic (living in open ocean) estuarine fish known to inhabit San Francisco Bay, including the waters surrounding NSTI (IEP 2001; Hieb 2001). Longfin smelt feed primarily on planktonic crustaceans, such as the opossum shrimp (*Neomysis mercedis*). Mature adults, nearing the end of their second year, migrate in the fall from the brackish waters of the San Francisco and San Pablo bays to Suisun Bay and the lower delta (Wang 1986). Spawning occurs December through June in the freshwater portions of the delta, along areas with rocks and aquatic plants (Moyle 1976; Wang 1986). Most of the adults die after spawning, though some females survive for a second spawning season (Moyle 1976). Longfin smelt eggs are deposited and adhere to substrates, such as rocks and vegetation. Larvae live in the middle to surface portion of the water column and can be found from Carquinez Strait to the lower reaches of the delta (Wang 1986). Juveniles migrate downstream in the late spring and summer to Suisun, San Pablo, and San Francisco bays, where they spend most of their time in the middle to lower portion of the water column (McAllister 1963; Ganssle 1966). Longfin smelt may be found in the Central Bay at any time of the year. CDFG monitoring stations have detected the species within the project area (IEP 2001).

The primary threats to longfin smelt are low water levels due to water diversions, water pollution, climatic variation, and introduced species.

There is no critical habitat designated for this species.

Delta Smelt *(Hypomesus transpacificus).* Delta smelt are endemic to the upper Sacramento-San Joaquin estuary. They occur in the delta, primarily below Isleton on the Sacramento River, below Mossdale on the San Joaquin River, and in Suisun Bay. They move into freshwater when spawning. During high outflow periods, they may be washed into San Pablo Bay, but they do not establish permanent populations there (USFWS 1996). Consequently, delta smelt are rare to the Central Bay and are unlikely to be found in the project area. The USFWS has listed this federally and state-listed threatened species as potentially occurring in the project area (USFWS 2001).

In the fall, adults congregate and begin their swim upstream to spawn in river channels and sloughs. Spawning occurs between January and July. Most spawning occurs in the dead-end sloughs and shallow edge waters of channels in the western delta, though it also has been recorded in Montezuma Slough near Suisun Bay and far upstream in the Sacramento River near Rio Vista (Radtke 1966; Wang 1986). With low levels of vegetation in the winter, it is likely that the eggs are deposited on submerged tree branches or on sandy and rocky substrate (Thelander et al. 1994). It takes 10 to 14 days for eggs to hatch, at which time the current carries the planktonic larvae downstream, where they feed on a steady supply of zooplankton. The final destination for most juvenile smelt is the null zone, an area where saltwater from the ocean meets freshwater from rivers (Thelander et al. 1994).

The primary threats to delta smelt include the decrease in water level in the delta due to water diversions and entrainment (when fish are drawn into hydroelectric turbines on dams or irrigation canals).

There is no critical habitat designated for this species in the project area.

Bird Species

Bird species are protected under the ESA or the MBTA. Information on these statutes and their implementing regulations can be found in Section 3.1. Table 3-20 lists those bird species of special concern that the USFWS states could occur within the project area. With the exception of the California least tern, the California clapper rail, and the western snowy plover, only those species considered likely to occur or known to occur in the project area are addressed below.

This section is divided into two parts, the first of which discusses ESA listed species or species of concern that could occur or are known to occur in the project area. The second part describes species covered only by the MBTA that are known to occur or have nesting habitat in the area. Because some birds are protected under both the ESA and the MBTA, there may be overlap between the sections.

Sensitive (ESA) Species

American peregrine falcon *(Falco peregrinus anatum).* This species is no longer federally listed but is listed as state endangered. The peregrine falcon was fairly common in the state before 1947, with at least 100 nesting pairs counted (USFWS 1992). The peregrine falcon was placed on the federal endangered species list in 1970, when fewer than five pairs were believed to nest in all of California. Presently, an estimated 10 to 20 birds range over the San Francisco Bay Area and delta region (FHWA 2001). Other bird species are prey for the peregrine falcon, including pigeons, terns, blackbirds, sparrows, and shorebirds. Peregrine falcons usually nest in depressions on protected ledges of high cliffs or on rock outcrops (Peterson 1990). They are also known to use tall buildings or bridges in urban areas. During the last few years, four pairs have begun nesting in the Central Bay. Two of these peregrine falcon nests occur on the SFOBB; one on the support structure east of Yerba Buena Island and one on the central support structure, between the island and San Francisco (Bell 1996). They most likely forage within the project area.

California clapper rail *(Rallus longirostris obsoletus).* Although the USFWS cites the federally and state-listed endangered California clapper rail as occurring in the area (USFWS 2001), very little of the salt marsh habitat preferred by this species exists in the project area. It is unlikely that the species is found in the project area.

Table 3-20
Special Status Bird species that may occur within the Project Area

Common Name *Scientific Name*	Status[1] (F/S)	Habitat Requirements	Potential Occurrence within Project Area[2]	Comments
Alameda song sparrow *Melospiza melodia pusillula*	SC/SC	Fresh, brackish, or salt marsh habitats	C	May be an occasional visitor, breeding populations unlikely.
American peregrine falcon *Falco peregrinus anatum*	DL/E	Woodlands, coastal habitats, riparian areas, coastal and inland waters, human-made structures that may be used as nest or temporary perch sites	C	Habitat in project area; nests adjacent to project area.
Black-Crowned Night Heron *Nycticorax nycticorax*	*	Lowlands and foothills. Nests and roosts in dense-foliaged trees and dense emergent wetlands.	C	Nests and roosts on Yerba Buena Island in woodland areas.
Black oystercatcher *Haematopus bachmani*	SC/SC	Rocky shores of marine habitats and adjacent islands	C	Occurs in project area.
Brant's cormorant *Phalacrocorax pencillatus*	*	Yearlong resident of marine subtidal and pelagic zones of California. Nests on rocky headlands or islets.	C	Occurs in project area; nest known on YBI.
California brown pelican *Pelecanus occidentalis*	E/E	Open water, estuaries, beaches; roosts on various structures (e.g., pilings, boat docks, breakwaters, mudflats)	C	Habitat in project area.
California clapper rail *Rallus longirostris obsoletus*	E/E	Salt marshes traversed by tidal sloughs, tidal marshes, pickleweed marshes	U	Habitat in project area.
California least tern *Sterna antillarum browni*	E/E	Shallow areas of estuaries, lagoons, and at the joining points between rivers and estuaries	U	Habitat in project area.
Double-crested cormorant *Phalacrocorax auritus*	-/SC	Open water, fresh and estuarine waters, near-shore	C	Habitat in project area.
Pelagic cormorant *P. pelagicus*	*	Frequently in marine subtidal and uncommon to marine pelagic around rocky coasts. Nests on rocky cliffs.	C	Occurs in project area.
Western gull *Larus occidentalis*	*	Occupies coastal islands, cliffs, harbors, bays, river mouths and garbage dumps. Nests in a depression on ground, among vegetation or rocks in a variety of habitats.	C	Occurs in project area.
Western snowy plover *Charadrius alexandrinus nivosus*	T/SC	Sandy beaches, estuarine, inter-tidal mudflats, salt pond levees, alkali lakes, gravel areas near beaches and estuaries	U	Habitat in project area.

Source: CDFG 2001; USFWS 2001; FHWA 2001.

[1]**Status**
F = Federal
S = State
* = Protected under MBTA
E = listed as endangered
T = listed as threatened
SC = species of concern
C = candidate
DL = delisted

[2]**Likelihood of occurrence on the project site**
C = Confirmed
U = Unlikely to occur

Notes:
YBI = Yerba Buena Island

California least tern ***(Sterna antilarum browni).*** Listed as endangered both federally and by the state, this migratory species is found in California and Baja California from April to September (Thelander et al. 1994) and is believed to winter along the Pacific coast of South America (Massey 1971). During the breeding season, from May through August, the California least tern is found in the Central Bay at the former Alameda Naval Air Station and at Oakland International Airport (approximately 3 and 9 miles [5 and 9 km]) respectively, to the southeast of NSTI), where major nesting areas occur. The former Naval Air Station Alameda is the largest nesting spot for least terns in San Francisco Bay, and the terns have been observed occasionally in nearshore waters surrounding NSTI. No least tern nesting colonies have been recorded on Yerba Buena Island (DON 1990a), and the potential habitat for nesting on NSTI is unlikely. The California least tern is believed to be an infrequent visitor to Treasure or Yerba Buena islands and most likely does not occur in the project area. This species has declined in numbers because of coastal development, introduced predators, and human disturbance (USFWS 1992).

California brown pelican *(Pelecanus occidentalis californicus).* A federally and state-listed endangered species, brown pelicans are found in estuarine, marine subtidal, and marine pelagic waters throughout coastal California (Thelander et al. 1994). Important habitat for pelicans during the nonbreeding season includes roosting and resting areas, such as offshore rocks, islands, sandbars, breakwaters, and pilings. Suitable areas need to be free of disturbance. They rest temporarily on the water or isolated rocks, but roosting requires a dry location near food and a buffer from predators and humans. California brown pelicans use open water areas for feeding and use rocks, jetties, and piers for roosting. Brown pelicans feed on small surface-schooling fish, primarily anchovy (Zeiner et al. 1990). Nesting normally begins in the spring but is highly variable, according to colony and year. Breeding occurs from March to early August, with eggs being laid from March to June.

California brown pelicans migrate from their breeding zones in the Channel Islands and Mexico as early as mid-May, to disperse throughout coastal California. Most pelicans return to breed by the following March. Brown pelicans are common in northern California from June to November, are rare to uncommon from December to February and May, and are very rare in March and April (Anderson and Anderson 1976; Cogswell 1977; McCaskie et al. 1979). The California brown pelican is a common post-breeding resident (May through November) of the open waters of the central San Francisco Bay and of San Pablo Bay (USFWS 1992). They can be found roosting at Breakwater Island, near the former Naval Air Station Alameda (Jacques-Strong 1994) and fishing throughout the bay. This species occurs at the project area and occasionally forages at the nearshore areas at NSTI. They are also known to rest on bridge footings and to forage by the SFOBB (FHWA 2001).

This species has been affected by numerous factors that have contributed to its decline, including disease outbreaks, low productivity, colony failure, its primary dependence on the northern anchovy for prey (which has declined), oil and other toxic spills, the presence of relatively high levels of pesticides in the tissues of some pelicans, human and nonnative mammal disturbance at central California coast post-breeding roosts, physical injury and mortality due to fish hooks, entanglement in abandoned fishing line, and El Niño events that cause prey fishes to move well offshore and away from pelican nesting islands.

There is no critical habitat designation for this species (USFWS 2001).

Western snowy plover *(Charadrius alexandrinus nivosus).* A federally listed threatened species and a state species of special concern, they typically occupy sandy beaches, salt ponds, and intertidal areas of marine and estuarine habitats but are known to occur in some inland areas (Thelander et al.

1994). Along the Pacific Coast, snowy plovers are distributed on the mainland and offshore islands, from southern Washington to southern Baja California, Mexico. Some populations, however, reside yearlong in California. Within California, plovers tend to winter along Bodega Bay in Sonoma County and to the south in the Los Angeles vicinity, with a large congregation around the San Francisco Bay Area (Zeiner et al. 1990). Nests are usually established in sparsely vegetated to nonvegetated areas of sandy beaches and estuaries. Western snowy plovers forage on insects and amphipods from the dry sand of upper beaches along the coast and occasionally forage for sand crabs and brine flies. This species is sensitive to human harassment, and direct destruction of nest sites and breeding habitat are some reasons for its decline.

Snowy plovers nest March though September at sandspits and open beaches near rivers and estuaries. The nests can sometimes be found in salt pond levees and dry salt ponds. Western snowy plovers are known to winter in the San Francisco Bay Area, and an estimated 250 individuals have been recorded in the bay during the breeding season (Goals Project 2000). Critical habitat for the western snowy plover falls outside of the project area. Although a small amount of habitat exists for the snowy plover at NSTI, there is no nesting habitat. Any occurrences of this species at NSTI would be incidental, and the species is unlikely to be found there.

Alameda song sparrow *(Melospiza melodia pusillula).* A federally listed species of concern, the Alameda song sparrow is found in freshwater, brackish, and salt marsh habitats. This species occurs in coastal salt marsh habitat bordering South San Francisco Bay and can be found near NSTI, at the Emeryville Crescent, adjacent to the SFOBB toll plaza. The main range of the Alameda song sparrow extends from Coyote Creek, at the southern extremity of the bay, northward along the west shore of south San Francisco Bay to Belmont Slough, and along the east shore to San Lorenzo (Jurek 1974). Small populations also occur in marshes at the northeast shore of Richmond Inner Harbor in El Cerrito, along the shoreline from Emeryville to the SFOBB toll plaza, and at Arrowhead Marsh at the mouth of San Leandro Creek in the bay in San Leandro (Jurek 1974).

There is potential nesting habitat for this species at sites where marsh gumplant occurs, such as on Yerba Buena Island. The Alameda song sparrow has been observed perching on individual gumplants in these areas. The Alameda song sparrow could nest in the project area but has not been observed nesting at NSTI.

The song sparrow has been affected by urbanization and economic development throughout its range. Increasing salinity from diversion of freshwater streams has resulted in only limited areas of brackish marsh, the preferred habitat. Salt marshes have been filled or converted to salt ponds, so few remaining areas of complex salt marsh exist.

Migratory Bird Treaty Act Protected Species

Although numerous bird species covered by the MBTA are found in the project area, the USFWS has identified only the following species nesting on NSTI: black-crowned night heron, double-crested cormorant *(Phalacrocorax auritus),* Brandt's cormorant *(Phalacrocorax pencillatus),* the pelagic cormorant *(Phalacrocorax pelagicus)*, the western gull *(Larus occidentalis)*, and black oystercatcher *(Haematopus bachmani)* (USFWS 1995c).

Black-crowned night heron *(Nycticorax nycticorax)*. The black-crowned night heron is a fairly common yearlong resident in lowlands and foothills throughout most of California. This species usually nests between February and July; however, nesting and roosting in dense foliage trees and dense emergent wetlands. It feeds along the margins of lakes, large rivers, fresh and salt water wetlands and, rarely, on kelp beds in marine subtidal habitats. The black-crowned night heron both nests and roosts in woodland areas on Yerba Buena Island.

There is no designated critical habitat for this species.

Double-crested cormorant *(Phalacrocorax auritus)*. A state species of special concern, the cormorant is a year-long resident along the entire coast of California and is known to frequent inland lakes and fresh, salt, and estuarine waters. Cormorants rest in daytime and roost overnight beside water on rocks offshore, on islands, and on other perching sites barren of vegetation. Fish make up the bulk of the double-crested cormorant's diet, while crustaceans and amphibians are known to be taken as food items to a lesser degree. It feeds during the day and is known to roost beside water on offshore rocks, islands, steep cliffs, trees, or engineered structures (wharves, jetties, and bridges). Nests are built in habitats similar to those used for roosting, with the further requirements that the area be inaccessible to predators, that it be near a foraging area, and that it have a dependable food supply. Breeding cormorants are very sensitive to human disturbance (Goals Project 2000). Causes of decline include habitat destruction and human disturbance, particularly from boating (Ellison and Cleary 1978), eggshell thinning from DDT contamination, and human disturbance at nest sites.

Double-crested cormorants are fairly common within San Francisco Bay, especially during the winter. The largest colonies are on the SFOBB, where there is a large nesting colony, and on the Richmond-San Rafael Bridge. The species is known to occur within the project area.

There is no designated critical habitat for this species.

Black oystercatcher (*Haematopus bachmani*). This species is a permanent resident on rocky shores of marine habitats along almost the entire California coast, as well as on adjacent islands. The state breeding population has been estimated at about 1,000 (Sowls et al. 1980).

The black oystercatcher is subject to human disturbance and predation by native and nonnative predators, such as rats and feral cats. It may be either uncommon or locally fairly common in northern and central California (Cogswell 1977). It is rare on the mainland coast south of Point Conception (Santa Barbara County), and no recent California nesting records exist south of this locality (Garrett and Dunn 1981). This species tends to be distributed fairly evenly along the mainland where suitable habitat exists, with denser concentrations on offshore islands, such as the Farallons and the Channel Islands.

The black oystercatcher has nesting sites in the San Francisco Bay Area. The USFWS has documented one breeding black oystercatcher on Yerba Buena Island (USFWS 1995c) and it has been observed on Treasure Island (USFWS 1995c).

Western gull (*Larus occidentalis*). This species is quite common along the California coast. It is abundant year round, occurs in the project area, and nests locally. It forages often at low tide on mudflats.

Western gulls nest on the column footings of the SFOBB west span and could nest on the footings of the east span. The USFWS has documented 31 known nest sites for this species on Yerba Buena Island (USFWS 1995c).

Brandt's cormorant (*Phalacrocorax pencillatus*). This species is a common yearlong resident in marine subtidal and pelagic zones of California, especially near rocky shores. Perch sites are usually barren of vegetation. Brandt's cormorants roost communally and tend to nest on rocky headlands or islets along the coast and on islands south, from Morro Bay to the Channel Islands. This species is common in outer parts of large estuaries but is only an occasional visitor in inner bay areas or on smaller estuaries. It dives for food in shallow or deep water and consumes mostly small saltwater fishes and also some crabs and shrimps. Brandt's cormorant requires a dependable food supply within commuting distance of a suitable roost or nest site, but it is known to commute a relatively great distance (Palmer 1962).

There are large numbers of this species that nest offshore (approximately 22,000 breed on South Farallon Island; DeSante and Ainley 1980). Large numbers have been seen migrating northward past Goleta Point, Santa Barbara County, in February and March (Garrett and Dunn 1981). The population increases south of Morro Bay in the winter, from migrants from the north, Baja California, and the Channel Islands. Many members of the population may be local or distant migrators. Many Southeast Farallon Island juveniles disperse northward as far as Vancouver Island, British Columbia (DeSante and Ainley 1980).

In San Francisco Bay, they rarely feed near their winter roosts and have been known to commute as much as 10 miles (16 km) daily from their roost to feeding areas (Bartholomew 1949). Brandt's cormorant occur in the project area, and the USFWS has documented four known nest sites for this species on Yerba Buena Island (USFWS 1995c). These are the only known nesting sites for this species in San Francisco Bay.

Pelagic cormorant (*Phalacrocorax pelagicus*). The pelagic cormorant is a yearlong resident of California. Pelagic cormorants inhabit marine subtidal areas along the rocky coasts of California and its islands, down to San Luis Obispo County. Less commonly they are found in marine pelagic habitats. Although most pelagic cormorants remain close to their breeding sites throughout the year, some populations migrate within California, heading south after nesting. Locally they are found at the outermost part of bays (Zeiner et al. 1990). The pelagic cormorant breeds on rocky cliffs beginning in April through August (Zeiner et al. 1990). Their diet consists of small fish and crustaceans, to a lesser degree. These cormorants prefer to feed in shallow rocky-bottomed areas (Robertson 1974).

Pelagic cormorants are known to inhabit San Francisco Bay, with a breeding colony on Alcatraz Island (Point Reyes Bird Observatory 2001), and are known to occur in the project area.

Mammals

No special status terrestrial mammal species are found in the project area, but special status marine mammals have been observed at or near NSTI. These commonly include the harbor seal, the California sea lion *(Zalophus californianus),* and occasionally, the gray whale *(Eschrichtius robustus).* On rare occasions, the following marine mammal species may occur in the bay as individual transients: humpback whale *(Megaptera novaengliae),* minke whale *(Balaenoptera acutorostrata),* steller sea lion *(Eumetopias jubatus),* and southern sea otter *(Enhydra lutris nereis).* Table 3-21 lists the mammal species of special concern that may occur within the project area. The marine mammal species considered likely to occur or known to occur are discussed below.

Table 3-21
Mammal Species of Special Concern that may occur within the Project Area

Common Name *Scientific Name*	Status[1] (F/S)	Habitat Requirements	Potential Occurrence within Project Area[2]	Comments
California sea lion *Zalophus californianus*	*	Coastal California waters	P	May occur in bay.
Gray whale *Eschrichtius robustus*	DL/-	Coastal arctic and tropical waters	C	May occur in bay.
Harbor seal *Phoca vitulina richardsi*	*	Deep water with gently sloping terrestrial area nearby	C	Occurs throughout the bay.
Steller sea lion *Eumetopias jubatus*	T/-	Pacific ocean, island and coastal rookeries	U	May occur rarely in bay.

Source: CDFG 2001; USFWS 2001; FHWA 2001.

[1]**Status**
F = Federal
S = State
* = protected under MMPA
T = listed as threatened
DL = delisted

[2]**Likelihood of occurrence on the project site**
C = Confirmed
P = Potentially may occur
U = Unlikely to occur

The section is divided into two parts. The first part discusses ESA listed species and the second discusses species protected by the MMPA.

<u>*Sensitive (ESA) Species*</u>

Southern sea otter *(Enhydra lutris nereis).* This mammal is listed as federally threatened under the ESA. It is not known if California sea otters are migrants or residents in certain areas of

California. Southern sea otters in San Francisco Bay are probably not seasonal residents but are more likely to be isolated foragers that ranged north of their generally recognized territory. The northern edge of their range is usually considered to be Half Moon Bay (Allen 2001), although this range keeps extending. They are common at Point Reyes but are considered to occur rarely in the waters off Treasure Island. One sea otter has been sighted in the waters off Yerba Buena Island (Green 2001).

Steller sea lion *(Eumetopias jubatus).* Listed as federally threatened under the ESA, this species is found in nearshore waters out to and beyond the continental shelf (Marine Mammal Center 2000a). They haul out at various locations, which have changed historically in the San Francisco Bay region. Historically they hauled out at the rocks near the Cliff House and also at Pier 39 in San Francisco, though not regularly (Allen 2001). They occur to the south at Año Nuevo Island, which is the southernmost breeding area for the species (Tetra Tech 1999), and on the Farallon Islands, much farther offshore.

They can occur in the waters off NSTI and Yerba Buena Island rarely as individual and intermittent transients, but their presence in the ROI is unlikely. They have never been sighted hauling out at either Treasure Island or Yerba Buena Island (Allen 2001). Any occurrences of this species in the ROI would most likely correspond to when the herring are running in the bay, as this is a prey species for Steller sea lions (Allen 2001). Typically, however, they are unlikely to occur in the waters of Treasure Island.

The project area is within designated critical habitat for this species, due to considerations other than the species' presence. The critical habitat for the Steller sea lion includes areas where its preferred prey occurs, such as San Francisco Bay, or areas that have been within its historic range. Steller sea lions are not currently found throughout much of their historic range and rarely occur in San Francisco Bay.

Marine Mammal Protection Act Species

Harbor seal *(Phoca vitulina richardsi).* This species is a permanent resident in the San Francisco Bay and is routinely seen in waters at NSTI. Harbor seals are protected under the MMPA. They have been observed as far upstream as Sacramento, though their use of the habitat north of Suisun Bay is irregular (Goals Project 2000).

There are several harbor seal haulout sites in the Central Bay, located near feeding sites, including Yerba Buena Island, Sisters Island in Muzzi Marsh, Castro Rocks, Brooks Island, a floating abandoned dock near Sausalito, Angel Island, and a breakwater at the Oakland entrance to Alameda Harbor (Allen 1991; Harvey and Torok 1995). Haulout sites must have gently sloping terrain and deep water immediately nearby and must be free of disturbance (Allen 1991). Only three sites in the bay—Yerba Buena Island, Mowry Slough, and Castro Rocks—show greater than 40 individuals present during the breeding and molting seasons (Kopec and Harvey 1995).

Seals haul out year-round on Yerba Buena Island. The haulout area is within the ROI but not within the boundaries of the property for disposal. The Yerba Buena Island haulout site near the SFOBB is on the southeast side of the island (Figure 3-14), on US Coast Guard property. Individual seals may occasionally haul out farther to the west and southwest of the main haulout site on Yerba Buena Island, depending on space availability and conditions at the main haulout area (Figure 3-14).

Harbor seals feed in the deepest waters of the bay, and the areas from Golden Gate to Treasure Island and from the San Mateo Bridge south are the principle feeding sites (Kopec and Harvey 1995). Harbor seals feed on a variety of fish, such as perch, gobies, herring, and sculpin.

CDFG aerial surveys done since 1998 of the bay population reflect a conservative estimate of approximately 500 animals. Land-based censusing reflects a higher, and probably more accurate, number of approximately 700 animals (Richmond Bridge Harbor Seal Survey [RBHSS] 2001). This number has remained relatively constant since the early 1970s (SFEP 1993).

Several hundred harbor seals use the Yerba Buena Island site as a year-round haulout site, though highest counts occur in the winter, from December to April (SFEP 1993; DON 1990a; RBHSS 2001). This most likely corresponds to the period of high Pacific herring numbers in the bay, Pacific herring being a preferred prey. In January 1999, 296 animals were counted at Yerba Buena Island (Green et al. 2001), and in March 2001, the count was 277 (Green 2001).

Only the most undisturbed sites are used for pupping, which occurs in the spring. The area is not historically identified as a pupping site for harbor seals but pups are occasionally seen there (Kopec and Harvey 1995), as is afterbirth. One dead pup was documented as having been born there (Green 2001). The number of pups sighted on Yerba Buena Island, while still under 10 a year, has increased by one a year for each of the last four years. Males made up 83.1 percent of the seals whose gender could be determined on the haulout site at Yerba Buena Island in a study conducted in 1997 (Spencer 1997).

Harbor seals at Yerba Buena Island are subject to high levels of disturbance, primarily from recreational watercraft. This is particularly true during the summer, when numbers of small boats, jet skis, and kayaks on the bay increase. A minimum distance of 100 yards is recommended as a standard to boaters from the haulout area to avoid disturbing the seals (RBHSS 2001). Researchers have reported seals shifting from a predominantly diurnal (active during the day) hauling pattern to a nocturnal (active at night) pattern in response to human disturbance (Paulbitski 1975). Others have reported that increased disturbance can cause reduced reproductive success and site abandonment (Bartholomew 1949; Calambokidis et al. 1979).

California sea lion *(Zalophus californianus).* The California sea lion occurs year-round in parts of San Francisco Bay though, as with the other seal species, they are most abundant in the winter, corresponding with the herring run. California sea lions are not listed under the ESA but are protected under the MMPA. The largest haulout site in the bay is at Pier 39 in San Francisco. Most of the sea lions hauled out at this site are males, and no pupping has been observed (Goals Project 2001).

Individual sea lions have been observed with some regularity in the shipping channel south of Yerba Buena Island. Individuals have also been sighted in the waters east of Yerba Buena Island (Green 2001). It is unlikely that these animals would occur within the defined ROI of the project.

Gray whale *(Eschrichtius robustus).* Gray whales are found only in the Pacific Ocean, with the current ocean-wide population documented at approximately 26,000 (NMFS 2001). Gray whale populations have begun to rebound, and the species was delisted under the ESA in 1994. Protected under the MMPA, the gray whale is the most common cetacean along the central California coast during its annual spring migration to northern feeding grounds and during its late fall-winter return to Mexican calving and breeding lagoons (Monterey Bay National Marine Sanctuary 2001).

Gray whales may occur in the waters off Treasure Island. Gray whale populations have been increasing in San Francisco Bay over the last three years. In 1999, they were spotted in the bay on 39 days, in 2000 on 64 days, and in 2001 (to date) on 116 days (Oliver et al. 2001). They are usually sighted traveling alone, but also have been sighted in pairs. A single sighting at the Dumbarton Bridge consisted of a group of five whales (Oliver et al. 2001). Greater than 95 percent of the sightings occur during the northern migration, from February to May.

All age classes have been sighted, though the majority of animals sighted in San Francisco Bay have been juveniles, less than 37 feet (11 m) long. This overall sighting increase may represent an increase in habitat utilization by this species. They have been sighted from the extreme southern end of the bay to the extreme northern end. Behaviors observed in the bay include traveling, milling, socializing, and foraging. Numbers of strandings have also been increasing and range from 17 to 29 animals (Marine Mammal Center 2001b).

Sensitive Amphibian Species

Three amphibian species are listed by USFWS as potentially occurring within the project area. These are the California red-legged frog *(Rana aurora draytonii),* the Alameda whipsnake *(Masticophis lateralis euryxanthus),* and the giant garter snake *(Thamnophis gigas).* No habitat for any of these species is found within the project area; therefore, they are considered unlikely to be present in the project area.

Sensitive Invertebrate Species

The USFWS lists three invertebrate species as potentially occurring within the project area: the Mission blue butterfly *(Icaricia icarioides missionensis),* the San Bruno elfin butterfly *(Incisalia mossii bayensis),* and the white abalone *(Haliotes sorensi).* However, no habitat for any of these species is found within the project area, and they are considered unlikely to be present in the project area.

Sensitive Reptile Species

Four species of sea turtles occur at least occasionally along the central California coast. These are the federally endangered leatherback turtle *(Dermochelys coriacea schlegelii)* and the federally threatened green turtle *(Chelonia mydas agassizi),* the olive ridley turtle *(Lepidochelys olivacea),* and the loggerhead turtle *(Caretta caretta gigas).* These species are all unlikely to occur in the estuarine waters near NSTI and have no known occurrences in the project area.

3.8.5 Sensitive Habitats

Sensitive habitats are vegetation communities that federal, state, or local agencies or conservation organizations have assigned special status because of declining, restricted, or threatened populations or areas. Habitat areas or vegetation communities that are unique or that offer particular value to wildlife also are considered sensitive.

The mudflats, which may contain eelgrass beds, on the western side of the cove between Treasure Island and Yerba Buena Island are rare or sensitive habitat at NSTI (DON 1996a). The soft bay mud substrate provides habitat for many invertebrates, including oligochaetes, polychaetes, crustaceans, isopods, gastropods, and bivalves. These species, which typically reside in the top few inches of the substrate, are preyed upon by shorebird species, such as western sandpipers *(Calidris mauri)*, sanderling *(Calidris alba)*, spotted sandpiper *(Actitis macularia)*, and killdeer *(Charadrius vociferus)*, which forage in the area during low tide. Research on stomach contents has shown that the gem clam, the polychaete *Neanthes succina*, and the mud snail are the most common prey species among many shorebirds (USFWS 1992).

Critical Habitat

Areas of habitat considered essential to the conservation of a listed endangered or threatened species may be designated as critical habitat, which is protected under the ESA. Although critical habitat may be designated on private or government land, activities on these lands are not restricted unless there is federal involvement in the activities or direct harm to listed wildlife.

The ROI of the project area contains critical habitat for the following species, as designated by NMFS on the dates shown:

- Central California coast coho salmon, October 3, 2000;
- Central California coast steelhead trout, February 16, 2000;
- Central Valley steelhead trout, February 16, 2000;
- Central Valley spring-run chinook salmon, February 16, 2000;
- Sacramento River winter-run chinook salmon, June 16, 1993; and
- Steller sea lion, March 23, 1999.

3.8.6 Essential Fish Habitat

The MSA defines EFH as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. The MSA set forth a number of new mandates for NMFS, regional fishery management councils, and federal action agencies to identify EFH and to protect important marine and anadromous fish habitat. The MSA provided NMFS with legislative authority to regulate fisheries in the US, in the area between 3 miles (5 km) and 200 miles (320 km) offshore and established eight regional fishery management councils that manage the harvest of the fish and shellfish resources in these waters. The councils, with assistance from NMFS, are required to delineate EFH in FMPs or FMP amendments for all managed species. A FMP is a plan to achieve specified management goals for a fishery and is composed of data, analyses, and management measures for a fishery. EFH that is sanctioned for an FMP includes all fish managed by the plan. Federal agency actions that fund, permit, or carry out activities that may adversely affect EFH are required to consult with NMFS regarding potential adverse effects of their actions on EFH and to respond in writing to NMFS's recommendations. In addition, NMFS is required to comment on any state agency activity that will affect EFH (NMFS 2000).

The MSA requires that EFH be identified for all species that are federally managed. This includes species managed by the councils' FMPs, as well as those managed by NMFS under FMPs developed by the Secretary of Commerce.

The project area is designated as EFH for fish managed under three FMPs—Pacific groundfish, coastal pelagics, and Pacific coast salmon (National Marine Fisheries Service Southwest Region [NMFS SWR] 2001). All species for which EFH exists in the project area and that are found in the project area are listed in Table 3-22. For a comprehensive list of all species included in these three FMPs, refer to Appendix G. A description of the relevant FMPs follows.

West Coast Groundfish FMP

There are 83 species of groundfish that are managed under this FMP. (For a listing of species that are found in the project area, refer to Table 3-22; for a comprehensive list of all species included in the west coast groundfish FMP, refer to Appendix G.) The EFH for west coast groundfish includes saltwater from the mean higher high waterline and the upriver extent of saltwater intrusion in river mouths along the coast of California (NMFS 1998). Therefore, the whole project area lies within the west coast groundfish EFH.

Coastal Pelagic FMP

Species managed under this plan include northern anchovy *(Engraulis mordax)*, Pacific sardine *(Sardinops sagax)*, Pacific (chub) mackerel *(Scomber japonicus)*, jack mackerel *(Trachurus symmetricus)*, and market squid *(Loligo opalescens)* (Coastal Pelagic Species Fish Management Plan 1998). San Francisco Bay, including the project area, qualifies as EFH for all species managed under this FMP.

Pacific Coast Salmon FMP

The Pacific coast salmon FMP includes coho, chinook, and Puget Sound pink salmon (Pacific Fishery Management Council [PFMC] 1999). Variation in the timing of migration and spawning of chinook salmon has led to the designation of ESUs, a distinctive group of Pacific salmon, steelhead, or sea-run cutthroat trout. Four ESUs of chinook and a coho salmon ESU are found in the project area. They are fall, late-fall, winter-run, and spring-run chinook and central California coast coho salmon (Vogel and Marine 1991). The EFH associated with the Pacific coast salmon FMP encompasses all of the project area (PFMC 1999).

3.8.7 Wetlands

The only delineated wetland in the ROI is a small band of northern coastal salt marsh that occurs on the north side of Yerba Buena Island, adjacent to Clipper Cove (FHWA 2001). This salt marsh is not within the proposed disposal area.

Table 3-22
FMP Species Abundance in the Central Bay

Common Name / *Scientific Name*	Fish Management Plan (FMP)	Abundance
Big skate *Raja binoculata*	GF	Present
Bocaccio *Sebastes paucispinis*	GF	Rare
Brown rockfish *S. auriculatus*	GF	Abundant
Cabezon *Scorpaenichthys marmoratus*	GF	Few
Chinook salmon *Oncorhynchus tshawytscha*	PCSP	*
Coho salmon *O. kisutch*	PCSP	*
Curlfin turbot *Pleuronichthys decurrens*	GF	Present
English sole *Parophrys vetulus*	GF	Abundant
Jack mackerel *Trachurus symmetricus*	CP	Present
Kelp greenling *Hexagrammos decagrammus*	GF	Present
Leopard shark *Triakis semifasciata*	GF	Present
Lingcod *Ophiodon elongatus*	GF	Present
Market squid *Loligo opalescens*	CP	*
Northern anchovy *Engraulis mordax*	CP	Abundant
Pacific sanddab *Citharichthys sordidus*	GF	Present
Pacific sardine *Sardinops sagax*	CP	Rare
Pacific whiting (hake) *Merluccius productus*	GF	Present
Sand sole *Psettichthys melanostictus*	GF	Present
Soupfin shark *Galeorhinus galeus*	GF	Rare
Spiny dogfish *Squalus acanthias*	GF	Present
Starry flounder *Platichthys stellatus*	GF	Abundant

Source: NMFS SWR 2001.
*Abundance not known
FMP = Fish Management Plan
GF = Groundfish Fishery Management Plan
CP = Coastal Pelagics Fishery Management Plan
PCSP = Pacific Coast Salmon Plan

The EPA identifies six categories of special aquatic sites: sanctuaries and refuges, wetlands, mudflats, vegetated shallows, coral reefs, and riffle and pool complexes.

Special aquatic sites in the project area include the mudflats and shallow water habitat in Clipper Cove, sand flats on the eastern side of Yerba Buena Island, and vegetated shallows around the perimeter of the island. The waters surrounding NSTI are considered waters of the US and are regulated by Section 10 of the Rivers and Harbors Act. The EPA and the COE regulate all of these aquatic areas.

3.9 GEOLOGY AND SOILS

NSTI is in a geologically sensitive area within the San Andreas Fault zone. The following description includes regional, vicinity, and underlying geologic features at NSTI. The principal geologic features and formations at NSTI are discussed in this section in the context of the regional geologic setting.

3.9.1 Regional Geology and Seismicity

NSTI is within the Coast Ranges Geomorphic Province. Landforms within the region are influenced by geologically young processes, such as active uplift of mountains, rapid erosion of streams, active transform faulting within the San Andreas Fault system, and large fluctuations in sea level brought on by Pleistocene (Ice Age) glaciation.

Treasure Island was constructed in 1936 and 1937 with engineered fill placed on a sandy shoal north of Yerba Buena Island. Treasure Island is nearly flat, with interior elevations ranging from about 3.7 to 11.7 feet (1.1 to 3.6 m) NGVD and with a perimeter dike as high as approximately 13.2 feet (4 m) NGVD. (NGVD is the National Geodetic Vertical Datum of 1929, which is the elevation datum used on US Geological Survey topographic maps.)

Yerba Buena Island is a peak in the bedrock surface that underlies San Francisco Bay. To the east of Yerba Buena Island is a deep erosional trough developed in the Franciscan bedrock surface that extends beneath Alameda Island and the Oakland Airport. As a result, the top of the bedrock goes from an elevation of about 338 feet (103 m) NGVD on Yerba Buena Island to about -1,000 feet (-305 m) NGVD beneath Oakland Airport (US NSF 1992).

Geology in the Vicinity of NSTI

East of the San Andreas Fault, the Bay Area is underlain by marine cherts, sandstone, and volcanic rock belonging to the Franciscan formation. The region that is now San Francisco Bay was above sea level until about a million years ago. Then a combination of basin subsidence and rising sea levels led to sediment deposition in the valleys that had been eroded in the Franciscan bedrock surface. Yerba Buena Island may have been uplifted relative to the surrounding land by faulting along an early offshoot of the Hayward Fault. This offshoot, called the Coyote Shear, is believed to have caused the uplift of the Coyote Hills in Fremont. A deep trough formed adjacent to the Coyote Shear zone extends along the East Bay shore from Emeryville to south of the Oakland Airport. Sediments collected in this trough as streams emptied into the basin.

The first sediments deposited on the Franciscan bedrock surface belong to the Alameda formation. This formation spans several cycles of glacial advance and retreat between 700,000 and 135,000 years ago. During this period, the sea was as much as 350 feet (107 m) lower than present (US NSF 1992). The Alameda formation is about 100 feet (30.5 m) thick on the north, east, and south sides of Yerba Buena Island and increases to over 900 feet (274 m) thick where it fills the trough in the Franciscan bedrock surface beneath Oakland Airport.

The top of the Alameda formation is an erosional surface caused by downcutting streams. The surface of the Alameda formation shows evidence of an ancient channel that may have drained to the Pacific Ocean along the southwest side of San Bruno Mountain. Later, the channel changed direction and drained through the Golden Gate via the east side of Yerba Buena Island. Ultimately the channel moved to its current position west of Yerba Buena Island (US NSF 1992).

Around 115,000 years ago, the climate changed dramatically as the huge glaciers covering the interior melted and sea levels rose high enough to inundate the San Francisco basin. The marine silt and clay sediments that were deposited on the surface of the Alameda formation at this time are known as the Old Bay Mud, and more recently as the Yerba Buena Mud. The thickness of the Yerba Buena Mud ranges from less than 50 feet (15 m) on the west side of NSTI to about 125 feet (38 m) east of NSTI (US NSF 1992). The top of the Yerba Buena Mud is less than 100 feet (30.5 m) below sea level.

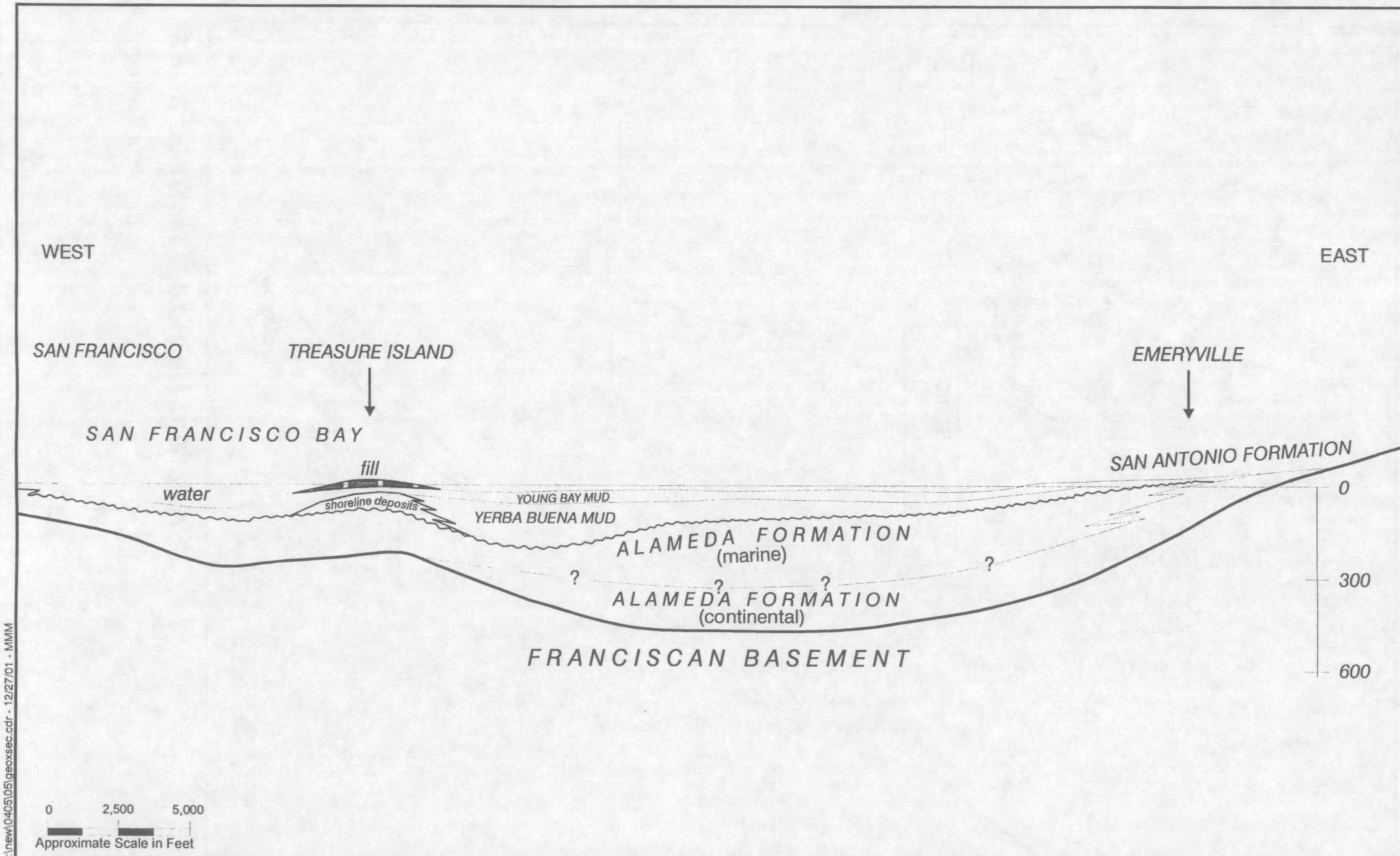
The top of the Yerba Buena Mud is an erosional surface created between about 90,000 and 11,000 years ago when sea levels were lower. Coarser, nonmarine sediments, including silts and sands, were deposited in a variety of estuarine, alluvial, and shoreline dune environments during this period. The classification of these units is not well established. In general, the basin deposits have been lumped together as the San Antonio formation, which includes the Posey and Merritt sand members that form local aquifers. By the end of the Wisconsin glacial age, a number of deeply incised channels had been eroded in the surface of the San Antonio formation, including Temescal Creek, San Antonio Creek, San Leandro Creek, and San Lorenzo Creek. Temescal Creek flowed around the south side of Yerba Buena Island from what is now Emeryville, joining the north-flowing main drainage channel of the South Bay.

At the end of the Wisconsin Age, sea levels rose again to approximately their present levels. During this period, the Younger Bay Mud (or Bay Mud) was deposited in the now inundated incised stream channels. Figure 3-17 shows an interpretive east-west cross section of the geology beneath Treasure Island.

Seismicity

NSTI is located within the San Andreas Fault system, which is approximately 44 miles (71 km) wide in the Bay Area (USGS 1990a). The principal active faults include the San Andreas, San Gregorio, Hayward, Rogers Creek, West Napa, Calaveras, Concord, and Green Valley faults (California Division of Mines and Geology 1982), as shown on Figure 3-18. The last major earthquake to affect the Bay Area was the Loma Prieta earthquake in October 1989; the epicenter of this earthquake was approximately 59 and 61 miles (95 and 98 km) south of Yerba Buena Island and Treasure Island, respectively. An active fault is defined by the California Division of Mines and Geology (CDMG) as a fault that has "had surface displacement within Holocene time (about the last 11,000 years)" (CDMG 1992a). In general, it is believed that future earthquakes are more likely to occur on recently active faults than on faults that have not been recently active.

In California, special restrictions apply to construction within "fault-rupture hazard zones," as defined by CDMG under the Alquist-Priolo Earthquake Fault Zoning Act (Cal. Pub. Res. Code § 2621), to prevent structures for human occupancy being built across the traces of active faults.



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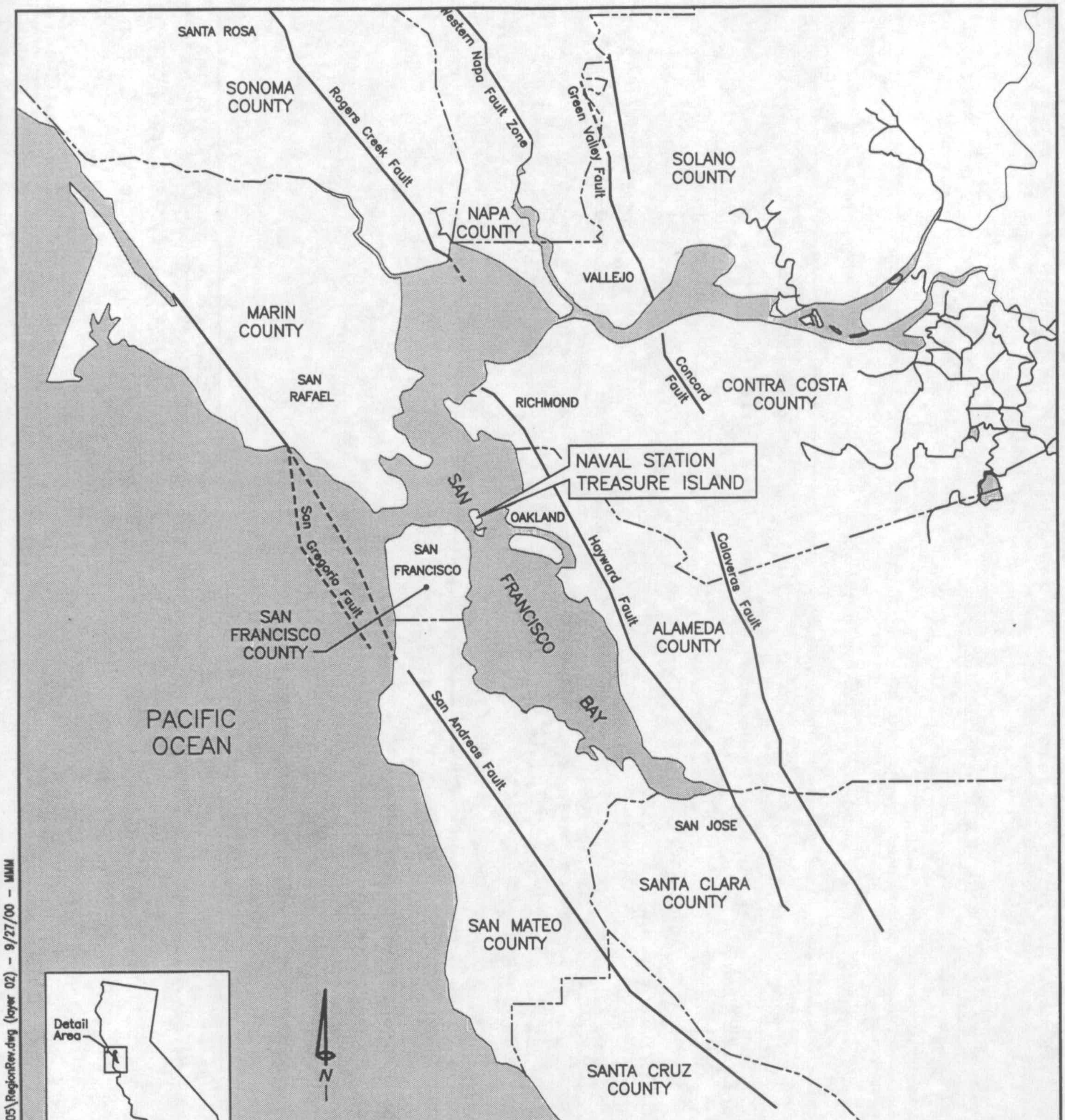
Yerba Buena Island is a high point in the Franciscan formation, which slopes to more than 300 feet beneath Treasure Island. The line of this cross-section passes north of Yerba Buena Island.

Geologic Cross Section from West to East Beneath Treasure Island

Treasure Island, California

Source: Rogers and Figuers 1992

Figure 3-17



The nearest principal active regional faults to Treasure and Yerba Buena Islands are the San Andreas and Hayward Faults.

Legend:

Active fault

Active fault, concealed

County Lines

Principal Regional Active Faults

Bay Area, California

Figure 3-18

Source: Wallace 1990

Treasure Island is in an area of liquefaction potential and has been designated a Seismic Hazards Studies Zone (SHSZ) by CDMG (CDMG 1997). No active faults have been identified at NSTI, and NSTI is not in an Alquist-Priolo Earthquake Fault Zone. NSTI is approximately 7 miles (11 km) west of the northern segment of the Hayward Fault and about 18 miles (29 km) east of the San Andreas Fault (CDMG 1994).

The last major earthquake along the Hayward Fault occurred in 1868 (130 years ago) and had an estimated magnitude of 6.8 Richter (CDMG 1992b). It is estimated that the recurrence interval for an earthquake of that size is about 130 ± 60 years (CDMG 1992c). The last major earthquake on the San Francisco segment of the San Andreas Fault was the 1906 earthquake, with an estimated magnitude of 8.3 Richter (USGS 1990b).

The probability of one or more large earthquakes (Richter magnitude 7.0 or greater) occurring on the San Andreas, Hayward, or Rogers Creek faults has been estimated to be greater than 67 percent for the 30-year period from 1990 to 2020 (USGS 1990c). The estimated individual probabilities of magnitude 7.0 or greater earthquakes for the same period on either the northern segment of the Hayward Fault or the San Francisco Peninsula segment of the San Andreas Fault were estimated to be 27 percent and 23 percent, respectively.

3.9.2 Geology Underlying NSTI

Treasure Island

Treasure Island is connected to Yerba Buena Island by an engineered causeway constructed on a former sand spit. Treasure Island was engineered by placing over 29 million cubic yards (22 million cubic m [m^3]) of fill from various sources (CDMG 1969a). The fill was placed on Yerba Buena Shoals, a submerged area of about 735 acres (298 ha), between February 1936 and July 1937. The shoals varied in elevation from -2 feet (-0.6 m) to -26 feet (-8 m) mean lower low waterline (MLLW). About 8 million cubic yards (6 million m^3) of the original fill subsequently was lost to erosion, settlement, and drift of fine material during placement (DON 1990c).

The unconsolidated deposits that constitute and underlie Treasure Island can be divided into four broad categories based on their engineering characteristics—fill, native shoal sand, recent bay sediments, and older bay sediments (USGS 1994). The fill was derived from hydraulic and clamshell dredging and was placed within a retaining dike built of rock. Filling commenced February 11, 1936, and was completed July 2, 1937, except for refill operations from August 1 to 24, 1937 (CDMG 1969a). The retaining dike was placed in two to four stages on a prepared bed of coarse sand placed over the shoal. The retaining dike was later covered with riprap from elevation -6 to +14 feet (-2 to +4 m) MLLW (USGS 1994). Of the 29 million cubic yards (22 million m^3) of artificial fill placed on Treasure Island, 1.3 million cubic yards (0.99 million m^3) (less than 0.5 percent) was described as "heavy sand," consisting of coarse and well-graded sand and gravel from Presidio, Alcatraz, and Knox Shoals. The remaining material was predominantly sand, but much finer-grained, which was transported to the island by pipeline from nearby dredging grounds. Beneath the artificial fill are sand and Bay Mud deposits that formed the Yerba Buena Shoals.

Yerba Buena Island

Yerba Buena Island consists predominantly of consolidated sandstone and shale of the Franciscan formation. Slopes on Yerba Buena Island range from approximately 5 to 75 percent (DON 1986). The Franciscan formation is overlain in some areas by thin sand deposits belonging to the Pleistocene Colma formation (USGS 1974) or is derived from the underlying Franciscan sandstone (USGS 1957). Only a small area has been filled, on the northeast tip of the island beneath the SFOBB (USGS 1975b; USGS 1957).

3.9.3 Soils

Treasure Island

Soils on Treasure Island and the extreme northeastern tip of Yerba Buena Island, covering zero to 2 percent slopes, are classified as Urban Land-Orthents complex. Urban Land includes those areas that are more than 85 percent covered by asphalt, concrete, or structures. Underlying these areas are reclaimed soil, gravel, broken concrete, Bay Mud, and other materials that extend to depths of -2 to -26 feet (-0.6 to -8 m). The main characteristics of these soils are subsidence, corrosivity (due to the shallow tidally influenced water table), and highly variable soil properties (USDA 1991; DON 1986).

Yerba Buena Island

Soils on Yerba Buena Island range from fine sandy loam to gravely loam 10 to 40 inches (25 to 102 cm) deep. The natural soils consist of a complex of Candlestick, Kron, and Buriburi soils. These are generally coarse, loose soils, which reflect the underlying Franciscan sandstone bedrock. The permeability of these soils is moderately low. Stormwater runoff is rapid, and soil erosion potential is high. Candlestick soil is a sandy loam that is very susceptible to failure on steep slopes. The Kron soil, also a sandy loam, is the shallowest of the three subunits, with a depth of 10 to 20 inches (25 to 51 cm) to bedrock. The Buriburi subunit is a gravelly loam, with a depth of 20 to 40 inches (51 to 102 cm) to bedrock.

The soil covering the moderately steep to steep (5 to 75 percent) slopes of north-central Yerba Buena Island are classified as Orthents, Cut and Fill-Urban Land complex. The original soil structure was modified by cutting and filling (Orthents) and is covered by buildings or pavement (Urban Land). On Yerba Buena Island the properties of this soil are expected to be very similar to the Candlestick-Kron-Buriburi complex from which the soil was derived. Limitations to development tend to be steepness of slopes and high erosion (USDA 1991; DON 1986).

3.9.4 Geologic Hazards at NSTI

Figure 3-19 shows geologic hazards at NSTI, including those that would occur in a major seismic event. These hazards consist of areas of fill and areas subject to liquefaction, settlement, lateral spreading, and slope and dike instability. Each of these potential hazards is described briefly below.

Ground Shaking

The Mercalli intensity scale is used to describe the severity of an earthquake and rates earthquake damage based on anticipated damage levels ranging from I to XII (e.g., an intensity of I means that

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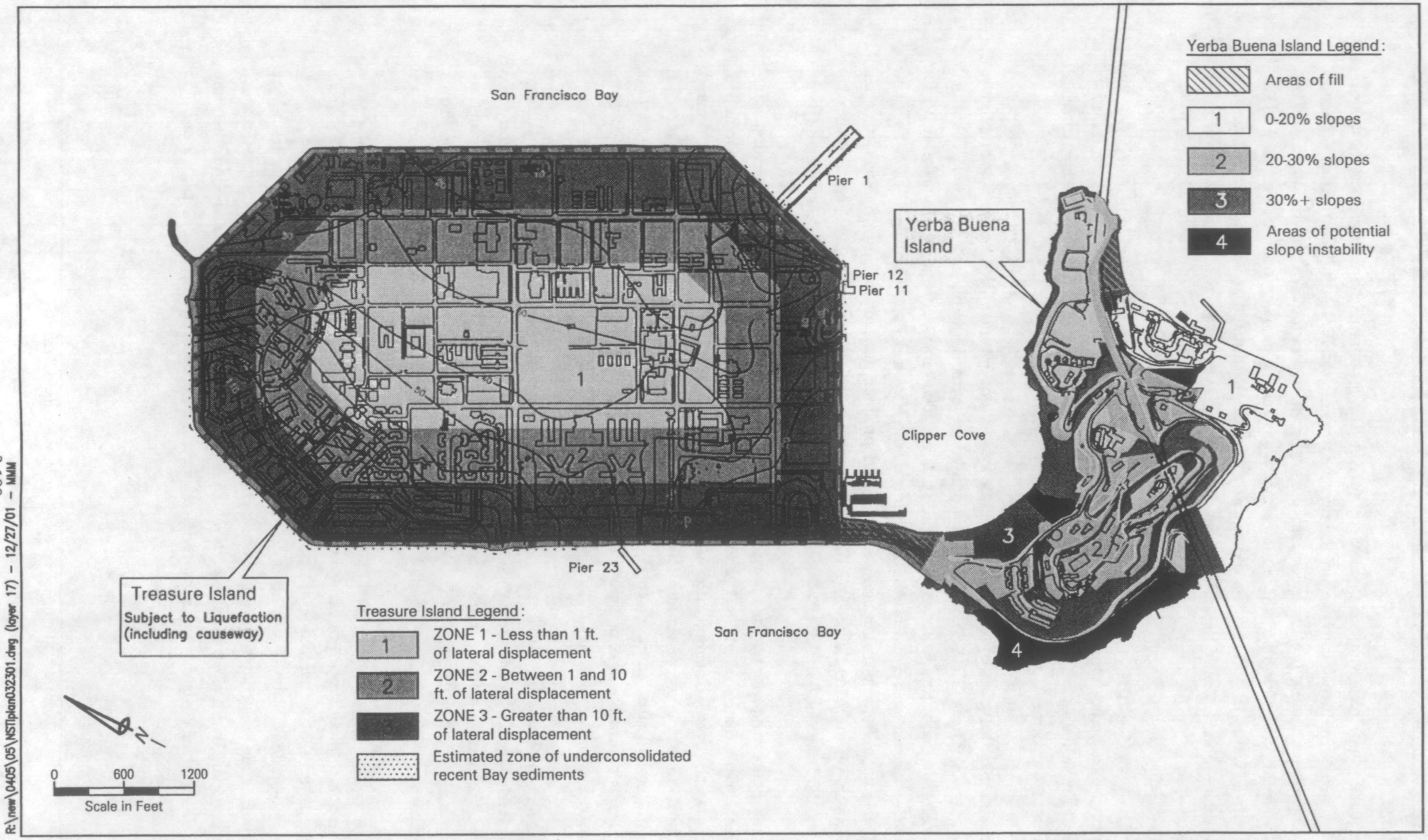


The primary geotechnical hazards induced from earthquakes could include soil liquefaction, settlement, lateral spreading and slope instability.

20 Thickness contours of recent Bay sediments

Most susceptible to deep failure through recent Bay sediments

Areas subject to liquefaction

Geotechnical Hazards

Naval Station Treasure Island, California

Figure 3-19

Source: CCSF 1996e

the earthquake is not felt, whereas an intensity of XII is a condition where large rock masses are displaced, objects are thrown into the air, and damage is nearly total). Earthquake intensity depends on many factors, including the distance from the origin of the earthquake and the nature of the geologic materials at the location where the earthquake is felt. Generally, bedrock shakes the least because seismic waves travel quickly and efficiently through these materials. Loose water-saturated materials shake more violently because seismic waves are slowed down and are amplified in these materials.

Damage to structures depends not only on the intensity and duration of an earthquake but also on how structures are built, the direction of travel of seismic waves, the orientation of the supporting elements of the structure relative to the direction of seismic wave travel, and the underlying materials (i.e., reclaimed soil, cement, and bedrock).

ABAG has prepared a series of maps projecting the intensity of ground shaking in geologic materials throughout the Bay Area (ABAG 1995a). According to these maps, the fill materials at NSTI are the type of materials that typically increase seismic shaking. The most damaging earthquake at NSTI would be one originating on the northern portion of the Hayward Fault (ABAG 1995a). Such an earthquake, with a Richter magnitude of 7.1, could produce ground shaking on NSTI with an intensity of IX on the Mercalli scale (ABAG 1995a). By comparison, ABAG assigned a Mercalli intensity of VIII to ground shaking on NSTI during the October 17, 1989, Loma Prieta earthquake.

The Loma Prieta earthquake resulted in property damage throughout the greater Bay Area, including Santa Cruz, approximately 65 miles (105 km) southeast of San Francisco. The 1989 damage in San Francisco was not evenly distributed through the city. Most of the severe property damage occurred in areas built on unengineered artificial fill in the Marina and South of Market districts where the nature of the soils resulted in liquefaction, severe ground shaking, and fire. Bay Area transportation systems also were disrupted, particularly by the collapse of the Cypress Freeway in the West Oakland neighborhood in the City of Oakland and a portion of the SFOBB (San Francisco 1996b).

During the Loma Prieta earthquake, damage varied widely on Treasure Island. Types of damage observed included lateral spreading, slope failure, pavement collapse and cracking, and dike settlement. Liquefaction was pervasive in the interior of Treasure Island, evidenced by numerous large sand boils. Settlement of up to 12 inches (30.5 cm) occurred, causing numerous pipe breaks and ponding water at the surface (USGS 1994). There were no fires.

There is a 67 percent probability that one or more earthquakes of magnitude 7.0 or greater on a nearby portion of the Hayward or San Andreas Faults will occur by 2010 (USGS 1990c). The USGS (1994) predicted that a magnitude 7.0 earthquake on the Hayward Fault would produce a peak bedrock acceleration of about 0.45 times the acceleration of gravity (g) on Yerba Buena Island, or about 7.5 times the acceleration observed during the Loma Prieta earthquake. Even though Treasure Island is underlain by fill, the peak acceleration in a large nearby earthquake would be about the same on both Yerba Buena Island and Treasure Island, because the seismic response of fill is not linear (USGS 1994).

In addition to ground shaking, several types of ground failure can be triggered by earthquakes. These secondary seismic effects include liquefaction, settlement, and lateral spreading, and in areas with steep slopes, earthquakes may trigger landslides.

Liquefaction Potential

A major cause of damage to structures during earthquakes is soil liquefaction. Liquefaction occurs when loose, water-saturated soils (generally fine-grained sand) are subjected to strong seismic ground motions of significant duration.

Treasure Island has been designated a SHSZ by CDMG because of its high liquefaction potential (CDMG 1997). The San Francisco General Plan Community Safety Element, Map 4, indicates Treasure Island, along with portions of the San Francisco shoreline perimeter, as an area of liquefaction potential (see Figure 3-20) (San Francisco 1996b). Liquefaction was observed in the Marina and South of Market districts (San Francisco 1996b), as well as throughout Treasure Island, during the Loma Prieta earthquake (DON 1990d).

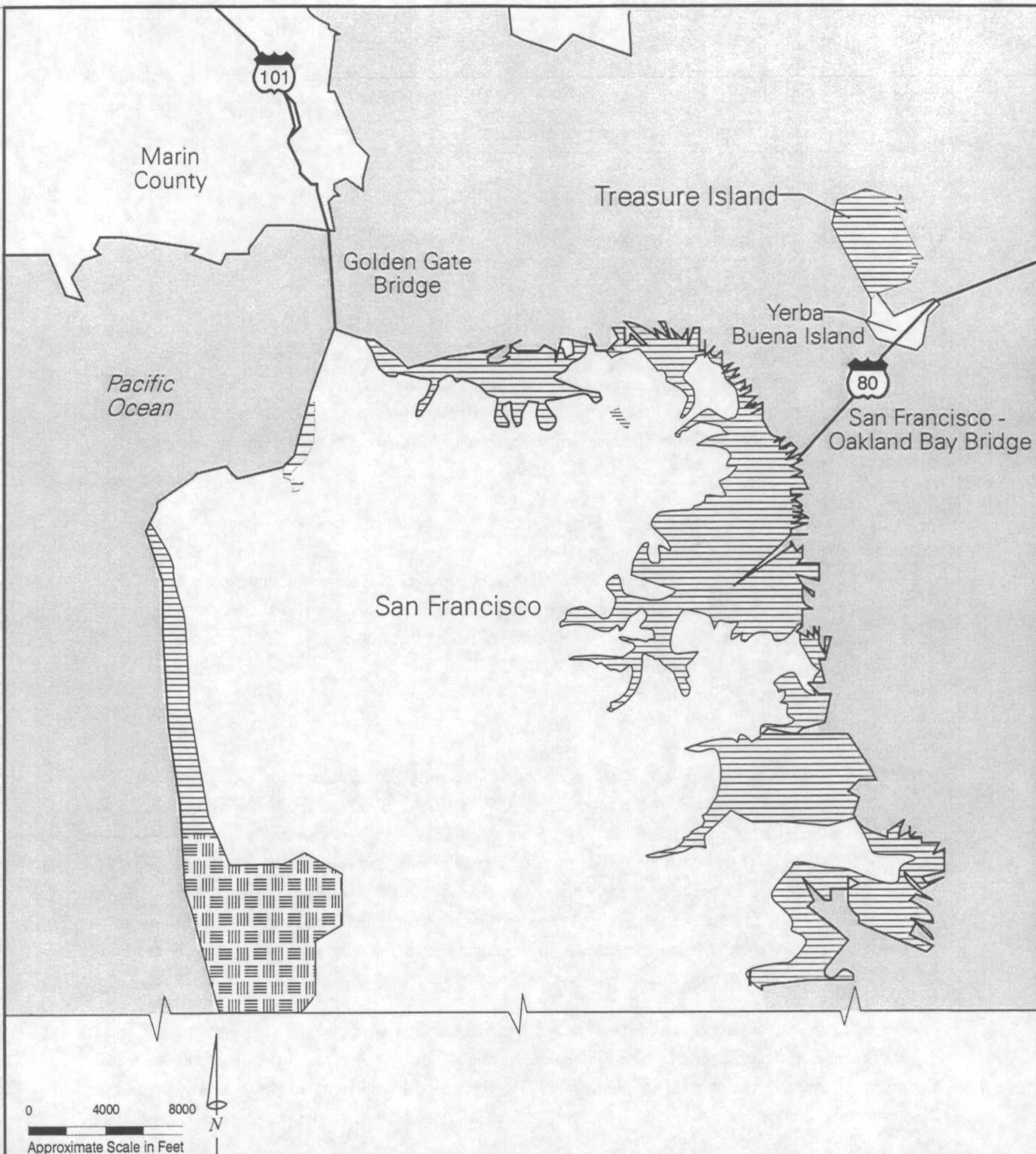
The materials most susceptible to liquefaction are the sand fill below the water table and the underlying shoal sands. The Treasure Island water table typically occurs at a depth of about 5 to 8 feet (1.5 to 2.5 m) below the ground surface. No damage was observed during the Loma Prieta earthquake in an area on the southeast corner of Treasure Island that previously had been compacted to reduce liquefaction hazards (by a method called "vibroflotation"). This suggests that the liquefaction potential of sediments underlying Treasure Island could be reduced by this method or other appropriate site preparation.

Settlement

Settlement is the gradual downward movement of an engineered structure due to compaction of the unconsolidated material below the foundation (USGS 1979). Bay Mud frequently is associated with settlement problems in the San Francisco Bay Area because of its extremely low shear strength (CDMG 1969b). It has been estimated that for an underlying Bay Mud thickness of greater than 60 feet (18 m), about 35 percent of the ultimate settlement would take place during the first 10 years (CDMG 1969a). Due to the relatively old age of the fill across much of Treasure Island, most of the settlement for the current loading already has occurred. Adding new fill or substantially modifying the current loading would initiate a new cycle of settlement.

Seismic shaking can accelerate the rate of settlement, allowing liquefied sediments to reach a greater degree of compaction than before the shaking. In 1990, after the Loma Prieta earthquake, a Navy study to evaluate the seismic stability of NSTI's perimeter dikes estimated that a relatively uniform seismically induced settlement of 1 to 2 feet (0.3 to 0.6 m) would occur across Treasure Island after a large earthquake (DON 1990c).

Differential or uneven settlement results from spatial variations in the uniformity or thickness of the fill and underlying uncompacted sediments. Differential settlement is of particular concern to structures because of the potential for floors, foundations, pavement, or other distributed loads to break or buckle rather than to settle uniformly.



Treasure Island has been designated a seismic hazard zone by the California Division of Mines and Geology because of its high liquefaction potential.

LEGEND:

Area of liquefaction potential

Area of probable liquefaction potential

Seismic Hazards Study Zones - Areas of Liquefaction Potential

Bay Area, California

Figure 3-20

Source: CCSF 1996b

Lateral Spreading

Lateral spreading is the horizontal component of soil movement in the direction of an open (i.e., unsupported) slope face that typically results from liquefaction of a supporting soil layer due to an earthquake. Lateral spreading also occurs due to slope failure that is not caused by earthquakes. Cracks in a nearly horizontal or gently sloping ground surface are a common visual indicator of lateral spreading.

Lateral spreading accompanying liquefaction is a major seismic hazard for Treasure Island (DON 1990e). It has been estimated that lateral displacements in the vicinity of the Treasure Island perimeter dikes may be more than 10 feet (3 m) within the first 500 feet (152 m) from the perimeter for a magnitude 8.0 earthquake on the San Andreas Fault and on the order of 4 feet (1 m) for a magnitude 7.0 earthquake on the Hayward Fault (DON 1990e; San Francisco 1995b). The displacements would extend inland, probably significantly more than the 500 feet (152 m) observed in the Loma Prieta earthquake, and would be exposed as horizontal cracks ranging in size from less than an inch (2.5 cm) to a few feet (0.6 m). Vertical sliding of a fourth to a half the magnitude of the horizontal movements also would occur. Vertical sliding is considered more damaging to structures than the more uniform liquefaction-induced settlement.

Slope Stability

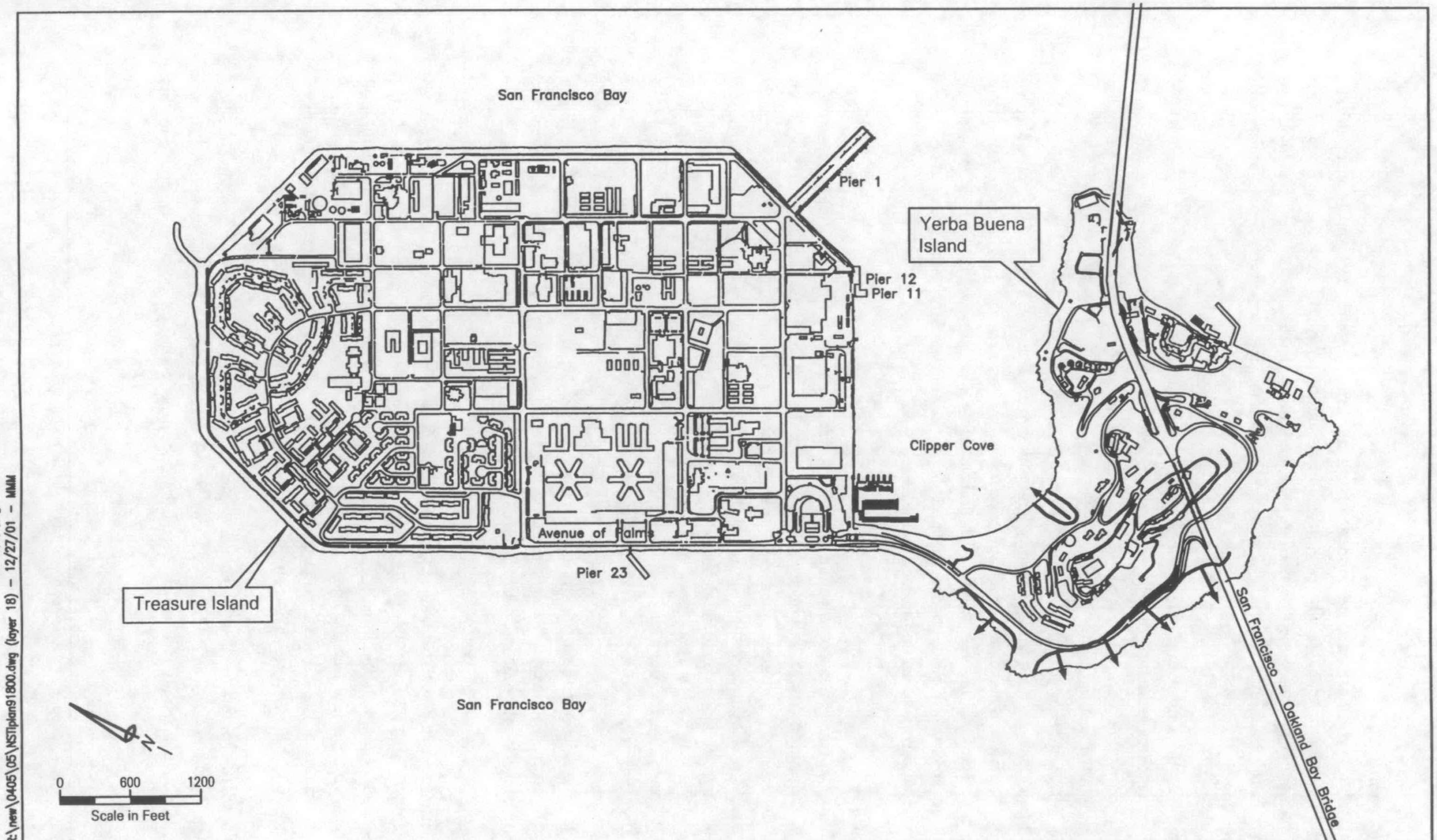
Slope stability depends on a combination of factors, including rainfall, geology, slope steepness, orientation, vegetation cover, seismicity, and development. Slope failure could occur from landslides, debris flows and avalanches, creep, earthflow, or erosion. Catastrophic slope failure in susceptible areas may be triggered by seismic events, rainfall, undercutting of slopes by construction activities, and overloading of unstable deposits.

Figure 3-21 shows the locations of landslide deposits on Yerba Buena Island (USGS 1975a). In addition, the San Francisco General Plan Community Safety Element (Map 5) shows areas of potential landslide hazard on Yerba Buena Island. Landslide deposits are susceptible to continuing failure. Landslide deposits occur at the base of steep slopes around the margin of Yerba Buena Island, mostly on the south side. There is one landslide area on the north side. The island interior is underlain by bedrock with thin soil, which is less susceptible to slope failure.

Dike Stability

Treasure Island contains approximately 15,800 feet (4,816 m) of perimeter stone dike that varies in elevation from 7.7 to 13.8 feet (2.3 to 4.2 m) NGVD. The perimeter dike performs several essential functions—it protects the island interior from flooding, it resists shore erosion, and it retains the fill material that composes the island. The island and the dike were constructed concurrently in 1936 and 1937. Portions of the dike were repaired between 1983 and 1985. This increased the height of the slope north of the entry gate to 54 feet (16.5 m). Repairs consisted of placing rock in this area.

The stability of the perimeter dike at Treasure Island was evaluated by Navy following the 1989 Loma Prieta earthquake (DON 1990c). It was found that in most locations around the island perimeter, less than 6 inches (15 cm) of lateral (bayward) movement occurred in response to this



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Existing landslide deposits are limited to the margins of Yerba Buena Island.

Legend:

Landslide deposit showing direction of movement

Landslide Deposits at NSTI

Naval Station Treasure Island, California

Figure 3-21

Source: Nilsen 1975

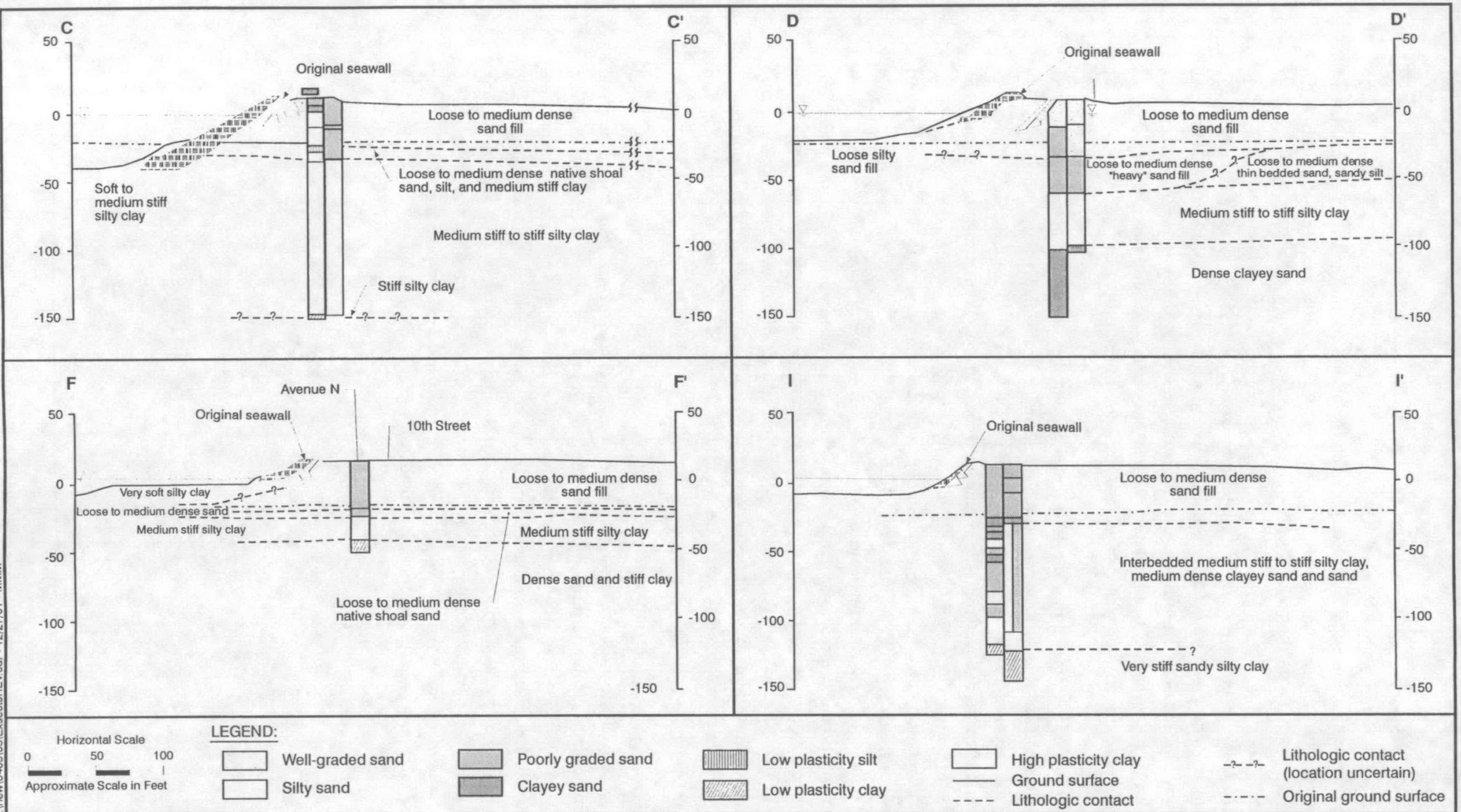
earthquake. Settlements near the dike were generally less than 12 inches (30.5 cm). Small lateral spreading cracks were observed more than 500 feet (152 m) inland from the perimeter dike on the east side of the island (DON 1990c).

Figure 3-22 shows four cross sections of the perimeter dike (DON 1990c). Cross sections FF' and II', which are the most typical, show that the dikes are constructed on potentially liquefiable material. Cross section CC' shows where offshore material was removed by dredging or erosion and was repaired with rock. Section DD' is the location where the retaining dike was reconstructed on 70 feet (21 m) of sand after the slope failed during the initial construction.

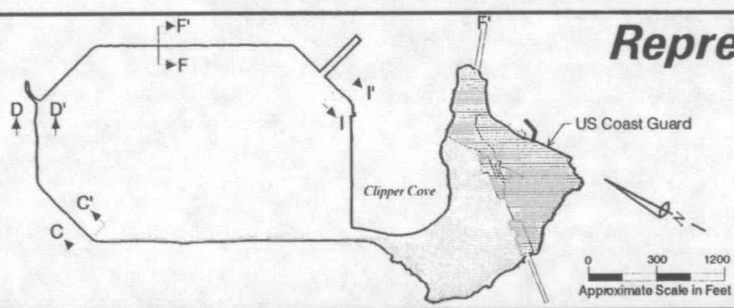
Navy's 1990 study, incorporated into the 1995 Treadwell and Rollo report, indicated that during a design-level earthquake (Richter magnitude 8.0 on the San Andreas Fault or magnitude 7.0 on the north East Bay segment of the Hayward Fault), the sand fill and shoal materials below the water table would be expected to liquefy, and the existing perimeter dikes and causeway shoreline would be expected to spread laterally toward the Bay. Within 500 feet (152 m) inland of the perimeter dike and along portions of the causeway underlain by sand fill and shoal materials, lateral spread displacements were estimated to be greater than 10 feet (3 m). Movements of this magnitude would cause dike failure. Even if improvements are made to mitigate the hazards associated with liquefaction and lateral spreading, rotational slope failures may still occur through the underlying weak layer of recent Bay sediments. During a design-level earthquake, deep failures that could occur through recent Bay sediments could result in up to 5 feet (1.5 m) of slope movement. The study further concluded that if improvements were performed to increase the stability of the slope against deep failures, lateral displacements could be reduced to less than one foot (DON 1990c; San Francisco 1995b).

3.9.5 Improving Ground Stability

Five foundation soil modification techniques have been used at Treasure Island to reduce soil susceptibility to liquefaction and differential settlement (DON 1990c). These techniques involved some form of densifying the underlying soil, such as installing sand compaction piles, installing nonstructural timber piles, vibro-compaction, and stone columns. Mixing the soil with portland cement to form a foundation of "soilcrete" also has been attempted. Figure 3-23 shows the locations of the 12 buildings and one area at the base of Pier 1 with improved foundations. All structures founded on improved ground or piles reportedly performed reasonably well during the Loma Prieta earthquake, with the exception of Building 461 (San Francisco 1995b).



Cross sections illustrate that perimeter dikes are constructed on sand or fill materials.



Representative Cross Sections on Perimeter Dikes at Treasure Island

Treasure Island, California

Source: DON 1990d

Figure 3-22

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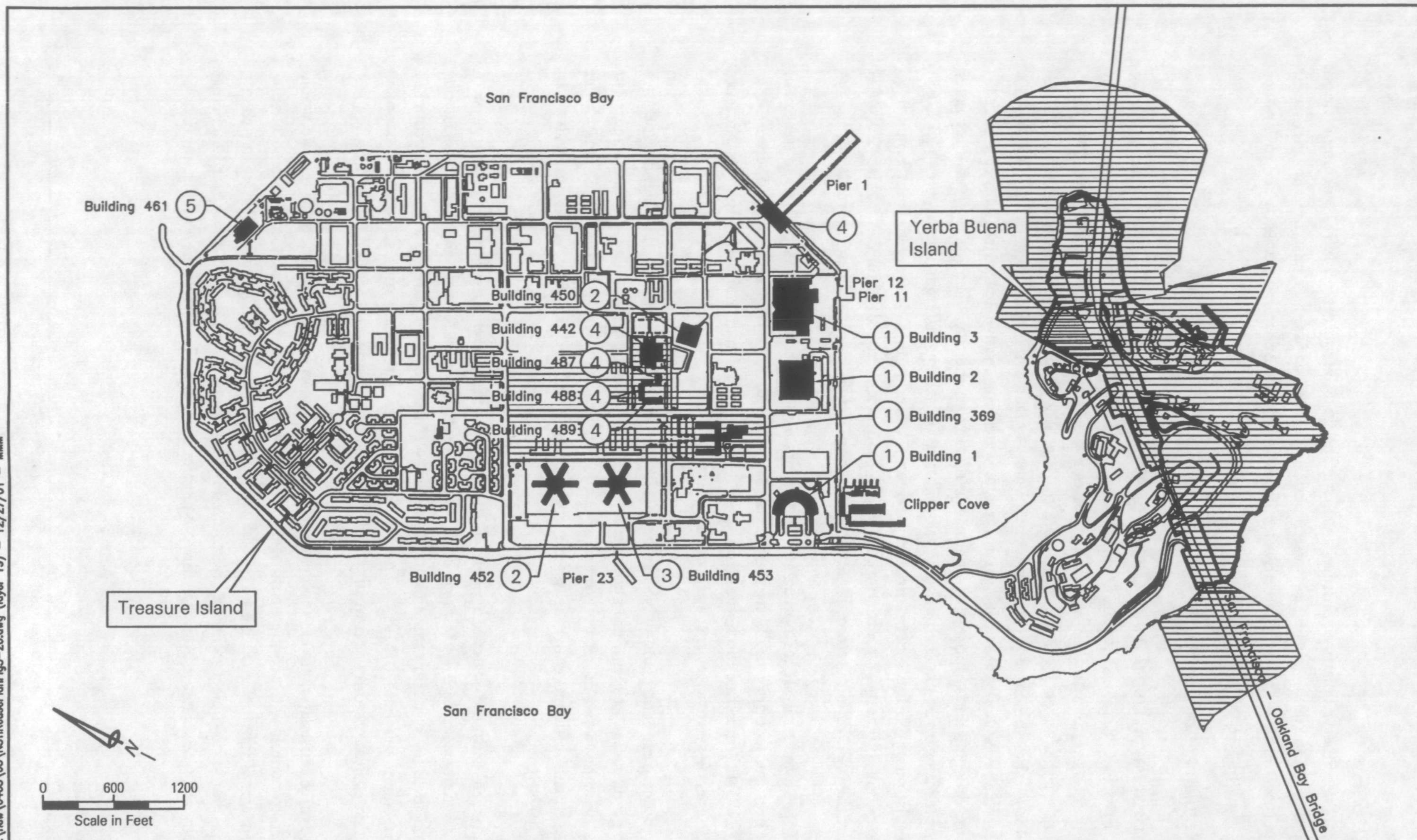

Some of the building sites have been compacted or otherwise prepared to prevent settlement.

Legend:

1 Structure supported by pile foundation

2 Ground improvement by sand compaction piles

3 Ground improvement by nonstructurral timber piles

4 Ground improvement by stone columns

5 Structure constructed on pad of soilcrete

Areas Exlcuded from Proposed Navy Disposal

Source: DON 1990e

Locations of Buildings with Improved Foundations

Naval Station Treasure Island, California

Figure 3-23

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3.10 WATER RESOURCES

This section describes regulatory considerations, surface water resources on NSTI (including flood hazards and water quality), the ground water underlying the islands, and past dredging activities. Other water-related issues, such as stormwater runoff and contamination, are discussed in Utilities (sections 3.11 and 4.11) and Hazardous Materials and Waste (sections 3.13 and 4.13).

3.10.1 Regulatory Considerations

San Francisco Bay Regional Water Quality Control Board

The San Francisco Regional Water Quality Control Board (RWQCB) operates under authority delegated to it by the EPA and the State Water Resources Control Board (SWRCB). The RWQCB is the local enforcement agency for the federal Clean Water Act (Pub. L. 92-500, as amended, 33 U.S.C. §§ 1251-1387) and the State Porter-Cologne Water Quality Act (Cal. Water Code §§ 13000-13999.19). The RWQCB participates in the regionwide long-term management strategy (LTMS) program for dredging and disposing of material dredged from the Bay. The RWQCB also regulates urban runoff discharges under the National Pollutant Discharge Elimination System (NPDES) permit regulations. NPDES permitting requirements cover runoff discharged from point (e.g., industrial outfall discharges) and nonpoint (e.g., stormwater runoff) sources. The RWQCB implements the NPDES program by issuing construction and industrial discharge permits.

All of the stormwater runoff from mainland San Francisco is directed to the city's sewage treatment plants for pretreatment prior to discharge into the Bay or ocean. The treatment plants operate under individual NPDES industrial discharge permits. However, unlike mainland San Francisco, Treasure Island has separate stormwater and wastewater systems.

The wastewater treatment plant at NSTI operates under an NPDES permit. The permit specifies discharge prohibitions, effluent limitations, receiving water limitations, and sludge requirements for the plant. Navy has a self-monitoring arrangement for effluent with RWQCB (DON 1996g). Under this arrangement, effluent constituents are continuously analyzed at one-minute intervals (San Francisco 1995b).

NSTI complies with the statewide General Permit for Stormwater Discharges Associated with Industrial Activities through a notice of intent that covers the entire base as a single industrial site. The permit includes a Stormwater Pollution Prevention Plan (SWPPP) and existing and proposed best management practices (BMPs). The SWPPP includes a representative stormwater sampling program that evaluates stormwater quality from the most active industrial areas (DON 1998g).

Under the three reuse alternatives, anyone conducting specific industrial operations at the site would be required to comply with requirements of the statewide General Permit for Stormwater Discharges Associated with Industrial Activities. In addition, proposed construction on NSTI greater than 5 acres (2 ha) would be subject to measures required by the General Permit for Stormwater Discharges Associated with Construction Activities or to equivalent site-specific permits in compliance with the Clean Water Act.

The RWQCB also regulates water quality in accordance with state laws and policies identified in the San Francisco Basin Plan. The plan identifies beneficial uses of surface and ground waters, wetlands, and marshes, and sets forth water quality objectives to protect the beneficial uses. Beneficial uses for San Francisco Bay include industrial uses, processing, navigation, contact and noncontact recreation, fishing, commercial uses, wildlife habitat, species preservation, and fisheries habitat (RWQCB 1995). Stormwater discharges would need to be consistent with beneficial uses identified for San Francisco Bay as part of the basin plan. NPDES permit effluent discharge limitations are structured to achieve regional compliance with basin plan beneficial uses.

Long-term Management Strategy

The LTMS study is intended to identify long-term solutions to the problem of regional dredge material disposal for a 50-year planning period. An estimated average of approximately 300 million cubic yards (229 million m^3) per year of dredge materials will require disposal through the planning period (1995 to 2045). The LTMS includes provisions for disposing of, rehandling, and reusing dredge material in both construction and fill activities. Under the proposed reuse alternatives, dredged materials would be required to be disposed of in compliance with the LTMS Plan.

US Army Corps of Engineers

The San Francisco Bay and shoreline is within the jurisdiction of the COE. The COE's regulatory authorities and responsibilities are based on the following laws:

- Sections 9 and 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. §§ 401, 403), which regulate diking, filling, or placing structures or work in or affecting navigable waters of the US;
- Section 404 of the Clean Water Act of 1972 (33 U.S.C. § 1344), which regulates disposal of dredged or fill material into the waters of the US; and
- Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. § 1413), which regulates the transportation of dredged material for purposes of disposing of it in ocean waters.

The COE also participates in the regionwide LTMS program for dredging and disposing of material dredged from the Bay. For a proposed project within its jurisdiction, the COE conducts a public interest review by soliciting comments on permit applications through a public notice process. The BCDC, RWQCB, CDFG, EPA, USFWS, and NMFS have specific review and comment responsibility for COE-permitted projects. The COE will review developments proposed under the Reuse Plan that involves structures or dredging within the Bay shoreline or proposed discharges of dredged material into US waters.

3.10.2 Surface Water Resources

Surface Drainage

Surface drainage is the flow or runoff of rainfall from the site. This runoff can be over the ground surface in open drains or through a system of storm drainpipes. Area precipitation is mostly rainfall and averages about 20 inches (51 cm) annually between October through April. The two islands have very different topography; Treasure Island is relatively flat, with shoreline areas protected by a perimeter dike, while Yerba Buena Island has steep slopes and a natural bedrock shoreline. Storm drainage systems of the two islands are separate, but runoff from both systems flows to San Francisco Bay.

Treasure Island

Runoff from Treasure Island collects in a series of storm drain systems and is directed to the Bay via gravity outfalls and pump stations. The Treasure Island storm drainage system includes six storm drain lift stations, each with high capacity pumps for winter storms and lower capacity pumps for summer duty, primarily irrigation runoff. Twenty-five major outfalls serve Treasure Island, primarily steel or concrete pipes, ranging from 12 to 42 inches (31 to 107 cm) in diameter. Approximately 24 smaller outfalls supplement this system, ranging from 4-inch (10-cm) to 10-inch (25-cm) pipes of varied composition (San Francisco 1995a). The Treasure Island storm drain system is adequate in terms of capacity. It performed well in heavy rains during 1995-1996 and 1996-1997, and no ponding or other problems were noted during these events. The Treasure Island storm drain system was inspected in 1991-1992 and was repaired in 1993 (DON 1996i).

Localized ponding occurs on low-lying areas of Treasure Island, particularly on its northern side, from tidal seepage through the perimeter dikes during extreme high tides. This has not affected structures or foundations, which are above the seepage level, but has resulted in ponding in yard and open space areas.

Yerba Buena Island

Runoff from the generally undeveloped portions of Yerba Buena Island flows to the Bay via natural ravines and overland sheetflow; this runoff has caused erosion and slope failures (San Francisco 1998a). Runoff from developed areas flows to the Bay via a gravity stormwater drainage system that discharges at various points along the shoreline.

Flood Hazards

Treasure Island is protected from tidal flooding by a perimeter dike. The dike provides adequate protection from wind- and wake-generated waves (San Francisco 1995b). Tsunamis (also known as seismic sea waves or tidal waves) can be generated by offshore or distant seismic activity or by submarine landslides. Seiches are waves generated in an enclosed body of water caused by seismic shaking, climatic forces, or landslides into the water body. Although seiches are possible in San Francisco Bay, the largest ever measured in the Bay was 4 inches (10 cm) in the 1906 earthquake (Alameda Reuse and Redevelopment Authority 1995). The site has not been mapped for flood hazards by the Federal Emergency Management Agency (FEMA) (DON 1988b).

Tide heights range from approximately zero to about 6 feet (2 m) NGVD, with 100-year highest estimated tides of 6.4 feet (2 m) NGVD (COE 1984). Waves generated by 60 mph (97 km/hour) storm winds may reach heights of approximately 7.5 feet (2 m) (DON 1985). Therefore, combined maximum storm wave and high tide heights could reach about 13 to 14 feet (4.0 to 4.3 m) NGVD.

Predictions of future accelerated sea level rise due to global warming vary widely. The EPA projects a 50 percent likelihood that sea levels will rise approximately 4 inches (10 cm) (an average of 0.14 inches [0.36 cm]/year) by 2025 and approximately 8 inches (20 cm) (an average of 0.16 inches [0.39 cm]/year) by 2050 (EPA 1995).

Water Quality

NSTI surface runoff contains relatively low levels of urban pollutants, such as oil and grease, heavy metals, rubber, fertilizers, and pesticides (DON 1998e). Localized ground water contamination from spills and leaks of hazardous materials have been identified in areas of NSTI, and exceedances of the EPA's ambient water quality criteria for various organic compounds and metals have been measured. Areas of contamination are in proximity to the shoreline, and contaminants may reach the Bay via tidal influence (for further discussion, see Section 3.13, Hazardous Materials and Waste).

San Francisco Bay in its entirety has water quality problems resulting from past and present practices, including urban waste disposal, runoff from agricultural areas into the Bay, contaminants entrained in urban street runoff, ship repair, and accidental spills or deliberate discharges from ships. The SWRCB has listed Central San Francisco Bay as impaired on the basis of field surveys of the water column, sediments, sediment toxicity, bivalve bioaccumulation, and water toxicity. This determination related to levels of copper, mercury, selenium, diazinon, and PCBs (SWRCB 1997; San Francisco 1998d). Regarding discharge of sewage from vessels at Treasure Island, since 1981, most military vessels have been equipped with holding tanks for both sewage and grey water, and there are adequate pump-out facilities at NSTI docks. However, the marina does not have a pump-out station for recreation boats (San Francisco 1998a).

The sewage treatment plant at NSTI provides for secondary treatment of sanitary sewage and discharge to the Bay via an outfall near the plant. Baseline (pre-closure) discharge volumes equaled approximately 600,000 gallons per day (2,271,000 liters per day) dry-weather flow in 1994 (DON 1994b). This quantity and the quality of discharge is permitted by the RWQCB, which has regulatory authority over Bay discharges. The quality of sediments in near-shore waters is addressed in Section 3.13.

3.10.3 Ground Water

NSTI influences on regional ground water hydrology are considered minimal because the islands are isolated from water-bearing aquifers in the Oakland area. Ground water at Treasure Island is recharged by direct infiltration of precipitation, landscape irrigation, and leaking storm drains (DON 1990b; RWQCB 1996). Ground water occurs at shallow depths throughout Treasure Island but is limited on Yerba Buena Island. The Treasure Island subsurface, whether fill, Bay Mud, or shoal deposits, is saturated at elevations of 0 to 6 feet (0 to 2 m) NGVD, depending on tidal influence. Average ground water elevations in the central part of the island were measured at 3 feet (0.9 m) NGVD in 1990 (DON 1990c) and at 4 feet (1 m) NGVD in 1995 (San Francisco 1995b).

The shallow ground water in fills and Bay Mud is hydrologically connected with the saline waters of San Francisco Bay; this connection is greatest at the edges of the island. Tidally influenced ground water table fluctuations have been observed at distances ranging from 90 to 250 feet (27 to 76 m) inland. Ground water at Treasure Island generally flows from the island center towards the shoreline. Tidal mixing with ground water has been noted up to about 100 feet (30.5 m) inland from the shoreline (DON 1995e), resulting in brackish ground water.

The San Francisco Groundwater Master Plan (San Francisco Public Utilities Commission 1996) does not consider ground water at Treasure Island to be an important water supply aquifer. The San Francisco Bay RWQCB has conducted a Pilot Beneficial Use Project (RWQCB 1996), which also considers Treasure Island to be of limited value as a water supply aquifer and recommends deleting water supply as a beneficial use for the island's ground water. Localized ground water contamination from spills and leaks of hazardous materials are discussed in the hazardous materials and waste section of this document (Section 3.13).

3.10.4 Past Navy Dredging

Treasure Island and Yerba Buena Island form a cove east of the causeway, open to the northeast. A large shoal area from -3 to -5 feet (-0.9 to -1.5 m) mean lower low waterline (MLLW), which is about 3.1 feet (0.9 m) below NGVD, has formed across the cove, extending to within 150 yards (137 m) of Pier 1. Other depths in the cove, including the marina area, range to -20 feet (-6 m) MLLW. Berth soundings at Pier 1 are -28 feet (-8.5 m) MLLW on the north side and -15 to -28 feet (-4.5 to -8.5 m) MLLW on the south side.

Between 1970 and 1985, Navy dredged a 3-mile (5-km) long, 1,000- to 1,500-foot (305- to 457-m) wide channel to a depth of -35 feet (-11 m) MLLW adjacent to the northern and eastern shores of Treasure Island. This channel continues around the east side of Yerba Buena Island, extending about 3,000 feet (914 m) beyond its southern edge. Three contiguous berthing zones on the northern and eastern side of Treasure Island were dredged to a depth of -45 feet (-14 m) MLLW in 1970 and 1985. The dredging from these projects extracted approximately 763,000 cubic yards (583,355 cubic m) of material, averaging about 51,000 cubic yards (38,992 cubic m) per year from 1970 to 1985. In 1970, approximately 272,000 cubic yards (207,958 cubic m) of material was disposed of at open water sites. In 1985, about 35,000 cubic yards (26,759 cubic m) was disposed of on Treasure Island, and approximately 457,000 cubic yards (349,401 cubic m) was disposed of at the Alcatraz Island disposal site (COE 1996). Navy has maintenance dredged the marina and pier areas of NSTI. The last dredging in the marina area occurred in 1990.

Pursuant to Section 404 of the Clean Water Act (33 U.S.C. § 1344), dredge material is tested routinely for dissolved metals and other contaminants. Sediment quality in the southeast corner of Treasure Island was evaluated in 1984 for the potential homeport of the USS Missouri Battle Group, and no contaminants were detected (DON 1984b). Navy's Treasure Island Dredging Project reported no history of sediment contamination in the navigation channel (COE 1996). Few data are available to establish sediment quality in Clipper Cove, although data from nearby locations suggest that sediments at other locations in the Central Bay, including nearby at Yerba Buena Island, are contaminated by metals. In one study that compared the toxicities of sediments from various sites in the Bay, sediments from Clipper Cove were found to be toxic to sea urchin, mussel, and amphipod species. However, the source of the toxicity was thought to be high concentrations of ammonia and sulfides, rather than heavy metals. The concentration of copper, nickel, cadmium, zinc, and lead in the Clipper Cove sediments was found to be relatively low (Anderson et al. 1995).

3.11 UTILITIES

This section describes the utility delivery system and quantities of utility use under baseline conditions, including potable water and fire protection distribution, wastewater collection and treatment, stormwater collection, electrical and natural gas, telecommunications, and solid waste systems. The utility infrastructure is still owned by Navy, unless otherwise noted. Portions of the utility infrastructure cross the property that was appropriated by FHWA and transferred to Caltrans; under the terms of the appropriation, that infrastructure is owned by Caltrans. San Francisco personnel are granted periodic access to the property to maintain the infrastructure. While this section describes the current condition of utility systems, levels of use or consumption represent baseline conditions (1993 units). Most buildings at NSTI, including housing units, were not individually metered for utilities.

3.11.1 Potable Water and Fire Protection Water

NSTI has a combined potable water and fire protection distribution system. The San Francisco Water Department supplies water to NSTI through its 10-inch (25.5-cm) diameter steel main attached to the SFOBB. According to the San Francisco Water Department (San Francisco Water Department 1998), the maximum pump rate for that line is 1,750 gallons per minute (6,624 liters per minute).

Emergency backup water service is provided by the East Bay Municipal Utilities District (EBMUD) through a Navy-owned 12-inch (30.5-cm) cement-lined steel pipe attached to the SFOBB. This pipe is connected to a Navy-owned pump station in Pier E-23 of the SFOBB and connects at the east end of the SFOBB with approximately 13,000 feet (3,962-m) of Navy-owned land-based pipeline of 12-inch (30.5-cm) and 14-inch (35.6-cm) diameter that originates at a connection to an EBMUD water main in Emeryville. The water is treated with chloramines before delivery to NSTI. The line used to supply water to SFOBB fire hydrants; however, it hasn't been used for hydrants since 1999. Total capacity of the system is about 2 million gallons per day (MGD) (7.5 million liters per day).

Water from the San Francisco main is routed into 4 concrete reservoirs on Yerba Buena Island, which have a total storage capacity of approximately 6.5 million gallons (24.5 million liters) (DON 1994b). Use of Reservoir 242 is reserved for fire protection purposes. The capacity of this reservoir is adequate for five hours of firefighting demand (San Francisco 1995b). The structural condition of these reservoirs was not investigated. However, reservoirs 242 and 168 have been drained and repaired, and Reservoir 227 was inspected by a dive team, was drained in 1998, and remains out of service (DON 2001; San Francisco 1998a). The capacity and use of each reservoir is summarized in Table 3-23.

The original potable water distribution system, constructed in 1939, was separate from the fire protection system. This separate system was replaced in 1989-1990 with a combined system. All areas are supplied by gravity except for one housing area on Yerba Buena Island that is supplied from Reservoir 168 by a booster pump. Water from Reservoir 227 is supplied to Treasure Island through an 18-inch (46-cm) main with a maximum flow rate of approximately 7,900 gallons (29,905 liters) per minute. A 22-inch (56-cm) backup main runs parallel to the 18-inch (46-cm) main.

Table 3-23
Water Storage Capacity at NSTI (Yerba Buena Island)

Reservoir	Capacity (million gallons)	Water Elevation Range (feet above mean sea level)	Use
227	3.0	252.5 to 255.5	Primary potable water supply to Treasure Island
162	2.0	322.0 to 327.0	Supplies potable water to Yerba Buena Island
242	1.0	247.0 to 251.0	Reserved for fighting fires
168	0.5	356.0 to 359.0	Supplies potable water to Yerba Buena Island
(Total capacity)	6.5		

Source: DON 1994b.

The present system is equipped with sectioning valves that allow sectors to be isolated for maintenance and repair. The distribution system, which includes a chlorinization unit, is in good condition and received regular preventive maintenance. The polyvinyl chloride (PVC) piping in the distribution system, which is present in limited sections, does not conform to San Francisco Water Department standards (San Francisco 1996e). The fire hydrants do not possess backflow regulators. The total capacity of the system is approximately 2 MGD (7.5 million liters per day) (San Francisco 1995b). Baseline domestic water use was 0.96 MGD (3.6 million liters per day) (DON 1997c).

3.11.2 Wastewater Collection and Treatment

The wastewater collection system was constructed in 1939 and was upgraded in 1984 (DON 1994b). Approximately 52,600 linear feet (16,032 linear m) of 4-inch (10-cm) to 16-inch (40.5-cm) diameter pipes collect the wastewater. Wastewater flows through collection piping from gravity and pumping. The system includes 24 lift stations of varying configurations and equipment. The collection system at Yerba Buena Island is linked to Treasure Island by an underwater 6-inch (15-cm) force main. There is also a sewer line connecting the two islands along the causeway.

The current condition of the collection system is fair (DON 2001). Some elements of the plant are in need of repair (San Francisco 1995b). About a third of this system was cleaned and inspected in 1997; repairs were made to the most critical deficiencies (San Francisco 1998a). The wastewater collection system does not conform to San Francisco standards (San Francisco Public Utilities Commission 1998). The plant is constructed on unreinforced ground adjacent to the shoreline, where lateral spreading of 10 feet (3 m) or greater during a severe earthquake is considered a possibility (San Francisco 1995b).

Wastewater flows to the wastewater treatment plant in the northeast corner of Treasure Island. The plant, constructed in 1990, provides secondary treatment and has a design capacity of approximately 2 MGD (7.5 million liters per day), wet weather capacity of approximately 8 MGD (30 million liters per day), and storage tanks that provide 200,000 gallons (757,082 liters) of pre-treatment storage. The plant has a minimum treatment requirement of approximately 200,000 MGD (757,082 million liters per day) and is capable of providing service to a residential population of about 22,000 people. Under a RWQCB permit, the wastewater treatment plant is permitted to discharge up to approximately 2 MGD (7.5 million liters per day) of treated effluent to San Francisco Bay.

Following treatment, residual solids are disposed of at Redwood Landfill in Marin County. Baseline sewage generation was 0.04 MGD (0.15 million liters per day)(DON 1997c).

3.11.3 Stormwater Collection

Storm drains throughout NSTI collect stormwater and convey it via 4-inch (10-cm) to 42-inch (107-cm) pipelines to outfalls. There are 49 outfalls at the perimeter of Treasure Island and 26 at Yerba Buena Island. San Francisco's assessment of the collection system indicated potential problems, including crushed pipe, redwood pipe, asbestos cement pipe, and cross connections, which may be contributing to petroleum contamination of the Bay (San Francisco Department of Public Works 1996). The problem with cross connections has been resolved, and problems related to the nonstandard materials and age of the system require repair and replacement actions (DON 2001). The stormwater collection system does not conform to San Francisco standards (San Francisco Public Utilities Commission 1998). The system operates under a NPDES statewide General Permit for Stormwater Discharges Associated with Industrial Activities. Stormwater quality with respect to urban pollutants is discussed in Section 3.10, Water Resources. Stormwater contamination due to hazardous materials, spills, and leaks is discussed in Section 3.13, Hazardous Materials and Waste.

3.11.4 Electrical and Natural Gas Systems

Electricity Distribution

Electricity is supplied to NSTI through a Navy-owned 12.5-kilovolt (kV) underwater cable, which originates at a connection at the eastern end of the SFOBB. At that point, the underwater cable connects to a Navy-owned 12.5-kV overheard line originating at the Navy's Davis Substation, located at the former Fleet and Industrial Supply Center (FISC) in Oakland (DON 1996d; DON 2001). Western Area Power Administration (WAPA) power (115 kV) supplied to the substation is stepped down to 12.5 kV for transmission to NSTI. WAPA electricity is generated by 55 hydroelectric plants with a combined capacity of 10,600 megawatts. The Pacific Gas and Electric Company (PG&E) provides secondary electrical power to NSTI via a 12.5-kV underwater cable originating at PG&E Substation J in San Francisco.

The main electrical substation is in Building 3 on Treasure Island. From here, four underground 12.5-kV feeders extend to the NSTI distribution system. In addition, two 4.16-kV feeders supply power to Yerba Buena Island (DON 1985). The electrical distribution system at NSTI was upgraded in the early 1980s. The system is in good condition and is capable of providing service to existing load demands (San Francisco 1995b; DON 2001). The Yerba Buena Island distribution system is aging and in need of replacement. Individual buildings at NSTI are not metered, and most meters serve multiple buildings or customers.

Natural Gas Distribution

PG&E provides natural gas transmission service to the NSTI main metering station, located near the steam plant (Building 455), via a 10-inch (25.5-cm) 120-pounds per square inch (psi) (8.4 kilograms [kg] per square cm [cm^2]) underwater main from the East Bay. This main has a capacity of 700,000 cubic feet (178,360 m^3]) per hour, which is 130 percent of the current load.

Four distribution systems (referred to as A, B, C, and D) supplied both Treasure Island and Yerba Buena Island with natural gas. The Existing Conditions Report (San Francisco 1995b) determined that the distribution system is in adequate condition for current needs. Buildings and customers on the islands are not individually metered. System A, installed in 1965, delivers service (mostly via steel pipe) at 10 psi (0.7 kg per cm^2). System B was installed in 1965 to provide natural gas to steam plants. The steel lines provide gas at 10 psi (0.7 kg per cm^2) to steam plants located in buildings 455 and 540. System C was installed in 1970 to provide service to the fire fighting school and the steam generation plant at Building 550. Gas is provided through an 8-inch (20-cm) diameter steel pipe at 20 psi (1.4 kg per cm^2). System D was installed in 1985 to provide service to the steam plants at buildings 520 and 530. Gas is provided at 20 psi (1.4 kg per cm^2) through a 4-inch (10-cm) diameter PVC pipe.

3.11.5 Telecommunications

A conduit on the SFOBB provides telecommunications connections to NSTI from San Francisco through trunk lines installed in 1989. The system consists of basic T-1 trunks (24 voice channels per T-1, over 2 twisted pairs) grouped in cables of 100 to 1,200 copper pairs. The copper cable, consisting of 9,375 cable pairs, is in excellent condition (DON 1996l).

The NSTI telecommunications system was designed for the specific requirements of Navy and tenant organizations. The telephone component of the telecommunications infrastructure was installed in 1989 using both new and used equipment (DON undated). Telecommunications at NSTI were divided into three independent systems: the residential system, the Consolidated Area Telephone System (CATS), and a classified system. The residential system is operated by Pacific Bell, and CATS and the classified system were owned and operated by Navy (DON 1996d). CATS and the classified system are no longer in operation.

The residential system owned and operated by Pacific Bell provides standard "1+" service to meet private needs at family residences, bachelor officers quarters, and bachelor enlisted quarters. The service is connected to a cable hut at Yerba Buena Island from Pacific Bell's central office switch at 611 Folsom Street in San Francisco. From the hut, the cable extends to Building 1 via the causeway. The Pacific Bell system appears to be at capacity. The bachelor officers quarters and bachelor enlisted quarters are underserved. In addition, the cable lines have degraded to the point where only 25 percent are operable.

3.11.6 Solid Waste

Solid waste was collected either by Navy or a private contractor. The solid waste is delivered to the Davis Street Transfer Station, and then it is transported to the Altamont Landfill (DON 1996e). The landfill receives an average of 6,000 tons (5,444 metric tons) per day from all customers and can accept a maximum of approximately 11,150 tons (10,117 metric tons) per day (Waste Management of Alameda County 1997). The landfill was recently expanded and will reach capacity in approximately 30 years.

Weights are not routinely measured, as Navy's agreement with the contractor is based on the number of containers by volume removed, as shown in Table 3-24. Assuming that each emptied container was full, NSTI would have generated approximately 113,623 cubic yards (86,871 m^3) or 14,203 tons (12,882 metric tons) of solid waste in fiscal year 1993 (FY93). In addition, Navy removed approximately 8,291 cubic yards (6,339 m^3) or 1,037 tons (941 metric tons) of construction debris in FY93. Combining these two waste streams, the total amount of solid waste generated at NSTI in FY93 is estimated to be 15,240 tons (13,829 metric tons), an average of approximately 42 tons (38 metric tons) per day. The recycling program at NSTI is outlined in the solid waste management plan.

Table 3-24
Solid Waste Removed from NSTI (Fiscal Year 1993)

Container Type	Volume of Container	Number of Containers Removed, FY93
Waste container	50 cubic yards	312
Waste container	20 cubic yards	728
Waste container	5 cubic yards	13,156
Waste container	2 cubic yards	364
Can	32 gallons	105,144
Bag	variable	12,108
TOTAL	77 cubic yards/32 gallons	131,812

Source: DON 1994b.

3.11.7 Steam Distribution

Five boiler plants supplied various areas of NSTI with steam for building space heating, domestic water heating, and galleys (DON 1994b). Steam was the primary source of heat for most nonresidential buildings at NSTI. Approximately 14,000 feet (4,267 m) of distribution pipe and approximately 14,000 feet (4,267 m) of condensate return pipe make up the distribution system. Over 70 buildings received steam at a pressure of 55 psi (3.9 kg per cm^2) through insulated underground piping. The entire system was upgraded in 1983 and closed in 1997; the pipes remain in place.

3.12 Public Services

This section describes public services both at NSTI and in San Francisco. Fire protection, police protection, and emergency medical services are addressed.

3.12.1 Fire Protection

NSTI

Prior to October 1, 1997, Navy NSTI Fire Department provided services to the islands, including fire suppression, emergency medical services, fire prevention, public education, and hazardous materials mitigation response. A mutual aid agreement was in place with San Francisco. Historically, Navy operated two fire stations, one on Treasure Island (Building 157) and one on Yerba Buena Island (Building 213). The 1988 Master Plan Update (DON 1988b) indicated that the Treasure Island station was in substandard condition and recommended constructing a new facility. This project was not completed.

In 1993, the department employed 41 fire fighters and 18 emergency medical personnel DON 1996t). In 1993, the department's jurisdiction included the Hunters Point Annex in San Francisco. Approximately 51 fire suppression calls and 224 emergency medical calls were dispatched to both sites in 1993.

In 1992, a fire fighter training complex was completed at NSTI. The complex is a computer-controlled facility with six fire-simulator sites, four classrooms, and training grounds (San Francisco 1995a). Located at the northeast edge of Treasure Island, the complex covers approximately 8 acres (3 ha). The complex was used in 1993 to train Navy firefighters and in 1997 by the California Maritime Academy to train its personnel (San Francisco Fire Department 1997b). The San Francisco Fire Department began using the complex to train department personnel at the end of 1997. San Francisco's planned expansion of the complex would accommodate aircraft crash rescue training facilities.

San Francisco

The San Francisco Fire Department is responsible for providing fire suppression, fire prevention, and emergency medical assistance in San Francisco. On October 1, 1997, the department began providing these services to NSTI from Building 157.

The department is trained and equipped to meet the unique public safety requirements that San Francisco presents, including surf, water, and cliff rescues. The department employs 1,510 fire fighters, 719 of whom are cross-trained as emergency medical technicians (EMTs) (San Francisco Fire Department 1996). Approximately 294 personnel are on duty during an average shift, distributed among 41 fire stations throughout San Francisco.

The department's response time goal is three minutes for the first engine company, and the department is currently achieving that goal (San Francisco Fire Department 1996). The department received 57,112 emergency calls during fiscal year 1996 (San Francisco Fire Department 1997a). Of that number, 29,940 were fire suppression calls, a decrease of 6.6 percent over fiscal year 1995. The remaining calls were emergency medical-related and totaled 27,712, a decrease of 7.5 percent from fiscal year 1995.

Landward, the station nearest NSTI is at 36 Bluxome Street in San Francisco, approximately 4.5 miles (7 km) from NSTI. This station has an 11 person staff, and the vehicles include 1 fire engine, 1 fire truck, and 1 chief's sedan.

Laws and ordinances governing building structure design and equipment requirements for detecting, restraining, and extinguishing fires are in Cal. Code. Regs. Title 24, § 13000 et seq., and the Life Safety Provisions of the San Francisco Uniform Building Code, 1991, as amended in 1992. Under these laws, fire stations and other critical facilities (e.g., police) are required to remain operational after an earthquake. Enforcing these laws and ordinances is the responsibility of the Bureau of Fire Prevention (San Francisco 1996d).

3.12.2 Police Protection

NSTI

Prior to October 1, 1997, police protection services were provided by Navy NSTI Security Department. The Security Department's primary mission was to enforce Navy/military, federal, state, and local laws; to provide security to NSTI; and to maintain evidence for possible use in criminal cases (DON 1996j). A mutual aid agreement was in place with the San Francisco Police Department. In the event of large-scale emergency situations, the department would assist or would be assisted by the San Francisco Police Department and the California Highway Patrol. The department also provided initial response and assistance to emergency situations on the SFOBB.

Police protection facilities at NSTI included a police station (Building 107), a dispatch center (within Building 157), and a military brig (Building 670). The police station was in the middle of Treasure Island and housed the administrative offices of the department. The brig remains on a 3-acre (1-ha) site in the northwest corner of the island. It housed 10 single-person cells and 5 prisoner dormitories. The 1988 Master Plan Update (DON 1988b) indicated that Building 107 was in substandard condition and recommended constructing a new facility. This project was not completed.

In 1993, the department employed 65 police and security personnel. Of those, an average of eight officers were on duty at any one time. Approximately 9,400 emergency calls were dispatched in 1993 (DON 1996j).

San Francisco

The San Francisco Police Department is the agency responsible for providing police protection and security services to San Francisco. On October 1, 1997, the department began providing these services to NSTI.

The department currently employs 2,043 sworn officers and 398 nonsworn administration and support personnel (San Francisco Police Department 1996). A minimum of 200 patrol officers are on duty during daytime shifts. This number increases during nighttime shifts, due to an increase in criminal activity. Patrol officers are deployed at 10 district stations throughout San Francisco. The patrol force is fully staffed, although newly hired personnel have not all completed the field training program. In 1996, the department received 776,678 calls and filed 139,425 reports, increases over 1995 levels of 25.1 percent and 0.7 percent, respectively (San Francisco Police Department 1997).

3.12.3 Emergency Medical Services

NSTI

The fire department at Treasure Island has first response duties for emergency medical calls. If a situation requires transporting injured persons, an ambulance unit is requested. The medical clinic employed approximately 12 EMTs trained in basic life support (DON 1996k). A minimum of two EMTs were on duty at all times. The San Francisco fire department is now the emergency response organization for NSTI.

San Francisco

The San Francisco Department of Public Health provides paramedic services to San Francisco. The Paramedic Division of the Department of Public Health currently employs 189 paramedics, an average of 32 of whom are on duty at any one time (San Francisco Department of Public Health 1996, 1997). The division dispatches approximately 65,000 calls per year, approximately 54,000 of which require ambulance transportation to San Francisco hospitals. Of the 1,510 San Francisco Fire Department personnel, 719 are dual-trained as EMTs. Fire department emergency medical personnel are dispatched when a call involves a potentially life-threatening situation.

3.13 HAZARDOUS MATERIALS AND WASTE

Military activities on NSTI have included operations and training, administration, general engineering support and mission operations, medical and dental activities, materials maintenance, and supply operations. Fuels, lubricants, paints, solvents, and other industrial chemicals have been used throughout much of the history of the station.

3.13.1 Hazardous Materials Management

Under the requirements of the BRAC process, NSTI completed a basewide environmental baseline survey (EBS) in May 1995 (DON 1995c) and a BRAC cleanup plan (BCP) in March 1997 (DON 1997b). The EBS is a broad evaluation and summary of all known and suspected areas where hazardous materials or petroleum products have been handled, stored, disposed of, or released within the boundaries of NSTI and adjacent areas. It also identifies clean properties on Treasure Island under the Community Environmental Response Facilitation Act (CERFA) (Pub. L. 102-426, 42 U.S.C. § 9620). The BCP provides an overview of the environmental restoration and associated compliance programs.

At the time of NSTI closure, hazardous materials that were not required for the environmental site restoration process or caretaker maintenance activities were collected from all designated storage areas and transferred to the Defense Reutilization and Marketing Office (DRMO) off-site. Materials that were not redistributed or sold were removed and disposed of off-site in accordance with the Resource Conservation and Recovery Act of 1976 (RCRA) (Pub. L. 94-580, 42 U.S.C. § 6901-6992k) and state requirements.

Small quantities of hazardous materials will continue to be used at NSTI during the caretaker period. These materials will consist predominantly of lubricants, degreasers, and cleaners used for general maintenance.

3.13.2 Hazardous Waste Management

NSTI has a hazardous waste management plan (DON 1992b). NSTI generated approximately 9,921 pounds (4,500 kg) of hazardous waste per month (based on 1991 records) and is classified as a fully regulated generator, subject to all laws and regulations governing the generation and handling of hazardous waste. Navy hazardous waste management plan for NSTI (DON 1992b) remains in effect until NSTI is transferred to a new owner.

Twelve facilities at NSTI generated or stored hazardous wastes or recyclable petroleum products. Waste solvents, cleaners, adhesives, and other hazardous wastes, as well as recyclable oil and antifreeze, were generated by various NSTI work centers. Hazardous wastes were stored in designated hazardous waste accumulation areas for up to 90 days before removal by the hazardous waste handler. The hazardous waste handler notified the NSTI hazardous waste manager of container types, volume, and the waste profile.

Navy has a one-time compliance closure program for closing operational light industrial and hazardous waste and material accumulation facilities. All hazardous wastes and hazardous materials other than structural materials such as asbestos and lead-based paint (LBP) will be removed in accordance with the NSTI hazardous waste management plan before properties are transferred or conveyed. For discussion of asbestos and LBP, see sections 3.13.4 and 3.12.7.

3.13.3 Installation Restoration Program (IRP)

The IRP is an ongoing DoD-administered program for identifying, evaluating, and remediating contaminated sites on federal lands under DoD control. The administrative record for the NSTI IRP is at:

US Navy, Southwest Division
Naval Facilities Engineering Command
1230 Columbia Street, Suite 1100
BRAC Operations Office
San Diego, California 92101-8517

Public information repositories are at two locations:

San Francisco Public Library
Main Branch, Government Division
100 Larkin Street
San Francisco, CA 94102

Caretaker Site Office
410 Palm Avenue, Room 123
San Francisco, CA 94130

In January 1995, the Department of Justice (DOJ) determined that a federal agency is not required to independently implement NEPA at CERCLA clean-up sites. The DOJ decision stated that the CERCLA process incorporates many of the NEPA values of public participation including public review, and collection of environmental and human health impacts that could result from a federal action, thus making the clean-up decision process under CERCLA the functional equivalent of NEPA. Clean up of Navy property under CERCLA is independent of, and not a part of, the NEPA decision-making process.

On September 29, 1992, Navy and California Environmental Protection Agency (Cal EPA) (including the Department of Toxic Substances Control [DTSC] and the RWQCB) signed a federal facility site remediation agreement (FFSRA) (DON 1992c). The NSTI FFSRA provides a means for Navy and the State of California to cooperate in accelerating and streamlining the remediation process at NSTI consistent and in compliance with applicable federal and state laws and to use consensus problem-solving to achieve the goal of environmental restoration. It is designed to ensure that environmental impacts associated with past and present activities at NSTI are investigated and remediated to protect public health and welfare and the environment. The agreement specifies and outlines review and approval procedures and stipulates primary and secondary documents to be prepared, meetings to be conducted, and deadlines and extensions to meet. It also takes into consideration emergencies and removals, dispute resolution procedures, enforceability, public participation criteria, real property transfer, statutory compliance and corrective action, quality assurance, funding, and exemptions. Appendix D of the NSTI FFSRA, which provides the submittal schedule for draft primary and secondary documents, was updated in October 1997.

The following tasks are required under Section 6.2 of the agreement:

- Investigating and sampling all sites to establish the nature and extent of contamination at each site;
- Conducting feasibility studies to determine the most effective method of cleaning up each site;
- Preparing all response actions for the sites, such as removing contaminants and installing treatment systems;
- Conducting operation and maintenance response actions at the sites, including maintaining treatment systems and monitoring to assess the effectiveness of remediation; and
- Notifying and coordinating federal and state natural resource trustees.

CERCLA Remediation Process

CERCLA (Pub. L. 96-510, 42 U.S.C. §§ 9601 – 9675) requires that all federal facilities comply with federal and state laws with regard to the remediation process. The NSTI IRP follows this process. Phases of the process are described below.

Site Discovery (SD). A site is an area that has had or has the potential for a hazardous substance release. A single facility may contain several sites to be studied under the IRP. Occasionally, potential sites are discovered by searching through records or during construction projects.

Preliminary Assessment (PA). This assessment identifies areas of potential contamination and evaluates each area to determine if there is a threat to human health or the environment. A PA report is developed from readily available information, such as past inventory records, aerial photographs, employee interviews, existing analytical data, and an activity visit. A PA may recommend no further action, additional work under the IRP, or a removal action.

Site Inspection (SI). This inspection is conducted after the PA when additional information is needed to evaluate a site. Collecting and analyzing soil, sediment, surface, and ground water samples may help to determine the need for further study. Information needed for hazard ranking also is collected. An SI may recommend a site for no action, further study, or an immediate removal action. The PA and SI often are performed concurrently.

Removal Actions. A removal action is any action that may be necessary to monitor, evaluate, prevent, minimize, or mitigate a threat or potential threat to public health or welfare or the environment, A removal action may include cleanup or removal of a hazardous materials release or hazardous material threat. Usually, removal actions do not completely clean up a site and additional remediation steps are required.

Remedial Investigation (RI). This investigation is performed to more fully define the nature and extent of the contamination at a site and to evaluate possible methods of cleaning up the site. During the investigation, ground water, surface water, soil, sediment, and biological samples are collected and analyzed to determine the type and concentration of each contaminant. Samples are collected at different areas and depths to help determine the spread of the contamination. The RI process at NSTI typically is done in two phases; phase I is site characterization, and phase II is characterization of the constituents of concern, the migration pathways, and the potential hazards to human health and the environment.

Feasibility Study (FS). The FS identifies and evaluates all applicable site cleanup alternatives. As part of the study, a risk assessment is performed to quantify the level of risk posed by the site. Each alternative is evaluated for effectiveness in protecting human health and the environment, ease of implementation, and overall cost. The RI and FS may be performed concurrently.

Remedial Action Plans (RAP)/Record of Decision (ROD). These two documents are essentially the same. RAP is the state term, while ROD is the federal term. The RAP/ROD documents the reasoning behind selecting a particular cleanup alternative. A RAP/ROD is required even if the most feasible alternative is no action.

Remedial Design (RD). After a RAP/ROD is signed, the remedial design phase can begin. In the RD, specific construction parameters or equipment specifications are presented for the selected cleanup alternative.

Remedial Action (RA). During the remedial action phase, the selected cleanup technology is implemented. An RA can be as simple as soil excavation or as complicated as a complete ground water treatment system, which may operate for many years. Remedial action work plans for long-term remediation include operation and maintenance (O&M) plans, which continue until the cleanup is complete.

Long-term Monitoring. After completion of the RA, federal, state, or local regulatory agencies may require subsequent monitoring of the site.

Petroleum Hydrocarbons

The CERCLA definitions of hazardous substances (42 U.S.C. § 9601(14)) and pollutants or contaminants (42 U.S.C. § 9601(33)) specifically exclude petroleum unless specifically listed. The EPA interprets the term petroleum to include hazardous substances found naturally in crude oil and crude oil fractions, such as benzene, and hazardous substances normally added to crude oil during refining. Petroleum additives or contaminants that increase in concentration in petroleum during use are not excluded from CERCLA regulations. Petroleum hydrocarbons in ground water that are not commingled with CERCLA-regulated substances are addressed under a corrective action plan (CAP) administered by the RWQCB. The RWQCB, whose mandate is to protect ground water quality, requires that potential petroleum contamination in ground water be evaluated and, if necessary, a petroleum CAP be developed.

The Draft CAP for NSTI covers nine major sites. These sites are described in more detail below. Several of these sites were initially part of the NSTI Installation Restoration Program (IRP) but following initial site investigation under the IRP, the sites were excluded from the IRP under the CERCLA petroleum exclusion. CAPs also will be developed for fuel lines and smaller UST sites at NSTI. Cleanup levels for these petroleum-contaminated sites are being determined by Navy, in coordination with the RWQCB. Final cleanup methods have not been determined but could range from no action to bioventing.

Site 04 (Hydraulic Training School) and Site 19 (Refuse Transfer Area). Sites 04 and 19 (formerly IR 04 and IR 19, respectively) are along the northeastern side of Treasure Island. The Hydraulic Training School operated from the 1970s to 1997, and the Refuse Transfer Area operated from 1953 to 1997. These two sites were investigated together, since they have similar contaminants and are in close proximity. Petroleum-contaminated soils were identified at these sites, which were investigated during the phase I and II RIs under the IRP and were found to qualify for CERCLA's petroleum exclusion. Navy transferred the sites into the petroleum program based on data indicating contamination limited to petroleum products. Recommendations for site remediation described in the November 1997 Draft CAP include excavation and treatment for surface soil and bioventing for subsurface soil.

Site 06 (Fire Training Area). Site 06 (formerly IR 06) is along the northern side of Treasure Island. This site was an active fire training area from 1946 to 1992. During the phase I and II RIs under the IRP, this site was found to qualify for CERCLA's petroleum exclusion. Navy transferred the site into the petroleum program based on data indicating contamination limited to petroleum products. However, in June 1997, the RWQCB requested that Navy continue ground water monitoring for potential CERCLA substances at the site, including, but not limited to, metals and chlorinated solvents (RWQCB 1997b). Remediation measures recommended in the Draft CAP include excavation and treatment for surface soil, bioventing for subsurface soil, and biosparging for ground water.

Site 14 (New Fuel Farm) and Site 22 (Navy Exchange Services Station). Site 14 and Site 22 (formerly IR 14 and IR 22, respectively) are north of 11th Street, between Avenue M and the Bay on the northeast corner of Treasure Island. The sites are being investigated together because of their close proximity and similar contaminants. IR 14 operated as a fuel farm between 1943 and 1997. IR 22 operated as Navy Exchange Service Station between 1946 and 1997. Contaminants of concern include VOCs, petroleum, and metals in soil. IR 14/IR 22 were investigated during the phase I and phase II RIs and later found to qualify for CERCLA's petroleum exclusion. Based on data indicating contamination limited to petroleum products, Navy is evaluating this site as part of the petroleum program. Draft CAP recommendations include excavation and treatment for surface soil and bioventing for subsurface soil.

Site 15 (Old Fuel Farm). Site 15 (formerly IR 15) is on the southeastern portion of Treasure Island, at the intersection of California Avenue and Avenue M. The site operated as a fuel farm during the 1940s. Petroleum and SVOC contamination in soil were identified as the contaminants of concern during phase I and phase II RIs. Based on data indicating contamination limited to petroleum products, Navy is evaluating this site as part of the petroleum program. Draft CAP recommendations include excavation and treatment for surface soil and bioventing for subsurface soil.

Site 16 (Clipper Cove Tank Farm). Site 16 (formerly IR 16) is on the western corner of Yerba Buena Island at the intersection of Macalla Road and Treasure Island Road. The site operated as a tank farm between the 1940s and the 1960s. Phase I and phase II RIs identified petroleum-contaminated soil. Based on data indicating contamination limited to petroleum products, Navy is evaluating this site as part of the petroleum program. Draft CAP recommendations include excavation and treatment for surface soil and bioventing for subsurface soil.

Site 20 (Auto Hobby Shop and Transportation Center). Site 20 (formerly IR 20) is in the western portion of Treasure Island. The site is bordered by 12th Street to the north and Avenue B to the west. From 1943 to 1997, the site operated as an auto hobby shop and a transportation center. RI activities identified petroleum-contaminated soil. Draft CAP recommendations included excavation and treatment for surface soil.

Site 25 (Seaplane Maintenance). Site 25 (formerly IR 25) is on the eastern portion of Treasure Island between Avenue H and Avenue N. The site operated as a seaplane maintenance facility between 1943 and 1958. Petroleum-contaminated soil was identified during RI activities. Based on data indicating contamination limited to petroleum products, Navy is evaluating this site as part of the petroleum program. The Draft CAP recommendations include bioventing for subsurface soil. Regulatory agency concerns at this site are limited to releases at the shoreline and their potential environmental risks.

NSTI Installation Restoration Program

Twenty-nine IR sites were identified for investigation. Based on the recommendations of a PA/SI conducted in 1988 (DON 1997b), 25 sites remained in the IRP for further study; four sites (02, 18, 23, 26) were removed from the IRP. The three sites requiring no further action under CERCLA are sites 02, 18, and 23. Site 26 was composed of underground storage tanks (USTs); therefore, it was deactivated as an IR site and the individual tank sites are being investigated under a separate petroleum program. As discussed above, nine sites that were initially part of the IRP were removed from the program following the determination under the Draft RI that the petroleum products were the only concern and therefore qualified for the petroleum exclusion under CERCLA. The 16 remaining IRP sites are described below.

Localized ground water contamination from hazardous materials has been noted on both Treasure Island and Yerba Buena Island. Contamination is from various petroleum hydrocarbons that have spilled or leaked into the soil and entered the high ground water table. This contamination has resulted in limited exceedances of the US EPA's ambient water quality criteria for various organic compounds and metals commonly associated with fuel leaks and spills and, at one site, solvents associated with dry cleaning activities (DON 1996n). Most of the known contaminated areas are on the perimeter of Treasure Island within approximately 50 to 600 feet (15 to 183 m) from the shore. Given the proximity of many of these contaminated sites to San Francisco Bay and tidal influences, some contaminated materials may have entered the Bay in concentrations exceeding the US EPA criteria. Specific sites are discussed below.

A draft baseline human health risk assessment and a draft ecological risk assessment report were prepared in conjunction with the draft phase I RI report for the IR sites in 1993. A phase II RI was conducted during 1994, 1995, and 1996 to further characterize the extent of contamination and to collect data necessary for evaluating remedial alternatives.

As IR sites are identified as candidates for removal actions, and after removal actions are completed, some of the IR sites are expected to require no further action.

IR 01 (Medical Clinic). IR 01 is in the central portion of Treasure Island at the intersection of 9th Street and Avenue F. From the 1940s to the late 1970s, the site operated as a medical clinic for NSTI personnel. The clinic occupied Building 257, and the X-ray department was operated at the south end of the middle wing in Building 257 until the early 1970s. During this period of operation, developer and corrosive fixer solutions leaked from the X-ray equipment through the wooden floor of the building into the soil (DON 1997i). Residual silver from the X-ray film was identified as the contaminant of concern at the site. The removal of silver-contaminated soil was completed at the site, and no further action under CERCLA is recommended.

IR 03 (Polychlorinated Biphenyls (PCB) Equipment Storage Area). IR 03 is along the southeastern side of Treasure Island, approximately 150 feet (46 m) from the shore. The site was used to store and repair transformers used to supply electricity to the various facilities at NSTI from before 1953 to the present. Some of the transformers were known to have contained PCBs. PCB-containing transformer fluid may have been spilled at the site as recently as the mid-1980s (DON 1997i). Based on sampling results from the PA/SI, IR 03 was recommended for further study in an RI. Based on the results of the draft RI, baseline human health risk assessment, and ecological risk assessment, the site has been recommended for no further action under CERCLA.

IR 05 (Old Boiler Plant). IR 05 is on the southeastern portion of Treasure Island. The old boiler plant operated from the 1940s to 1968. Asbestos was used as an insulating material for the boilers and pipes in the building, and mercuric nitrate may have been used during boiler plant operations to inhibit scaling. In 1968, the building was demolished and the debris reportedly buried in place. Underground fuel pipelines that may have been damaged in the 1989 Loma Prieta earthquake run beneath the site in an east-west direction along 5th Street. A 1988 PA/SI identified that building debris possibly containing asbestos had been buried at the site; therefore, an RI was recommended. Asbestos was not detected in the soil samples taken from the site; however, petroleum and volatile organic compound (VOC) contamination were discovered during Navy's RI. Petroleum contamination will be addressed under the petroleum program. The site will be subject to deed restrictions due to VOC-contaminated ground water. Any additional investigation of ground water at the site will be investigated as part of the dry cleaning facility at Site 24. The Navy will prepare a letter documenting no action at the site

IR 07 (Pesticide Storage). IR 07 is north of 13th Street, between Avenue M and the Bay, in the northeast corner of Treasure Island. Between 1943 and the 1960s, the site was used for storage and handling of a variety of liquid substances, including pesticides, chlorinated herbicides, and paint. Pesticide- and herbicide-contaminated soil and ground water were identified at the site during the phase I and phase II RIs. Additional sampling for contaminants of concern will be conducted in May 2002.

IR 08 (Army Point Sludge Disposal Area, Yerba Buena Island). IR 08 is on Army Point at the extreme eastern end of Yerba Buena Island. The site was used as a disposal area for sludge from the wastewater treatment facility on Treasure Island between 1968 and 1976. Waste sludge was transported from the wastewater treatment facility and spread on the ground between the foundations of former buildings at IR 08 to dewater the sludge. Pesticides and metals, including elevated lead concentrations, were identified as the contaminants of concern at the site. DTSC requested that additional effort be made to explain elevated lead concentrations in four borings collected from the site. The Navy is currently reviewing responses to DTSC and CDFG's comments on the Draft Final Onshore RI and will follow up with their findings. Additional research is currently planned to evaluate ecological risk from potential surface water runoff (TtEMI 2000a). This site was transferred to FHWA/Caltrans on October 26, 2000.

IR 09 (Foundry). IR 09 is in the central portion of the southern end of Treasure Island. The site has been used for multiple operations since the early 1940s, including a forge and foundry between 1943 and 1947, and a paint shop between 1952 and 1981. Metals are the most likely contaminants from the foundry, and the paints used at this facility were known to have contained lead and zinc-chromium based pigments. Two concrete trenches, the remnants of a hydraulic lifting system, indicate that vehicle maintenance also may have been performed at this site. From 1981 to 1987, the foundry building was used as a welding training school by Navy Technical Training Center, and in 1994, it was the site of a small boat maintenance shop. A 1988 PA/SI recommended further investigation because of potential soil and ground water contamination from previous site activities (DON 1997i).

Petroleum and metal contamination was discovered in both soil and ground water during RI activities. The site was recommended for further evaluation and inclusion in the RI because of ecological risks associated with the potential impacts to the Bay. A request was made in March 2000 by DTSC and RWQCB to analyze soil samples collected near a 30-gallon (114-liter) hydraulic hoist tank for VOCs and PCBs. RWQCB also requested adding VOCs to the ground water monitoring parameter for well 09-MW01. Analytic results indicated no major VOC contamination to ground water. The results of that research will lead to decisions regarding remedial action through the IRP

IR 10 (Bus Painting Shop). IR 10 is north of 13th Street, between Avenue M and the Bay, in the northeast corner of Treasure Island. It was constructed during the mid-1940s and operated as a bus painting shop through the 1950s. For an unspecified period of time, the building also may have been used for paint mixing. Pesticides, petroleum, and semi-volatile organic compounds (SVOCs) have been identified as the contaminants of concern in both ground water and soil. Additional research was conducted regarding the catch basins located within the building. Elevated total petroleum hydrocarbon- (TPH-) extractable concentrations were detected in sediment samples collected from the catch basins. Additional research and ground water monitoring is scheduled through December 2000, followed by the completion of a RI. Resulting investigations will lead to decisions regarding remedial action through the IRP

IR 11 (Yerba Buena Island Landfill). IR 11 is a 200- by 600-foot (66- by 197-m) former marsh area on the southern side of the eastern tip of Yerba Buena Island. The site operated as a landfill for an unspecified period of time beginning in 1935. The exact nature of materials disposed at this site is unknown but is thought to include solid wastes from Yerba Buena Island and Treasure Island operations. Former USTs and a fuel pipeline also may have been sources of contamination at the landfill site. The 1988 PA/SI concluded that the site warranted further investigation in an RI due to potential soil and ground water contamination from past site operations (DON 1997i). Metals, petroleum, pesticides, VOCs, and SVOCs in soil and ground water were identified as the contaminants of concern during RI activities. Additional investigation is planned to determine the extent of the landfill. Further investigations will lead to decisions regarding remedial action through the IRP (TtEMI 2000a). This site was transferred to FHWA/Caltrans on October 26, 2000

IR 12 (Old Bunker Area). IR 12 comprises about 90 acres (36 ha) at the northwestern end of Treasure Island. Ammunition, electronics, tear gas, and film were stored in bunkers throughout the site from the early 1940s until about 1969 when the site was converted to military housing. Soil trenching and boring activities performed prior to housing foundation excavations in 1965 indicated that debris, including rubbish, bottles, wire rope, paper, and steel drums, had been disposed of in the areas between and around the bunkers. Incinerator ash was also suspected to have been disposed in this area. A UST and a former landing strip in the area also may have contributed to potential contamination at this site (DON 1997i).

A PA/SI was conducted in 1988 to review past activities. A preliminary risk assessment, including a geophysical survey to locate utilities and buried items, and soil sampling for metals, TPHs, VOCs, and SVOCs, was conducted in 1990. Following the preliminary risk assessment, an RI was performed to assess the nature and extent of the identified TPH and metals contamination, to determine whether the bunker areas and buried oil tank continued to be sources of contamination, to assess the extent of soil and ground water contamination, and to characterize ground water hydraulic parameters for modeling purposes. Petroleum, metals, and SVOCs were identified as contaminants of concern during RI activities. Additional soil and ground water sampling to characterize the portions of the site beyond the boundaries of known or suspected contamination began in October 1997. Further evaluation of the site in an FS was recommended due to potential human health and ecological risks. A removal action at the site is scheduled to be completed in 2002 and will be followed by a Final RI.

This site is currently residential and is expected to remain residential under reuse. Numerous housing units on this site are currently occupied under interim leases with San Francisco and TIHDI for market rate rentals and homeless housing. All CERCLA response actions will be conducted to ensure continued protection of human health and the environment. The Remedial Action Objective under CERCLA will be for residential or unrestricted use, consistent with the current configuration of housing on NSTI. Any subsequent redevelopment of the area that would involve demolition of existing structures and the grading and reconfiguring of the soil would be subject to land use controls on the property, including a City-administered soil management plan that would ensure proper characterization and management of soil and groundwater disturbance. In addition, deeds conveying the affected property will contain a notice that portions of the property not accessible to remediation efforts (such as areas beneath existing foundations) may require additional characterization and possible response actions subject to appropriate regulatory oversight.

IR 13 (Stormwater Outfalls, Treasure Island and Yerba Buena Island. Offshore Sediments). IR 13 comprises six stormwater outfall areas (A through G) surrounding Treasure Island and the northeastern end of Yerba Buena Island. Historically at IR 13, petroleum leaks were suspected to have entered Treasure Island storm drains and flowed to the Bay. Navy has a stormwater pollution prevention plan (SWPPP) that monitors the outfalls for petroleum and other potential contaminants on an annual basis.

During the 1993 phase I ecological risk assessment for NSTI, chemicals of potential ecological concern (CPOECs) were identified using data collected during the stormwater investigation, in which drainage areas served by each stormwater outfall were investigated. The onshore RI focused on human health issues, and the offshore RI primarily addressed ecological risks based on the CPOECs identified in the 1993 data. The draft offshore RI report was completed in June 1998 (DON 1998d). Based on chemical concentration screening of offshore sediment and pore water, the following were identified as chemicals of concern at the IR 13 outfall areas: arsenic, barium, cobalt, copper, lead manganese, mercury, nickel, selenium, vanadium, zinc, and organics, including dichlorodiphenyltrichloroethane (DDT), PCBs, and polychlorinated aromatic hydrocarbons (PAHs). The draft offshore RI addresses the risk these chemicals present to benthic receptors and birds. The Final RI has been submitted to the agencies for review and recommends no further action at this site.

IR 17 (Tanks 103/104). IR 17 is near the center of Treasure Island, approximately 1,400 feet (460 m) west of the eastern edge of the island. The site is bordered by Avenue H, Avenue I, 5th Street, and an unnamed street to the south. The site contains two 200,000-gallon (757,000-liter) diesel fuel aboveground storage tanks (ASTs). The ASTs were installed before 1943 and decommissioned in 1993. An estimated 20,000 gallons (75,700 liters) of diesel fuel was reportedly released from the ASTs in 1983. The 1983 fuel spill, other unrecorded minor spills, and tank or pipeline leaks are thought to be the primary sources of contamination at the site (DON 1998d). Petroleum, metals, and SVOCs were detected in soil and ground water during RI activities. No VOCs have been detected in preliminary well and soil samples collected at the site. The Navy will prepare a letter documenting no action at the site. IR 17 could be the subject of deed restrictions due to solvent-contaminated ground water, depending on the success of remediation actions. Petroleum will be addressed under the petroleum program (Uribe and Associates 2000).

IR 21 (Vessel Waste Oil Recovery). IR 21 is along the southeastern edge of Treasure Island, directly adjacent to the Bay and Clipper Cove. Asphalt and buildings cover this site. IR 21 operated as a waste oil transfer and separation facility from 1946 to 1995. Waste oil unloaded from ships was transferred to an onshore oil/water separation facility at IR 21, consisting of five 2,000-gallon (7,570-liter) capacity ASTs. The ASTs were removed in 1995. Several of the buildings at this site were reportedly used for chemical storage. For example, Building 3 stored sulfuric acid for batteries, paint, paint thinner, lubricating oil, and hydraulic fluid. A fuel line also was on the site and was abandoned in place after the 1989 Loma Prieta earthquake damaged it (DON 1997i).

In 1988, a PA/SI was conducted for IR 21, and in 1994 the soil and ground water in the vicinity of the abandoned pipeline were sampled for VOCs, including chlorinated solvents. Chlorinated solvents were detected in ground water samples but not in soil samples (DON 1997i). An RI was conducted to determine the nature and extent of TPH contamination near the oil recovery system and chlorinated solvent contamination near the abandoned pipeline. Petroleum and VOCs (chlorinated solvents from an unknown source) were identified in ground water and soil during RI activities. Recent data reviewed by the RWQCB suggests that discharges are occurring into the Bay. Additional research and ground water monitoring for TPHs and VOCs is to continue until 2001. No further action is planned for soils. For this site, human health risks are within the US EPA target risk range considered protective of human health. Further investigations will lead to decisions regarding remedial action through the IRP.

IR 24 (Fifth Street Fuel Releases and Dry Cleaning Facility). IR 24 is on the southeastern part of Treasure Island and extends from the central portion of the island east towards the Bay. The site is rectangular and is bounded by Avenue H on the west, Avenue N on the east, 6th Street on the north, and 4th Street on the south. Building 99, on the site, operated as a laundry and dry cleaning facility from the 1940s through the 1950s. Trench drains in the building's floor may have been used to dispose of dry-cleaning waste solvents. The site also contains an underground pipeline that was formerly used to transport oil and fuel on Treasure Island between 1943 and 1977. In 1986, leaks were discovered at several locations along 5th Street.

A PA/SI was conducted in 1988 to determine the extent of soil contamination from the abandoned fuel lines along 5th Street. The highest concentrations of TPHs were detected in soil samples from a stockpile excavated in 1986 and 1987 near the intersection of Avenue M and 5th Street. An RI was conducted to determine the extent of chlorinated solvent contamination in soil and ground water. To further characterize contamination at IR 24, additional ground water sampling was conducted in July 1997. The RI recommended continued ground water monitoring for VOCs. In March 2000, the RWQCB recommended that additional investigation be conducted to identify the source of VOCs at the site. The site is recommended for further evaluation and inclusion in an FS because of ecological risks associated with the potential impacts to the Bay. For this site, human health risks are within the US EPA target risk range considered protective of human health. Petroleum contamination in the soil and any associated remedial actions will be conducted under the petroleum program (DON 1997i). As with Site 17, a remedial action is planned. The site could be subject to deed restrictions, depending on the success of remedial actions.

IR 27 (Clipper Cove Skeet Range). IR 27 is a separate operable unit off the southern shore of Treasure Island. The site operated as a skeet range between 1979 and 1989. IR 27 was investigated in 1996 during the phase II ecological risk assessment. Sampling to define the vertical and horizontal extent of lead and PAHs in offshore sediments and overlying surface water was conducted during this investigation. This site is included in the June 1998 draft offshore RI report (DON 1998d), which was conducted to characterize the sources, extent, and potential toxicity of chemicals in offshore sediments at NSTI. Based on the screening of chemical concentrations in offshore sediment and pore water, lead and PAHs were identified as chemicals of concern. The Clipper Cove Skeet Range was under a Regional Board Cleanup and Abatement Order, and Navy worked with the RWQCB under a Compliance Plan. The final RI was completed in 2001.

IR 28 (West Side On- and Off-Ramps). IR 28 consists of the northwestern slopes of Yerba Buena Island and the SFOBB's west side on- and off-ramps, along Treasure Island Road. The west side on- and off-ramps on Yerba Buena Island have been in operation since the SFOBB was opened to traffic in 1936. A 1993 investigation indicated lead and zinc concentrations in soil near the west side on- and off-ramps. An RI was conducted to determine the extent of metals contamination, which was found to be present in soils throughout the site. No action for soil has been proposed based on the site's industrial use only categorization.

IR 29 (East Side On- and Off-Ramps). IR 29 consists of the eastern slopes of Yerba Buena Island directly underneath the SFOBB, and its east side on- and off-ramps along Treasure Island Road, near the guard shack, which is no longer active. The east side on- and off-ramps have been in operation since the SFOBB was opened to traffic in 1936. Similar to IR 28, IR 29 was suspected to be subject to lead and other metals contamination as a result of vehicle emissions and ramp painting and maintenance. Lead contamination in soil was identified during RI activities. Further investigations were requested by RWQCB in March 2000 to evaluate lead concentration levels at the site. Because of the uncertainty associated with the pending SFOBB work, any remedial action would most likely be delayed until all bridge-work is complete This site was transferred to FHWA/Caltrans on October 26, 2000.

3.13.4 Asbestos

Several surveys to determine the presence of asbestos-containing material (ACM) have been conducted at NSTI. Between 1995 and 1997, the Mare Island Naval Shipyard conducted an ACM survey of some of the nonresidential buildings at NSTI, and Radian conducted surveys of the remaining major nonresidential structures. Abatement of asbestos in all residential and nonresidential buildings has been completed, and the results have been compiled into a report of ACM type, location, and status (Uribe and Associates 2000).

Navy began and partially completed an asbestos survey of the Job Corps buildings. However, this Navy survey was not completed because the Department of Labor began their own asbestos survey and took over remediation responsibility for any hazards. This property has been transferred by DoD to the Department of Labor, and there are no further Navy actions for asbestos.

DoD policy is that any ACM at NSTI found to be a threat to human health will be abated prior to property transfer. ACM considered a threat to human health is defined as any damaged ACM that is accessible. Any undamaged friable ACM and any damaged friable ACM that is inaccessible may remain (US DoD 1994).

ACM is regulated both as a hazardous material under the Toxic Substances Control Act (TSCA) (15 U.S.C. §§ 2601-2692) and a hazardous air pollutant under the Clean Air Act (42 U.S.C. §§ 7401–7671q). It is a potential worker safety hazard under the authority of California's Occupational Safety and Health Administration (Cal OSHA). These regulations limit emissions of asbestos from asbestos-related manufacturing, demolition, or construction activities and require notice to federal and local government agencies prior to beginning renovation or demolition that could disturb asbestos. BAAQMD requires asbestos removal pursuant to state regulations.

All available information on ACM will be provided to the transferee. The information must include the following:

- Available information on the type, location, and condition of asbestos in any building or improvement on the property;
- Results of testing for asbestos;
- A description of asbestos control measures taken for the property;
- Available information on costs or time necessary to remove all or any portion of the remaining ACM; and
- Results of a site-specific update of the asbestos inventory performed to revalidate the condition of the ACM.

3.13.5 Polychlorinated Biphenyls (PCBs)

PCBs are considered a hazardous substance under the Toxics Substances Control Act (15 U.S.C. §§ 2601-2692). A basewide remedial program began in the mid-1980s to update electrical equipment, including primary transformers and capacitors. Investigation of potential releases of PCBs from this equipment was not conducted at the time of replacement. In 1995, Navy completed a survey to determine whether any primary electrical equipment containing PCBs remained at NSTI. Naval Operations Instruction (OPNAVINST) 5090.1B specifies eliminating all transformers containing 500 ppm or more PCBs by October 1998 and eliminating all transformers containing 50 ppm or more PCBs by October 2003. Approximately five pieces of equipment were removed, since PCBs were detected in them at over 500 ppm. Surveys continue to be conducted for PCBs in secondary electrical equipment and hydraulic equipment.

Navy has investigated IR sites 03 and 17 for potential PCB contamination. No further action relative to PCBs has been recommended at either site. The EBS also identified parcels that may have contained PCB equipment. Additional research and investigation into soils for PCBs at IR site 09 has been recommended by DTSC and RWQCB.

3.13.6 Storage Tanks and Oil/Water Separators

Underground Storage Tanks (USTs)

Seventy-four sites with suspected USTs were investigated at NSTI. Of these, 40 were removed, 14 were closed in place, and investigation of 18 USTs indicated that the tanks did not exist (DON 1997b).

Recently, two previously suspected USTs were found near the entrance to the US Coast Guard Station. These USTs will be removed by Navy in accordance with RWQCB guidelines (TtEMI 2000b).

Fuel lines also are subject to UST regulations requiring upgrade or removal. Navy has completed removing or closing approximately 11,000 linear feet (3,353 m) of abandoned fuel lines at NSTI. These areas were investigated in 1998 and 1999.

The SWRCB has a draft policy regarding the cleanup of low-risk petroleum sites. The intent of the policy for low-risk sites is to remove floating product and the contaminant source, followed by ground water monitoring to assess whether bioremediation has occurred. Navy has identified approximately 10 sites that appear to qualify as low risk under this guidance. Approval of these sites is pending further negotiations with the RWQCB (DON 1998b).

Aboveground Storage Tanks (ASTs)

Fifty-three ASTs are or were located at NSTI. Of these, 27 have been removed (DON 1997b). Twenty-six ASTs are at NSTI, and seven are included in IR sites (Section 3.13.3). Any contamination associated with these ASTs will be addressed under the IRP. Only eight of the remaining ASTs are active. They are being used by the gasoline station (one), fire training school (five), sewer treatment boiler plant (one), and brig (one). Remaining ASTs will be or have been drained and cleaned and will remain in place unless demolition is needed for remedial action (TtEMI 2000b).

Oil/Water Separators (OWS)

There are two underground oil/water separators at the former fire training school location, IR site 06, but they are inactive. The status of this site is addressed under Section 3.13.3.

3.13.7 Lead

Lead-based Paint (LBP)

Lead was a major ingredient in the house paint used throughout the country for many years. In 1978, the maximum lead content was reduced to 0.06 percent of newly applied dry paint. LBP use was discontinued in 1980.

Navy, in accordance with HUD guidelines, will abate any hazardous LBP found in residential use structures constructed before 1960. The inspection and abatement will not be performed for buildings scheduled for demolition or nonresidential use.

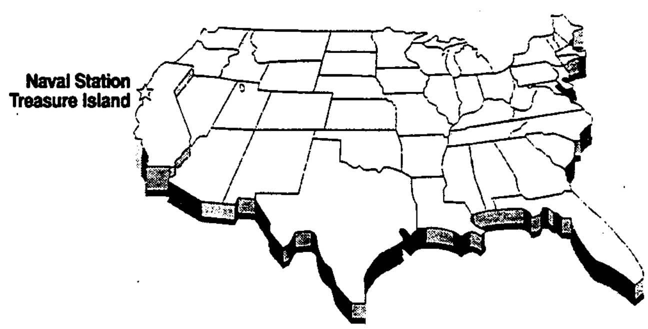
DTSC has considered a release to soil of LBP from DoD buildings or structures to be a CERCLA hazardous substance release. The position of DTSC and US EPA has been that all structures constructed prior to 1978 should be evaluated to determine if there are elevated lead levels in soils and if they could cause a risk to future users. Navy's policy for LBP remediation in nonresidential areas has been to comply with CERCLA in the same manner and to the same extent, both procedurally and substantively, as any non-governmental entity.

Lead in Drinking Water

NSTI tested for lead and copper in drinking water in 1993, 1994, and 1995, but no copper or lead was detected above the federal maximum contaminant levels (MCLs). The City and County of San Francisco, under Navy Cooperative Agreement, will continue to monitor lead and copper in drinking water, as required by the Safe Drinking Water Act of 1974 (Pub. L. 93-523, as amended, 42 U.S.C. §§ 300f–300j-26).

3.13.8 Radon

Radon screening for six locations was conducted by Navy at NSTI (March 1991) as part of Navy Radon Assessment and Mitigation Program. Concentrations ranged from none detected above the detection limit of 0.5 picocuries per liter (pCi/L) (4 locations) to 0.6 pCi/L. No buildings were identified as having radon gas levels above 4 pCi/L, which is the US EPA recommended action level (US EPA 1988).



4. ENVIRONMENTAL CONSEQUENCES

CHAPTER 4
ENVIRONMENTAL CONSEQUENCES

Chapter 4 of this EIS addresses the environmental consequences of the proposed disposal and reuse of NSTI with respect to 13 environmental issue areas. Each issue is addressed in its own section, numbered as follows:

- 4.1 Land Use
- 4.2 Visual Resources
- 4.3 Socioeconomics
- 4.4 Cultural Resources
- 4.5 Transportation
- 4.6 Air Quality
- 4.7 Noise
- 4.8 Biological Resources
- 4.9 Geology and Soils
- 4.10 Water Resources
- 4.11 Utilities
- 4.12 Public Services
- 4.13 Hazardous Materials and Waste

Each of the disposal/reuse alternatives is analyzed from the viewpoint of these 13 environmental issues. Navy disposal is assumed as part of each reuse alternative. Each discussion is organized as follows:

- Alternative 1—This subsection addresses the environmental consequences of the LRA's proposed Draft Reuse Plan for NSTI. The Draft Reuse Plan can be characterized by a combination of publicly oriented development, open space and recreation, and extensive residential development at full build-out.
- Alternative 2—This subsection analyzes the environmental consequences of a reuse alternative based on development of the site with a land use plan characterized by an emphasis on open space and recreation and publicly oriented uses with low residential use.
- Alternative 3—This subsection analyzes the environmental consequences of a reuse alternative based on development of the site with a land use plan characterized by little new development and extensive reuse of existing facilities.

- No Action Alternative—This subsection addresses the environmental consequences of retaining NSTI in caretaker status in Navy ownership.

Measures that can be taken to reduce impacts to a level below significant are suggested for each alternative, as appropriate. Navy would be responsible for mitigation measures identified in its ROD for the proposed disposal action. As reuse will occur after the property is transferred from federal ownership, mitigation measures identified for impacts associated with reuse are the responsibility of the acquiring entity, under the direction of federal, state, and local agencies with regulatory authority over and responsibility for such resources. Mitigation for impacts associated with reuse are not the responsibility of Navy.

For reasons discussed in Chapter 3, the environmental baseline year for some resource areas is 1993, the year that NSTI was designated for closure. For other resource areas, baselines reflect more recent data from 1996-1997. The impacts presented in this chapter have been evaluated against the baseline environmental conditions presented in Chapter 3. The Navy recognizes that changes in the environmental conditions may have occurred in the period between the baseline years and the present and that these changes may result in different, and in many cases, lesser impacts to certain resources. Since baseline environmental conditions are used as the benchmark for analysis, it would be inappropriate to alter the impact analysis based on any interim change in resource conditions.

As stated previously, on October 26, 2000, FHWA acquired 97 acres (39 ha) of Navy dry and submerged land on Yerba Buena Island and conveyed this land in fee to Caltrans for the SFOBB east spans retrofit project. This land is no longer available for transfer by the United States and, as such, is no longer available for community reuse in accordance with the NSTI Draft Reuse Plan. The deed conveying the right-of-way also granted Caltrans a temporary construction easement over a substantial part of the remaining property on the Yerba Buena Island, as well as permanent aerial easements over two parcels of land. The easements impose substantial restrictions on Navy's ability to access and utilize the underlying property. For that reason, Navy is effectively precluded at this time from taking those actions that are required of it to make the property suitable for conveyance.

4.1 LAND USE

The following discussion focuses on compatibility of proposed actions with land uses on the site, compatibility with existing uses adjacent to the reuse plan area (e.g., non-Navy land uses, such as the Coast Guard Station and FHWA/Caltrans land for the SFOBB on Yerba Buena Island, and Job Corps on Treasure Island), and consistency with the City and County of San Francisco General Plan and zoning ordinance.

Factors considered in determining whether an alternative would have a significant land use impact included the extent or degree to which implementation of the alternative would:

1) Result in non-attainment of policies of applicable plans of the City and County of San Francisco or BCDC; or

2) Result in proposed uses that are incompatible with existing or adjacent land uses.

4.1.1 Alternative 1

Significant and Mitigable Impact

Impact: Land use policy (Factor 1). The City and County of San Francisco General Plan land use designation for NSTI is Military. The zone classifications that would be required for Alternative 1 (i.e., Public, Residential, Mixed Use) would be inconsistent with the existing general plan designation and zoning classification.

> *Mitigation.* To achieve consistency between the selected reuse alternative and city policies, it will be necessary to amend the San Francisco General Plan to include land use designations for surplus property on Treasure Island and Yerba Buena Island prior to approving future land use actions. NSTI would not be rezoned until the Final Reuse Plan is adopted, at which time the City and County of San Francisco should amend its Planning Code to be consistent with planned land uses. Upon receiving a zoning designation, the area would be subject to the land use and height and bulk regulations established by the zoning. These controls would be subject to the Redevelopment Plan and its design for development standards and would likely include site design measures, such as buffering, landscaping, screening, and setbacks, to ensure high quality development and compatibility between land uses.

Not Significant Impacts

Land use policy (Factor 1). Implementing Alternative 1 would increase public access to existing open space areas, including the San Francisco Bay shoreline, and would allow development of recreational facilities, which would be consistent with the San Francisco Bay Plan. Implementation of Alternative 1, in accordance with the Reuse Plan, would not conflict with Sustainability Plan objectives.

Land use compatibility—Treasure Island (Factor 2). As a result of implementing this alternative, proposed reuse of Treasure Island would change the intensity of use and develop publicly oriented land uses in place of former military uses. Introduced and expanded uses would require demolishing some buildings and constructing others.

At full build-out, implementing this alternative would result in a higher development density than existed before the closure decision. However, proposed reuse of Treasure Island would provide additional opportunities for public access to open space and recreational resources, publicly oriented attractions, and access to the Bay. These land use changes would be consistent with the Reuse Plan guiding policies to ensure land use compatibility under reuse and therefore would not be a significant land use impact. No mitigation is proposed.

At the time of the closure decision, there were no non-Navy land uses on Treasure Island. However, after the federal agency screening process, approximately 36 acres and 12 buildings were provided to the US Department of Labor for developing a Job Corps facility. Proposed publicly oriented land uses, including the themed attraction, hotels, retail and specialty stores, and film production, would provide a compatible land use relationship with the Job Corps facility and would provide employment opportunities for the resident population. Proposed reuse of Treasure Island would therefore not result in a significant land use impact to the Job Corps facility. No mitigation is proposed.

Land use compatibility—Yerba Buena Island (Factor 23). Proposed reuse of Yerba Buena Island would represent a change in the intensity of some uses and would introduce publicly oriented use of the island. Proposed land use changes would convert the senior officers quarters (Quarters 1-7), an NRHP listed historic district, to publicly oriented facilities, would develop new residential areas and infill existing residential areas, and would develop a bed and breakfast and restaurant in place of existing residential units on the Yerba Buena hilltop. Introduced and expanded uses would require demolishing some buildings and constructing others. If Quarters 1-7 were to continue in residential use, then fewer dwelling units would be included elsewhere at NSTI so that the total number of units available would remain the same.

At full build-out, implementing Alternative 1 would result in a higher development density than existed at the time of the closure. However, the proposed reuse of Yerba Buena Island would provide additional opportunities for public access to open space, recreational resources, publicly oriented attractions, and access to the Bay. These land use changes would be consistent with applicable Reuse Plan policies guiding future development and would not be considered a significant land use impact. No mitigation is proposed.

Existing non-Navy land uses on Yerba Buena Island include an active US Coast Guard Station and the SFOBB and tunnel structures. The approximately 30-acre (12-ha) Coast Guard Station is physically separated from land proposed for community reuse, and consequently the physical arrangement of the station would not be disrupted or divided by proposed land use changes. As a result of the federal agency screening process, the Coast Guard was provided an additional 11 acres (5 ha) of land and associated facilities on the southeastern Yerba Buena Island hilltop. This property is physically separated from the land proposed for community reuse, and the physical arrangement of either would not be disrupted or divided by proposed land use changes.

The existing SFOBB or the proposed realignment would not be affected by changes in land use that are part of community reuse. Land on Yerba Buena Island transferred to FHWA to accommodate the SFOBB realignment is no longer available for transfer and reuse and consequently no land use conflict exists. Cumulative impacts from community reuse and the SFOBB are discussed in Chapter 5. Please refer to the EIS for the east spans realignment for discussion of impacts of that project (see http://www.dot.ca.gov/dist4/sfobb/sfobbfeis.htm). There would be no significant land use impact, and no mitigation is proposed.

4.1.2 Alternative 2

Significant and Mitigable Impact

Impact: Land use policy (Factor 1). The City and County of San Francisco General Plan land use designation for NSTI is Military. The zone classifications that would be required for Alternative 2 (i.e., Public, Residential, Mixed Use) would be inconsistent with the existing general plan designation and zoning classification.

> *Mitigation.* To achieve consistency between the selected reuse alternative and city policies, it will be necessary to amend the San Francisco General Plan to include land use designations for surplus property on Treasure Island and Yerba Buena Island prior to approving future land use actions. NSTI would not be rezoned until the Final Reuse Plan is adopted, at which time the City and County of San Francisco should amend its Planning Code to be consistent with planned land uses. Upon receiving a zoning designation, the area would be subject to the land use and height and bulk regulations established by the zoning. These controls would be subject to the Redevelopment Plan and its design for development standards and would likely include site design measures, such as buffering, landscaping, screening, and setbacks, to ensure high quality development and compatibility between land uses.

Not Significant Impacts

Land use policy (Factor 1). Implementing Alternative 2 would increase public access to existing open space areas, including the San Francisco Bay shoreline, and would allow development of recreational facilities, which would be consistent with the San Francisco Bay Plan. Alternative 2 would be in accordance with the Reuse Plan guidelines and would not conflict with Sustainability Plan objectives.

Land use compatibility—Treasure Island (Factor 2). This alternative would affect the vicinity character by increasing the amount of land devoted to open space and recreation, decreasing the amount of land used for institutional purposes, eliminating former military housing, and introducing new publicly oriented uses. Land use changes would include constructing an approximately 150-acre (61-ha) golf course, approximately 20-acre (8-ha) wildlife habitat and observation area or possible wetlands, amphitheater, entertainment center, 2 hotels, a conference center, and an expanded marina. This alternative would involve more demolition than Alternative 1.

With the exception of Building 1, the wedding chapel, firefighter training school, brig, fitness center, and gym, the buildings on Treasure Island would be demolished to accommodate proposed reuses. Implementing this alternative would involve more building demolition and, with the proposed golf course and wildlife area, would create more open space and recreation areas than Alternative 1. As with Alternative 1, proposed reuse of Treasure Island would provide additional opportunities for public access to open space and recreational resources, publicly oriented attractions, and access to the Bay. These land use changes would be consistent with applicable Reuse Plan policies, which guide future development to ensure land use compatibility under reuse, and therefore would not be considered a significant land use impact. No mitigation is proposed.

As with Alternative 1, proposed land uses would provide a compatible land use relationship with the Job Corps facility and would provide trainees with employment opportunities. Proposed reuse of Treasure Island would therefore not result in a significant land use impact to the Job Corps facility. No mitigation is proposed.

Land use compatibility—Yerba Buena Island (Factor 2). As a result of implementing this alternative, proposed reuse of Yerba Buena Island would affect the vicinity character by converting the senior officers quarters to publicly oriented facilities, by developing new residential areas and infilling existing residential areas, and by developing a bed and breakfast in place of existing residential units on the Yerba Buena Island hilltop.

Proposed Yerba Buena Island development would be similar to Alternative 1, but more land would be set aside for publicly oriented uses (i.e., hotel or bed and breakfast, conference center, or restaurant facilities), and less would be devoted to residential uses. This development would involve more demolition and construction than under Alternative 1. As with Alternative 1, the proposed reuse of Yerba Buena Island would provide additional opportunities for public access to open space and recreational resources, publicly oriented attractions, and access to the Bay. These land use changes would be consistent with applicable Reuse Plan policies, which guide future development to ensure land use compatibility under reuse, and therefore would not be considered a significant land use impact. No mitigation is proposed.

As with Alternative 1, proposed land use changes on Yerba Buena Island would be separate and distinct from existing uses, and as such, implementing this alternative would not disrupt or divide the physical arrangement of existing uses. The existing SFOBB or the proposed realignment would not be affected by changes in land use that are part of community reuse. Land on Yerba Buena Island transferred to FHWA to accommodate the SFOBB realignment is no longer available for transfer and reuse and consequently no land use conflict exists. Cumulative impacts from community reuse and the SFOBB are discussed in Chapter 5. Please refer to the EIS for the east spans realignment for discussion of impacts of that project (see http://www.dot.ca.gov/dist4/sfobb/sfobbfeis.htm). Therefore, there would be no significant land use impact, and no mitigation is proposed.

4.1.3 Alternative 3

Significant and Mitigable Impact

Impact: Land use policy (Factor 1). The City and County of San Francisco General Plan land use designation for NSTI is Military. The zone classifications that would be required for Alternative 3 (i.e., Public, Residential, Mixed Use) would be inconsistent with the existing general plan designation and zoning classification.

Mitigation. To achieve consistency between the selected reuse alternative and city policies, it will be necessary to amend the San Francisco General Plan to include land use designations for surplus property on Treasure Island and Yerba Buena Island prior to approving future land use actions. NSTI would not be rezoned until the Final Reuse Plan is adopted, at which time the City and County of San Francisco should amend its Planning Code to be consistent with planned land uses. Upon receiving a zoning designation, the area would be subject to the land use and height and bulk regulations established by the zoning. These controls would be subject to the Redevelopment Plan and its design for development standards and would likely include site design measures, such as buffering, landscaping, screening, and setbacks, to ensure high quality development and compatibility between land uses.

Not Significant Impacts

Land use policy (Factor 1). Implementing Alternative 3 would increase public access to existing open space areas, including the San Francisco Bay shoreline, and would allow development of recreational facilities, which would be consistent with the San Francisco Bay Plan. Alternative 3 would be in accordance with the Reuse Plan guidelines and would not conflict with Sustainability Plan objectives.

Land use compatibility—Treasure Island (Factor 2). With the exception of the themed attraction and sports complex, proposed reuse of Treasure Island under Alternative 3 would be accommodated within existing facilities. Existing city leases on Treasure Island, including leases for film production, a firefighting school, brig, marina, and elementary school, would continue through 2015 under this alternative. Implementing this alternative would require minimal demolition and construction. As with Alternative 1, proposed reuse of Treasure Island would provide additional opportunities for public access to open space and recreational resources, publicly oriented attractions, and access to the Bay. Proposed land uses under Alternative 3 would be less responsive to the objectives of the Reuse Plan than those of alternatives 1 and 2; however, land use changes would be consistent with applicable Reuse Plan policies, which guide future development to ensure land use compatibility under reuse, and therefore would not be considered a significant land use impact on the vicinity character of Treasure Island. No mitigation is proposed.

As with alternatives 1 and 2, proposed land uses would provide a compatible land use relationship with the Job Corps facility and would provide trainees with employment opportunities. Proposed reuse of Treasure Island would therefore not result in a significant land use impact to the Job Corps facility. No mitigation is proposed.

Land use compatibility—Yerba Buena Island (Factor 2). As a result of implementing this alternative, proposed reuse of Yerba Buena Island would represent a change in the intensity of some land uses and would introduce publicly oriented use of the island. Proposed land use changes would affect the vicinity character by converting the senior officer quarters to publicly oriented facilities, by developing new residential areas and infilling existing residential areas, and by developing a bed and breakfast in place of existing residential units on the Yerba Buena hilltop. New uses would require expanding some existing buildings, demolition, and new construction. Using the Nimitz House (Quarters 1), a NRHP listed property, as a conference center would continue through 2015 under this alternative.

At full buildout, overall land uses would be similar to Alternative 1 at a reduced scale. Fewer residential units would be constructed, and only the senior officers quarters would be developed as a conference facility. As with Alternative 1, proposed reuse of Yerba Buena Island would provide additional opportunities for public access to open space and recreational resources, publicly oriented attractions, and access to the Bay. These land use changes would be consistent with applicable Reuse Plan policies, which guide future development to ensure land use compatibility under reuse, and therefore would not be considered a significant land use impact on the vicinity character of Yerba Buena Island. No mitigation is proposed.

As with alternatives 1 and 2, proposed land use changes on Yerba Buena Island would be separate and distinct from existing uses, and as such, implementing this alternative would not disrupt or divide the physical arrangement of existing uses. The existing SFOBB or the proposed realignment would not be affected by changes in land use that are part of community reuse. Land on Yerba Buena Island transferred to FHWA to accommodate the SFOBB realignment is no longer available for transfer and reuse and consequently no land use conflict exists. Cumulative impacts from community reuse and the SFOBB are discussed in Chapter 5. Please refer to the EIS for the east spans realignment for discussion of impacts of that project (see http://www.dot.ca.gov/dist4/sfobb/sfobbfeis.htm). There would be no significant land use impact, and no mitigation is proposed.

4.1.4 No Action Alternative

The No Action Alternative would retain NSTI in a caretaker status under Navy control. No disposal action would occur. Existing structures and grounds would be maintained to minimize deterioration. Environmental cleanup would continue in conformance with federal requirements and ongoing military programs, but cleanup would occur over a longer period of time than alternatives 1 through 3, as no reuse requirements would need to be met.

Land use policy (Factor 1). The No Action Alternative would be consistent with the existing General Plan and zoning designation (Military). There would be no need for the City and County of San Francisco to amend its General Plan. There would be no land use impact.

Land use compatibility—Treasure Island (Factor 2). Continuing use of Treasure Island would be accommodated within existing facilities. Existing city leases on Treasure Island, including leases for film production, a firefighting school, brig, marina, and elementary school, would continue through 2015 under this alternative. These leases would continue until expired or terminated. Implementing this alternative would require minimal demolition and construction by Navy to comply with safety standards. There are no proposed land use changes, and there would be no impact on the vicinity character of Treasure Island.

As there are no proposed land use changes, this alternative would provide a compatible land use relationship with the Job Corps. There would be no land use impact.

Land use compatibility—Yerba Buena Island (Factor 2). Continuing use of Yerba Buena Island would be accommodated within existing facilities. Existing leases on Yerba Buena Island would continue until expired or terminated. Implementing this alternative would require minimal demolition and construction by Navy to comply with safety standards. There are no proposed land use changes, and there would not impact on the vicinity character of Yerba Buena Island.

4.2 Visual Resources

Visual resources impacts may be associated with changes in either the built or natural environment and can be short-term or long-term. The presence of heavy machinery during construction of buildings and infrastructure is considered a short-term impact. Large trucks, bulldozers, and other construction equipment would be visible within the construction/demolition zone. Long-term visual changes are associated with demolishing existing buildings and structures and constructing new buildings and structures. The significance of visual effects is very subjective and depends upon the degree of alteration, the scenic quality of the area disturbed, the sensitivity of the viewers, and the viewer perception of features in the viewshed.

Visual resources impacts have been qualitatively evaluated by assessing the nature and extent of change in landscape character that would occur under each disposal and reuse alternative. The visual analysis addresses landscape modifications as seen from notable public viewpoints within the viewshed.

Factors considered in determining whether an alternative would have a significant impact on visual resources included the extent or degree to which its implementation would:

1) Degrade scenic quality within the ROI (defined as Treasure Island, as seen from any public view or viewpoint);
2) Damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings; or
3) Create a new source of substantial light or glare that might adversely affect day or nighttime views in the area.

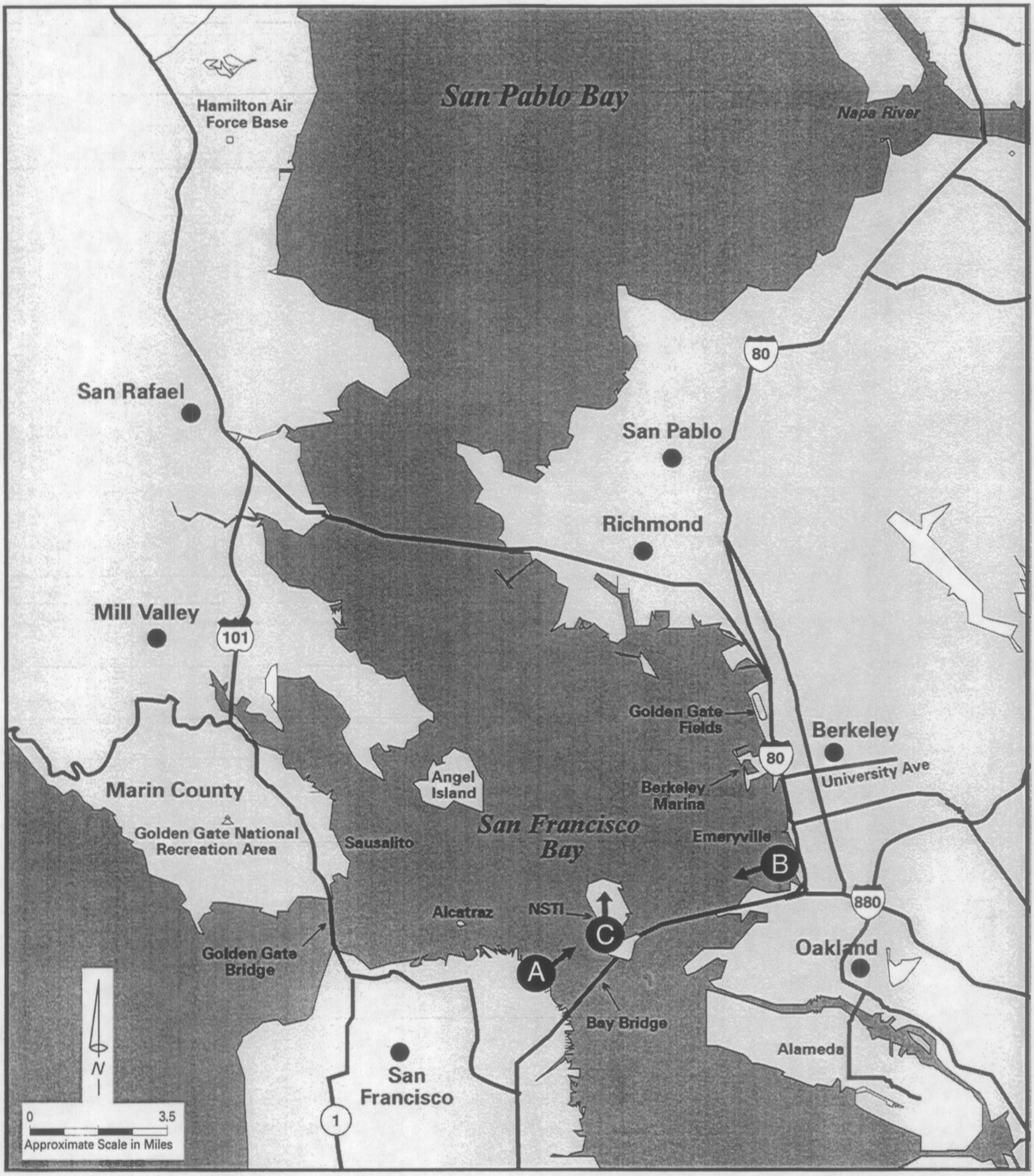
Assumptions for Visual Analysis

The building or development components analyzed are derived from the alternative descriptions in Chapter 2, with additional assumptions based on descriptions of similar components in the Draft Reuse Plan and consultation with city staff and the EIS team. Based on information contained in the Draft Reuse Plan, the analysis assumed building heights for proposed hotels to be 65 to 75 feet (20 to 23 m), for residential buildings to be 40 feet (12 m), for at least one landmark structure to be up to 100 feet (30.5 m), and for other buildings in the Treasure Island core area to be 60 feet (18 m).

Methodology

The descriptions of major proposed development components and their resulting potential visual impacts are generalized. Computer-based photosimulations, taken from three viewpoints identified in Figure 4-1, have been used to supplement the analysis.

These three viewpoints were selected because they are representative public viewpoints from the East Bay, West Bay, and NSTI that are used intensively and that could be affected by the reuse alternatives. The simulations are based on three dimensional (3D) computer-aided design (CAD) data provided by Navy from photogrammetry of the site, with limited digitizing and 3D modeling of



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A, B, and C show the vantage point for the visual simulations in this analysis.

Legend

A End of Pier 7, San Francisco (Figure 4-2)

B Emeryville Shoreline Park (Figure 4-3)

C Public Parking at the Gate to Treasure Island (Figure 4-4)

Map Viewpoint Used in Photosimulations

Bay Area, California

Figure 4-1

proposed building heights based on the data sources and assumptions discussed above. The simulations show the maximum volume, or extent, of possible development. Because the alternatives are conceptual at this time, the simulations do not show design detail. However, the simulations do provide a conservative estimate of the extent of development.

Major reuse alternative development components considered in this analysis include new buildings (at least two stories high), new larger structures, loss of visually prominent buildings or large areas of buildings by demolition, creation or loss of large areas of open space, and establishment or loss of major tree groups/canopy. The proposed reuse of buildings and facilities without substantial modification would not be identified as having an effect on visual resources or urban design.

4.2.1 Alternative 1

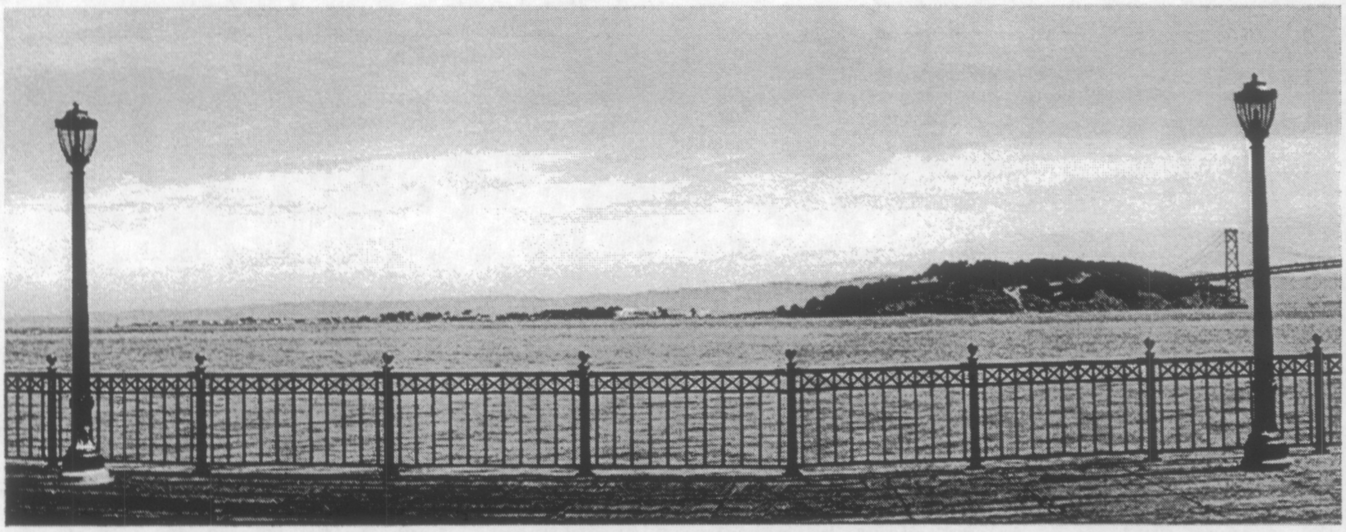
This alternative would alter visual resources in primary views from the San Francisco waterfront, East Bay shore, SFOBB, and in more background views from other locations around San Francisco Bay. Significant adverse impacts are not anticipated, and some of the potential anticipated effects could be beneficial. Beneficial effects could result from aesthetic enhancements of Treasure Island areas and increased opportunities for public access to panoramic views of the San Francisco Bay Area.

Not Significant Impacts

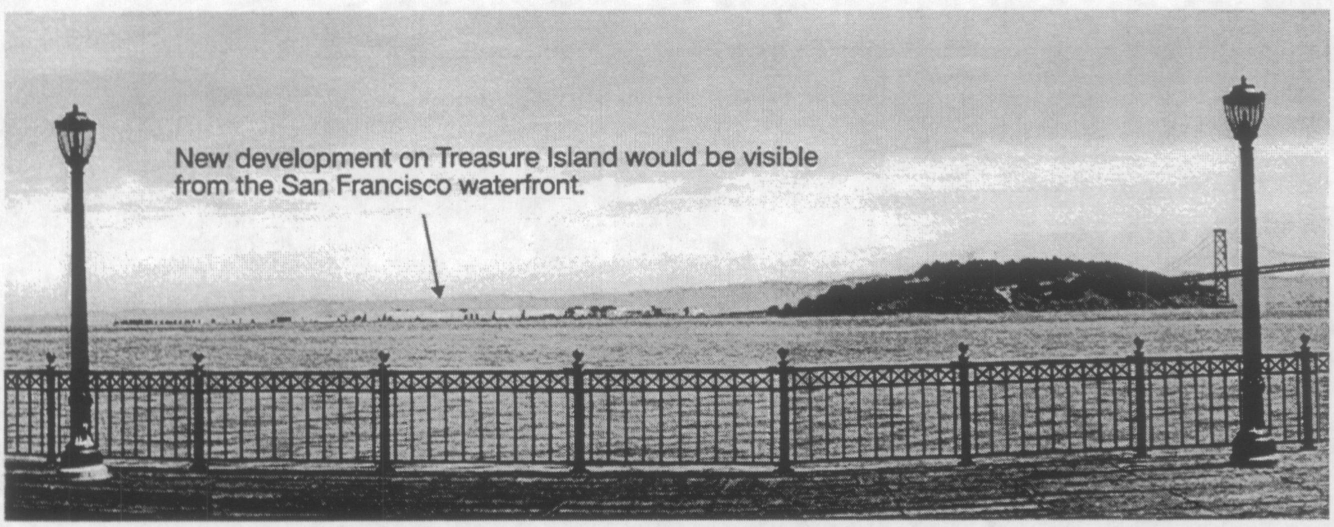
Views from Surrounding Viewshed

San Francisco waterfront and open space (Factors 1 and 2). The principal development components of this alternative visible from the San Francisco waterfront area would include the proposed hotels on Treasure Island, a landmark structure, the themed attraction and other mid-rise buildings, and development on the top and west-facing slopes of Yerba Buena Island. Figure 4-2 shows the view from Pier 7 on The Embarcadero, which is a conservative-case representation of other Embarcadero and waterfront views; at locations to the south (e.g., the Ferry Building area and its nearby promenade), similar but slightly more distant views would be obtained. These are considered highly sensitive viewing locations, where the most viewers come to sightsee or to enjoy the scenic views during breaks in their workday.

The proposed hotel development and a landmark structure in particular would alter the profile of Treasure Island and Yerba Buena Island from this viewpoint, with the potential for visual contrast to be similar in prominence to other landscape features in the panoramic field of view. The hotels, if extending up to approximately 75 feet (23 m) tall along much of their frontage, would introduce a visual mass nearly 2 times that of the existing 40-foot (12-m) prominent Building 1. The landmark structure, assumed to be up to 100 feet (30.5 m), would also create a higher profile but may not have the visual mass of the hotels. However, the existing landscape is dominated by nearby Buildings 2 and 3, originally constructed as aircraft hangers, because their scale and mass exceed that of any other existing or proposed buildings on the island.



Existing View



Simulated View

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Pier 7, a public open space pier, is a popular spot for pedestrians along Herb Caen Way, and is nearer Treasure Island than other San Francisco waterfront points.

Existing View/Simulated View of Alternative 1, Seen from the End of Pier 7, San Francisco

San Francisco, California

Figure 4-2

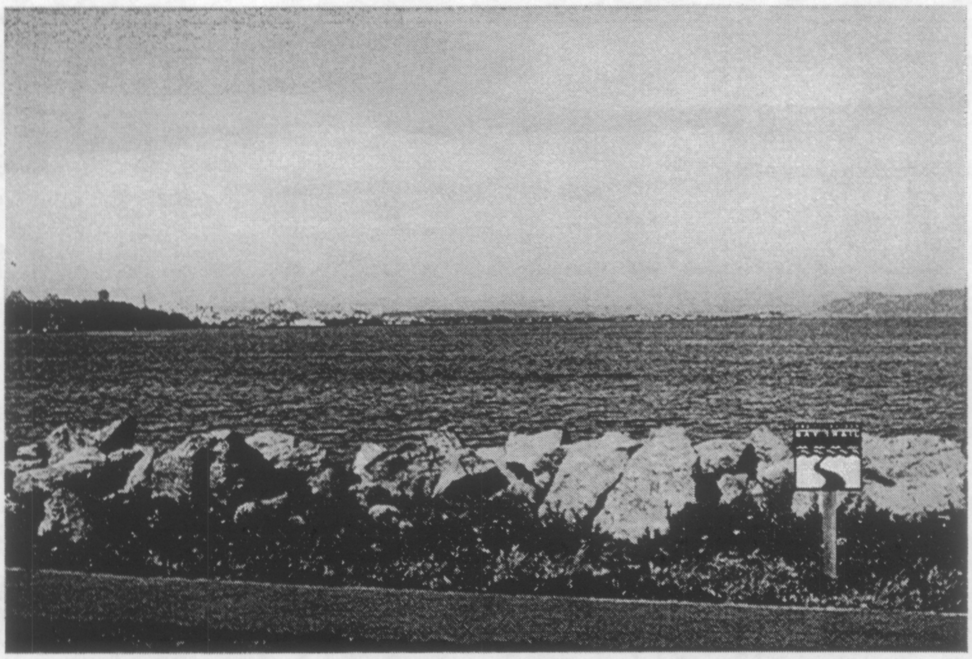
The hotels and the landmark structure, in combination with these other large buildings, would, therefore, be prominent above existing and newly established landscaping, especially if painted in pale colors. From The Embarcadero between the SFOBB and approximately Pier 39, the proposed hotel buildings and landmark structure would partially block views of the East Bay hills, although the hotels would be low in comparison with Yerba Buena Island. From more elevated viewpoints such as Coit Tower in San Francisco, the taller buildings would partially block views of the water beyond Treasure Island.

A small hotel (up to approximately 60 feet [18 m] high) on Yerba Buena Island would be clearly visible if located in a prominent location, but it would be visually subordinate to the rest of the island in most viewing conditions, assuming that it is designed with a tapering profile (setbacks at higher stories), as proposed in the Reuse Plan Urban Design policies for the hillside at Yerba Buena Island. Furthermore, the elevation at the proposed hotel location would be below the summit of Yerba Buena Island.

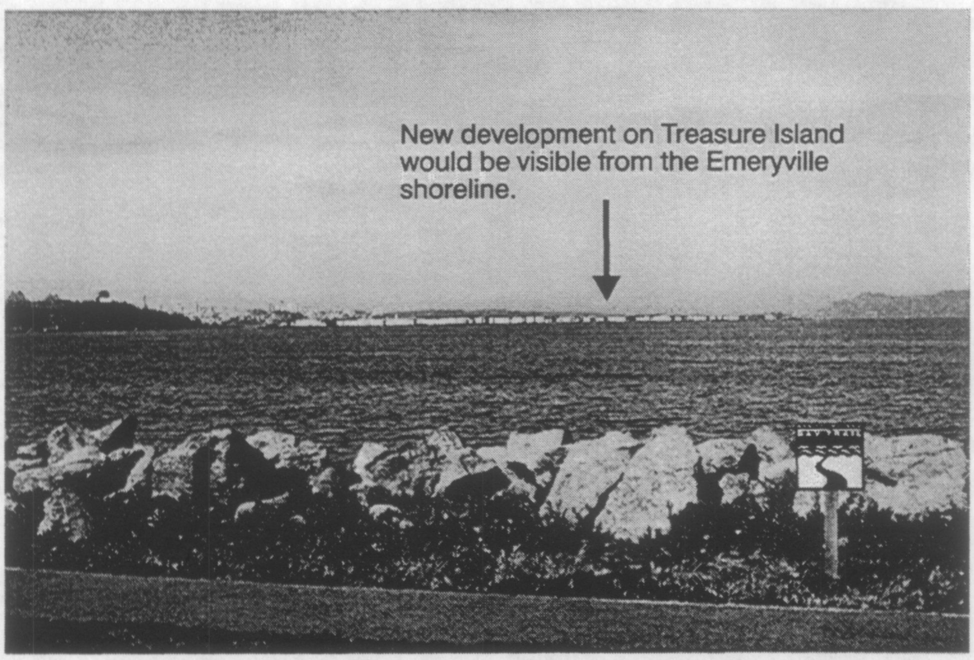
These visual effects are identified as not significant because, although there could be new visual contrasts, the scale and urban design of the development, as proposed in the Reuse Plan Urban Design policies, such as protecting natural character and stepping of buildings following the slope, would not be expected to substantially degrade existing scenic quality. In terms of view blockage, similar views of the East Bay hills could still be obtained elsewhere in the same panorama and from other locations along the waterfront. No mitigation is proposed.

<u>*Views from Bay islands and Marin County* (Factors 1 and 2)</u>. In views from Alcatraz, Angel Island, and background locations, such as the Golden Gate Bridge and Sausalito, the same components as described for the San Francisco waterfront views would be the most prominent. However, greater viewing distances between Treasure Island and these Bay islands and Marin County would reduce the visual effects of proposed development compared to other landscape features in view. At these long viewing distances, the development would not substantially block views of the East Bay hills or SFOBB. Visual impacts also would not be significant from these viewpoints. No mitigation is proposed.

<u>*Views from East Bay shoreline* (Factors 1 and 2).</u> The principal components of Alternative 1 that would be visible from the East Bay shoreline parks and open space include the proposed hotels on Treasure Island, landmark structure, themed attraction, and other mid-rise buildings (Figure 4-3). Some screening of new buildings provided by mature trees and lower buildings on the east side of Treasure Island would reduce the degree of change. The higher buildings on Treasure Island would introduce a visual mass approximately seven times that of the existing hangars seen from this location. Because the island is seen against the taller backdrop of the San Francisco skyline from most viewpoints, such as the Emeryville and Watergate shoreline, Berkeley Marina, and Golden Gate Fields on the Berkeley and Albany border, the resulting visual contrast would remain subordinate to other landscape features in the panoramic field of view. The proposed buildings would not block views of the Golden Gate and would only partially block views of lower elevations of San Francisco without interrupting the skyline. A somewhat different situation would occur at the publicly accessible



Existing View



Simulated View

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The point of Emeryville Shoreline Park is nearest Treasure Island among East Bay vantage points.

Existing View/Simulated View of Alternative 1, Seen from the Emeryville Shoreline Park

Emeryville, California

Figure 4-3

open space near the radio station facilities near the eastern landfall of the SFOBB. From here, partial blockage of views of the Golden Gate Bridge would be increased by the taller buildings and themed attraction, in addition to some existing view obstruction of the Golden Gate Bridge deck from this angle by vegetation on Treasure Island. The impact is not significant because of the relatively low levels of use experienced at this location in comparison with the major eastshore parks and the availability of other unobstructed views from similar locations northward along the shoreline. However, should the Bay Trail bring substantially increased levels of use to the area, this partial view blockage from this alternative could be experienced by more people. No mitigation is proposed.

Views from vessels on San Francisco Bay (Factors 1 and 2). In views from ferries and recreational vessels on the Bay, the main components that would be visible include the taller buildings (primarily hotels), development on Yerba Buena Island, and shoreline open space. Visual contrasts of proposed development would be similar in prominence to other existing features (notably Yerba Buena Island, the SFOBB, and hangar buildings) in most views. Some beneficial effects could occur with improved landscaping and new nonindustrial development. View blockage is not a major concern because of the mobility of the viewing position and the free access to views over open water. No mitigation is proposed.

Views from eastshore highway and SFOBB (Factors 1 and 2). In views from the eastshore highway and SFOBB, the buildings at the heights proposed in the Reuse Plan would not project substantially above the San Francisco skyline and therefore would not block the skyline from view. Further, because the viewer would be in vehicles moving in traffic and because the views are either partially blocked by SFOBB railings, other highway structures, or trees on Yerba Buena Island, or are at almost a 90 degree angle from the direction of travel (on the eastshore highway), the views are considered less sensitive and the impacts less significant than the pedestrian views from open space. It is estimated that the proposed hotel buildings would be visible and would at least partially block the views of the Golden Gate Bridge for up to two minutes for passengers of vehicles traveling westward on the SFOBB, but this would occur only from more distant portions of the bridge nearer sea level. Some views of Alcatraz Island from the SFOBB also could be blocked. No mitigation is proposed.

Views from urban and residential areas (Factors 1 and 2). Off-site urban and residential areas with views to Treasure Island are principally at background viewing distances from both the East Bay hills (8 miles) and from higher elevations in San Francisco (under 2 miles). View blockage is not considered a major issue at this viewing distance, and scenic qualities would not be reduced by the proposed hotel and mid-rise buildings. Depending on the design of the themed attraction and the landmark structure, there is the potential for either beneficial or adverse visual impacts because of the introduction of a new visual structure in the center of the Bay. Design of any themed attraction or landmark structure would undergo further public review. No mitigation is proposed.

Views from Within the Reuse Plan Area

On-site views and visual access (Factors 1 and 2). Development on Treasure Island would replace aging industrial and military facilities with urban design elements intended to be more attractive and in closer character with the rest of the San Francisco waterfront. Scenic quality could be enhanced through additional landscaping and attention to aesthetic design in developing new buildings, the themed attraction, and other visitor-serving facilities, according to design guidelines in the Reuse Plan and Urban Design policies of the General Plan.

It is assumed that existing view corridors to the Bay would be kept open, with additional open space perimeter opportunities and public access opportunities provided along the waterfront open space. The hotel complex would block some existing view corridors. In scenic views at public locations, such as the gateway area, and in views around Clipper Cove, most existing scenic features would be retained. The expanded marina with approximately 300 slips and 100 tie-up buoys, compared to the existing 100 slips, would add new visual elements to what is now a relatively undisturbed cove with primarily open water. The proposed hotels and themed attraction buildings would alter the setting for the older buildings (Figure 4-4) but are intended to be compatible with the existing features. Assuming compatibility in design with the older structures in on-site views, this reuse alternative would not result in significant visual impacts. No mitigation is proposed.

Light and Glare

Night lighting and glare (Factor 3). The proposed development under Alternative 1 would include placement of light sources for safety, identification, and security. Proposed development, including the hotels, lighting along the Treasure Island waterfront, themed attraction lighting, and lighting of other buildings or features would be prominent at night from closer views, such as the San Francisco waterfront and SFOBB. Themed attraction lighting also may be visible from more distant viewpoints, such as from the East Bay. However, assuming lighting levels are similar to urban lighting at the San Francisco waterfront, with shielding to prevent upward glare visible to SFOBB drivers, this alternative is not expected to introduce light and glare at nuisance levels. Lighting could visually enhance the island at night.

Glare, a condition where light is uncomfortably harsh, could impact effective vision or even temporarily blind an individual and is therefore a safety concern. Glare could be generated from new buildings that are composed of reflective materials, such as glass or polished metal. Glare can be controlled through design controls and building material restrictions as part of the standard design review and approval processes of the City and County of San Francisco. For example, City Planning Commission Resolution 9212 generally prohibits use of mirrored or reflective glass in new buildings. Compliance with this resolution would avoid related glare impacts. No mitigation is proposed.

4.2.2 Alternative 2

Under this alternative a mix of land uses would be established, with emphasis on publicly oriented development and open space and recreation. It mainly differs from Alternative 1 by including more open space, especially by replacing residential uses on the northern half of Treasure Island with a golf course and wildlife observation or potential wetlands area. It also would provide for a wider open space strip along the southern and eastern waterfront of Treasure Island, more marina development in Clipper Cove, and an expanded hotel and bed and breakfast area on the western end of Yerba Buena Island.

Existing View

Simulated View

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This view would greet the motorist approaching Treasure Island from the causeway and arriving ferryboat passengers.

Existing View/Simulated View of Alternative 1 Seen from Public Parking at the Gate to Treasure Island

Treasure Island, California

Figure 4-4

This alternative would in many respects be visually similar to Alternative 1. The most prominent development components (hotels and themed attraction structures) would alter visual resources in views from the San Francisco waterfront, East Bay shoreline, SFOBB, and in more background views from other locations around San Francisco Bay. These impacts would not be significant. Beneficial effects could include those that result from aesthetic enhancement of existing areas with strong industrial or utilitarian character on Treasure Island and increased opportunities for the public to experience panoramic views of the San Francisco Bay Area.

Not Significant Impacts

Not significant impacts would be similar to those described for Alternative 1 because of the similarity in major visual development components. Specific visual effects that would be similar to or less than those described for Alternative 1 include views from Bay islands and Marin County, views from the East Bay shoreline, views from vessels on San Francisco Bay, views from urban and residential areas, and night lighting and glare. The greater open space and wildlife habitat on Treasure Island in this alternative would not alter its current appearance from most viewpoints in the surrounding Bay Area since the existing housing is of low profile and not conspicuous at greater viewing distances; this impact would, therefore, be less than with Alternative 1. Those visual effects that would be different from Alternative 1 are described below.

Views from San Francisco waterfront and open space (Factors 1 and 2). The proposed hotel complex on Yerba Buena Island would be of lower height than in Alternative 1 and therefore would be less visible and more similar to existing conditions. In other respects, this alternative would have similar not significant impacts to those described for Alternative 1. No mitigation is proposed.

Views from eastshore highway and SFOBB (Factors 1 and 2). The expanse of open space at the north end of Treasure Island would be apparent to passengers of buses and other vehicles with seating raised above the level of the bridge railing. The extent of green space would be conspicuous from this elevated vantage point and would represent a change in comparison with the existing military and industrial character of NSTI. In other respects, this alternative would have similar not significant impacts to those described for Alternative 1. No mitigation is proposed.

On-site views and visual access (Factors 1 and 2). Development on Treasure Island under this alternative would replace aging industrial and military facilities with elements and open space intended to be in character with the rest of the Bay Area shoreline. Effects compared to Alternative 1 would include greater extent and visibility of open space on Treasure Island. The wider open space corridor along the waterfront around the themed attraction also would enhance views to and from the shoreline. Compared to the existing 100-slip marina, the expanded marina would accommodate between 500 to 675 slips and tie-up buoys and would add new visual elements to what is now a relatively undisturbed cove with primarily open water. However, these additional boat slips would not result in a significant visual impact because they would not substantially degrade or obstruct views to and from NSTI.

Light and glare (Factor 3). Urban Design policies in the Reuse Plan and General Plan, and City Planning Commission Resolution 9212 regarding use of mirrored or reflective glass, also would apply to this alternative. Less development under this alternative would result in even less glare than under Alternative 1. No mitigation is proposed.

4.2.3 Alternative 3

Under Alternative 3, a mix of land uses would be established, but with many of the structures remaining. Compared to Alternative 1, Alternative 3 would have slightly more designated open space (approximately 157 acres [64 ha] versus approximately 135 acres [55 ha]) and would be more similar to existing conditions. Other differences from Alternative 1 include no new hotel buildings, no marina expansion in Clipper Cove, and a greatly reduced area for the themed attraction (approximately 39 acres [16 ha] compared with approximately 59 acres [24 ha] for Alternative 1).

This alternative generally would have less visual impact than alternatives 1 and 2. This alternative would not include the taller and most prominent project components of the other two reuse alternatives. Views of Treasure Island under this alternative would not appear very different from the island's existing appearance, except for the prominent themed attraction structure and some visible development on Yerba Buena Island. The latter features would appear as described in Alternative 1.

Although the proposed themed attraction structures may still be visible in closer-range and background views, this alternative would have more limited effects on visual resources in views from the San Francisco waterfront, East Bay shoreline, SFOBB, and in more background views from other locations around San Francisco Bay because of its reduced development scale. Other effects could be beneficial, such as those that would result from limited aesthetic enhancement of existing areas on Treasure Island and increased opportunities for the public to experience panoramic views of the San Francisco Bay Area.

Not Significant Impacts

Specific visual effects that would be less than those described for Alternative 1 include views from Bay islands and Marin County, views from vessels on San Francisco Bay, views from the eastshore highway and the SFOBB, views from urban and residential areas, and night lighting and glare. Those visual effects that would be different than alternatives 1 and 2 are described below.

Views from San Francisco waterfront and open space (Factors 1 and 2). The profile of development on Treasure Island would not appear very different from its existing appearance, with the exception of the prominent themed attraction structure and the hotel on Yerba Buena Island. The latter features would appear as described in Alternative 1. No mitigation is proposed.

Views from East Bay shoreline (Factors 1 and 2). Treasure Island would not appear very different from its existing appearance, except for the prominent themed attraction structure and some visible development at the east end of Yerba Buena Island. The latter features would appear as described in Alternative 1. No mitigation is proposed.

On-site views and visual access (Factors 1 and 2). New development in the themed attraction area would replace aging industrial and military facilities with elements and open space intended to be in character with the rest of the public Bay Area shoreline. Clipper Cove would remain in its existing condition and therefore would retain the scenic features of this undisturbed open water area compared to the other reuse alternatives that propose expansion of this facility. It is assumed that public access would be provided around the entire perimeter of Treasure Island, offering some of the same beneficial effects of increased visual access as the other alternatives.

Light and glare (Factor 3). Urban Design policies in the Reuse Plan and General Plan, and City Planning Commission Resolution 9212 regarding use of mirrored or reflective glass, also would apply to this alternative. No mitigation is proposed.

4.2.4 No Action Alternative

The No Action Alternative would be a continuation of the caretaker status of NSTI surplus property. Existing interim leases would be allowed to expire. No existing buildings would be rehabilitated or demolished, and no new buildings would be constructed. The only activity on the site would be from maintenance personnel and security staff. Although modification of appearance due to boarding up of some windows and doors may occur, the general physical character of the property would remain the same. This change in appearance would not be visible from off-site views in San Francisco and the East Bay and therefore would be no impact. In addition, access to NSTI under caretaker status would be limited; therefore, no on-site visual impacts would occur. Reduced staffing and the lower level of activity could affect the character of the site; however, the visual contrast would be weak, and impacts would be less than significant. Existing views would not be disrupted or blocked. There would be no substantial visual changes to the site as a result of the No Action Alternative; therefore, no visual impacts would occur.

4.3 SOCIOECONOMICS

Potential direct and indirect impacts on employment, population, housing, and schools resulting from disposal and reuse of NSTI are discussed in this section. Factors considered in determining whether an alternative would have significant socioeconomic impacts include the extent or degree to which its implementation would:

1) Cause a decrease in local or ROI employment;
2) Induce growth or concentrations of population;
3) Create a demand for additional housing in San Francisco, Oakland, or the surrounding communities; or
4) Generate student enrollment that exceeds the capability of responsible authorities to accommodate.

The significance of socioeconomic impacts is related to the social and economic characteristics of the region. In general, the more jobs generated, the more beneficial the socioeconomic effects that may occur. Population and housing growth may have ramifications for other environmental issues, such as potential traffic increases and the need for additional infrastructure improvements. The significance of these other impacts is defined in pertinent sections of this document.

Table 4-1 summarizes the estimated number of jobs, housing units, and residents that would be associated with each reuse alternative. Assumptions used to generate the population and employment estimates are provided in Appendix F, Socioeconomics.

The impacts presented in this section have been evaluated against the baseline environmental conditions presented in Chapter 3. Navy recognizes that changes in the environmental conditions may have occurred in the period between the baseline years and the present. Although these changes may result in different, and in many cases, lesser impacts to certain resources, changes to the impact analysis based on any interim change in resource conditions is not appropriate.

4.3.1 Alternative 1

Not Significant Impacts

Employment (Factor 1). Alternative 1 would create approximately 4,920 full-time equivalent jobs (information on employment generation factors is provided in Appendix F). Generation of this employment would occur over a period of 15 or more years, dependent on market conditions, land availability, and other factors.

Most of the jobs associated with this alternative would be created through reuse of parts of Treasure Island for a themed attraction, hotel and conference facilities, restaurants, film studios, community services, and a variety of recreational facilities. The largest employment generator would be the themed attraction, which would employ approximately 3,500 persons, although some of these jobs would be seasonal. Of the approximately 4,920 full-time equivalent jobs created, full-time equivalent

Table 4-1
Estimated Jobs, Population, and Housing Units for Baseline Conditions and Reuse Alternatives[1]

	Baseline Conditions (Year)	Alternative 1	Alternative 2	Alternative 3
Employment[2]				
Treasure Island	-	4,740	2,640	2,015
Yerba Buena Island	-	180	180	180
Total employment	3,635[4,5] (1988)	4,920	2,820	2,195
Resident population				
Treasure Island[3]	-	6,020	90	3,060
Yerba Buena Island	-	875	620	450
Total population	4,500[4,5] (1990)	6,895	710	3,510
Housing units				
Treasure Island	-	2,500	0	905
Yerba Buena Island	-	350	250	160
Total housing units	1,045[4,5] (1990)	2,850	250	1,065

[1]The Navy disposal alternative is not included because it is a transfer of title, and no new jobs would be created or displaced by the title transfer.
[2]Jobs are reported as full-time equivalent jobs; seasonal jobs would increase the total number of jobs.
[3]Treasure Island resident population includes brig inmates in all scenarios.
[4]Numbers represent totals for 1988 (military employment) and 1990 (civilian employment, population, and housing); data were not available for Treasure Island and Yerba Buena Island separately.
[5]Data are reported for Census Tract 179.02, which encompasses both Treasure Island and Yerba Buena Island, and therefore includes US Coast Guard data, but are representative of NSTI baseline conditions.

Note: A "-" indicates that information was not available.

Sources: DON 1988b; US Department of Commerce 1990; DON 1997l.

employment associated with the themed attraction is estimated to be approximately 1,750. After the themed attraction, the next largest employment generators would be hotel facilities, the film industry, and restaurants.

The number of civilian jobs created under Alternative 1 would offset the 750 jobs lost to closure and would result in a net gain of 4,170 jobs. Therefore, the projected increase in employment under Alternative 1 would be a beneficial impact. No mitigation is proposed.

Population (Factor 2). The development of the reuse plan area would result in an increase in San Francisco's population through the provision of new housing units. As shown in Table 4-1, development under Alternative 1 would result in an estimated total population of about 6,895 people. This estimate is based on the assumption that the average household size for existing and newly constructed housing units is 3.2 and 2.3 persons, respectively (see Appendix F.2, Socioeconomics). Subtracting the baseline residential population of approximately 4,500 in 1990, the net population increase would be approximately 2,395 persons. This increase of 2,395 persons represents 0.3 percent of the projected population in San Francisco by 2015 and is accounted for in ABAG's projected population increases; therefore, this is not considered a significant impact (ABAG 1995b). No mitigation is proposed.

Housing (Factor 3). Alternative 1 would provide up to 2,850 housing units on the site at buildout (Table 4-1). Approximately 290 units (200 on Treasure Island and 90 on Yerba Buena Island) are existing military housing that would be converted to civilian use. Because none of the NSTI housing units were previously available to the general public, the total contribution to the City and County of San Francisco housing market would be 2,850 units.

Alternative 1 also addresses housing needs of the homeless. TIHDI initially would manage the leasing of 375 units (285 units on Treasure Island and 90 units on Yerba Buena Island) from the existing housing stock on the two islands, with promise of additional land for TIHDI housing if new housing is developed. As stated in the Reuse Plan, TIHDI would be provided one acre for every 1,000 new residential units developed (San Francisco 1996e). The buildout housing mix would range from affordable to market-rate under this agreement.

Given San Francisco's lack of affordable housing and its lack of housing for those employed in San Francisco, Alternative 1 would have a beneficial impact on housing by providing housing for all income levels and by increasing the number of housing units within the San Francisco housing market (ABAG 1995b). No mitigation is proposed.

Jobs-Housing Balance (Factor 3). In regional terms, Alternative 1 would add both housing (2,850 units) and jobs (4,920 employees) to the City and County of San Francisco. Assuming that 55 percent of people working in San Francisco are expected to live in the city in 2015, and given that the average number of San Francisco workers in households with workers is 1.6 (MTC undated in San Francisco 1998b; Keyser Marston Associates and Gabriel Roche 1997 in San Francisco 1998b), projected employment growth under Alternative 1 translates to about 1,690 San Francisco households. The housing units provided under Alternative 1 can easily accommodate this demand. Because Alternative 1 provides housing units in excess of the demand generated by employment under this alternative, Alternative 1 would not create a demand for additional housing in San Francisco. Alternative 1 would not result in an adverse jobs-housing balance or a significant impact. No mitigation is proposed.

Schools (Factor 4). As described in Section 3.3, enrollment at elementary schools throughout the SFUSD is at or near capacity; at the middle school and high school levels, some schools are at capacity, while others are underenrolled. Enrollment in the district has remained constant since 1990, averaging approximately 63,000 to 64,000 students.

Under Alternative 1, the Treasure Island Elementary School would continue to operate. The middle school and high school students at NSTI would be bussed to San Francisco schools. As demonstrated by US Census data, San Francisco households have fewer children compared to Navy households on NSTI. In 1990, there were 1,134 school-aged children (5 to 19 years of age) at NSTI, representing 25 percent of the total NSTI population. In comparison, 96,173 school-aged children lived in San Francisco in 1990, only 13 percent of the total citywide population (US Department of Commerce 1990). Given the population figure of 6,895 derived in the previous section, the number of school-aged children living at NSTI under this alternative is estimated to be approximately 896 in 2015, or about 80 percent of the number of school-aged children who resided there in 1990. This would lead to an overall decrease in enrollment for the San Francisco school system. This is considered a not significant impact. No mitigation is proposed.

4.3.2 Alternative 2

Not Significant Impacts

Employment (Factor 1). Alternative 2 would create approximately 2,820 full-time equivalent jobs (information on employment generation factors is provided in Appendix F). This alternative would generate this level of employment over a period of roughly 15 or more years, dependent on market conditions, land availability, and other factors.

As in Alternative 1, many new jobs would be associated with a themed attraction or similar visitor attraction. This facility would create about 1,400 seasonal and permanent jobs, or approximately 700 full-time equivalent jobs. The remaining new jobs would be created through the development of a major hotel and conference facility on Treasure Island, as well as smaller scale bed-and-breakfast and reception facilities on Yerba Buena Island.

The number of civilian jobs created under Alternative 2 would offset the 750 jobs lost to closure and would result in a net gain of 2,070 jobs. Therefore, the projected increase in employment under Alternative 2 would be a beneficial impact, and no mitigation is proposed.

Population (Factor 2). The development of the reuse plan area would result in an increase in San Francisco's population through the provision of new housing units. As shown in Table 4-1, development under Alternative 2 would result in an estimated total population of about 710 people; this is because no housing other than the brig is proposed on Treasure Island. Subtracting the baseline residential population of approximately 4,500 in 1990, there would be a net population decrease of approximately 3,790 persons. This decrease represents 0.5 percent of the projected citywide population of 795,800 residents by 2015 and would not be a significant impact. No mitigation is proposed.

Housing (Factor 3). Alternative 2 would provide up to 250 housing units on Yerba Buena Island at build-out (Table 4-1); no housing other than the brig is proposed on Treasure Island. Approximately 50 units on Yerba Buena Island are existing military housing that would be converted to civilian use. Because none of the NSTI housing units were previously available to the general public, the total gain would be 250 units. There may be replacement homeless housing for TIHDI to manage and lease elsewhere off-island. By increasing the number of housing units, Alternative 2 would provide a beneficial impact. No mitigation is proposed.

Jobs-Housing Balance (Factor 3). In regional terms, Alternative 2 would add both housing and jobs to the City and County of San Francisco. However, only 250 housing units would be provided for 2,820 full-time equivalent jobs. Assuming that 55 percent of people working in San Francisco are expected to live in the city in 2015 and an average number of San Francisco workers in households with workers of 1.6 (MTC undated in San Francisco 1998b; Keyser Marston Associates and Gabriel Roche 1997 in San Francisco 1998b), projected employment growth under Alternative 2 translates to about 970 San Francisco households. Therefore, implementing Alternative 2 would create a demand for additional housing in San Francisco. Based on current vacancy rates, this increased housing demand could be accommodated by existing vacant housing units in San Francisco.

An imbalance of housing to jobs is not a physical environmental effect but rather a regional economic and social issue. Certain indirect project and cumulative effects caused by the imbalances in local employment and housing opportunities would be physical environmental impacts, primarily transportation and related air quality impacts created by increased commuting distances for employees living farther from their place of employment. The physical impacts of NSTI's housing supply shortfall under Alternative 2 relate primarily to project-induced and cumulative traffic and air quality effects. These impacts can be reduced through proposed transportation demand management measures (see Section 4.5, Transportation and Chapter 5, Cumulative Projects and Impacts).

It is expected that demands for new employees on Treasure Island and Yerba Buena Island under Alternative 2 will be met by the local Bay Area population. Outside of San Francisco, it would be reasonable to presume that any additional housing demand not met locally would be dispersed over the regional housing market and would not be concentrated in any particular location. This additional demand would therefore not have a significant impact on regional housing conditions and land development. No mitigation is proposed.

Schools (Factor 4). Under Alternative 2, the Treasure Island Elementary School would be closed. Based on a residential population of 710, the population of school-aged children associated with Alternative 2 would be approximately 92 children in 2015, or less than a tenth the number who resided at NSTI in 1990. These children would be bussed to San Francisco elementary, middle, and high schools. The 80 children represent about 13 percent of the population projected to be living in the 250 units on Yerba Buena Island. Because the 1,042-person decrease in the population of school-aged children at NSTI would more than offset the loss of the 852-student capacity elementary school, there would be an overall decrease in enrollment for San Francisco schools. The impact on schools would be less than significant. No mitigation is proposed.

4.3.3 Alternative 3

Not Significant Impacts

Employment (Factor 1). Alternative 3 would create approximately 2,195 full-time equivalent jobs (information on employment generation factors is provided in Appendix F). Generation of this employment would occur over a period of 15 or more years, dependent on market conditions, land availability, and other factors.

The majority of new jobs would be associated with mixed use/office space and film production on Treasure Island. The themed attraction would create about 700 seasonal and permanent jobs, or approximately 350 full-time equivalent jobs. The remaining new jobs would be created through the development of smaller scale bed-and-breakfast and reception facilities on Yerba Buena Island.

The number of civilian jobs created under Alternative 3 would offset the 750 jobs lost to closure and would result in a net gain of 1,445 jobs. Therefore, the projected increase in employment under Alternative 3 would be a beneficial impact, and no mitigation is proposed.

Population (Factor 2). The development of the reuse plan area would result in an increase in San Francisco's population through the provision of new housing units. As shown in Table 4-1, development under Alternative 3 would result in an estimated total population of about 3,510 people. Subtracting the baseline residential population of approximately 4,500 in 1990, there would be a net population decrease of approximately 990 persons. This decrease represents 0.1 percent of the projected citywide population of 795,800 residents by 2015 and would not be a significant impact. No mitigation is proposed.

Housing (Factor 3). Alternative 3 would provide up to 1,065 housing units on the site at build-out (Table 4-1). Approximately 995 units (905 on Treasure Island and 90 on Yerba Buena Island) are existing military housing that would be converted to civilian use. Since the military housing units were not previously available to the civilian market, the total gain would be 1,065 units.

Alternative 3 also addresses housing needs of the homeless. The 200 units of the existing housing units on Treasure Island would be made available to TIHDI for leasing. The buildout housing mix would range from affordable to market-rate under this agreement. Through provision of housing for all income levels and by increasing the number of housing units, Alternative 3 would provide a beneficial impact. No mitigation is proposed.

Jobs-Housing Balance (Factor 3). In regional terms, Alternative 3 would add both housing (1,065 units) and jobs (2,195 employees) to the City and County of San Francisco. Assuming that 55 percent of people working in San Francisco are expected to live in the city in 2015, and given that the average number of San Francisco workers in households with workers is 1.6 (MTC undated in San Francisco 1998b; Keyser Marston Associates and Gabriel Roche 1997 in San Francisco 1998b), projected employment growth under Alternative 1 translates to about 755 San Francisco households. The housing units provided under Alternative 3 can easily accommodate this demand. Because Alternative 3 provides housing units in excess of the demand generated by employment under this alternative, Alternative 3 would not create a demand for additional housing in San Francisco. Alternative 3 would not result in an adverse jobs-housing balance or a significant impact. No mitigation is proposed.

Schools (Factor 4). Under Alternative 3, the Treasure Island Elementary School would continue to operate. The projected 2015 population described above would include approximately 456 school-aged children, or about 40 percent of the school-aged children who resided on NSTI in 1990. The middle school and high school students at NSTI would be bussed to San Francisco schools. Because the number of school-aged children at NSTI, and also in San Francisco, would decline, the schools impact would be less than significant. No mitigation is proposed.

4.3.4 No Action Alternative

Employment (Factor 1). Under this alternative, property available for disposal at NSTI would continue under federal ownership in an inactive caretaker status, and existing interim leases would be allowed to expire. There would be minimal use of the property and facilities under this alternative.

Ongoing activities would include maintenance, to minimize deterioration, and essential security operations.

The caretaker program would provide employment for approximately 50 personnel on the site. This basewide level of employment represents a decrease of 700 jobs from the operational baseline. Employment generated by existing leases to nonfederal agencies would cease, because these leases would be allowed to expire and would not be renewed or extended. Given the number of jobs available in the region, this would be a less than significant impact.

Population, Housing, Jobs-Housing Balance, and Schools (Factors 2, 3, and 4). Under the No Action Alternative, the population would decrease to zero once the interim leases expire and the existing military housing would no longer be used. In addition, the No Action Alternative would mean no additional school children enrolling in the SFUSD. No impacts would occur under the No Action Alternative.

4.4 CULTURAL RESOURCES

Potential impacts to cultural resources, including historical and archaeological resources, resulting from disposal and reuse of NSTI are discussed in this section. Factors considered in determining whether an alternative would have a significant impact on cultural resources include the extent or degree to which implementation would cause either of the following:

- a substantial and adverse change in the characteristics that qualify a historic resource for listing on the NRHP; or

- a substantial and adverse change in the characteristics that qualify an archaeological resource for listing on the NRHP.

Under Section 106 of the NHPA, an undertaking has an effect on a historic property when it alters characteristics of the property that may qualify it for inclusion in the NRHP. The regulations implementing the NHPA define the term "adverse effect" to include the transfer, lease, or sale of the property out of federal ownership, in the absence of adequate and legally enforceable restrictions or conditions, to ensure the long-term preservation of the property.

As discussed in Section 3.4, the Navy's analysis of the impacts to cultural resources of disposal and reuse of federal property is limited to the Navy property that is suitable for transfer. The Navy formally excluded historic resources on these transferred properties from the transfer through the agreement and consultation with the SHPO, as outlined in the MOA discussed below.

Identified Cultural Resources

Yerba Buena Island. On Yerba Buena Island, the following Navy structures are listed in or area eligible for listing in the NRHP: the Senior Officers Quarters Historic District, which consists of quarters 1 through 7, three garages (buildings 83, 205, and 230), and the associated landscaping elements. Quarters 1, the Nimitz House, was listed in the NRHP in 1991. In addition to these properties, there are areas on the island that have been identified as archaeologically sensitive zones. These areas could contain unrecorded sites below the ground surface that would be discovered only during construction or some other activity requiring deep excavations (see Figure 3-3 in Section 3.4).

Treasure Island. On Treasure Island, the following Navy structures are listed in or eligible for listing in the NRHP: Building 1 (Administration Building), Building 2 (Hall of Transportation), and Building 3 with Building 111 as a structural element (the former Palace of Fine and Decorative Arts).

The Memorandum of Agreement

Navy must comply with Section 106 of the NHPA, which requires consultation among federal agencies, the SHPO, the ACHP, and other interested parties. Navy and the SHPO have prepared an MOA in order to ensure Section 106 compliance with regard to historic properties (a copy of the draft MOA is included as Appendix H). Compliance with the MOA is intended to ensure that project effects are not significant. Navy and the SHPO will sign the MOA before release of the final EIS, and it will be in effect before Navy transfers or disposes of the property. The MOA includes preservation provisions concerning Navy actions prior to disposal and long-term preservation plans following Navy disposal. Defined signatories to the MOA include Navy and SHPO. The ACHP has declined to participate. Invited signatories include the City and County of San Francisco and the Treasure Island Development Authority. Consulting parties include the Bay Band of Miwok Indians, with concurrence by the California Preservation Foundation and the San Francisco Historic Architecture Society.

If Navy decides to dispose of the excess property at NSTI, it will incorporate the relevant provisions of the MOA into the final EIS for conveying the property (disposal action).

4.4.1 Alternative 1

The proposed reuse for the NRHP-listed and NRHP-eligible buildings under Alternative 1 is summarized in Table 4-2.

Table 4-2
Reuse Plans for NRHP-listed and NRHP-eligible Buildings on NSTI

Property	Alternative 1	Alternative 2	Alternative 3
Senior Officers Quarters Historic District	Conference/reception, possible residential	Conference/reception, possible residential	Conference/reception, possible residential
Building 1, Treasure Island	Mixed use, including museum	Mixed use, including museum	Mixed use, including museum
Building 2, Treasure Island	Film production	Demolition for construction of themed attraction	Film production
Building 3, Treasure Island	Film production	Demolition for construction of themed attraction	Film production

Source: San Francisco 1996c

Not Significant Impacts

Loss of potentially significant historic resources (Factor 1). To accommodate planned reuse of historic properties, as described in Table 4-2, the buildings would likely need to be rehabilitated. Alternative 1 would include a substantial level of rehabilitation and construction on Treasure Island. Construction in the vicinity of the historic properties at NSTI, particularly Building 1, Building 2, and Building 3/111, may be out of character with the historic buildings and their setting and could have an adverse effect on these properties. Although the proposed themed attraction may restore Building 1, Building 2, and Building 3/111, such construction could alter the character-defining features of Treasure Island (i.e., the setting in which these historic properties are located).

The prepared MOA requires that any rehabilitation work performed prior to final Navy disposal conform to the Secretary of the Interior's *Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings* (US Department of the Interior 1996). Following Navy disposal, the MOA stipulates that the properties would be designated either as historic landmarks or as part of a historic district under San Francisco Planning Code, Article 10, Preservation of Historical and Aesthetic Landmarks, to insure long-term protection of the properties. The impact, therefore, would not be significant.

Loss of potentially significant archaeological resources (Factor 2). Implementing Alternative 1 could result in the repair, relocation, or construction of supporting infrastructure on Yerba Buena Island. These activities could occur in archaeologically sensitive zones (Figure 3-3). The MOA identifies required measures to guard against the potential loss of important information about the prehistoric or historic occupation of the island. Implementing the MOA would insure that archaeological resources would not be significantly affected.

4.4.2 Alternative 2

A summary of the proposed reuse for the NRHP-listed and NRHP-eligible buildings under Alternative 2 appears in Table 4-2.

Significant and Not Mitigable Impact

Impact: Demolition of historic resources (Factor 1). Alternative 2 involves the demolition of Building 2 and Building 3 on Treasure Island, both of which are eligible for listing on the NRHP. This demolition would result in the loss of significant historic resources.

> *Mitigation.* This adverse effect can be lessened by recording the affected resources to the standards of either the Historic American Buildings Survey (HABS) or the Historic American Engineering Record (HAER). HABS/HAER recordation would reduce but would not eliminate the adverse effect caused by demolishing NRHP-eligible resources. Available mitigation measures, short of preservation, would not reduce impacts of demolition below the threshold of significance.

Not Significant Impacts

Loss of potentially significant historic resources (Factor 1). Alternative 2 proposes alteration of historic properties for reuse, as described in Table 4-2, construction in the vicinity of the historic properties, or deterioration of vacant buildings after transfer. As described above for Alternative 1, the MOA requires that any rehabilitation work performed or any construction in the vicinity of historic structures prior to Navy disposal conform to the Secretary of the Interior's *Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings* (US Department of the Interior 1996).

Following Navy disposal, the MOA stipulates that the properties would be designated either as historic landmarks or as part of a historic district under San Francisco Planning Code, Article 10, Preservation of Historical and Aesthetic Landmarks, to insure long-term protection and historically appropriate rehabilitation of the structures. Following provisions in the MOA, rehabilitation of historic properties would not constitute a significant impact.

Loss of potentially significant archaeological resources (Factor 2). Implementing Alternative 2 could result in the repair, relocation, or construction of supporting infrastructure on Yerba Buena Island in archaeologically sensitive zones (Figure 3-3). The MOA identifies measures that guard against the potential loss of important information about the prehistoric or historic occupation of the island and for the unexpected discovery of archaeological remains. The impact would not be significant.

4.4.3 Alternative 3

A summary of the proposed reuse for the NRHP-listed and NRHP-eligible buildings under Alternative 3 appears in Table 4-2. The projected reuse of NRHP-listed or NRHP-eligible buildings would be identical to that of Alternative 1, although on a smaller scale.

Not Significant Impacts

Loss of potentially significant historic resources (Factor 1). Similar to Alternative 1, Alternative 3 proposes alteration of historic properties for reuse, as described in Table 4-2, construction in the vicinity of the historic properties that affects the character of those properties, or deterioration of vacant buildings after transfer. As described above for Alternative 1, the prepared MOA requires that any rehabilitation work performed or any construction in the vicinity of historic structures prior to Navy disposal conform to the Secretary of the Interior's *Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings* (US Department of the Interior 1996).

Following Navy disposal, the MOA stipulates that the properties would be designated either as historic landmarks or as part of a historic district under San Francisco Planning Code, Article 10, Preservation of Historical and Aesthetic Landmarks. Article 10 includes preservation measures that protect the character of historic districts. The MOA ensures that potential reuse activities would not result in construction that diminishes the character of historic resources.

Loss of potentially significant archaeological resources (Factor 2). Similar to Alternative 1, implementing Alternative 3 could result in the repair, relocation, or construction of supporting infrastructure on Yerba Buena Island in archaeologically sensitive zones (Figure 3-3). The MOA identifies measures to guard against the potential loss of important information about the prehistoric or historic occupation of the island and for the unexpected discovery of archaeological remains. Following the measures within the MOA would eliminate any potential significant impacts.

4.4.4 No Action Alternative

Deterioration of historic property and archaeologically sensitive areas (Factors 1 and 2). The No Action Alternative would be a continuation of the caretaker status of NSTI surplus property. There would be minimal use of the property and facilities under this alternative. Ongoing activities would include maintenance to minimize deterioration and essential security operations. No structures would be demolished or reused, and NRHP-listed and NRHP-eligible buildings would not be affected. Archaeologically sensitive areas would remain under the control and jurisdiction of Navy and would be afforded the protection of federal historic and archaeological preservation laws and regulations.

4.5 TRANSPORTATION

Potential transportation impacts resulting from disposal and reuse of NSTI are discussed in this section. Potential impacts are characterized by the changes in the movement of vehicles on freeways, ramps, and intersections, changes in demand for transit services, changes in delivery and loading operations (truck traffic), parking availability, and emergency access on and off the site. A summary of the transportation features assumed for the reuse alternatives is included in Appendix F. Factors considered in determining whether an alternative would have a significant transportation, traffic, and circulation impact included the extent or degree to which its implementation would:

1) Exceed the capacity of on- and off-ramps, cause LOS at intersections and freeway mainline segments to deteriorate from LOS A through D to LOS E or F, cause LOS to deteriorate from LOS E to LOS F, or increase congestion at intersections currently operating at (or anticipated to operate at) LOS F (San Francisco 2000);
2) Increase demand on public transportation in excess of planned or anticipated capacity at time of increase;
3) Increase demand for bicycle and pedestrian facilities in excess of planned or anticipated capacity at time of increase;
4) Increase truck traffic;
5) Result in parking demand exceeding the supply; or
6) Impede emergency access on or off the site.

Traffic Analysis Methodology

Traffic impacts of the reuse alternatives are described for 2010, which is representative of 2015 conditions (the assumed build out year for all the reuse alternatives). The year 2010 was selected since it is a common benchmark for long-range planning by regional agencies such as ABAG and MTC, including planning for regional transportation improvements. The MTC has developed forecasts of 2010 travel demand based on anticipated land use and demographic patterns developed by ABAG (Projections '94), and the planned and funded transportation improvements identified by the nine Bay Area counties, Caltrans and MTC.

NSTI is connected to the region by only one route—the SFOBB/I-80. SFOBB/I-80 traffic volumes are controlled by metering lights in the westbound approach and are constrained by the number of traffic lanes on the SFOBB in the eastbound approach. Further, as described in Section 3.5.2, the SFOBB has operated and is expected to continue to operate at capacity during peak periods. (The SFOBB replacement alternative may improve traffic operations but congestion is unlikely to be affected [Caltrans and FHWA 2000]). Therefore, traffic at NSTI would not be substantially affected by changes in the regional growth or transportation systems and so, the established regional growth and transportation projections for 2010 are therefore taken to be an accurate representation of 2015 conditions (see Appendix F, Future Travel Forecasts).

Typical traffic conditions were evaluated for weekday AM and PM peak hours (during the morning and evening commute periods). In addition, because some of the reuse alternatives would generate a large amount of weekend traffic and because the SFOBB has high traffic volumes during the weekend midday period, the weekend midday peak hour also was evaluated.

Impacts from each reuse alternative to SFOBB/I-80 freeway operations and local intersections on Treasure Island were determined by the increase in delay caused by the addition of reuse-generated traffic. Impacts on SFOBB/I-80 operations were evaluated using the FREQ11 freeway travel operations model. Impacts at local intersections were evaluated using the TRAFFIX software program, which incorporates methodologies from the 1994 update to the Highway Capacity Manual (Transportation Research Board 1994). Traffic impacts at the SFOBB ramps were evaluated by comparing projected demand under the reuse alternatives (expressed in number of vph) to existing ramp capacity and queuing.

Traffic impact analyses for closing military installations typically compare traffic conditions for each reuse alternative to baseline traffic conditions (traffic levels at or just prior to the decision to close NSTI [1993]) under projected build out time frames (2010). However, because the SFOBB has operated, does operate, and will continue to operate at or above capacity, comparing peak period traffic generated by the reuse alternatives to a traffic condition that combines baseline trip generation for the reuse plan area with projected 2010 traffic generation in the region would not change either the SFOBB/I-80 mainline or ramp impact analysis or conclusions. The following analysis presents average daily trip (ADT) traffic and peak-hour vehicle-trip volumes for each of the three reuse alternatives and compares these volumes to future (2010) background conditions without the project (No Action Alternative). Reuse traffic volumes also are compared to a fully operational baseline (representing conditions at the time of or prior to closure [1993]) for informational purposes. Table 4-3 identifies vehicle-trips generated by the three reuse alternatives and a fully operational baseline; these trips form the basis of the transportation impact analysis on the SFOBB/I-80 corridor and its associated ramps.

Table 4-3
Estimated NSTI Vehicle-trip Generation[1]
Weekday Daily, AM and PM Peak Hour (2010)[2]

	1993 Existing (Operational Baseline)[4]			Alternative 1			Alternative 2			Alternative 3		
	Weekday Daily	AM Peak Hour	PM Peak Hour	Weekday Daily	AM Peak Hour	PM Peak Hour	Weekday Daily	AM Peak Hour	PM Peak Hour	Weekday Daily	AM Peak Hour	PM Peak Hour
Total Vehicle Trips[3]	6,480	442	475	10,525	960	1,555	6,140	385	775	5,390	610	800

[1]Includes inbound and outbound trips. Does not include vehicle-trips for persons arriving at ferry terminals in San Francisco and the East Bay by auto (see Tables 4-4 and 4-5 for total vehicle-trip numbers).
[2]The AM peak hour of 8:00 to 9:00 AM occurs within the AM peak period of 6:00 to 9:00 AM. The PM peak hour of 5:00 to 6:00 PM occurs within the PM peak period of 3:00 to 7:00 PM.
[3]Total vehicle-trips do not include any internal trips since they would be walking, bicycle, or shuttle trips.
[4]Trips are presented for 6:00 AM to 6:00 PM period.

Source: DON 1997d; DON 1986.

Future Travel Forecasts

The development of 2010 travel forecasts used the regional MTC model to identify traffic growth in the region and the land use components of the reuse alternatives to determine travel demand to and from NSTI. A detailed description of the methodology and assumptions is presented in Appendix F. This approach includes a cumulative impacts assessment for 2010, taking into account both the growth expected at NSTI and the growth forecasts for San Francisco and the Bay Area.

4.5.1 Alternative 1

Vehicle Trips

Weekday and weekend vehicle-trips projected to be generated in 2010 under Alternative 1 are shown in Tables 4-4 and 4-5, respectively. This alternative is estimated to generate approximately 960 vehicle-trips during the weekday AM peak hour, 1,555 vehicle-trips during the weekday PM peak hour, and 1,440 vehicle-trips during the weekend midday peak hour. Vehicle-trips would be by private auto, carpool vehicles, taxis, limousines, vanpools, and buses, including tour buses and public transit buses. In comparison, there were approximately 442 vehicle-trips during the weekday AM peak hour and 475 vehicle-trips during the weekday PM peak hour under fully operational baseline conditions (Table 4-3).

Significant and Mitigable Impacts

Impact: Increased volumes and queuing on three SFOBB/I-80 Yerba Buena Island ramps (Factor 1). Alternative 1 would result in traffic volumes that exceed the capacities of three ramps: the SFOBB/I-80 Yerba Buena Island westbound on-ramp on the west side of Yerba Buena Island, the eastbound off-ramp on the west side of Yerba Buena Island, and the eastbound on-ramp on the east side of Yerba Buena Island. The remainder of the on- and off-ramps would operate within their given capacities, as discussed under Not Significant Impacts. Figure 3-5 in Section 3.5 shows on- and off-ramp locations, while Table 4-6 summarizes ramp volumes and queuing. The ramps are discussed separately below.

SFOBB/I-80 Yerba Buena Island westbound on-ramp (west side). The projected traffic demands during the AM, PM, and weekend midday peak hours would exceed the current ramp capacity of 330 vph. The projected demands on the westbound on-ramp west of the Yerba Buena Island tunnel would result in a queue of 7 vehicles during the AM peak hour, 22 vehicles during the PM peak hour, and 239 vehicles during the weekend midday peak hour. A queue of 239 vehicles would be approximately 4,800 feet (1,463 m) in length and would constrain vehicular and bus movements throughout Yerba Buena Island and onto Treasure Island. The wait time for vehicles in a queue of this length would be substantial. This would be a significant and mitigable impact.

Mitigation. The following mitigation measures are recommended:

- As described in Section 3.5, the SFOBB/I-80 Yerba Buena Island on-ramps are substandard by current Caltrans standards, primarily in acceleration/deceleration lengths, ramp radii, and sight distances. Upgrading the on-ramps would increase ramp capacity and level of operation and decrease queuing impacts. However, upgrades to the on-ramps may be constrained by the geology of the site (elevation change and bedrock) and structural limitations due to the viaduct.

Table 4-4
Estimated Vehicle-trip Generation by Travel Mode[1]
Weekday Daily, AM and PM Peak Hour (2010)[2]

Mode	Alternative 1			Alternative 2			Alternative 3		
	Daily	AM	PM	Daily	AM	PM	Daily	AM	PM
Auto	9,210	875	1,390	5,200	330	660	4,790	545	715
Vanpool/Other	995	60	120	700	45	85	470	50	65
Bus	320	25	45	240	10	30	130	15	20
Total NSTI Vehicle-trips	***10,525***	***960***	***1,555***	***6,140***	***385***	***775***	***5,390***	***610***	***800***
Auto trips to Ferry Terminals[3]	7,575	450	975	6,945	150	900	1,310	100	175
Total Vehicle-trips[4]	***18,100***	***1,140***	***2,530***	***13,085***	***535***	***1,675***	***6,700***	***710***	***975***

[1]Includes inbound and outbound trips.
[2]The AM peak hour of 8:00 to 9:00 AM occurs within the AM peak period of 6:00 to 9:00 AM. The PM peak hour of 5:00 to 6:00 PM occurs within the PM peak period of 3:00 to 7:00 PM.
[3]Ferry vehicle-trips include persons arriving at ferry terminals in San Francisco and the East Bay by auto.
[4]Total vehicle-trips do not include any internal trips since they would be walking, bicycle, or shuttle trips.
Source: DON 1997d.

Table 4-5
Estimated Vehicle-trip Generation by Travel Mode[1]
Weekend Daily and Midday Peak Hour (2010)[2]

Mode	Alternative 1		Alternative 2		Alternative 3	
	Daily	Midday	Daily	Midday	Daily	Midday
Auto	7,795	1,300	6,210	670	5,340	695
Vanpool/Other	980	100	1,020	85	745	55
Bus	295	40	275	30	155	20
Total NSTI Vehicle-trips	***9,070***	***1,440***	***7,505***	***785***	***6,240***	***770***
Auto trips to Ferry Terminals[3]	6,465	780	6,830	820	1,210	130
Total Vehicle-trips[4]	***15,535***	***2,220***	***14,335***	***1,605***	***7,450***	***900***

[1]Includes inbound and outbound trips.
[2]The midday peak hour of 12:00 to 1:00 PM occurs within the midday peak period of 10:00 AM to 1:00 PM.
[3]Ferry vehicle-trips include persons arriving at ferry terminals in San Francisco and the East Bay by auto.
[4]Total vehicle-trips do not include any internal trips since they would be walking, bicycle or shuttle trips.
Source: DON 1997d.

Table 4-6
SFOBB/I-80 Yerba Buena Island Ramp Demand Volumes and Maximum Queue
Existing and Year 2010 Weekday and Weekend Peak Hour Conditions

Peak Hour/Ramp[3]	1993 Existing (Operational Baseline)		2010 Background Conditions (No Action)		2010 Alternative 1		2010 Alternative 2		2010 Alternative 3	
	Volume	Queue[4]	Volume	Queue[4]	Volume	Queue[4]	Volume	Queue[4]	Volume	Queue[4]
Weekday AM Peak Hour										
westbound on-ramp[1] (east side)	40	--	15	--	145	--	40	--	75	--
westbound on-ramp[2] (west side)	90	--	35	--	335	7	90	--	170	--
westbound off-ramp (east side)	190	--	45	--	160	--	145	--	160	--
eastbound on-ramp (east side)	215	--	80	--	300	--	135	--	190	--
eastbound off-ramp (west side)	120	--	95	--	235	--	205	--	235	--
eastbound off-ramp (east side)	20	--	5	--	145	--	135	--	145	--
Total ramp volumes	*675*		*275*		*1,320*		*750*		*975*	
Weekday PM Peak Hour										
westbound on-ramp (east side)	25	--	15	--	85	--	70	--	65	--
westbound on-ramp (west side)	135	--	60	--	355	22	295	--	270	--
westbound off-ramp (east side)	240	--	35	--	375	--	145	--	160	--
eastbound on-ramp (east side)	250	--	80	--	300	--	275	--	250	--
eastbound off-ramp (west side)	60	--	55	--	535	36	190	--	240	--
eastbound off-ramp (east side)	20	--	5	--	145	--	45	--	60	--
Total ramp volumes	*730*		*250*		*1,795*		*1,020*		*1,045*	
Weekend Midday Peak Hour										
westbound on-ramp (east side)	20	--	15	--	195	--	90	--	110	--
westbound on-ramp (west side)	125	--	35	--	570	239	260	--	320	--
westbound off-ramp (east side)	130	--	45	--	175	--	150	--	100	--
eastbound on-ramp (east side)	155	--	80	--	480	150	295	--	320	--
eastbound off-ramp (west side)	75	--	95	--	230	--	210	--	160	--
eastbound off-ramp (east side)	20	--	5	--	60	--	50	--	30	--
Total ramp volumes	*525*		*275*		*1,710*		*1,055*		*1,040*	

[1]Ramp located east of Yerba Buena Island tunnel.
[2]Ramp located west of Yerba Buena Island tunnel.
[3]Maximum on-ramp capacity = 330 vehicles per hour per ramp; Maximum off-ramp capacity = 500 vehicles per hour per ramp. Total on-ramp capacity = 990 vehicles per hour and total off-ramp capacity = 1,500 vehicles per hour.
[4]Number of vehicles.
Source: DON 1997d.

- Implement measures, including signage and notices to residents, to encourage residents and visitors to use the second westbound on-ramp east of the Yerba Buena Island tunnel. These measures would reduce the queue at most times of the day and week except for the weekend midday peak hour.

- Redirecting traffic during the weekend midday peak hour to the second on-ramp east of the Yerba Buena Island tunnel would reduce the queue at the first westbound on-ramp from 4,800 feet to approximately 3,225 feet (977 m). A queue of this length still would extend beyond the Treasure Island Road southbound "Y" split and the intersection of Macalla Road and Treasure Island Road but would not extend to the Treasure Island Main Gate. Mitigation measures to reduce the volume of ramp traffic and thus further reduce the queue length are described below.

- Implement a Travel Demand Management (TDM) program to further reduce traffic generation during peak hours. TDM measures encourage individuals to travel during off-peak times or to use alternative means of transportation to reduce the number of vehicles on area roadways during high-volume periods. TDM measures may include flextime, employer-provided shuttles, subsidy of transit services, limiting available visitor parking, and implementing tolls (see TDM assumptions described in Appendix F). Based on nationwide averages, aggressively implemented TDM measures are anticipated to reduce traffic volumes on these on-ramps by between 6 and 12 percent during the weekday AM and PM peak hour commute times.

- Implement additional or enhanced TDM measures, such as discounted ferry passes, flex-time, public relations campaigns, and giving NSTI employees preferential access to housing on NSTI, to encourage ferry use or to encourage vehicle-trips during the nonpeak period to reduce queues on both westbound on-ramps to tolerable levels.

- Monitor NSTI ramp traffic volumes to ensure that the transportation goals and objectives established by the Reuse Plan are successfully implemented. Monitoring traffic volumes would inform San Francisco whether westbound on-ramp traffic demand would reach capacity at each phase of development. If at some point it is determined that demand on the westbound on-ramps would approach capacity, either more aggressive TDM and transit improvements must be implemented or additional developments should be delayed until such improvements are implemented.

- Monitor NSTI bus transit demand on an annual basis (or at each phase of development) and ensure that planned services are implemented to meet or exceed demand. If the results of this monitoring program indicate that there is an imbalance between transit service and demand, the planned land use development on NSTI could be limited by San Francisco (which has permit approval authority) until required services are funded and implemented. Limiting land use development at NSTI would ensure that major development would not occur until adequate transit service is provided. Implement a similar monitoring program for ferry demand.

- Restripe the portion of Treasure Island Road between the Main Gate and the westbound on-ramp on the west side of the Yerba Buena Island tunnel from two lanes to accommodate three traffic lanes. The narrowest segment of the roadway is approximately 32.5 feet (9.9 m) wide and could accommodate three 10-foot (3-m) lanes, one in the northbound direction (inbound to Treasure Island) and two in the southbound direction (outbound from Treasure Island). Reconfiguring this portion of Treasure Island Road to accommodate two southbound lanes would ensure that southbound vehicles traveling to the southern half of Yerba Buena Island would not be impeded by vehicles queuing to enter the westbound on-ramp on the west side of the tunnel.

Implementing all of these measures would reduce this impact to a not significant level.

<u>SFOBB/I-80 Yerba Buena Island eastbound off-ramp (west side).</u> The projected traffic increase during the PM peak hour would exceed the current ramp capacity of 500 vph. The projected demand of 535 vph would result in a maximum queue of 36 vehicles, or about 720 feet (219 m) on the SFOBB. This could result in a significant impact if vehicles destined to exit the SFOBB/I-80 were to queue along the left (fast-moving) lane of the freeway. This would be a significant and mitigable impact.

Mitigation. The following mitigation measures are recommended:

- Use traffic control measures, such as signage, to encourage eastbound motorists to use the second Yerba Buena off-ramp (the off-ramp on the east side of Yerba Buena Island). By shifting demand to the off-ramp on the east side of Yerba Buena Island, projected traffic volumes on each off-ramp would be approximately 340 vph, well below the off-ramp capacities of 500 and 560 vph for the west side and east side off-ramps, respectively.
- Implement TDM and monitoring measures to reduce traffic volumes on this off-ramp by between 6 and 12 percent, as described above for increased volumes on the westbound on-ramp on the west side of Yerba Buena Island. Even without shifting demand to the eastbound off-ramp on the east side of Yerba Buena Island, TDM measures would lower traffic volumes on the eastbound off-ramp on the west side of the tunnel to between approximately 503 and 471 vph. These reduced traffic volumes would slightly exceed or be below the off-ramp capacity of 500 vph and would not substantially constrain access to NSTI or substantially affect SFOBB traffic operations.

Implementing both of these measures would reduce this impact to a not significant level.

<u>SFOBB/I-80 Yerba Buena Island eastbound on-ramp (east side).</u> The projected traffic increase during the weekend midday peak hour would exceed the current ramp capacity of 330 vph. The projected demand of 480 vph would result in a maximum queue of approximately 150 vehicles, or about 3,000 feet (914 m). This length of queue would result in significant wait times for vehicles in the queue. The queue also would constrain access from Treasure Island Road to the Coast Guard facilities on Yerba Buena Island. However, the eastbound on-ramp will be upgraded as part of the planned replacement of the east span of the SFOBB. The planned ramp upgrade would reduce

queuing impacts associated with the eastbound on-ramp. Therefore, this impact is significant and mitigable.

Mitigation. The following mitigation measures are recommended:

- Upgrade the eastbound SFOBB/I-80 on-ramp on the east side of Yerba Buena Island to provide for an adequate acceleration lane. Preliminary concept plans for the new east span indicate that the eastbound on-ramp would be modified to Caltrans standards. This ramp would mitigate this impact to a not significant level.
- Implement TDM and monitoring measures, as described above for increased volumes on the westbound on-ramp on the west side of Yerba Buena Island. TDM measures are anticipated to reduce traffic volumes on this on-ramp by between 6 and 12 percent, which would result in a demand of between 451 and 423 vph, respectively, during the weekend midday peak hour. This decrease in demand and the increase in ramp capacity from the ramp upgrade would mitigate this impact to a not significant level.

Implementing both of these mitigation measures would reduce this impact to a not significant level.

<u>*Impact: Transit operations—bus service to East Bay*</u> <u>(Factor 2)</u>. Lack of direct bus service between NSTI and the East Bay is a significant and mitigable impact (bus service between San Francisco and Treasure Island is provided by MUNI). Approximately 4,290 weekday daily and approximately 4,000 weekend daily bus transit patrons are estimated between NSTI and the East Bay (Table 4-7). Without direct service, bus patrons would be required to travel to San Francisco using the MUNI service, and transfer at the Transbay Terminal to AC Transit service to the East Bay or to drive, which would add to the vehicular demand and congestion at the Yerba Buena Island ramps and would be a significant and mitigable impact.

Mitigation. The following mitigation measures are recommended:

- Establishing direct transit service between NSTI and the East Bay would mitigate this impact to a not significant level. To meet the estimated demand, bus service for Alternative 1 would need to be at 10-minute headways (the interval between the trips of 2 successive vehicles) throughout the day during the weekday and at 15-minute headways throughout the day during the weekend.
- Monitor NSTI bus transit demand on an annual basis (or at each phase of development) and ensure that planned services are implemented to meet or exceed demand. If the results of this monitoring program indicate that there is an imbalance between transit service and demand, the planned land use development on NSTI could be limited by San Francisco (which has permit approval authority) until required services are funded and implemented. Limiting land use development at NSTI would ensure that major development would not occur until adequate transit service is provided. Implement a similar monitoring program for ferry demand.

Table 4-7
Estimated Bus Transit Person-trips
Weekday and Weekend Conditions

Origin/Destination	Alternative 1			Alternative 2			Alternative 3		
Weekday Conditions	**Daily**	**AM**	**PM**	**Daily**	**AM**	**PM**	**Daily**	**AM**	**PM**
San Francisco[1]	5,310	440	750	3,620	135	460	2,140	240	325
East Bay	4,290	260	530	3,480	150	450	1,785	190	260
Total	***9,600***	***700***	***1,280***	***7,100***	***285***	***910***	***3,925***	***430***	***585***
Weekend Conditions	**Daily**		**Midday**	**Daily**		**Midday**	**Daily**		**Midday**
San Francisco[1]	4,760		670	3,960		455	2,255		300
East Bay	4,000		440	4,210		420	2,395		210
Total	***8,760***		***1,110***	***8,170***		***875***	***4,650***		***510***

[1] Transit trips from the South Bay and North Bay included with San Francisco.

Source: DON 1997d.

- Implement TDM measures to encourage transit rather than auto use. Such measures include placing limits on parking and tolls (see TDM assumptions described in Appendix F). Additional TDM measures, such as discounted ferry passes, public relations campaigns, and housing preferences for NSTI employees, are described under the mitigation for increased volumes on the SFOBB/I-80 westbound on-ramp and eastbound off-ramp west of Yerba Buena Island.

Implementing all of these measures would reduce this impact to a not significant level.

Not Significant Impacts

SFOBB/I-80 operations (Factor 1). Access to the SFOBB/I-80 from the East Bay at the toll plaza metering lights and from San Francisco at the approach to the SFOBB would remain constrained. Traffic volumes and operating conditions in 2010 are anticipated to be similar to both fully operational base conditions and future 2010 background conditions (No Action Alternative) and are therefore considered not significant (Table 4-8). Since the SFOBB westbound traffic volumes are controlled by signal lights west of the toll booth, westbound traffic volumes on the bridge structure would not change (the metering lights only allow a sufficient number of vehicles on the bridge to have a free flow operation) regardless of what level of development occurs at TI.

Other ramp operations (Factor 1). The vehicle-trips generated by Alternative 1 would increase ramp volumes (Table 4-6). Except for the westbound on-ramp (west of Yerba Buena Island), eastbound off-ramp (west of Yerba Buena Island), and eastbound on-ramp (east of Yerba Buena Island), all other on- and off-ramps would operate with the ramp demand less than the capacity during the weekday peak hour conditions and would therefore not result in any significant queuing impacts.

Delivery/goods movement/loading (Factor 4). A guiding policy of the Reuse Plan is to limit truck service and freight delivery to off-peak hours (generally between 10:00 AM and 3:00 PM and after 7:00 PM on weekdays). It is estimated that Alternative 1 typically would generate approximately 57 service and freight delivery trips (18 inbound and 39 outbound) during the AM peak hour and 39 service and freight delivery trips (24 inbound and 15 outbound) during the PM peak hour. Since service and delivery vehicles would occur during the off-peak hours to reduce potential conflicts with peak period SFOBB/I-80 traffic, increases in truck traffic would not result in a significant impact.

The eastbound off-ramp at the east side of the Yerba Buena Island tunnel has a 12-foot (3.5-m) height restriction, thereby limiting larger trucks to the off-ramp on the west side of the Yerba Buena Island tunnel. The existing ramp geometry can accommodate any California highway-legal trucks. However, due to the constrained ramp geometries and slower acceleration capabilities of trucks, trucks would take longer to enter the traffic stream than autos. During peak periods, trucks merging with mainline traffic could cause short-term disruptions in traffic flow. Water transportation of goods delivery to NSTI also would be an option. However, unless truck access to NSTI from the SFOBB/I-80 is limited to late night/early morning hours, truckers would likely find ferry access to be inconvenient and expensive. No mitigation is proposed.

Construction activities (Factors 1 and 4). Construction impacts are generally short-term in nature. They usually can be managed through proper phasing, sequencing, and scheduling of the construction

Table 4-8
SFOBB/I-80 Operations
Existing and Year 2010 Weekday and Weekend Peak Hour Conditions

Peak Hour/Direction	Existing (Operational Base)		2010 Background Conditions (No Action)		2010 Alternative 1		2010 Alternative 2		2010 Alternative 3	
	Speed[3]	LOS[4]	Speed[3]	LOS[4]	Speed[3]	LOS[4]	Speed[3]	LOS[4]	Speed[3]	LOS[4]
Weekday AM peak hour[5]										
Eastbound[1]	57	B	57	B	57	B	57	B	57	B
Westbound[2]	45	E	23	F	22	F	23	F	23	F
Weekday PM peak hour[6]										
Eastbound[1]	46	D	46	D	46	D	46	D	46	D
Westbound[2]	56	B	18	F	17	F	17	F	17	F
Weekend midday peak hour[7]										
Eastbound[1]	57	B	57	B	56	B	57	B	56	B
Westbound[2]	57	B	57	B	57	B	57	B	57	B

[1]Eastbound SFOBB/I-80 east of Yerba Buena Island tunnel.
[2]Westbound SFOBB/I-80 west of Yerba Buena Island tunnel.
[3]Speed is expressed in miles per hour.
[4]LOS is based on mainline travel speeds, consistent with San Francisco Congestion Management LOS designations.
[5]The AM peak hour of 8:00 to 9:00 AM occurs within the AM peak period of 6:00 to 9:00 AM.
[6]The PM peak hour of 5:00 to 6:00 PM occurs within the PM peak period of 3:00 to 7:00 PM.
[7]The midday peak hour of 12:00 to 1:00 PM occurs within the midday peak period of 10:00 AM to 1:00 PM.
Note: Degraded operating conditions on the SFOBB/I-80 in 2010 (without reuse) would be attributable to regional growth. The additional vehicle-trips associated with each reuse alternative would contribute to increases in queues at the SFOBB toll plaza, congestion and queues in downtown San Francisco, and in the duration of the peak periods.

Source: DON 1997d.

activities. However, construction would cause a temporary inconvenience to motorists. Due to the short-term nature of construction-related impacts, they are usually not considered significant. Construction activities on NSTI would include existing roadway work, buildings, the causeway, dike improvements and other seismic work, utility lines, and piers. For each, the following phases generally would or could be included—demolition, excavation, foundation, and for buildings, construction of building structure, and finishing. Construction vehicles would include trucks removing demolition debris and delivering materials and supplies, as well as construction worker vehicles. The volume of construction vehicles accessing NSTI would vary, depending on the specific construction activity and construction schedules for the various components of the alternatives.

Existing ramp geometry would allow all size construction vehicles to enter or exit the SFOBB/I-80 ramps. However, due to the slower acceleration capabilities and larger turning radii, large construction trucks would take longer to enter the SFOBB traffic stream. The additional construction-related traffic would add to traffic at East Bay and San Francisco approaches to the SFOBB and could conflict with SFOBB/I-80 and NSTI traffic; this effect could be reduced by shuttling workers to NSTI from parking areas off of NSTI, such as in San Francisco or the East Bay.

Water transportation of demolition and construction materials could avoid transporting materials on the SFOBB/I-80. There are two possible approaches—a roll-on, roll-off vehicular ferry or a barge. No mitigation is proposed.

Transit operations—ferry and bus service (Factors 2 and 5). This alternative includes a comprehensive transportation program that relies on passenger ferries and buses to transport most residents and visitors between NSTI, San Francisco, and the East Bay. The ferry plan identified for phase three of the Reuse Plan would adequately serve the ferry trip daily demand of approximately 34,635 person-trips on weekdays (Table 4-9) and approximately 32,120 person-trips on weekends (Table 4-10). The Reuse Plan includes two new ferry terminals (at Candlestick Point in San Francisco and at Golden Gate Fields on the Berkeley/Albany border). The new terminals would provide sufficient capacity to accommodate the ferry demand and would include parking for those ferry patrons arriving by auto. Under Alternative 1, a new ferry terminal would be built on the west side of Treasure Island. Pier 1 would be retrofitted to serve as a ferry landing on the east side of the island.

Ferry service also would be provided between NSTI and the Ferry Building in San Francisco and between NSTI and Jack London Square area in Oakland. The ferry terminal at the Ferry Building in downtown San Francisco does not provide dedicated parking for ferry patrons. Under Alternative 1, a daily demand of approximately 540 spaces is estimated (Table 4-11). This demand represents daily pick-up/drop-off activities in front of the Ferry Building; it translates into about two to three on-street pick-up and drop-off spaces. Although a substantial supply of parking is available within half a mile (0.8 km) of the Ferry Building (approximately 16,500 off-street spaces on weekdays and approximately 11,500 spaces on weekends within a 7-block radius), these spaces are generally occupied during the weekday. NSTI visitors who would drive to the Ferry Building may not find readily available parking in the vicinity or may not be willing to pay the cost to park in downtown

Table 4-9
Estimated Ferry Person-trips by Mode of Access
Weekday Daily, AM and PM Peak Hour

Ferry Terminal Location	Alternative 1			Alternative 2			Alternative 3		
	Daily	AM	PM	Daily	AM	PM	Daily	AM	PM
Transit/Pedestrian Access to Terminal									
Downtown San Francisco/ Ferry Building									
Transit	5,615	535	905	3,955	135	535	3,390	440	595
Pedestrian	6,940	170	635	7,785	95	955	2,545	115	255
Marin County	550	20	60	550	10	70	165	10	20
Candlestick Point	1,450	80	180	1,345	30	170	0	0	0
Jack London Square/Alameda/ Golden Gate Fields	3,020	70	285	3,495	30	435	685	25	70
Total	*17,575*	*875*	*2,065*	*17,130*	*300*	*2,165*	*6,735*	*590*	*940*
Vehicular Access to Terminal									
Downtown San Francisco/ Ferry Building	1,395	80	170	1,305	25	165	655	60	95
Marin County	450	15	50	450	10	60	135	10	15
Candlestick Point	6,150	350	765	5,665	125	715	0	0	0
Jack London Square/Alameda/ Golden Gate Fields	9,065	210	850	10,490	95	1,305	2,055	75	210
Total	*17,060*	*655*	*1,835*	*17,910*	*255*	*2,245*	*2,845*	*145*	*320*
Total Ferry Person-trips									
Downtown San Francisco/ Ferry Building	13,950	785	1,710	13,045	255	1,655	6,540	615	945
Marin County	1,000	35	110	1,000	20	130	300	20	35
Candlestick Point	7,600	430	945	7,010	155	885	0	0	0
Jack London Square/Alameda/ Golden Gate Fields	12,085	280	1,135	13,985	125	1,740	2,740	100	280
Total	*34,635*	*1,530*	*3,900*	*35,040*	*555*	*4,410*	*9,580*	*735*	*1,260*

Source: DON 1997d.

Table 4-10
Estimated Ferry Person-trips by Mode of Access
Weekend Daily and Midday Peak Hour

Ferry Terminal Location	Alternative 1		Alternative 2		Alternative 3	
	Daily	Midday	Daily	Midday	Daily	Midday
Transit/Pedestrian Access to Terminal						
Downtown San Francisco/Ferry Building						
Transit	4,070	770	3,795	475	2,550	465
Pedestrian	7,140	505	8,505	955	155	15
Marin County	525	45	525	65	3,375	225
Candlestick Point	1,285	145	1,395	160	0	0
Jack London Square/Alameda/Golden Gate Fields	3,000	215	3,580	425	730	55
Total	*16,020*	*1,680*	*17,800*	*2,080*	*6,810*	*760*
Vehicular Access to Terminal						
Downtown San Francisco/Ferry Building	1,245	140	1,365	160	645	75
Marin County	430	35	430	50	125	10
Candlestick Point	5,430	620	5,835	675	0	0
Jack London Square/Alameda/Golden Gate Fields	8,995	640	10,740	1,270	2,195	160
Total	*16,100*	*1,435*	*18,370*	*2,155*	*2,965*	*245*
Total Ferry Person-trips						
Downtown San Francisco/Ferry Building	12,455	1,415	13,665	1,590	6,470	765
Marin County	955	80	955	115	280	25
Candlestick Point	6,715	765	7,230	835	0	0
Jack London Square/Alameda/Golden Gate Fields	11,995	855	14,320	1,695	2,925	215
Total	*32,120*	*3,115*	*36,170*	*4,235*	*9,675*	*1,005*

Source: DON 1997d.

Table 4-11
Estimated Parking Demand at Ferry Terminals
Weekday and Weekend Conditions

Ferry Terminal Location	Alternative 1	Alternative 2	Alternative 3
Weekday Conditions (Daily)			
Downtown SF/Ferry Building[1]	540	345	340
Marin County	190	165	75
Candlestick Point[2]	2,640	1,745	0
Jack London Sq./Alameda/Albany/ Berkeley [3,4]	1,835	1,950	510
Total	***5,205***	***4,205***	***925***
Weekend Conditions (Daily)			
Downtown SF/Ferry Building[1]	365	315	230
Marin County	160	140	65
Candlestick Point [2]	1,815	1,550	0
Jack London Sq./ Alameda/Albany/ Berkeley[3, 4]	1,715	1,940	475
Total	***4,055***	***3,945***	***770***

[1] This demand represents needs for pick-up/drop-off activities in front of the Ferry Building. In the San Francisco downtown (bounded by Bryant Street, Second/Sansome, and Broadway) there is a supply of approximately 16,500 off-street parking spaces during the weekday and 11,500 off-street spaces during the weekend. Most of these spaces are occupied by workers and visitors to the area.

[2] Candlestick Point currently has approximately 18,000 parking spaces in paved and dirt lots that could be used throughout the week. During twelve days during football games, these parking spaces would not be available for ferry parking.

[3] The Jack London Square area has approximately 1,110 parking spaces, and the Alameda Main Street terminal has approximately 250 spaces.

[4] Golden Gate Fields on the Albany/Berkeley border has approximately 5,000 parking spaces. The existing horsetrack operates 110 days per year. The parking lots are not completely filled during typical event operations.

Source: DON 1997d.

San Francisco. However, in San Francisco, with its "Transit First" policy, parking shortfalls are not considered significant impacts because ferry patrons could park farther away or could switch travel modes. In practice, existing ferry patrons regularly use public transit from their homes or places of business to access the ferry terminal because parking in San Francisco is scarce and often costly. No mitigation is proposed.

The Jack London Square area in Oakland has approximately 1,110 parking spaces, the Alameda Main Street terminal has approximately 250 parking spaces, and Golden Gate Fields has approximately 5,000 parking spaces (the existing racetrack operates 110 days a year, and parking lots are not completely filled during typical events). If sufficient parking could not be provided at the Jack London Square or Alameda Main Street terminals, the terminal at Golden Gate Fields would need to serve a greater portion of the East Bay demand. Ferry riders driving to the ferry terminals would add to cumulative traffic volumes and congestion in the vicinity of these East Bay terminals (see Chapter 5, Cumulative Projects and Impacts).

The number of transit-trips on bus lines connecting with the ferry terminals would increase. Public transit access to the Ferry Building is via MUNI, Golden Gate Transit, San Mateo County Transit District (SamTrans), BART, and California Train (Caltrain). During the peak periods, the greatest number of additional transit riders destined to the San Francisco Ferry Building would be during the weekday PM peak-hour condition, when approximately 905 new trips would be made (Table 4-9). Transit access to Candlestick Point would be via MUNI and shuttle buses, with a shuttle between the transit stations and ferry terminals. The weekday PM peak-hour trips would be approximately 180 transit-trips to the ferry at Candlestick Point. Access to Jack London Square/Alameda and Golden Gate Fields would be via AC Transit (BART access with an AC Transit connection is also possible to the Jack London Square terminal), with a total of approximately 285 weekday PM trips destined to and from both these terminals. In general, the additional transit demand destined to the ferry terminals would be spread over a number of lines and would include inbound and outbound trips.

Approximately 700 bus transit-trips during the weekday AM peak, approximately 1,280 trips during the weekday PM peak, and about 1,110 trips during the weekend midday peak are estimated for this alternative (Table 4-7). Headways (the wait time between two scheduled bus runs) of 10 minutes would be required throughout the day for weekday service to both San Francisco and the East Bay, and 15-minute headways would be required throughout the day during the weekends.

A condition of the Reuse Plan is that transit service would be provided to accommodate the demand; therefore, transit requirements would not result in a significant impact. Traditionally MUNI has provided services to areas where warranted. Increasing frequency on MUNI line 108, which serves Treasure Island, would require additional funding. MUNI has been subject to increasingly severe funding constraints and thus has limited ability to expand. Without additional funding to pay for further needed service expansion, service may need to be reduced elsewhere in San Francisco or additional funding sources found. The City and County of San Francisco Transportation Commission holds regular public hearings on service modifications. MUNI also prepares short-range transit plans to assess the need for changes in service deployment. Mitigation for transit operations to the East Bay would ensure that major development would not occur until adequate transit service is provided.

Intersection LOS (Factors 1 and 3). Tables 4-12 and 4-13 present the results of the intersection level of service analysis at the five study intersections within Treasure Island for weekday and weekend conditions, respectively. Under Alternative 1, all five study intersections, except Avenue of Palms/California Street, would operate at LOS A and B during the weekday AM and PM peak and weekend midday peak hours. Traffic analysis intersections are shown in Figure 4-5. The intersection of Avenue of Palms/California Street would operate at LOS D during the weekday PM peak and weekend midday peak hours; LOS D and better are considered acceptable service levels. All intersections would operate as unsignalized intersections.

The intersection of Avenue of Palms/California Street serves as the gateway to Treasure Island; therefore, heavy pedestrian traffic is anticipated at this location. However, projected traffic volumes are not at levels to warrant a traffic signal. This alternative would include sidewalks, crosswalks, and a system of pedestrian and bicycle paths, lanes, and routes. These facilities would allow for convenient and safe travel among the various uses and travel modes on NSTI. A shuttle service, operating between Treasure Island and Yerba Buena Island, would further facilitate internal trips. No mitigation is required.

Parking (Factor 5). Table 4-14 presents the parking demand calculations for NSTI. It is estimated that there would be a daily parking demand of approximately 6,820 spaces during the weekday, including about 2,560 nonresidential spaces and 4,260 residential spaces. During the weekend, the total parking demand would be approximately 6,660 spaces (2,300 nonresidential spaces and 4,360 residential spaces). As these estimates show, a substantial portion of the demand would be attributed to the residential component of this alternative.

Alternative 1 would include parking facilities to accommodate the vehicular demand, and approximately 2,560 spaces would need to be provided to accommodate the nonresidential demand during the weekday. Residential parking would be provided, and nonresidential parking would be provided in parking lots.

In San Francisco, which has a "Transit First" policy, parking shortfalls are not considered a significant impact. However, an implementing ordinance would limit the parking demand by encouraging use of transit and discouraging use of private autos. No mitigation is proposed.

Emergency access (Factor 6). A guiding policy of the Reuse Plan is to prepare an emergency response plan for all reuse alternatives to identify critical facilities, roles and responsibilities, and procedures during emergencies. Also, in accordance with the Reuse Plan, an updated emergency response plan (including alternative emergency evacuation scenarios) would be required prior to approving new development. Alternative 1 includes fire stations and medical facilities at NSTI that would handle day-to-day emergencies and participate in larger emergency responses. If emergency evacuation from NSTI could not be made via the SFOBB/I-80, emergency access would be possible by ferry or

Table 4-12
Intersection Level of Service—Weekday AM and PM Peak Hours
2010 Conditions

Study Intersection	Alternative 1				Alternative 2				Alternative 3			
	AM		PM		AM		PM		AM		PM	
	Delay[1]	LOS	Delay	LOS	Delay[1]	LOS	Delay	LOS	Delay[1]	LOS	Delay	LOS
Avenue of Palms/ California	6.2	B	28.9	D	0.7	A	3.4	A	2.8	B	3.8	A
Avenue C/California Street	0.1	A	0.9	A	0.1	A	0.0	A	0.1	A	1.2	A
Avenue C/9th Street	0.2	A	2.4	B	0.2	A	0.1	A	0.3	A	2.5	A
Avenue H/4th Street	0.3	A	0.3	B	0.4	A	0.6	A	0.5	A	0.4	A
Avenue H/9th Street	2.5	A	4.5	A	1.1	A	1.3	A	1.2	A	1.2	A

[1] Delay is expressed in seconds per vehicle.

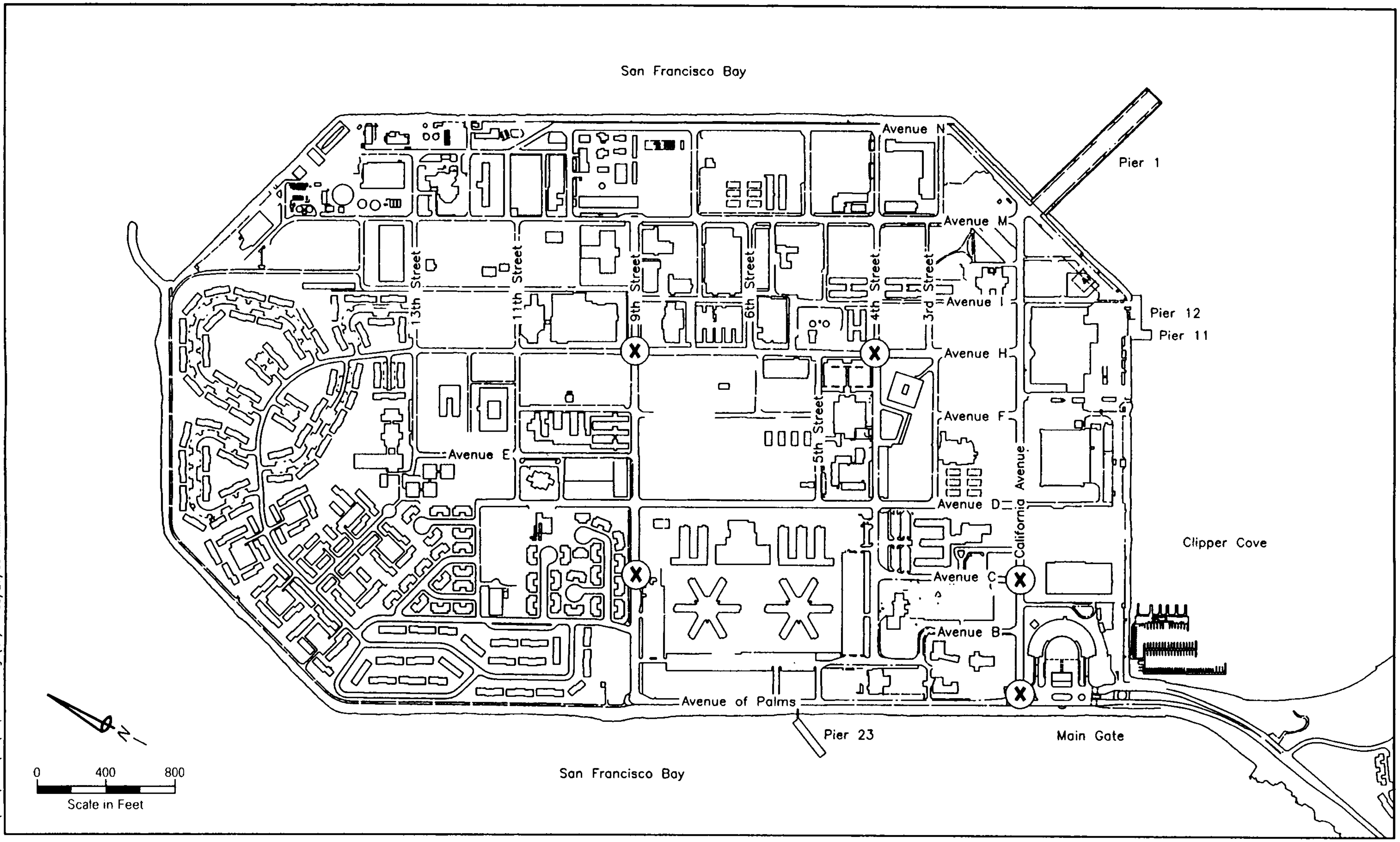
Source: DON 1997d.

Table 4-13
Intersection Level of Service—Weekend Midday Peak Hour
2010 Conditions

Intersection	Alternative 1		Alternative 2		Alternative 3	
	Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS
Avenue of Palms/California Street	21.9	D	3.4	A	3.5	A
Avenue C/California Street	0.1	A	0.0	A	0.1	A
Avenue C/9th Street	0.2	A	0.2	A	0.5	A
Avenue H/4th Street	0.0	A	0.2	A	0.1	A
Avenue H/9th Street	4.1	A	1.1	A	1.1	A

[1] Delay is expressed in seconds per vehicle.

Source: DON 1997d.



Traffic at these five key intersections would continue to operate at acceptable service levels under Alternative 1.

Legend:

(X) Analysis Intersections

Traffic Analysis Intersections

Treasure Island, California

Figure 4-5

Table 4-14
Estimated Parking Demand at NSTI
Weekday and Weekend Conditions

Origin/Destination	Alternative 1			Alternative 2			Alternative 3		
	Nonresidential	Residential	Total	Nonresidential	Residential	Total	Nonresidential	Residential	Total
Weekday Conditions									
Short-term[1]	845	0	845	590	0	590	390	0	390
Long-term	1,715	4,260	5,975	1,355	375	1,730	945	1,710	2,655
Total	*2,560*	*4,260*	*6,820*	*1,945*	*375*	*2,320*	*1,335*	*1,710*	*3,045*
Weekend Conditions									
Short-term[1]	930	0	930	1,045	0	1,045	800	0	800
Long-term	1,370	4,260	5,630	1,025	375	1,400	710	1,710	2,420
Total	*2,300*	*4,260*	*6,560*	*2,070*	*375*	*2,445*	*1,510*	*1,710*	*3,220*

[1] Residential assumes that no short-term parking would be required.

Source: DON 1997d.

helicopter. Implementing this plan would assure that there are no significant impacts impeding emergency access to NSTI. No mitigation is proposed.

4.5.2 Alternative 2

Traffic generated on NSTI by Alternative 2 would be 6,140 weekday ADT compared to 10,525 weekday ADT under Alternative 1 (Table 4-3). Under Alternative 2, approximately 385 vehicle-trips would be generated during the weekday AM peak hour, 775 vehicle-trips during the PM peak hour (Table 4-4), and 785 vehicle-trips during the weekend midday peak hour (Table 4-5). In comparison, there were approximately 442 vehicle-trips during the weekday AM peak hour and 475 vehicle-trips during the weekday PM peak hour under fully operational base conditions (Table 4-3). There would be more trips during the PM peak hour and fewer trips during the AM peak hour, compared to fully operational base conditions, because the type of reuse land uses (i.e., fewer housing units and jobs and more recreational land use) would generate fewer trips. The number of daily and peak-hour vehicle-trips generated by Alternative 2 would be less than the number generated by Alternative 1.

Significant and Mitigable Impact

Impact: Transit operations—bus service to East Bay (Factor 2). Approximately 3,480 weekday daily and approximately 4,210 weekend daily bus transit patrons are estimated between NSTI and the East Bay under Alternative 2 (Table 4-7). The impact associated with increased demand for bus service to the East Bay would be similar to that described under Alternative 1 and would be significant and mitigable.

> *Mitigation.* Mitigation measures would be the same as those described for Alternative 1. However, at build-out, bus service for Alternative 2 would need to be at 15-minute headways (rather than 10-minute headways for weekdays under Alternative 1) throughout the day during the weekdays and weekends. Implementing these mitigation measures would reduce the impact to a not significant level.

Not Significant Impacts

Traffic Operations (Factor 1). Similar to Alternative 1, traffic volumes on SFOBB would not have a significant change due to the metering lights at the toll plaza. In addition, there would be no significant traffic impacts at the six on-ramps and off-ramps that serve NSTI and NSTI internal intersections during both weekday and weekend conditions because estimated demand on these ramps would be less than capacity during these periods (Table 4-6), and no intersection would operate at LOS E and F conditions (tables 4-12 and 4-13). Under Alternative 2, traffic volumes would be greater than fully operational baseline (1993) traffic volumes and 2010 background conditions (No Action Alternative). Under Alternative 2, total ramp volumes for the weekday AM peak hour would be 750 vph, the weekday PM peak hour would be 1,020 vph, and the weekend midday peak hour would be 1,055 vph (Table 4-6).

Delivery/goods movement/loading (Factor 4). The estimated delivery vehicle trips would be less than those identified under Alternative 1; similarly, Alternative 2 would not generate significant delivery vehicle-related impacts.

Transit Operations – ferry and bus service (Factor 2). Under Alternative 2, a new ferry terminal would be built on the west side of Treasure Island, and Pier 1 would be retrofitted to serve as a ferry landing on the east side of the island. Alternative 2 would generate marginally higher ferry ridership than Alternative 1 on a typical weekday (approximately 1.2 percent), but modestly higher ferry ridership than Alternative 1 on a typical weekend (approximately 13 percent) due to the differences in land use mixes. These changes would not increase the impacts on ferry services (tables 4-9 and 4-10). Alternative 2 would generate less bus ridership than Alternative 1 (Table 4-7); therefore, it would have less impacts than Alternative 1.

Parking (Factor 5). Parking demand would be approximately 35 percent of Alternative 1; therefore, no significant parking-related impacts would occur.

Construction Impacts (Factors 1 and 4). Impacts associated with construction activities would be similar to those identified under Alternative 1. Construction activities would cause inconvenience to motorists, but they can be managed by proper phasing and sequencing to reduce the short-term impacts.

Emergency Vehicle Impacts (Factor 6). Impacts associated with emergency vehicle access would be similar to those identified under Alternative 1. Day-to-day emergency needs will be accommodated by the on-site fire and medical facilities. Major evacuation will be accommodated by the SFOBB or ferry and helicopters.

4.5.3 Alternative 3

Traffic generated on NSTI by Alternative 3 would be 5,390 weekday ADT compared to 10,525 weekday ADT under Alternative 1 (Table 4-3). Alternative 3 would generate about 610 vehicle-trips during the weekday AM peak hour, 800 vehicle-trips during the weekday PM peak hour (Table 4-4), and 770 vehicle-trips during the weekend midday peak hour (Table 4-5). In comparison, there were approximately 442 vehicle-trips during the weekday AM peak hour and 475 vehicle-trips during the weekday PM peak hour under fully operational baseline conditions (Table 4-3). In general, this alternative would generate fewer daily and peak hour vehicle-trips than the other reuse alternatives. However, during the weekday AM peak hour, the number of vehicle-trips would be greater than Alternative 2, reflecting this alternative's greater number of residential dwelling units.

Significant and Mitigable Impact

Impact: Transit operations—bus service to East Bay (Factor 2). Approximately 1,785 weekday daily and approximately 2,395 weekend daily bus transit patrons are estimated between NSTI and the East Bay under Alternative 3 (Table 4-7). The impact associated with increased demand for bus service to the East Bay would be similar to but less than that described under Alternative 1 and would be significant and mitigable.

> *Mitigation.* Mitigation measures would be the same as those described for Alternative 1. However, at build-out, service for Alternative 3 would need to be at 20-minute headways throughout the day during weekdays (rather than 10-minute headways) and 15-minute

headways throughout the day during weekends. Implementing these mitigation measures would reduce the impact to a not significant level.

Not Significant Impacts

Traffic Operations (Factor 1). Similar to Alternative 1, traffic volumes on SFOBB as a result of this alternative would not change significantly due to the metering lights at the toll plaza. In addition, there would be no significant traffic impacts at the six on-ramps and off-ramps that serve NSTI and NSTI internal intersections during both weekday and weekend conditions because estimated demand on these ramps would be less than capacity during these periods (Table 4-6), and no intersection would operate at LOS E and F conditions (tables 4-12 and 4-13). Under Alternative 3, traffic volumes would be greater than fully operational baseline (1993) traffic volumes and 2010 background conditions (No Action Alternative). Under Alternative 3, total ramp volumes for the weekday AM peak hour would be 975 vph, the weekday PM peak hour would be 1,045 vph, and the weekend midday peak hour would be 1,040 vph.

Delivery/goods movement/loading (Factor 4). The estimated delivery vehicle trips would be less than those identified under Alternative 1; therefore, Alternative 3 would not generate significant delivery vehicle-related impacts.

Transit Operations – ferry and bus service (Factor 2). Under Alternative 3, piers 1 and 12 would be adapted to accommodate ferry service. Alternative 3 would generate substantially lower ferry ridership than Alternative 1 on a typical weekday (approximately 28 percent) and a typical weekend (approximately 30 percent) (tables 4-9 and 4-10); therefore, Alternative 3 would not generate significant impacts. Alternative 3 would generate substantially less bus ridership (more than 50 percent lower) than Alternative 1 (Table 4-7) and subsequently would have less impact than Alternative 1.

Parking (Factor 5). Parking demand under Alternative 3 would be approximately 50 percent of Alternative 1; therefore, there would be no parking-related impacts.

Construction Impacts (Factors 1 and 4). Impacts associated with construction activities would be similar to those identified under Alternative 1. Construction activities would cause inconvenience to motorists, but construction can be managed by proper phasing and sequencing to reduce the short-term impacts.

Emergency Vehicle Impacts (Factor 6). Impacts associated with emergency vehicle access would be similar to those identified under Alternative 1. Day-to-day emergency needs will be accommodated by the on-site fire and medical facilities. Major evacuation will be accommodated by the SFOBB or ferry and helicopters.

4.5.4 No Action Alternative

Under this alternative, property available for disposal at NSTI would continue under federal ownership in caretaker status, and existing interim leases would be allowed to expire. There would be minimal use of the property and facilities under this alternative. The 2010 background conditions shown on Table 4-6 represent the No Action conditions. A minimal number of trips would be directly generated by this alternative, and these trips would not affect the local or regional transportation system. The SFOBB/I-80 ramps would remain open, providing access to the Coast Guard facilities and occasional sightseers. Traffic conditions under the No Action Alternative on the SFOBB/I-80 are briefly described below.

SFOBB/I-80 Operations

Degraded operating conditions on the SFOBB/I-80 in 2010 (without reuse) would be attributable to regional growth from projected development assumed to occur under the No Action Alternative (but not caused by the No Action Alternative); therefore, no impact to traffic would occur under this alternative.

During peak periods of operation, traffic demand projected for 2010 conditions is expected to exceed the current maximum volumes on the SFOBB of approximately 10,500 vph. However, existing metering practices in the westbound direction at the toll plaza would limit the number of vehicles that could access the SFOBB/I-80. Westbound traffic accessing the SFOBB/I-80 is restricted to approximately 10,500 vehicles during the AM peak hour and approximately 9,000 vehicles during the PM peak hour. More vehicles are controlled with toll plaza metering lights during the PM peak to prevent congestion and backups caused by traffic entering westbound I-80.

As traffic increases, the peak period of delay and congestion would be extended over a longer period. By 2010, during both the AM and PM peak hours, the westbound traffic on the SFOBB/I-80 is projected to operate at capacity for more than 3 hours, compared to 2.5 hours under existing conditions (MTC 1991; BCDC 1994).

In the eastbound direction, the capacity and congestion in downtown San Francisco segments of I-80 restrict the number of vehicles accessing the SFOBB/I-80 to approximately 9,500 vph during both AM and PM peaks. This condition is anticipated to continue under the No Action Alternative, as there are no planned improvements on the San Francisco approach of the SFOBB/I-80. As in the westbound direction, an increase in eastbound demand could extend the duration of the peak period and could exacerbate queuing. The projected increase in traffic congestion on the SFOBB during the weekday AM and PM peaks is attributable to regional growth, not from trips generated under the No Action Alternative.

Weekday AM peak. During the AM peak period, 2010 traffic demand on the SFOBB/I-80 is anticipated to increase over 1994 conditions by approximately 6 percent (from 10,535 vph in 1994 to 11,135 vph in 2010) in the westbound direction and approximately 14 percent (from 8,320 vph in 1994 to 9,470 vph in 2010) in the eastbound direction. In the morning, the peak direction of travel is westbound into San Francisco. In this direction, travel speeds would drop (from about 45 mph to 23 mph [72 km/hour to 37 km/hour]) east of the Yerba Buena Island tunnel (from LOS E to LOS F). More aggressive metering at the toll plaza would be required to maintain travel speeds at about 45 mph (72 km/hour). Additional metering would result in longer queues at the toll plaza. In the eastbound direction, travel speeds would generally remain the same as under existing conditions (57 mph [92 km/hour], LOS B).

Weekday PM peak. By 2010, overall increases in traffic demand over existing conditions during the PM peak period are anticipated to be approximately 13 percent in the westbound direction (8,235 vph in 1994 to 9,310 vph in 2010) and 13 percent in the eastbound direction (8,235 vph in 1994 to 9,310 vph in 2010). During the PM peak hour, travel speed in the westbound direction would drop east of the Yerba Buena Island tunnel from about 56 mph to 18 mph (90 km/hour to 29 km/hour), and thus operating conditions on the SFOBB/I-80 would drop from LOS B to LOS F. This decrease is due to the extension of the duration of congestion from San Francisco across the SFOBB/I-80. While this change is significant, it would be caused by future traffic conditions in 2010; it would not be generated by the No Action Alternative.

As identified for the AM peak conditions, more aggressive metering at the toll plaza would be required to maintain operating conditions at 1994 levels. More aggressive metering would result in longer queues at the toll plaza. In the eastbound (nonpeak) direction, travel speeds generally would remain the same (about 46 mph [74 km/hour]) as existing 1994 levels (LOS D). The existing constraint to traffic accessing the SFOBB/I-80 at the downtown San Francisco approach would continue to restrict traffic accessing the SFOBB/I-80, would extend the peak period, and would exacerbate queuing at SFOBB/I-80 ramps and connecting arterial roads in San Francisco.

Weekend midday. During the weekend midday peak hour, the anticipated growth in traffic volumes would be similar to the weekday AM peak hour (approximately 6 percent in the westbound direction and approximately 14 percent in the eastbound direction). Since the SFOBB/I-80 has available capacity on weekends under existing conditions, the increase in traffic volumes during the weekend due to regional growth could be accommodated without substantially affecting traffic operating conditions. Under No Action Alternative conditions, travel speeds on the SFOBB/I-80 would remain similar to 1994 conditions in both eastbound and westbound directions (about 57 mph [92 km/hour], LOS B).

Other ramp operations. As a result of the closure of NSTI, traffic volume on the ramps connecting the SFOBB/I-80 with Yerba Buena Island has decreased. During both the weekday AM and PM peak hours, the ramp volumes are anticipated to be approximately a third of the 1993/1994 levels and would not have a significant impact on ramp operations. Under No Action Alternative conditions, total traffic entering and exiting NSTI in both the eastbound and westbound directions would decrease from about 675 vph under 1993/1994 conditions to approximately 275 vph during the AM peak hour and from approximately 730 vph to 250 vph during the PM peak hour. During the weekend midday peak hour, total ramp volumes are estimated to be similar to weekday AM conditions (approximately 275 vph). These vehicles would include trips to and from the Coast Guard Station.

4.6 AIR QUALITY

Potential air quality impacts resulting from disposal and reuse of NSTI are discussed in this section. Factors considered in determining whether an alternative would have significant air quality impacts included the extent or degree to which its implementation would:

1) Conflict with or obstruct implementation of the applicable air quality attainment plan;
2) Violate any stationary source air quality standard or contribute to an existing or projected air quality violation;
3) Create or contribute to a non-stationary source "hot spot;" or
4) Expose sensitive receptors (e.g., concentrations of children, elderly, or persons with respiratory conditions) to major pollutant concentrations.

Dispersion modeling analyses have been performed and are documented in Appendix F.

General Conformity

On November 30, 1993, EPA published the federal General Conformity Rule (40 C.F.R. §§ 51.850-51.860 and 40 C.F.R. Part 93). The US Navy document *Chief of Naval Operations Interim Guidance on Compliance with the Clean Air Act General Conformity Rule* (DON 1994c) provides policies and procedures for conformity evaluations.

As specified in 40 C.F.R. § 51.853 and 40 C.F.R. § 93.153, certain actions are exempt from general conformity determinations, including the action to dispose of NSTI. This finding is based on the following exemption as stated in 40 C.F.R. § 51.853(c)(2)(xix) and 40 C.F.R. § 93.153(c)(2)(xix): "Actions (or portions thereof) associated with transfers of land, facilities, title, and real properties through an enforceable contract or lease agreement where the delivery of the deed is required to occur promptly after a specific, reasonable condition is met, such as promptly after the land is certified as meeting the requirements of CERCLA, and where the federal agency does not retain continuing authority to control emissions associated with the land, facilities, title, or real properties." This is further explained in Volume 58 Number 228 of the Federal Register, "Supplementary Information on the Final Rule." Subsection III.J(3)(e) states that "Federal land transfers are included in the regulatory list of actions...exempt from the final conformity rules." Navy's Record of Non-Applicability (RONA) is included in Appendix F.

4.6.1 Alternative 1

Buildout of Alternative 1 would result in short-term air pollutant emissions from construction activities, long-term emissions from operation of new uses, and potential long-term emissions from hazardous air pollutants.

Not Significant Impacts

Construction and demolition (Factors 1 and 2). Clearing and grading of sites and construction, demolition, and remodeling activities within the reuse plan area would generate fugitive dust and emissions from equipment and from workers' vehicles. Building demolition, site preparation for new building construction, and roadway reconstruction would be the primary emission-generating activities. Construction-related emissions would be temporary and limited to the construction period.

Development is expected to occur in phases (see Section 2.4). Each phase would include some demolition and construction activities and would lead to additional employment and housing development. In this way, construction and demolition activities at NSTI are expected to occur incrementally, and the inconveniences and impacts associated with construction would be spread out in terms of time and location.

BAAQMD officials consider PM_{10} emissions from construction sites to be potentially significant (BAAQMD 1996b). They recommend focusing effort on developing effective and comprehensive PM_{10} control measures rather than on detailed emissions quantification, primarily because the mitigation measures, if adopted, would reduce temporary construction PM_{10} impacts to a not significant level; therefore, monitoring would not be required. BAAQMD would require implementation of measures for controlling particulate emissions for all construction that occurs as part of reuse. Therefore, potential impacts would be less than significant. No mitigation is proposed.

Standard dust control measures recommended by the BAAQMD are summarized below:

- Minimize the area disturbed by clearing, earthmoving, or excavation activities at all times;
- Sufficiently water all areas to be excavated or graded to prevent excessive dust generation;
- Seed and water all unpaved, inactive portions of the construction site to maintain a grass cover if they are to remain inactive for a long period during building construction;
- Water or treat all unpaved active portions of the construction site with dust control solutions, twice daily, to minimize windblown dust and dust generation by vehicle traffic;
- Sweep paved portions of the construction site daily or as necessary to control wind-blown dust and dust generation by vehicle traffic;
- Limit on-site vehicle speeds on unpaved areas on the construction site to 15 mph (24 km/hour) or less;
- Sweep streets adjacent to the construction site as necessary to remove accumulated dust and soil;
- Halt all clearing, grading, earthmoving, and excavating activities during periods of sustained strong winds (hourly average wind speeds of 25 mph [40 km/hour] or greater);
- Use tarpaulins or other effective covers for piles stored onsite and for haul trucks that travel on streets; and

- On haul trucks, maintain at least 6 inches (15 centimeters [cm]) of freeboard between the top of the load and the top of the trailer.

<u>*Transportation-related air pollutant emissions*</u> (Factors 1 and 2). By providing for increased employment and housing, Alternative 1 would result in increased travel, including personal vehicle travel, travel to and from off-site ferry terminals, bus travel, and ferry vessel travel. Travel associated with buildout under Alternative 1 would result in an increase in ozone precursor emissions (reactive organic compounds and nitrogen oxides) and PM_{10} (direct PM_{10} emissions plus organic compounds and nitrogen oxides, which are precursors of the portion of PM_{10} formed through chemical reactions). However, the increased emissions are not expected to lead to additional violations of ambient air quality standards for ozone or PM_{10}.

The 1997 Clean Air Plan for the San Francisco Bay Area estimates that regional emissions in 2003 (the last year for which a projection is available) would be more than 400 tons (363 metric tons) per day for both reactive organic compounds and nitrogen oxides and more than 200 tons (181.5 metric tons) per day for PM_{10}. Compared to operational (baseline) activity levels, the net addition of less than 0.2 tons (0.18 metric tons) per day of either ozone precursor or PM_{10} emissions by 2010 under Alternative 1 (Table 4-15) would not cause a measurable change in the location, magnitude, or frequency of high ozone or PM_{10} concentrations. Consequently, the change in land use and vehicle travel patterns resulting from buildout of Alternative 1 would not lead to additional violations of ambient air quality standards for ozone or PM_{10}. No mitigation is proposed.

<u>*Potential carbon monoxide hot spots*</u> (Factors 1 and 2). Implementation of Alternative 1 would add vehicular trips to the local roadways. Therefore, the potential exists for localized carbon monoxide hot spots. A carbon monoxide hot spot is created when sensitive receptors are exposed to carbon monoxide levels that exceed either federal or state carbon monoxide standards. The federal standards for carbon monoxide are an average of 9.0 ppm (parts per million) over an 8-hour period, and an average of 35 ppm over a 1-hour period. The state standards for carbon monoxide are an average of 9.0 ppm over an 8-hour period, and an average of 20 ppm over a 1-hour period.

Areas on Yerba Buena Island in the vicinity of the SFOBB corridor, which would support the highest peak hour traffic volumes, were chosen for analysis. The CALINE4 dispersion model (Caltrans 1989) was used to estimate the carbon monoxide concentrations from vehicular exhaust at three locations: near Macalla Road at the eastern end of Yerba Buena Island, about 300 feet (91 m) east of the eastern SFOBB tunnel opening, and about 160 feet (49 m) west of the western SFOBB tunnel opening. Receptor locations were established at 50, 75, 100, 200, and 300 feet (15, 23, 30.5. 61, and 91 m) from the centerline of the SFOBB. Vehicle emission rates were estimated for 2010 conditions using the California Air Resources Board's EMFAC7F model (California Air Resources board 1993). Emission rates produced by the EMFAC7F model were adjusted to account for vehicle idling during peak period traffic periods.

As shown in Table 4-16, the CALINE4 model demonstrates that carbon monoxide levels would not be expected to exceed federal or state standards at 50 feet (15 m) from the centerline of the SFOBB.

Table 4-15
Summary of Transportation-related Air Pollutant Emissions for the Reuse Alternatives

Alternative	Component	Amount		Estimated 2010 Emissions (Tons per Year) ROG	NO$_x$	CO	SO$_x$	PM$_{10}$
NSTI Operational Activity	Vehicle Traffic	21,677,000	annual VMT	7.6	14.5	61.0	0.7	22.3
	Mobile Equipment			1.6	0.5	6.6	0.01	0.04
	Ships			0.2	1.4	0.7	0.5	0.1
	Small Craft			17.7	87.1	19.8	12.3	3.0
	Totals			**27.1**	**103.4**	**88.0**	**13.5**	**25.4**
Alternative 1	Vehicle Traffic	72,800,428	annual VMT	32.8	58.7	316.9	2.4	74.8
	Bus System Travel	1,059,503	annual VMT	4.6	20.4	19.5	0.7	4.0
	To/From Terminals	15,476,203	annual VMT	6.1	8.5	67.9	0.5	15.6
	Ferry Vessel Trips	41,170	annual trips	1.5	18.4	3.7	7.7	1.0
	Totals			**45.0**	**105.9**	**408.1**	**11.3**	**95.5**
Alternative 2	Vehicle Traffic	36,413,204	annual VMT	15.0	31.7	138.5	1.2	37.8
	Bus System Travel	852,113	annual VMT	3.7	16.4	15.7	0.6	3.2
	To/From Terminals	14,813,005	Annual VMT	5.8	8.1	65.0	0.5	14.9
	Ferry Vessel Trips	42,800	Annual trips	1.5	19.1	3.9	8.0	1.1
	Totals			**26.0**	**75.3**	**223.1**	**10.3**	**57.0**
Alternative 3	Vehicle Traffic	35,725,521	Annual VMT	16.8	29.3	149.6	1.2	36.8
	Bus System Travel	468,023	Annual VMT	2.1	9.0	8.6	0.3	1.8
	To/From Terminals	2,741,663	Annual VMT	1.1	1.5	12.0	0.1	2.8
	Ferry Vessel Trips	17,520	Annual trips	0.4	6.7	1.7	2.9	0.4
	Totals			**20.4**	**46.6**	**172.0**	**4.5**	**41.7**

Alternative	Component	Net Change Compared to the Operational Activity Scenario (Tons per Year)[1] ROG	NO$_x$	CO	SO$_x$	PM$_{10}$
Alternative 1	Total mobile source emissions	17.9	2.5	320.1	-2.2	70.0
Alternative 2	Total mobile source emissions	-1.1	-28.2	135.1	-3.3	31.6
Alternative 3	Total mobile source emissions	-6.7	-56.9	84.0	-9.0	16.3

Notes: [1] All values rounded independently after calculation.
VMT = vehicle miles traveled
ROG = reactive organic compounds NO$_x$ = nitrogen oxides
CO = carbon monoxide SO$_x$ = sulfur oxides
PM$_{10}$ = inhalable particulate matter
Annual carbon monoxide emissions from motor vehicle traffic assume 8 months of summer temperature patterns and 4 months of winter temperature patterns.
SO$_x$ emissions for vehicle traffic based on an average emission rate of 0.3 grams/vmt (BAAQMD 1996).
PM$_{10}$ emission estimates for motor vehicle and bus traffic include a resuspended dust component based on the BAAQMD recommended factor of 0.69 grams per vmt (BAAQMD 1996).
Emissions associated with the NSTI operational activity scenario based on Radian International (1997), with adjustment of motor vehicle emissions for emission rate changes between 2001 and 2010.
Mobile equipment under the operational activity scenario include forklifts, pile drivers, and mobile generators.
The operational activity scenario assumes 250 work days per year. The reuse alternatives assume 365 work days per year.
Motor vehicle and bus traffic emissions for reuse alternatives calculated for 2010 using emission factors from the California Air Resources Board's EMFAC7F vehicle emission rate program.
Ferry trip estimates assume average passenger loads of 200 per trip for Alternative 3 and 300 per trip for alternatives 1 and 2.
Ferry vessel emissions based on data in California Air Resources Board 1991a assuming diesel-fueled ferry vessels and an average run time of 15 minutes per trip.

Table 4-16
Summary of Dispersion Modeling Results For Yerba Buena Island

Location and Distance From the Centerline of the SFOBB	Modeled Peak Hour CO Value (ppm)	1-hour Background CO Value (ppm)	Total Peak Hour CO Value (ppm)	Estimated 8-hour CO Value (ppm) By Reuse Alternative		
				Alternative 1	Alternative 2	Alternative 3
Near Macalla Road at eastern end of Yerba Buena Island						
50 ft N of I-80	5.0	1.0	6.0	5.1	5.0	4.8
75 ft N of I-80	3.4	1.0	4.4	3.7	3.7	3.5
100 ft N of I-80	3.0	1.0	4.0	3.4	3.3	3.2
200 ft N of I-80	2.0	1.0	3.0	2.6	2.5	2.4
300 ft N of I-80	1.6	1.0	2.6	2.2	2.2	2.1
50 ft S of I-80	2.5	1.0	3.5	3.0	2.9	2.8
75 ft S of I-80	2.1	1.0	3.1	2.6	2.6	2.5
100 ft S of I-80	1.8	1.0	2.8	2.4	2.3	2.2
200 ft S of I-80	1.5	1.0	2.5	2.1	2.1	2.0
300 ft S of I-80	1.3	1.0	2.3	2.0	1.9	1.8
About 300 feet east of eastern tunnel opening, Yerba Buena Island						
50 ft N of I-80	4.3	1.0	5.3	4.5	4.4	4.2
75 ft N of I-80	3.4	1.0	4.4	3.7	3.7	3.5
100 ft N of I-80	2.8	1.0	3.8	3.2	3.2	3.0
200 ft N of I-80	1.9	1.0	2.9	2.5	2.4	2.3
300 ft N of I-80	1.8	1.0	2.8	2.4	2.3	2.2
50 ft S of I-80	3.6	1.0	4.6	3.9	3.8	3.7
75 ft S of I-80	2.7	1.0	3.7	3.1	3.1	3.0
100 ft S of I-80	2.2	1.0	3.2	2.7	2.7	2.6
200 ft S of I-80	1.5	1.0	2.5	2.1	2.1	2.0
300 ft S of I-80	1.2	1.0	2.2	1.9	1.8	1.8
About 160 feet west of western tunnel opening, Yerba Buena Island						
50 ft N of I-80	4.1	1.0	5.1	4.3	4.2	4.1
75 ft N of I-80	3.1	1.0	4.1	3.5	3.4	3.3
100 ft N of I-80	2.6	1.0	3.6	3.1	3.0	2.9
200 ft N of I-80	1.9	1.0	2.9	2.5	2.4	2.3
300 ft N of I-80	1.6	1.0	2.6	2.2	2.2	2.1
50 ft S of I-80	3.5	1.0	4.5	3.8	3.7	3.6
75 ft S of I-80	2.6	1.0	3.6	3.1	3.0	2.9
100 ft S of I-80	2.2	1.0	3.2	2.7	2.7	2.6
200 ft S of I-80	1.5	1.0	2.5	2.1	2.1	2.0
300 ft S of I-80	1.0	1.0	2.0	1.7	1.7	1.6

Notes: CO = carbon monoxide.
ppm = parts per million by volume.

Modeling analyses were performed with the CALINE4 dispersion model, assuming poor dispersion conditions (1 meter per second wind speeds, mild inversion conditions [Class E stability], a 50-meter mixing height limit, and a horizontal wind fluctuation parameter of 10 degrees. Wind directions were varied in 10 degree increments. This table presents only the highest modeled CO concentration for each receptor location.

Emission rates were calculated for 2010 using the EMFAC7F vehicle emission rate program, with additional idling emissions added to account for peak period congestion conditions.

Due to SFOBB capacity limitations, peak hour traffic volumes are nearly identical for each alternative, resulting in identical peak 1-hour CO levels. Background CO values represent contributions from unmodeled sources (minor roadways, parking facilities, etc.).

Potential 8-hour CO values are estimated by applying a persistence (extrapolation) factor to the total peak hour CO value. The duration of near capacity traffic flows varies among reuse alternatives, resulting in somewhat larger persistence factors for higher intensity reuse alternatives.

Persistence factors assumed for this analysis are: 78% for the No Action Alternative, 85% for Alternative 1, 83% for Alternative 2, and 80% for Alternative 3.

The federal 1-hour CO standard is 35 ppm. The state 1-hour CO standard is 20 ppm. The federal and state 8-hour CO standards are 9 ppm.

Carbon monoxide concentrations would be less at distances greater than 50 feet (15 m). Because no sensitive receptor would be located closer than 50 feet (15 m) from the center of the SFOBB, no sensitive receptors in this area would be expected to be exposed to carbon monoxide hot spots in 2010. Therefore, carbon monoxide impacts would be less than significant. No mitigation is proposed.

Potential toxic air emissions (Factors 3 and 4). Some land uses that may be developed in Alternative 1 may generate air contaminants (other than the criteria pollutants discussed above) that have the potential to harm human health and the environment. Toxic air contaminants (TACs) could be generated from stationary sources. Although no industrial land use is proposed on NSTI, certain retail establishments could be potential sources of TACs. However, the actual amount of these air contaminants cannot be quantified due to a lack of information about specific business uses that may be located in the reuse plan area.

The BAAQMD limits emissions of and public exposure to TACs through a number of programs. TAC emissions from new and modified stationary sources are limited through an air toxics new source review program, which implements the district's Risk Management Policy via the district's permitting process for stationary sources. These analyses help to establish buffer zones around proposed new uses, preventing the exposure of sensitive receptors to TACs.

Evaluation of potential impacts attributable to TAC emissions from stationary sources would be speculative because no specific types or sizes of stationary sources have been proposed. Therefore, at this time, there is not sufficient information to evaluate the significance of stationary source emissions from future individual projects. Future air permit review (for both construction and operation) required by the BAAQMD would determine the significance of these potential impacts and could require new stationary sources to adopt specific mitigations as a condition for new permits.

In addition to stationary sources, vehicle trips generated under Alternative 1 would cause motor vehicle exhaust and evaporative emissions, known mobile sources of TACs. Exposure of TAC emissions from mobile sources would be roughly proportional to traffic volumes on the area roadway network. The further away from high-volume traffic arteries, the lower the exposure to all mobile source emissions. Reuse of NSTI would not result in traffic volumes on the local roadway network that would be unusually high in comparison to traffic volumes on comparable types of roadways elsewhere in the urbanized portions of the Bay Area. Furthermore, the BAAQMD's Impact Assessment Guidelines (BAAQMD 1996b) do not include a requirement for including mobile sources of TACs when evaluating impacts. Therefore, exposure to TAC emissions from mobile sources is considered not significant. No mitigation is proposed.

4.6.2 Alternative 2

Not Significant Impacts

Construction and demolition (Factors 1 and 2). Construction emissions from the development of Alternative 2 would be less than but similar in nature to those that would result from the development of Alternative 1. These activities would occur incrementally over an extended build-out period, making it impossible to estimate specific numbers for any particular year. Construction-generated dust would be reduced to a less than significant level by implementing dust control measures as required by the BAAQMD. No mitigation is proposed.

Transportation-related air pollutant emissions (Factors 1 and 2). Development of Alternative 2 would generate air pollutants from transportation-related emissions (Table 4-15). Under this alternative, reactive organic compound emissions in 2010 (26 tons/year [23.5 metric tons/year]) would be a little more than half of those projected under Alternative 1 (45 tons/year [41 metric tons/year]).

The 1997 Clean Air Plan for the San Francisco Bay Area estimates that regional emissions in 2003 (the last year for which a projection is available) would be more than 400 tons (363 metric tons) per day for both reactive organic compounds and nitrogen oxides and more than 200 tons (181.5 metric tons) per day for PM_{10}. Compared to operational (baseline) activity levels, the net decrease of approximately 0.07 tons per day (0.06 metric tons per day) of ozone precursor emissions and the net increase of about 0.08 tons per day (0.07 metric tons per day) of PM_{10} emissions by 2010 under Alternative 2 would not cause a measurable change in the location, magnitude, or frequency of high ozone or PM_{10} concentrations. Consequently, the change in land use and vehicle travel patterns resulting from buildout of Alternative 2 would not lead to additional violations of ambient air quality standards for ozone or PM_{10}. No mitigation is proposed.

Potential carbon monoxide hot spots (Factors 1 and 2). Traffic associated with Alternative 2 would produce carbon monoxide concentrations that are well within the limits of the federal and state air quality standards (Table 4-16). Consequently, this impact is considered not significant. No mitigation is proposed.

Potential toxic air emissions (Factors 3 and 4). Unlike Alternative 1, Alternative 2 does not propose to develop any land uses that are anticipated to be major generators of TAC emissions. However, weekday daily vehicle trips generated under Alternative 2, although fewer than under Alternative 1, would cause motor vehicle exhaust and evaporative emissions, known mobile sources of toxic air contaminants. This potential impact is similar to, but less than, the not significant impact described for Alternative 1. No mitigation is proposed.

4.6.3 Alternative 3

Not Significant Impacts

Construction and demolition (Factors 1 and 2). Construction emissions from the development of Alternative 3 would be substantially less than but similar in nature to those that would result for Alternative 1. Lower emissions are expected because several existing buildings would be reused and there would be limited new construction. These activities would occur incrementally over an extended build-out period, making it impossible to estimate specific numbers for any particular year. Construction-generated dust would be reduced to a not significant level by implementing dust control measures as required by the BAAQMD. No mitigation is proposed.

Transportation-related air pollutant emissions (Factors 1 and 2). Development of Alternative 3 would generate air pollutants from transportation-related emissions (Table 4-15). Under this alternative, ozone precursor and PM_{10} emissions in 2010 would be less than half of those projected under Alternative 1.

The 1997 Clean Air Plan for the San Francisco Bay Area estimates that regional emissions in 2003 (the last year for which a projection is available) would be more than 400 tons (363 metric tons) per day for both reactive organic compounds and nitrogen oxides and more than 200 tons (181.5 metric tons) per day for PM_{10}. Compared to operational (baseline) activity levels, the net decrease of approximately 0.2 tons per day (0.18 metric tons per day) of ozone precursor emissions and the net increase of about 0.04 tons per day (0.04 metric tons per day) of PM_{10} emissions by 2010 under Alternative 3 would not cause a measurable change in the location, magnitude, or frequency of high ozone or PM_{10} concentrations. Consequently, the change in land use and vehicle travel patterns resulting from buildout of Alternative 3 would not lead to additional violations of ambient air quality standards for ozone or PM_{10}. No mitigation is proposed.

Potential carbon monoxide hot spots (Factors 1 and 2). Traffic associated with Alternative 3 would produce carbon monoxide concentrations that are well within the limits of the federal and state air quality standards (Table 4-16). Consequently, this impact is considered not significant. No mitigation is proposed.

Potential toxic air emissions (Factors 3 and 4). Similar to Alternative 2, Alternative 3 does not propose to develop any land uses that are anticipated to be major generators of TAC emissions. However, weekday daily vehicle trips generated under Alternative 3, although fewer than under both alternatives 1 and 2, would cause motor vehicle exhaust and evaporative emissions, known mobile sources of toxic air contaminants. This potential impact is similar to, but less than, the impact described for Alternative 1. No mitigation is proposed.

4.6.4 No Action Alternative

The No Action Alternative would not result in an increase in air pollutant emissions. The site would be retained under federal ownership under a caretaker maintenance program. No operations other than minimal maintenance and security would occur. Existing interim leases would be allowed to expire. As a result, this alternative would have a beneficial impact on air quality because it would eliminate the majority of existing air pollutant emissions associated with the site and would not generate new emissions.

4.7 NOISE

Potential noise impacts resulting from disposal and reuse of NSTI are discussed in this section. Existing and future noise levels along roadways in the reuse plan area were projected using data from the traffic analysis (see EIS Section 4.5). Noise impacts were analyzed considering a full build-out condition for each of the reuse alternatives. Technical terms used in this section are defined in Section 3.7 (Noise Affected Environment) of this EIS. Noise level calculations are indicated in tables to tenths and hundredths of a dB; noise levels in the text are rounded to the nearest whole dB.

Factors considered in determining whether an alternative would have significant noise impacts included the extent or degree to which its implementation would:

1) Expose sensitive receptors to noise above standards or guidelines;
2) Permanently and noticeably increase ambient noise in a manner that could affect the use and enjoyment of adjacent areas or facilities;
3) Locate a noise sensitive reuse such that it is negatively affected by existing or projected noise levels; or
4) Result in temporary noise levels in excess of limits set by San Francisco's Noise Ordinance.

Residences, schools, libraries, hospitals, and recreational areas generally are considered sensitive noise receptors. New development within the reuse plan area would include sensitive noise receptors, such as residences, schools, and recreation areas.

4.7.1 Alternative 1

Not Significant Impacts

Noise generated by traffic associated with reuse (Factors 1 and 2). Implementation of Alternative 1 would result in minor additional vehicular noise from traffic generated by new development. Projected vehicle noise levels along major roadways on Yerba Buena Island are summarized in Table 4-17 and assume the existing SFOBB configuration.

As indicated in Table 4-17, traffic added to the SFOBB by Alternative 1 would not cause a noticeable change in freeway noise levels; compared to future baseline conditions without the project, noise levels would increase by less than one-tenth of an A-weighted decibel. Yerba Buena Island roadways would not generate CNEL levels above 60 dB for locations approximately 50 feet (15 m) from the edge of the road because traffic speeds generally would be low (25 mph [40 km/hour]). Even along major collector road segments where traffic speeds would be about 35 mph (56 km/hour) with substantial shuttle bus traffic, CNEL levels generally would be less than 61 dB at a distance of approximately 50 feet (15 m) from the edge of the road. Predicted noise levels do not exceed any adopted land use compatibility thresholds (see Table 3-16); therefore, there would not be a significant noise impact from on-site traffic, and no mitigation is proposed.

Table 4-17
Summary of Traffic Noise Modeling 24-hour Results for Yerba Buena Island

Location and Distance From SFOBB	Modeled CNEL Levels (dBA) for Weekday Conditions								
	Existing Baseline	Future Baseline Without Project	Baseline Change from Existing	Alternative 1	Change due to Project	Alternative 2	Change due to Project	Alternative 3	Change due to Project
Near Macalla Road at eastern end of Yerba Buena Island									
100 ft N of I-80	81.06	81.39	+0.33	81.47	+0.08	81.47	+0.08	81.25	-0.14
200 ft N of I-80	75.90	76.23	+0.33	76.31	+0.08	76.31	+0.08	76.10	-0.13
300 ft N of I-80	72.94	73.26	+0.32	73.34	+0.08	73.34	+0.08	73.13	-0.13
500 ft N of I-80	69.13	69.45	+0.32	69.52	+0.07	69.52	+0.07	69.31	-0.14
750 ft N of I-80	66.03	66.34	+0.31	66.42	+0.08	66.41	+0.07	66.21	-0.13
1000 ft N of I-80	63.74	64.06	+0.32	64.13	+0.07	64.13	+0.07	63.92	-0.14
100 ft S of I-80	81.07	81.40	+0.33	81.48	+0.08	81.48	+0.08	81.26	-0.14
200 ft S of I-80	76.26	76.59	+0.33	76.66	+0.07	76.66	+0.07	76.45	-0.14
300 ft S of I-80	73.54	73.87	+0.33	73.94	+0.07	73.94	+0.07	73.73	-0.14
500 ft S of I-80	70.04	70.36	+0.32	70.43	+0.07	70.43	+0.07	70.22	-0.14
750 ft S of I-80	67.14	67.45	+0.31	67.53	+0.08	67.52	+0.07	67.32	-9.13
1,000 ft S of I-80	64.96	65.27	+0.31	65.34	+0.07	65.34	+0.07	65.14	-0.13
About 300 feet east of eastern tunnel opening, Yerba Buena Island									
100 ft N of I-80	80.89	81.22	+0.33	81.30	+0.08	81.30	+0.08	81.08	-0.14
200 ft N of I-80	75.83	76.16	+0.33	76.23	+0.07	76.23	+0.07	76.02	-0.14
300 ft N of I-80	72.83	73.15	+0.32	73.22	+0.07	73.22	+0.07	73.01	-0.14
500 ft N of I-80	69.05	69.37	+0.32	69.45	+0.07	69.44	+0.07	69.24	-0.13
750 ft N of I-80	65.99	66.31	+0.32	66.38	+0.07	66.38	+0.07	66.17	-0.14
1,000 ft N of I-80	63.80	64.12	+0.32	64.19	+0.07	64.18	+0.06	63.98	-0.14
100 ft S of I-80	80.88	81.21	+0.33	81.29	+0.08	81.29	+0.08	81.07	-0.14
200 ft S of I-80	75.83	76.16	+0.33	76.24	+0.08	76.24	+0.08	76.02	-0.14
300 ft S of I-80	72.84	73.16	+0.32	73.24	+0.08	73.24	+0.08	73.03	-0.13
500 ft S of I-80	69.07	69.38	+0.31	69.46	+0.08	69.45	+0.07	69.25	-0.13

Table 4-17
Summary of Traffic Noise Modeling 24-hour Results for Yerba Buena Island *(continued)*

Location and Distance From SFOBB	Modeled CNEL Levels (dBA) for Weekday Conditions								
	Existing Baseline	Future Baseline Without Project	Baseline Change from Existing	Alternative 1	Change due to Project	Alternative 2	Change due to Project	Alternative 3	Change due to Project
750 ft S of I-80	66.10	66.42	+0.32	66.49	+0.07	66.49	+0.07	66.28	-0.14
1,000 ft S of I-80	64.02	64.33	+0.31	64.41	+0.08	64.40	+0.07	64.20	-0.13
About 160 feet west of western tunnel opening, Yerba Buena Island									
100 ft N of I-80	80.54	80.87	+0.33	80.95	+0.08	80.95	+0.07	80.74	-0.13
200 ft N of I-80	75.14	75.47	+0.33	75.55	+0.08	75.54	+0.07	75.33	-0.14
300 ft N of I-80	72.05	72.37	+0.32	72.45	+0.08	72.44	+0.07	72.24	-0.13
500 ft N of I-80	68.32	68.63	+0.31	68.71	+0.08	68.70	+0.07	68.50	-0.13
750 ft N of I-80	65.45	65.77	+0.32	65.84	+0.07	65.84	+0.07	65.63	-0.14
1,000 ft N of I-80	63.40	63.71	+0.31	63.79	+0.08	63.78	+0.07	63.58	-0.13
100 ft S of I-80	80.55	80.88	+0.33	80.96	+0.08	80.96	+0.08	80.74	-0.14
200 ft S of I-80	75.14	75.47	+0.33	75.54	+0.07	75.54	+0.07	75.33	-0.14
300 ft S of I-80	72.04	72.36	+0.32	72.44	+0.08	72.44	+0.08	72.23	-0.13
500 ft S of I-80	68.31	68.62	+0.31	68.70	+0.08	68.69	+0.07	68.49	-0.13
750 ft S of I-80	65.44	65.76	+0.32	65.83	+0.07	65.83	+0.07	65.62	-0.14
1,000 ft S of I-80	63.40	63.72	+0.32	63.79	+0.07	63.78	+0.06	63.58	-0.14

Notes: dBA = A-weighted decibels.
CNEL = Community noise equivalent level (a 24-hour weighted average noise level, with evening noise weighted by 5 dBA and nighttime noise weighted by 10 dBA).

Noise modeling performed using a spreadsheet version of the Federal Highway Administration Traffic Noise Prediction Model (FHWA 1978) to model a full 24-hour pattern of traffic volumes. Noise contributions from trucks modeled using Caltrans data (Caltrans 1984).

Modeled CNEL values are about 3.3 dBA greater than the maximum 1-hour dBA value.

Upper and lower decks of the SFOBB modeled as separate roadways; tunnel sections were treated as being completely shielded.

Hourly traffic volumes were extrapolated from 1994 patterns, making adjustments to match traffic analysis predictions of peak period volumes, and total daily traffic based on future No Action volumes plus weekday vehicle traffic added by reuse alternatives.

Modeled vehicle speeds adjusted according to estimated hourly volume/capacity ratios. Truck volumes set as fractions of the hourly total volume. Daily medium truck volume averages about 2%; daily heavy truck volume averages about 2.4%.

Noise drop-off rate for the lower deck modeled as 4.5 dBA per doubling of distance; noise drop-off rate for the upper deck modeled as 5 dBA per doubling of distance.

Ferry service to and from Treasure Island would not be a significant noise source. Boat engines and boat horns would be a minor localized noise source. Based on observations at the San Francisco Ferry Building, boat engine noise is about 70 to 75 dBA at approximately 50 feet (15 m) when boats are maneuvering away from the dock during ferry departures (Tetra Tech 2001). Boat engine noise levels are lower while arriving ferry boats dock. Boat horn noise is about 85 dBA at approximately 50 feet (15 m), but this is a brief noise event. The ferry dock area on Treasure Island would not contain noise-sensitive land uses, and these noise conditions would not be a significant impact. No mitigation is proposed.

Noise-related land use compatibility on Treasure Island (Factor 3). The proposed themed attraction would be a potential source of locally high noise levels. Potential impacts to nearby noise-sensitive land uses, such as persons engaged in recreational activities, would be avoided by appropriate site design. Reasonable attention to site planning and building design would minimize the potential for noise problems in mixed-use zones. Future noise-sensitive uses on Treasure Island would be developed in accordance with applicable regulations and would have adequate noise protection. For example, the San Francisco Building Code includes standards for noise insulation that would be met by new residential construction. In addition, the San Francisco Noise Ordinance is an enforcement mechanism that would limit noise impacts from construction activities and stationary sources. Existing on-site housing units planned for reuse are separated from proposed uses that would be sources of high noise levels by approximately a quarter mile and therefore are not anticipated to experience noise levels greater than 60 dBA. Because predicted noise levels do not exceed any adopted land use compatibility thresholds (see Table 3-16), no significant noise-related land use compatibility conflicts are anticipated on Treasure Island. No mitigation is proposed.

Noise-related land use compatibility on Yerba Buena Island (Factor 3). Alternative 1 would include noise-sensitive residential and commercial uses in portions of Yerba Buena Island that are currently subject to high levels of noise from existing traffic on the SFOBB. Existing CNEL noise levels of up to 81 dBA were found during computer modeling (see Table 4-17). Locations within approximately 800 feet (244 m) of the freeway would be subject to CNEL levels above 65 dBA unless intervening topography was to provide noise shielding. Locations within approximately 500 feet (152 m) of the freeway may be exposed to CNEL levels above 70 dBA. These noise levels could pose land use compatibility problems for residential land uses and some commercial land uses (such as restaurants, hotels, and conference centers) if they are not addressed through building design and construction to minimize indoor noise levels. It is difficult to mitigate outdoor noise levels for low-density residential development, especially when noise sources are elevated with respect to residential areas. For residential and commercial developments using tall buildings, the building structures can be used to mitigate outdoor noise levels in relatively modest, largely enclosed outdoor spaces. Since precise site design and building design plans are not known, it is speculative to draw conclusions regarding the significance of outdoor noise impacts for locations relatively close to the SFOBB.

For development on the northern portion of Yerba Buena Island, the Reuse Plan design guidelines identify methods to reduce bridge noise effects (including arranging proposed buildings to open away from the bridge and designing buildings with a "U" or courtyard shape). In addition, state requirements for building insulation would reduce interior noise levels to acceptable levels. If feasible, existing buildings that would be retained in areas of high ambient noise levels (e.g., historic structures on Yerba Buena Island) could be retrofitted with noise insulation features such as fixed windows and climate controls. These building insulation requirements and the associated noise reduction benefits apply to all structures regardless of interior noise levels. Therefore, land use compatibility conflicts would be not significant, and no mitigation is proposed.

Construction and demolition noise (Factor 4). Construction, demolition, and pile-driving activities have the potential for causing temporary disturbance to adjacent land uses. Construction and demolition activities would occur intermittently over an extended period; economic conditions would influence the amount, duration, and location of construction activities.

Noise levels from typical construction and demolition activities are summarized in Table 4-18. Most construction and demolition activity would result in CNEL levels above 70 dBA within approximately 200 feet (61 m) of construction sites. Pile-driving equipment generates a highly disturbing impulsive noise; over an 8-hour work day, CNEL increments would exceed 70 dBA for locations within approximately 600 feet (183 m) of pile-driving sites. Most pile-driving activity would occur on Treasure Island. Construction noise would become objectionable when areas close to noise-sensitive land uses are developed. Under Alternative 1, proposed noise-sensitive land uses include new residences, as well as parks, plazas, and other open space and recreational areas.

Construction noise impacts would be reduced to acceptable levels by restricting construction activities to normal daytime periods, by providing temporary noise barriers, such as heavy plywood fencing where necessary, and by sequencing development, to the extent feasible and practicable, such that noise-sensitive land uses are constructed last. Conditions would be imposed through San Francisco's building permit process and would result in controlled and reduced noise emissions. If pile driving during nighttime hours is required, it would be necessary to obtain a work permit from the San Francisco Director of Public Works, pursuant to San Francisco Noise Ordinance Section 2908. Construction noise would therefore be a not significant impact. No mitigation is proposed.

4.7.2 Alternative 2

Not Significant Impacts

Noise generated by traffic associated with reuse (Factors 1 and 2). Noise levels on NSTI roadways and from ferry service to and from Treasure Island would not be significant, as described above for Alternative 1.

Noise levels on Yerba Buena Island are dominated by existing freeway noise from the SFOBB. Similar to Alternative 1, traffic added to the SFOBB by Alternative 2 would not cause a noticeable change in freeway noise levels; compared to future baseline conditions without the project, noise levels would increase by less than one-tenth of an A-weighted decibel (see Table 4-17). Consequently, Alternative 2 would not generate significant traffic noise impacts. No mitigation is proposed.

Table 4-18
Typical Construction Noise Impacts

Distance from Site (feet)	CNEL Increments (dBA) from Typical Construction Phases			
	Building Demolition	Site Preparation	Excavation	Pile Driving
50	85.1	84.7	85.7	92.0
100	79.0	78.6	79.6	85.9
200	72.8	72.5	73.5	79.7
400	66.5	66.2	67.2	73.4
600	62.7	62.3	63.4	69.6
800	59.9	59.6	60.6	66.8
1,000	57.6	57.3	58.4	64.5
1,500	53.3	53.1	54.1	60.2
2,000	50.1	49.9	50.9	56.9
2,500	47.4	47.3	48.3	54.2
3,000	45.1	45.1	46.1	51.8
4,000	41.3	41.3	42.3	47.7
5,280	37.2	37.3	38.3	43.3
7,500	31.5	31.6	32.7	36.8
9,000	28.3	28.4	29.5	32.9
10,560	25.2	25.3	26.5	29.1

Notes: dB = decibel. Decibel scales are a logarithmic index based on ratios between a measured value and reference value.
dBA = A-weighted decibels.
CNEL = Community noise equivalent level. Noise calculations incorporate both distance attenuation and atmospheric absorption effect. Noise estimates assume variable equipment use over a 10-hour work day with no nighttime construction activity. Building demolition assumed to be through use of heavy equipment rather than explosives. Building demolition assumed to require two bulldozers, one front end loader, two heavy trucks, and a water truck. Site preparation assumed to require one bulldozer, one backhoe, one front end loader, two heavy trucks, and one water truck. Foundation excavation assumed to require one power shovel, one front end loader, two heavy trucks, and one water truck. Pile driving assumed to require one heavy truck, one crane, one forklift, and one pile driver.

Sources: EPA 1971; Gharabegian, et al. 1985; Acoustical Society of America 1978.

Noise-related land use compatibility on Treasure Island (Factor 3). Similar to Alternative 1, the proposed themed attraction would be a potential source of locally high noise levels from traffic, visitors, and rides and attractions, but potential impacts would be avoided by appropriate site design. In addition, noise-sensitive land uses such as residences or schools would not be developed on Treasure Island. Consequently, no significant noise-related land use conflicts are anticipated on Treasure Island. No mitigation is proposed.

Noise-related land use compatibility on Yerba Buena Island (Factor 3). Potential noise-related land use compatibility impacts and their remedies on Yerba Buena Island under Alternative 2 would be similar to those described for Alternative 1 and would be not significant. If feasible, existing buildings that would be retained in areas of high ambient noise levels (e.g., historic structures on Yerba Buena Island) could be retrofitted with noise insulation features, such as fixed windows and climate controls. No mitigation is proposed.

Construction and demolition noise (Factor 4). Noise impacts from construction, demolition, and pile driving would be similar for Alternative 2 to those discussed for Alternative 1. While the amount of construction activity would be less than for Alternative 1, the nature and scale of individual construction projects would probably be similar.

As indicated in Table 4-18, most construction and demolition activity would result in CNEL levels above 70 dBA within approximately 200 feet (61 m) of construction sites. Pile driving would result in CNEL levels above 70 dBA within approximately 600 feet (183 m) of the construction site. Most pile-driving activity would occur on Treasure Island. Construction noise would become objectionable if areas close to noise-sensitive land uses are developed. For Alternative 2, noise-sensitive land uses include a golf course and other open space and recreational areas. Construction noise impacts would be temporary, limited to the construction period, and minimized by restricting construction activities to daytime periods, by providing temporary noise barriers, by muffling and shielding construction equipment, where necessary, and by sequencing development. No mitigation is proposed.

4.7.3 Alternative 3

Not Significant Impacts

Noise generated by traffic associated with reuse (Factors 1 and 2). Traffic generated by buildout of Alternative 3 would not cause significant noise impacts on Treasure Island or Yerba Buena Island.

Noise levels on Yerba Buena Island are dominated by existing freeway noise on the SFOBB. Traffic added to the SFOBB by Alternative 3 would not cause a noticeable change in freeway noise levels; compared to future baseline conditions without the project, noise levels would actually decrease by approximately one-tenth of an A-weighted decibel (see Table 4-17). Consequently, Alternative 3 would not generate traffic noise impacts and would provide a beneficial impact. No mitigation is proposed.

Noise-related land use compatibility on Treasure Island (Factor 3). The proposed themed attraction would be a potential source of locally high noise levels, but potential impacts would be avoided by appropriate site design. Reasonable attention to site planning and building design would minimize the potential for noise problems in mixed-use zones; consequently, no significant noise-related land use conflicts are anticipated on Treasure Island. No mitigation is proposed.

Noise-related land use compatibility on Yerba Buena Island (Factor 3). Potential noise-related land use compatibility impacts and their remedies on Yerba Buena Island under Alternative 3 would be similar to those described for Alternative 1 and would not be significant. However, because Alternative 3 calls for extensive reuse of existing buildings, the Reuse Plan design guidelines to reduce bridge noise effects in new construction and building design would not apply. If feasible, existing buildings that would be retained in areas of high ambient noise levels (e.g., historic structures on Yerba Buena Island) could be retrofitted with noise insulation features, such as fixed windows and climate controls. No mitigation is proposed.

Construction and demolition noise (Factor 4). Although new construction under this alternative would be substantially less than for the other reuse alternatives, the nature and scale of some individual construction projects would be similar to those of the other reuse alternatives. Construction noise would become objectionable if areas close to noise-sensitive land uses were developed, such as residential and recreation uses. Construction noise impacts generally can be reduced by restricting construction activities to daytime periods, by providing temporary noise barriers, by muffling and shielding equipment, where necessary, and by sequencing development. Therefore, noise impacts from construction and demolition activities would not be significant. No mitigation is proposed.

4.7.4 No Action Alternative

Under the No Action Alternative, NSTI would remain in federal government ownership under a caretaker maintenance program, and existing interim leases would be allowed to expire. There would be minimal use of the property and facilities under this alternative, and no noise-sensitive land uses would be introduced on NSTI. No new activity would occur on NSTI, resulting in the elimination of traffic noise generated by vehicles traveling to and from the islands. As a result, the No Action Alternative would have a beneficial impact of reducing traffic noise.

4.8 BIOLOGICAL RESOURCES

Biological resources addressed in this section include sensitive species, sensitive habitats, and wetlands. Factors considered in determining whether an alternative would have significant impacts on biological resources included the extent or degree to which its implementation would:

1) Damage wetlands afforded protection under the CWA, Section 404 (16 U.S.C. §1344) and the § 404(b)(1) guidelines (40 C.F.R. Part 230) or other sensitive habitats;
2) Adversely affect any species listed or proposed for listing as endangered or threatened under the ESA (16 U.S.C. §§ 1531-1544) or otherwise afforded protection under the MMPA (16 U.S.C. §§ 1361-1421h), the MSA (codified in scattered sections of 16 USC § 1801 et seq.), or other federal law, or listed as a species of special concern; and,
3) Degrade or destroy designated critical habitat, as defined by the ESA, or Essential Fish Habitat (EFH), as defined by the MSA.

4.8.1 Alternative 1

Under this alternative, the planned actions most affecting biological resources would be dredging, increased boat traffic, and increased human presence. The biological resources of concern are the mudflat/eelgrass habitat, shallow water marine habitat, and salmonids (and associated critical habitat and EFH). There would be no significant impacts to ESA protected marine mammal, bird or sea turtle species.

Significant and Mitigable Impacts

Impacts to Sensitive Habitats (Factor 1)

Impact: Mudflat Habitat Disturbance. Significant impacts to mudflat habitat, including eelgrass beds, may occur as a result of increased pedestrian and boating activity around Clipper Cove (Figure 3-14). The eelgrass beds are the most sensitive habitats of the designated EFH within the project area. Under Alternative 1, the proposed themed attractions on Treasure Island would attract approximately 13,700 daily visitors, resulting in increased pedestrian activity in the area adjacent to Clipper Cove. This is likely to result in more people exploring the mudflats during low tide, which could disturb this sensitive habitat.

The enlarged marina under this alternative would add approximately 200 new boat slips and 100 new tie-up buoys to the existing 100 slips and would quadruple boat traffic in Clipper Cove. This would increase the potential for mudflat habitat disturbance, especially during low tides when recreational boating traffic could erode nearshore sediment; which could directly affect invertebrate prey species in shallow water. Although the project area is not under BCDC jurisdiction as a Navy facility, conversion to a nonfederal facility would place it within the jurisdiction of this agency. Expanding the marina or constructing a yacht harbor, new docks, or other structures that would cover the surface of the water could impact eelgrass areas. Such activities would constitute "fill," according to the BCDC, and would require a permit from the COE.

Mitigation. The property recipient or developer would be required to post signs along the shore adjacent to the mudflats and at the marina to inform pedestrians and recreational boaters that the mudflats are a protected sensitive area and that trespassing is not permitted. In addition, buoys would be placed in the bay to identify the restricted mudflat area. A five-mph (8 kph) zone would be established in Clipper Cove to minimize shoreline and mudflat erosion from high-speed recreational boats in shallow near-shore areas. Placing buoys to mark the channel and establishing a five-mph (8 kph) zone to regulate impacts from recreational boats would require a US Coast Guard aid to navigation permit. Posting the shoreline with information signs and establishing a five-mph (8 kph) zone would minimize impacts from recreational boats to sensitive mudflats and eelgrass beds. Construction would require a permit from the COE under Section 404 of the CWA or Section 10 of the Rivers and Harbors Act. Any impacts related to construction or fill would be addressed during the permitting process.

Complying with these mitigation procedures would eliminate or reduce impacts to less than significant.

Impacts to Sensitive Bird Species (Factors 1 and 2)

Impact: Pedestrian and Boating Impacts on Wading Shorebirds. Increased pedestrian and boating activity around Clipper Cove could have a significant impact on shorebirds by affecting mudflats and eelgrass beds where shorebirds forage. An increase in pedestrian activity near Clipper Cove from increased visitors to the themed attractions would be expected result in more people exploring the mudflats during low tide, which could disturb avian species and sensitive habitat zones. In addition, the enlarged marina would quadruple boat traffic in Clipper Cove, increasing the potential for disturbing mudflat habitat and for eroding nearshore sediments, especially during low tides, which could affect invertebrate prey species in shallow water. This effect on invertebrates, which are prey for the shorebirds, could result in a decrease in foraging success and thus an increase to the birds' energy expenditure. The above activities could disturb shorebird-breeding areas on NSTI. The combined effect could result in a significant impact to bird species in the project area, such as the black-crowned night heron, Brandt's and pelagic cormorants, and the black oystercatcher. The federally listed western snowy plover is not expected to occur at the project area and therefore would not be affected. Any individual plovers that may be present would be protected by the measures described below.

Mitigation. The property recipient or developer would post signs along the shore adjacent to the mudflats and at the marina, informing pedestrians and boaters that the mudflats are a protected and sensitive area. Placing buoys in the bay, identifying the mudflat area as restricted, and establishing a five-mph (8 kph) zone in Clipper Cove would reduce impacts by decreasing both numbers of people and boats in the area. Placing buoys and establishing a five-mph (8 kph) zone would require a Coast Guard aid to navigation permit.

Implementing these mitigation measures would reduce the impacts on identified avian species to a less than significant level.

The acquiring entity or entities would be responsible for implementing these mitigation measures, which would reduce the impacts on identified bird species to less than significant. It is noted that the regional office of the USFWS, in a letter to the Navy (see Appendix C) recommended that a covenant for the protection of birds protected under the Migratory Bird Treaty Act be included in the deed transferring ownership of the property. The Navy, in the absence of statutory authority, is without legal authority to impose such restrictions.

Impacts to Mudflat and Eelgrass Habitat (EFH) (Factor 1)

Impact: Pedestrian and Boating Impacts on EFH. Increased boat and pedestrian activity around Clipper Cove could have an indirect significant impact on EFH by degrading eelgrass vegetated areas and shallow water and mudflat areas. These areas provide important fish spawning, rearing, and foraging habitat. Impacts to EFH from pedestrian and boating activities are the same as those described under the impact to sensitive habitats, described above.

> *Mitigation.* Proposed mitigation measures are the same as those discussed under impacts to sensitive habitat above.

Complying with these mitigation procedures would eliminate impacts or reduce impacts to less than significant.

Not Significant Impacts

Dredging Impacts to Mudflat and Eelgrass Habitat (EFH) (Factor 1). Due to their function as cover and feeding habitat for a number of species, eelgrass vegetated areas on the southeastern side of Clipper Cove are considered the most sensitive aspect of EFH in the project area. Herring are known to spawn and deposit their eggs in the eelgrass beds of the surrounding shallow water. A decrease in the quantity of eelgrass around the islands could result in a decrease in egg deposits and a subsequent decrease in the local population of herring, thereby reducing available forage for harbor seals. Any reduction in eelgrass habitat also would affect shorebirds, such as dowitchers and sandpipers, by reducing foraging opportunities.

The lower limit of eelgrass growth is determined by the amount of available light, and plants at the lower limits of growth areas may not have sufficient carbon reserves to withstand periods of high turbidity (Zimmerman et al. 1991). Turbidity generated by dredging could significantly lower the amount of light available to eelgrass at the lower limits and could make such areas unsuitable as habitat for the species. If daily, monthly, and seasonal light requirements of the species are not met, long-term survival may be limited (Zimmerman et al. 1991). Dredging is not proposed in or near eelgrass beds.

Some dredging is proposed on the northwestern side of Clipper Cove for expanding and maintaining the marina. This dredging would occur at a significant distance, approximately 1,200 feet, from eelgrass beds on the southeastern side of Clipper Cove (Figure 3-14). Dredging, inserting pilings, or installing the seismic wall on the northwestern side of Clipper Cove is unlikely to affect these eelgrass beds due to the distance between construction areas and eelgrass beds.

The property recipient or developer would have to obtain required permits from the COE under section 404 of the CWA and Section 10 of the Rivers and Harbors Act. Also, the ESA and CEQA would require the property recipient or developer to consult and coordinate with the NMFS and CDFG before beginning any activities that may adversely affect sensitive habitats or species. The various permits and conditions resulting from consultations with state and federal resource agencies would address mitigation, avoidance, or minimization of potential adverse impacts. Required permits and consultations also would address impacts associated with disposal of dredge material.

Impacts to Other Sensitive Habitats (Factor 1). Impacts to jurisdictional wetlands, open water habitats, and terrestrial habitats would be less than significant because most development would occur on lands previously developed or disturbed and would not affect any lands currently used or occupied by any sensitive species (Figure 3-14). Marsh gumplant, the only plant species of concern known to occur on or near the project area, occurs to the east of the main project area and would not be affected by project activities. Dredging could result in short-term localized impacts to water quality in open water habitats. These activities are unlikely to cause significant impacts to sensitive habitats because of the distance between these habitats and the dredging activities. No mitigation is proposed.

Under Alternative 1, the number of boat slips in the proposed marina would quadruple, increasing the risk of oil or gas discharging into the water. Section 1321 of the CWA (33 U.S.C. § 1321) prohibits the discharge of oil or hazardous substances into or upon the navigable waters of the US; therefore, any spills would be accidental. Very small quantities of oil or gasoline spilled on surface waters can adversely affect sensitive habitat, although in practice it is difficult to prevent the discharge of small quantities of oil from the many possible sources. Two types of discharges are recognized by the EPA: point discharges attributable to a single source, such as from a pipe or a vent, and nonpoint discharges, which include the many small, accidental, and difficult to account for sources of pollutants. Point discharges are prohibited except under an NPDES permit issued by the RWRQB. NPDES permitting requirements cover runoff discharged from point sources and would minimize potential impacts to sensitive habitats.

The EPA or the state implementing agencies also require that certain classes of industrial facilities and activities, including marinas, obtain permits to allow them to discharge stormwater, provided that they conduct monitoring and adopt best management practices designed to identify and reduce the potential for nonpoint pollution. Certain shoreline facilities that store oil or hazardous substances are required to prepare and implement spill prevention, control, and countermeasures (SPCC) plans, which address the training and readiness to prevent and respond to spills. Finally, accidental spills must be reported to the appropriate regulatory agencies with jurisdiction over the affected waterbody, such as the US Coast Guard and the RWQCB. The possibility of an accidental spill is unknown, as is the potential intensity, which would depend on the volume released, wind patterns, tides, and other physical features. While the potential for spills cannot be eliminated entirely, existing regulatory requirements minimize the potential for spills to occur, require timely response to accidental spills, and reduce the potential for nonpoint sources to cause significant adverse impacts on surface water quality. The Coast Guard would have a quick response time, given its proximity to the site; any spills would be contained and would have less than significant impacts on biological resources. Therefore, increased boat traffic, including from proposed ferry service, is not expected to result in significant impacts to sensitive species, as described in Alternative 1.

Impacts to Critical Habitat (Factor 3). Although the project area is within designated critical habitat for several fish species, as discussed previously, the only critical habitat that could be affected would be that for the Central Coast California steelhead. No significant impacts are expected to any other critical habitat. The actual project area constitutes a very small portion of the specified habitat for the Central Coast California steelhead. Navy has initiated informal consultation with NMFS on this project. Potential impacts under this alternative would be localized and would not pose a threat to the viability of critical habitat in the area. No mitigation is proposed.

The project area falls within designated critical habitat for the endangered Steller sea lion, but this critical habitat zone covers almost all of the west coast of the US, including Alaska. Because the project area makes up such a small portion of that critical habitat and the species is rarely seen in the bay, impacts from project activities would be less than significant. No mitigation is proposed.

Impacts to Sensitive Marine Mammal Species (Factor 2). Increased boating activity from ferry service or from expanding the marina would increase boat traffic and human presence in the project vicinity and in the vicinity of the harbor seal haulout areas. Most impacts would come from recreational boats because large vessels would not be found near the haulout area. The level of boat traffic is the single strongest predictor of harbor seal haulout numbers; the more boat traffic, the fewer seals at the haulout site (Lelli and Harris 2001). Wild animals must maintain a balance between intake of nutrients and expenditure of energy to stay healthy. For example, stress can be caused by too little food, or, conversely, too much energy expenditure. If the harbor seals are overly disturbed while hauled out, which is generally a time of rest and recovery, this could increase their energetic expenditure. Although this area is used as a primary haulout site for seals in the bay, they are reasonably adaptable to disturbance from noise and can tolerate some degree of continuous exposure to human-made sounds. Seals can show short-term behavioral reactions to noise (Phillips 1999), especially at low tides or when pups are present (Green 2001). An accurate prediction of the number of boaters in the vicinity of the haulout area is not available; however, the level of potentially disturbing boat activity is not expected to differ substantially from present conditions, in which there are more sailboats than power boats, and in which boats have difficulty accessing the rocky shoreline in the vicinity of the haulout. Additionally, there are signs posted presently warning boaters to keep their distance from the harbor seal haulout site. Impacts to seals at the primary haulout and the secondary haulout west of this site would not be significant.

Unrestricted dredging could have an indirect significant impact on harbor seals by affecting herring, a preferred harbor seal prey species that is a significant portion of their diet. Dredging also could have a direct significant impact on harbor seals from noise associated with dredging to establish and maintain minimum depths for the proposed marina and other boating activities. Adhering to permit conditions and requirements identified by state and federal resource agencies would eliminate or reduce impacts to less than significant. The property recipient or developer would have to obtain required permits from the COE under sections 404 and 401 of the CWA and Section 10 of the Rivers and Harbors Act. Also, the ESA and CEQA would require the property recipient or developer to consult and coordinate with the NMFS and CDFG before beginning any activities that may adversely affect sensitive habitats or species. The various permits and conditions resulting from consultations with state and federal resource agencies would address mitigation, avoidance, or minimization of potential adverse impacts. Required permits and consultations also would address impacts associated with disposal of dredge material.

Impacts to all other marine mammals from dredging or increased boating and pedestrian activity also would be less than significant. Other marine mammals species in the ROI occur on an intermittent to rare basis and therefore are unlikely to be affected by dredging, increased boating or pedestrian activities. No mitigation is proposed.

Impacts to Benthic Organisms (Factor 3). Dredging in Clipper Cove would have a short-term adverse impact on benthic organisms and bottom-dwelling invertebrates found within the shallow water habitat of the cove. This impact would affect local populations and is not expected to affect the overall population of these species within the bay. Impacts to these species would lead to impacts to fish and bird species that prey on them, in that the amount of available prey in this area would be reduced temporarily. There are no sensitive aquatic species within this area, except for eelgrass, described in the previous section. Invertebrates affected by dredging are expected to reestablish themselves in the dredged zone over time. No mitigation is proposed.

Impacts to Sensitive Bird Species (Factors 1 and 2). Except for the pedestrian and boating impacts on MBTA-protected shorebirds described previously, there would be no significant impacts to sensitive bird species. Habitat degradation, human presence, and expansion of the marina, including dredging, under this alternative would not have a significant impact on bird species protected under ESA.

American peregrine falcons, a federally delisted but state-listed threatened species, forage in the Central Bay and nest on the SFOBB and Golden Gate Bridge. As noted in Section 3.8, two pairs nest on SFOBB—one on the support structure east of Yerba Buena Island and one on the central support structure between the island and San Francisco. This species may hunt over the water and land portions of the site and is unlikely to be adversely affected by development proposed under this alternative because the habitat of the falcon's common prey species (small birds) would remain similar to existing conditions. The peregrine falcon has adapted to an urban setting that includes SFOBB traffic noise and lights; therefore project-related noise and lighting would not be expected to adversely affect this species. No mitigation is proposed.

The California brown pelican and California least tern, federally listed endangered species, occasionally forage for fish in areas off NSTI. The California least tern generally forages in shallow waters and mudflat areas; the California brown pelican generally forages in deeper water on anchovies and sardines, both of which are abundant in the ROI and would not be affected by project activities. Increased boat traffic is likely to be dispersed throughout deep water surrounding NSTI and would not significantly affect foraging habitat or activities for the California brown pelican.

Protections identified in the significant and mitigable section for the shallow mudflat areas would also prevent boats interfering with California least tern foraging. There would be no significant impacts to prey species of these birds from boating or from dredging, as described previously. No mitigation is proposed.

The Alameda song sparrow is considered unlikely to be affected due to its low numbers and the lack of preferred habitat in the project area. This species prefers to coexist with marsh gumplant, which occurs east of the main project area. This species would most likely not be affected and there would be no significant impacts to their prey species from boating activity or human presence, as described above. No mitigation is proposed.

There would be no impacts to the California clapper rail because this species is not found in the project area. There also would be no impacts to the double-crested cormorant because no designated critical habitat or nesting sites are within the project area.

Impacts to Sensitive Fish Species (Factors 1 and 2). The Central California coast steelhead is the only ESA species that occurs in moderate numbers in the project area, which includes designated critical habitat for this species. Adults of this steelhead ESU are most likely to be in the area during their migration to South Bay spawning grounds. Juveniles are likely to be found in the proximity of the Central Bay, as they move from upstream habitats to the deeper waters of the bay and eventually the Pacific Ocean. Fish are sensitive to high noise levels, such as can be produced by dredging. Operational noise levels are recommended to remain below 150 dB; noise levels above 200 dB are lethal to fish (Woodbury 2001). Juvenile steelhead would be especially sensitive to noise and elevated turbidity and would be at risk from dredging and in-water construction. Dredging and in-water construction would require permitting from the COE and an ESA consultation with the NMFS. CEQA would require the property recipient or developer to undergo consultation with the CDFG. Conditions agreed on in these consultations would be implemented as part of project activities, ensuring that project activities would not affect ESA species such as the Central California coast steelhead. Navy has initiated informal consultation with NMFS on this project. This document will serve as a basis for this consultation.

In addition, four salmon ESUs, including the Sacramento River winter-run, fall/late fall-run, and spring-run chinook salmon and the Central Valley steelhead, may occur in the Central Bay in low numbers (Woodbury 2001). The project area is not along main migration routes used by these ESUs, therefore these species are not likely to be affected by project activities. These species have been observed in the Central Bay (Woodbury 2001; Hieb 2001) but are likely to occur in the area in low numbers due to the distance between the project area and their known migratory route. Of the low numbers of individuals that occur in the project area, the majority are likely to be juveniles (Woodbury 2001).

Delta smelt are found in the South Bay, although in much smaller numbers in comparison to North Bay populations (Ganssle 1966; Messersmith 1969). Movement of delta smelt and the contiguous nature of these sections of the San Francisco Bay make it likely that individual smelt would be found in the Central Bay. The delta smelt does not spawn in the area and is not expected to be affected by proposed project activities.

Longfin smelt migrate from the ocean to the delta to spawn but are known to enter the Central Bay. Longfin smelt are found in their largest numbers in San Francisco Bay during the spring and summer, when they are juveniles (Messersmith 1969; Aplin 1967). The longfin smelt does not spawn in the area and would not be expected to be affected by proposed project activities.

Green sturgeon are anadromous and may be found in low numbers in the Central Bay before or after spawning in the delta. The green sturgeon does not spawn in the area and would not be expected to be affected by proposed project activities.

Fish that are managed under the West Coast Groundfish FMP and the Coastal Pelagics FMP could inhabit the Central Bay. While groundfish, such as the Pacific sand dab, and coastal pelagics, such as the northern anchovy, are found in the project area, they are mobile and can move into other portions of the bay; therefore, their populations would not be expected to be affected by proposed project activities.

Impacts to Essential Fish Habitat (Factor 3). Dredging, constructing a seismic wall, expanding the marina, and implementing other in-water activities proposed under Alternative 1 would result in not significant impacts to EFH. All of the bay waters surrounding NSTI are designated as EFH for fish managed under the three FMPs—the Pacific Groundfish FMP, the Coastal Pelagics FMP, and the Pacific Coast Salmon FMP (NMFS 2000). The most delicate component of the Central Bay EFH is the eelgrass vegetated areas. These areas are sensitive to high turbidity and are an important resource to fish, which use eelgrass for depositing eggs, for foraging, and for seeking shelter. The closest eelgrass vegetated area to potential dredging and in-water activities is on the southeastern side of Clipper Cover. It is approximately 1,200 feet away from the proposed dredging area in Clipper Cove (Figure 3-14). This distance is great enough to prevent dredging from disturbing eelgrass.

Dredging is not proposed in or near eelgrass beds. However, were dredging or pile driving to occur on the southeastern side of Clipper Cove, eelgrass beds could be damaged, which would adversely affect EFH. The MSA requires federal agencies that authorize, fund, or conduct activities that "may adversely affect" EFH to work with the NMFS to develop conservation measures that minimize damage to EFH. Permitting procedures outlined below would lessen the impact of such dredging operations so that they would not adversely affect EFH.

The property recipient or developer would have to obtain permits from the COE under Sections 404 and 401 of the CWA and Section 10 of the Rivers and Harbors Act. Also, the ESA and CEQA require the property recipient or developer to consult and coordinate with the NMFS and CDFG before beginning any activities that may adversely affect sensitive habitats or species. The various permits and conditions resulting from consultations with state and federal resource agencies would address mitigation, avoidance, or minimization of potential adverse impacts. Required permits and consultations also would address impacts associated with disposing of dredge material. The property recipient or developer would adhere to the dredging protocols established by the LTMS, which incorporates conservation and preventative measures into the project activities.

4.8.2 Alternative 2

Under this alternative, the proposed actions most affecting biological resources would be dredging, expanding the marina, and increasing boat traffic.

Significant and Mitigable Impacts

Impacts to Sensitive Habitat (Factor 1)

Impact: Mudflat Habitat Disturbance. There could be significant impacts to mudflat habitat, including eelgrass beds, because of increased pedestrian and boating activity around Clipper Cove. Eelgrass beds are the most sensitive habitats of the designated EFH in the project area. Treasure Island development under Alternative 2 would attract an estimated 5,000 daily visitors, or approximately half the increase in pedestrian activity proposed under Alternative 1. As a result, the impacts in the area of the themed attraction adjacent to Clipper Cove would be less than half of that under Alternative 1.

Expanding the marina to between approximately 500 and 675 slips and buoys would result in at least a 500 percent increase in boat traffic in Clipper Cove over existing conditions and a 20 percent increase over that proposed under Alternative 1. This increases the potential for recreational boating traffic to disturb the sensitive mudflat habitat, including eelgrass beds. Most impacts would come from recreational boats because large vessels other than ferries would not be found in the project area.

> *Mitigation.* Mitigation measures related to disturbance of mudflat/eelgrass habitats would be the same as those described for Alternative 1.

Implementing these mitigation measures would reduce the impact to a less than significant level.

Impacts to Sensitive Bird Species (Factors 1 and 2)

Impact: Pedestrian and Boating Impacts on Wading Shorebirds. As described for Alternative 1, increased pedestrian and boating activity around Clipper Cove could have a significant impact on shorebirds by affecting mudflats and eelgrass beds where shorebirds forage. Habitat degradation, human presence, and an enlarged marina under Alternative 2 could result in significant impacts to sensitive bird habitat and species. Although none of the bird species are listed as endangered or threatened under the ESA, they are all protected under the MBTA.

Development at Treasure Island under Alternative 2 would attract approximately half the number of daily visitors proposed under Alternative 1. As a result, the impacts in the area of the themed attraction adjacent to Clipper Cove also would be approximately half of those described under Alternative 1. Expanding the marina to between 500 and 675 slips and buoys would result in an approximately 500 percent increase in boat traffic in Clipper Cove over existing conditions and a 20 percent increase over that proposed under Alternative 1. This increases the potential for increased recreational boating to disturb the sensitive mudflat habitat, including eelgrass beds.

> *Mitigation.* Mitigation measures for disturbing mudflat habitat would be the same as those described for Alternative 1.

Implementing these mitigation measures would reduce the impact to a less than significant level.

Impacts to Mudflat and Eelgrass Habitat (EFH) (Factor 1)

Impact: Pedestrian and Boating Impacts on EFH. Increased pedestrian and boating activity around Clipper Cove and along the perimeter of the islands could have a significant impact on EFH in shallow water and mudflat areas, as described for sensitive habitats under Alternative 1.

> *Mitigation.* Mitigation measures for disturbing EFH would be the same as those described for sensitive habitats under Alternative 1.

Implementing these mitigation measures would reduce the impact to a less than significant level.

Not Significant Impacts

Dredging impacts to mudflat and eelgrass habitat (Factor 1). Eelgrass vegetated areas on the southeastern side of Clipper Cove are considered the most sensitive aspect of EFH in the project area, due to their function as cover and feeding habitat for a number of species. Impacts to eelgrass and mudflat habitat resulting from dredging would be not significant. Dredging and other activities for maintaining Pier 1 for ferry service are not likely to affect any protected bird species because dredging would be conducted in compliance with Section 404 of the Clean Water Act and would be coordinated with the CDFG and NMFS, as described in Alternative 1.

Potential adverse affects and methods of mitigation would be the same as those listed under Alternative 1.

Impacts to Other Sensitive Habitats (Factor 1). Impacts to jurisdictional wetlands, open water habitats, and terrestrial habitats would be less than significant. Most development would occur on lands previously developed or disturbed and would not affect any lands currently used or occupied by any sensitive species. Marsh gumplant, the only plant species of concern known to occur on or near the project area, occurs to the east of the main project area and would not be affected by project activities.

Any dredging would require a Section 404 permit. Placing pilings or expanding docks in aquatic habitat would require a Section 10 permit from the COE. Impacts from these activities would be addressed during the permitting process.

Short-term impacts to water quality in open water habitats near dredging areas could occur as a result of dredging but are unlikely to cause significant impacts to sensitive habitats.

As described in Alternative 1, it is unlikely that increased boat traffic would affect sensitive habitats, with the exception of eelgrass, discussed above. No mitigation is proposed.

Impacts to eelgrass beds from accidental oil releases from boats could have short-term impacts on these habitats. Impacts of and prevention measures for accidental oil releases are discussed under Impacts to Other Sensitive Habitats, Alternative 1.

Similar to Alternative 1, any shore-based spills that reach the bay via the stormwater system would be regulated and monitored through the application of best management practices and an SPCC Plan. These measures would reduce this impact to less than significant. Impacts related to dredging to establish and maintain minimum depths for the proposed marina and other boating activities would be the same as those described for Alternative 1. Mitigation measures related to dredging would be the same as those described for Alternative 1.

Impacts to Critical Habitat (Factor 3). Although the project area is within designated critical habitat for several fish species, there would be no significant impacts to critical habitat. The actual project area constitutes a very small portion of fish species critical habitat. Potential impacts under this alternative would be localized and would pose no threat to the viability of critical habitat in the area.

The project area falls within designated critical habitat for the endangered Steller sea lion, but this critical habitat zone covers almost all of the west coast of the US, including Alaska. Because the project area makes up such a small portion of that critical habitat and the species is rarely seen in the bay, impacts from project activities would be less than significant. No mitigation is proposed.

Impacts to Sensitive Marine Mammal Species (Factor 2). Similar to Alternative 1, Alternative 2 would have less than significant impacts on the harbor seals at the basking and haulout area. While expanding the marina to between approximately 500 and 675 slips and buoys would substantially increase in boat traffic in Clipper Cove and would mean a 20 percent increase over that proposed under Alternative 1, this increase would not be expected to affect conditions at the seal haulout sites or the sensitive mudflat habitat (including eelgrass beds), which support harbor seal prey. Dredging and other activities for maintaining Pier 1 for ferry service would also have impacts on seals similar to those discussed for Alternative 1, which would be addressed through adherence to permit conditions and requirements identified by state and federal resource agencies.

Impacts to Benthic Organisms (Factor 2). Dredging in Clipper Cove to accommodate a yacht harbor would have a short-term adverse impact on benthic organisms and bottom-dwelling invertebrates found within the shallow water habitat of the cove. This impact would be to local populations and is not expected to affect the overall population of these species within the bay. There are no sensitive species within this habitat type except for eelgrass, described in the previous section, and invertebrates affected by dredging are expected to reestablish themselves in the dredged zone over time. No mitigation is proposed.

Impacts to Sensitive Bird Species (Factors 1 and 2). Impacts to the American peregrine falcon, California brown pelican, California least tern, and Alameda song sparrow are expected to be similar to, but proportionally less than, those described under Alternative 1. These not significant impacts include those to special status species and prey and avian foraging habitat and would be from dredging, in-water or near-shore construction, and increased vessel traffic. No mitigation is proposed.

Impacts to Sensitive Fish Species (Factor 2). Dredging, constructing a seismic wall, expanding the marina, and engaging in other in-water activities proposed under Alternative 2 would result in not significant impacts to sensitive fish species, similar to that described under Alternative 1. No mitigation is proposed.

Impacts to Essential Fish Habitat (Factor 3). Dredging, constructing a seismic wall, expanding the marina, and engaging in other in-water activities proposed under Alternative 2 would result in not significant impacts to EFH, similar to that described under Alternative 1. No mitigation is proposed.

4.8.3 Alternative 3

Under Alternative 3, many buildings and facilities at NSTI would be reused. Building upgrades for seismic safety would be limited to minor rehabilitation to meet life safety requirements recommended by FEMA-178 evaluations. Most new development would be on sites already occupied by buildings or parking lots, or on mostly landscaped areas, and therefore would not significantly affect natural habitat areas. Dredging would be required to maintain the marina and for constructing a new ferry terminal. The planned actions that would affect biological resources would be increasing boat traffic, constructing a ferry terminal at Pier 12 and a yacht harbor, and humans using sensitive mudflat habitat.

Significant and Mitigable Impacts

Impacts to Sensitive Habitat (Factor 1)

Impact: Mudflat Habitat Disturbance. Significant impacts to mudflat habitat, including eelgrass beds, may occur as a result of increased pedestrian and boating activity around Clipper Cove. Due to their function as cover and feeding habitat for a number of species, the eelgrass vegetated areas on the southeastern side of Clipper Cove are considered the most sensitive aspect of EFH. Development at Treasure Island under Alternative 3 would attract an estimated 2,740 daily visitors. Although this represents an 80 percent reduction in pedestrian activity compared to Alternative 1, it is still significantly higher than under current conditions. There would be a small increase in boat traffic from visitors to the island. This slightly increases the potential for disturbing the sensitive mudflat habitat, including eelgrass beds, from increased recreational boating.

> *Mitigation.* Mitigation measures for disturbing mudflat habitat would be the same as those described for Alternative 1.

Implementing these mitigation measures would reduce the impacts to a less than significant level.

Impacts to Sensitive Bird Species (Factors 1 and 2)

Impact: Pedestrian and Boating Impacts on Shorebirds. Alternative 3 would result in impacts to protected bird species from human disturbance similar to those under Alternative 2, though at a reduced level. Although none of the bird species are listed as endangered or threatened under the ESA, they are all protected under the MBTA. Development at Treasure Island under Alternative 3 would attract an estimated 2,740 daily visitors. Although this represents an 80 percent reduction compared to Alternative 1, it is still significantly higher than under current conditions. There would be a small increase in boat traffic from visitors to the island. This slightly increases the potential for disturbing the sensitive mudflat habitat, including eelgrass beds, which may have an indirect effect on protected birds.

> *Mitigation.* Mitigation measures for disturbing shorebirds would be the same as those described for Alternative 1.

Implementing these mitigation measures would reduce the impact to a less than significant level.

Impacts to Mudflat and Eelgrass Habitat (EFH) (Factor 1)

Impact: Pedestrian and Boating Impacts on EFH. Increased pedestrian and boat activity around Clipper Cove and along the perimeter of the islands would affect EFH in shallow water and mudflat areas, as described for sensitive habitats under Alternative 1.

> *Mitigation.* Mitigation measures for disturbing EFH would be the same as those described for sensitive habitats under Alternative 1.

Implementing these mitigation measures would reduce the impact to a less than significant level.

Not Significant Impacts

Dredging impacts to mudflat and eelgrass habitat (Factor 1). Impacts to eelgrass and mudflat habitat resulting from dredging would be less than significant. Potential adverse effects and methods of mitigation would be the same as those listed under Alternative 1.

Impacts to Other Sensitive Habitats (Factor 1). Impacts to jurisdictional wetlands and waters of the US would occur as a result of constructing a yacht harbor in Clipper Cove. Impacts related to dredging to establish and maintain minimum depths for the proposed marina and other boating activities would be the same as those described for Alternative 1. Dredging could result in short-term localized impacts to water quality in open water habitats. These activities are unlikely to cause significant impacts to sensitive habitats because of the distance between these habitats and the dredging activities. Any dredging or construction in these waters would require a Section 404 permit. Placing pilings in aquatic habitat would require a Section 10 permit from the COE. Impacts would be less than significant because these activities would be conducted under Section 404 and coordinated with CDFG and NMFS, as described in Alternative 1. Construction in Clipper Cove by a nonfederal agency would constitute fill, according to BCDC, and would be regulated by that agency.

As described in Alternative 1, it is unlikely that increased boat traffic would cause an impact to sensitive habitats, with the exception of eelgrass, discussed above. No mitigation is proposed.

Impacts to eelgrass beds from accidental oil releases from boats could have short-term impacts on these habitats. Impacts of and prevention measures for oil releases are discussed under Impacts to Other Sensitive Habitats, Alternative 1. Similar to Alternative 1, any shore-based spills that reach the bay via the stormwater system would be regulated and monitored through the application of best management practices and an SPCC Plan. These measures would reduce this impact to not significant.

Impacts to Critical Habitat (Factor 3). Although the project area is within critical habitat for several fish species, no critical habitat would be significantly affected. The project area constitutes a very small portion of fish species critical habitat. Potential impacts under this alternative would be localized and would pose no threat to the viability of critical habitat in the area.

The project area falls within designated critical habitat for the endangered Steller sea lion; however, this critical habitat zone covers almost all of the west coast of the US, including Alaska. Because the project area makes up such a small portion of that critical habitat and because the species is rarely seen in the bay, impacts from project activities would be less than significant. No mitigation is proposed.

Impacts to Sensitive Marine Mammals (Factor 2). Impacts to MMPA-protected species from habitat degradation and human presence under this alternative would be similar to, but less than, impacts from Alternative 1. There would be a small increase in boat traffic from visitors to the island. This slightly increases the potential for disturbing the sensitive seal habitat, including haulout and basking sites, from recreational boating. Impacts would be less than significant, and no mitigation is proposed. Dredging and other activities for building and maintaining a ferry terminal at Pier 1 would also have impacts on seals similar to those discussed for Alternative 1, which would be addressed through adherence to permit conditions and requirements identified by state and federal resource agencies.

Impacts to Benthic Organisms (Factor 2). Dredging in Clipper Cove to accommodate a yacht harbor would have a short-term, adverse impact on benthic organisms and bottom-dwelling invertebrates found within the shallow water habitat of the cove. This impact would be to local populations and is not expected to affect the overall population of these species within the bay. There are no sensitive species within this habitat type except for eelgrass, described in the previous section, and invertebrates affected by dredging are expected to reestablish themselves in the dredged zone over time. No mitigation is proposed.

Impacts to Sensitive Bird Species (Factors 1 and 2). Impacts to the American peregrine falcon, California brown pelican, California least tern, and Alameda song sparrow are expected to be similar to, but proportionally less than, those described under Alternative 1. These less than significant impacts include impacts to special status species and prey and avian foraging habitat, impacts from dredging and in-water and near-shore construction, and impacts from increased vessel traffic. No mitigation is proposed.

Impacts to Sensitive Fish Species (Factor 2). Dredging, constructing a seismic wall, expanding the marina, and other in-water activities proposed under Alternative 3 would result in not significant impacts to sensitive fish species similar to, but less than, that described for Alternative 1. No mitigation is proposed.

Impacts to Essential Fish Habitat (Factor 3). Dredging, constructing a seismic wall, expanding the marina, and other in-water activities proposed under Alternative 3 would result in not significant impacts to EFH similar to, but less than, that described for Alternative 1. No mitigation is proposed.

4.8.4 No Action Alternative

Under the No Action Alternative, property available for disposal at NSTI would continue under federal ownership in an inactive caretaker status, and existing interim leases would be allowed to expire. There would be minimal use of NSTI property and facilities under this alternative. Ongoing activities would include maintenance to minimize deterioration and essential security operations.

Maintaining NSTI in caretaker status would result in no impacts to biological resources. Because no reuse would occur, there would be no impacts to sensitive species, sensitive habitat, marine mammal species, or essential fish habitat. No impacts to the mudflat habitat would occur because no new docks or facilities for recreational boats would be constructed.

4.9 GEOLOGY AND SOILS

The primary geotechnical hazards that may affect the reuse plan area, along with engineering techniques that could avoid or reduce the risk from these hazards, are discussed in this section as related to either seismic events or nonseismic events. The effects of earthquake-induced tsunamis are addressed in Section 4.10, Water Resources.

Factors considered in determining whether an alternative would have a significant impact on geology and soils included the extent or degree to which its implementation would:

1) Cause soil erosion, sedimentation, or land subsidence;

2) Adversely affect unique geologic or topographic features; or

3) Increase exposure of people, structures, or infrastructure to risk of catastrophic loss, injury, or death from rupture of a known earthquake fault, strong seismic ground shaking; or seismic-related ground failure, including liquefaction.

4.9.1 Alternative 1

Not Significant Impacts

Non-Seismic Hazards

Geotechnical hazards not specifically related to earthquake activity include local settlement, slope instability, and erosion.

Local settlement (Factor 1). Settlement is the localized lowering of the ground surface due to a decrease in the volume of the underlying soil. Development under Alternative 1 could result in settlement hazards associated with construction on the on-site fill sediments or the underlying Bay muds as these materials adjust to new loading from heavy buildings, mat foundations, or other new fills and drains. Although most of the potential settlement at existing loadings at Treasure Island has already occurred, gradual area-wide settlement could be accelerated and could continue for many more years, resulting in increased local ponding, increased flooding potential, or water-logged soils.

Standard engineering techniques to remove and recompact loose, unconsolidated fill to relatively noncompressible materials would be applied in those areas proposed for development under Alternative 1. Geotechnical evaluations of proposed specific reuse development projects would be required. Engineering techniques to remove and recompact near-surface soils would be used to reduce hazards of local settlement. Because established engineering techniques would be applied, as appropriate, the potential for settlement would be minimized, and this impact would be not significant. No mitigation is proposed.

Slope instability (Factor 1). Due to the steep slopes and landslide deposits around the margin of Yerba Buena Island, development under Alternative 1 could result in increased exposure to hazards associated with slope instability. However, impacts on development would not be significant because of requirements for construction. San Francisco's standard code requirements for slope design and drainage would apply to new developments. San Francisco would routinely check existing landslides and steep slope areas for slope movements. If slope movement is detected, appropriate repairs would be initiated as soon as possible. Specific requirements would be evaluated on a project-by-project basis. Therefore, this impact would not be significant under Alternative 1. No mitigation is proposed.

Erosion (Factor 1). Demolition and construction activities within the reuse plan area could result in increased potential for wind erosion of soils, especially if grading is conducted in dry, but windy, summer weather. Once an individual site is graded and landscaping vegetation is established, the erosion potential of the soils would diminish.

Soil erosion from Treasure Island is not expected to be significant due to the relatively level topography of the island. Construction on Yerba Buena Island could result in substantial erosion due to its, steep slopes which in turn could affect slope stability. Temporary erosion control measures would be provided during the construction phases of the project, as required by the local grading code and NPDES permits, to minimize these effects. A post-development erosion-control program also would be implemented. This program could include regular inspection and maintenance of drainage control devices, proper irrigation to minimize runoff, and landscaping to reduce wind and water erosion. Implementation of these required measures would ensure that erosion impacts are reduced to a not significant level. No mitigation is proposed.

Ferry wakes also could erode the perimeter dike, but it is in good repair and subject to regular wave and wake action daily from local and international shipping vessels. Therefore, it is unlikely that ferry wakes would substantially affect the dike.

Seismic Hazards

As discussed in Section 3.9, the reuse plan area lies within a region of northern California that is seismically active and is subject to earthquake-related hazards, as discussed below.

Surface Fault Displacement (Factor 3). The reuse plan area is not located within an Alquist-Priolo Earthquake Fault Zone, and no active or potentially active fault is known to exist at the ground surface on or immediately adjacent (i.e., within 5 miles [8 km]) to the site; therefore, the potential risk of loss, injury, or death would be minimal. There would be no impact from hazards to reuse development associated with surface fault displacement.

Seismic shaking (Factor 3). As discussed in Section 3.9, the reuse plan area would be subject to strong seismic ground shaking during major earthquakes. A maximum credible earthquake centered on the northern segment of the Hayward Fault (Mercalli scale intensity IX at NSTI, ABAG 1995a) would cause major damage to NSTI structures and utilities. A major earthquake could severely limit or even prevent vehicular access to the site if the SFOBB is damaged, impeding basic and emergency services to the site, even with the proposed dike improvements, causeway reinforcement, and the proposed SFOBB east span replacement and west span strengthening.

It is likely that emergency response systems, in San Francisco in particular and in the Bay Area as a whole, would be overloaded in the immediate aftermath of a large earthquake. Because of the large population that probably would be present at NSTI in an earthquake under this alternative, it likely would be necessary for offices, hotels, recreational facilities, and residents to be self-sufficient for several days until basic systems could be restored or until occupants could be evacuated.

All new structures in California must be designed and constructed in compliance with seismic safety standards and requirements of the State Uniform Building Code (UBC). San Francisco requires all new development of existing structures to comply with the most current UBC requirements and standards. The San Francisco Department of Building Inspection (DBI) will use the *National Earthquake Hazards Reduction Program Handbook for the Seismic Evaluation of Existing Building* (FEMA-17) to assess seismic hazards in existing buildings; this is the federal standard by which federal buildings are evaluated (San Francisco 1998c). Seismic upgrades of existing structures designated for reuse would be performed to minimize life safety risks from failures in a large earthquake. Structures that cannot feasibly be retrofitted to meet a life safety objective would be demolished. Compliance with these regulations by each individual development within the reuse plan area would reduce impacts related to seismic shaking to the most current safety levels.

Several measures and policies to minimize the effects of seismic shaking are included as part of the Reuse Plan. These measures include investigating structural and geotechnical conditions with appropriate upgrades prior to reuse of existing structures, preparing geotechnical site investigations and conducting appropriate structural design for all new development, and preparing emergency response plans. Therefore, the potential risk of loss, injury, or death would be minimal and impacts would not be significant. No mitigation is proposed.

Liquefaction and differential settlement (Factor 3). As discussed in Section 3.9, Treasure Island has a high probability of liquefaction and differential settlement in the event of a major earthquake due to the presence of sand fill below the water table and the underlying shoal sands. Treasure Island is designated a SHSZ by the CDMG. During a strong earthquake, liquefaction and differential settlement would be likely throughout Treasure Island and the causeway (see Figure 3-16). Low-lying areas of Yerba Buena Island underlain by heterogeneous artificial fill also are potentially subject to liquefaction and differential settlement hazards. The severity of the damage would vary, depending on the nature of the structure and on site-specific geologic conditions.

San Francisco requires detailed geotechnical studies for individual development sites to identify which specific engineering techniques should be used to reduce liquefaction and differential settlement hazards. Among the measures that San Francisco will consider, based on site-specific conditions, during permit review and processing for either construction or for upgrades to existing facilities are: (1) incorporating the recommendations of a California-licensed engineering geologist into future site preparation, foundation, and building design; (2) supporting all sensitive structures (e.g., buildings greater than three stories, buildings intended for public occupancy, structures supporting essential services, and buildings housing schools, medical, police, and fire facilities) on pile systems or other specially designed foundations; (3) in-situ ground densification (e.g., dynamic consolidation, compaction piles, compaction grouting); and (4) using mat foundations for smaller structures to distribute loads over a larger area and to increase foundation flexibility.

Under Alternative 1, all individual reuse development projects in the reuse plan area would comply with these requirements and use specific engineering techniques for design, grading, and construction appropriate to a given development. As a result, the potential risk of loss, injury, or deaths would be minimal, and impacts would not be significant as a result of compliance with these requirements. No mitigation is proposed.

Lateral spreading (Factor 3). As described in Section 3.9, lateral spreading accompanying liquefaction is a major seismic hazard at the perimeter of Treasure Island. The proposed perimeter stabilization measures included in this alternative (i.e., stone columns, soil-cement columns, or rock berms) would protect the island, including new properly supported structures, roads, and utilities, from large-scale lateral spreading. Residual lateral spreading could be reduced to less than 1 foot (0.3 m). In interior areas of the island, the amount of residual lateral spreading would be less. However, even the least amount of lateral spreading that is achievable in perimeter areas of the island may result in damage to existing unsupported structures and infrastructure elements, which in turn could affect life safety. Therefore, additional engineering measures will be needed in these sites.

Under Alternative 1, all development would comply with requirements for the geotechnical evaluation as specified by San Francisco for each individual development site. As part of subsequent permit review for upgrades or reuse of existing infrastructure and buildings, San Francisco would consider the design of stabilization measures proposed for the perimeter of Treasure Island and ensure that the project's geotechnical investigation addresses the potential for residual lateral spreading. Structures and infrastructure would be supported in areas where residual lateral spreading still could occur after being placed on piles, columns, or other appropriate foundations. Essential utilities would be fit with flexible connections designed to withstand rupture. Therefore, compliance with these geotechnical requirements would reduce hazards related to lateral spreading. The potential risk of loss, injury, or death would be minimal, and impacts would be reduced to a not significant level on a project-by-project basis. No mitigation is proposed.

Dike failure (Factor 3). Under this alternative, placing stone columns, soil-cement columns, and rock berms around the island perimeter would minimize risks associated with perimeter dike failure from lateral spreading or slumping in an earthquake or from wave action associated with large storms. Still, localized failures may occur because of the thickness of the unconsolidated sediments underlying the dikes. In the event of a failure, or as a precautionary measure in areas deemed to be less resistant to failure, the rock berm that forms the perimeter dike could be replaced or reinforced with a larger, exterior rock berm. The larger rock berm would buttress the dike and would resist the forces imposed by liquefied soil and fill behind the dike, as well as ground shaking. The San Francisco DBI will require peer review of permits for perimeter dike improvements by structural and geotechnical engineers for the purpose of ensuring that appropriate geotechnical data are collected and properly evaluated, and for ensuring that appropriate corrective measures are proposed. Implementing these measures is expected to reduce the hazards related to dike failure to acceptable levels. Localized dike failure, which has occurred in the past, is not expected to result in an unacceptable risk of loss, injury, or death. No mitigation is proposed.

Seismically Induced Slope Failure (Factor 3). As described in Section 3.9, slope failure can be triggered by an earthquake. Slopes subject to earthquake-induced failure exist on steep slopes of Yerba Buena Island. Existing landslide deposits are concentrated around the margins of Yerba Buena Island, particularly on the south shore of the island (see Figure 3-18). There is no new habitable development planned for these areas; however, existing roads may continue to be undercut by slope failures, and earthquake-induced failures could threaten existing or proposed development in other areas in which landslides have not been mapped. Alternative 1 would not increase the potential for earthquake-induced slope failure; however, it could increase the number of people exposed to the hazards of slope failure to the extent that there would be more traffic on existing roads on Yerba Buena Island. Major slope failure could result in road closures, and this could impede transportation between NSTI and the mainland. Landslides onto the roadway would endanger people using the road. As discussed above with regard to seismic shaking, existing structures, including roadways, would be evaluated and retrofitted or abandoned, if necessary, to reduce risks to acceptable levels. Therefore, the impacts of earthquake-induced slope failure is not considered significant.

No Impacts

Unique geologic and topographic features (Factor 2). The reuse plan area does not contain any unique geologic or topographic features. Yerba Buena Island is a prominent topographic feature, but it is not unique and would not be substantially altered under Alternative 1. Therefore, there is no impact. No mitigation is proposed.

4.9.2 Alternative 2

Not Significant Impacts

The potential impacts under Alternative 2 would be comparable to those of Alternative 1 because the geotechnical hazards are associated with existing physical features of the reuse plan area itself. However, the type, nature, and magnitude of development under Alternative 2 differ from those proposed under Alternative 1. Alternative 2 includes creating a golf course instead of housing on the northwest portion of Treasure Island, eliminating the proposed perimeter stabilization of that portion of the island, and building fewer residential units on Yerba Buena Island. Less residential development under Alternative 2 would reduce the magnitude of the geologic impacts described for Alternative 1 because a smaller permanent population would be exposed to seismic hazards. Greater impacts to unprotected recreational land uses would be created in the golf course area due to the lack of perimeter stabilization in that area. For example, substantial lateral spreading in a major earthquake would result in a localized loss of recreational land near the point of a dike failure and within 500 feet (152 m) or more inland. If not promptly repaired, such a failure would reduce the buffer area provided by the golf course and possibly subject any unsupported structures and infrastructure inland of the failure to the secondary effects of future seismically induced lateral spreading.

Compliance with San Francisco requirements for site-specific geotechnical investigations would be required for each individual development. The site-specific investigations would identify which specific engineering techniques should be used to reduce any identified geotechnical hazards, and the potential risk for loss, injury, or death would be minimal. Requirements identified for Alternative 1 to reduce local settlement, slope instability, and erosion also would be required for development under Alternative 2. No mitigation is proposed.

4.9.3 Alternative 3

Not Significant Impacts

The potential impacts under Alternative 3 would be roughly comparable to those of Alternative 1 because the geotechnical hazards are associated with existing physical features of the reuse plan area itself. However, the type, nature, and magnitude of development-related impacts under Alternative 3 differ from those proposed under Alternative 1. Alternative 3 would involve extensive reuse of existing facilities, including continuation of existing leases, and less intensive new development than the other two reuse alternatives, and there may be more potential difficulty in retrofitting existing structures to resist seismic hazards. Compared to Alternative 2, more residential development would increase the magnitude of the impacts described because a larger resident population would be exposed to seismic shaking hazards, including greater nighttime exposure to these hazards. Perimeter dike improvements would be limited to the northwest and southeast corners of Treasure Island in the areas subject to rotational dike failure. Therefore, greater impacts to unprotected shoreline recreational land uses and some areas proposed for institutional and community uses would be created due to the lack of perimeter stabilization in these areas.

Compliance with San Francisco requirements for site-specific geotechnical investigations would be required for each individual development. The site-specific investigations would identify which specific engineering techniques would be used to reduce any identified geotechnical hazards, and the potential risk for loss, injury, or death would be minimal. Requirements identified for Alternative 1 to reduce local settlement, slope instability, and erosion also would be required for development under Alternative 3. No mitigation is proposed.

4.9.4 No Action Alternative

The No Action Alternative would not result in new or additional geotechnical impacts. Existing structures would continue to be subject to existing seismic and nonseismic hazards, and no increase over existing seismic hazards would occur.

4.10 WATER RESOURCES

Potential water resources impacts resulting from disposal and reuse of NSTI are discussed in this section. This section is closely related to Section 4.11 (Utilities), which discusses water supply and infrastructure for domestic use. Factors considered in determining whether an alternative has significant impacts to water resources included the extent or degree to which its implementation would:

1) Adversely affect drainage patterns to the extent that the physical, chemical, or biological character of nearby bodies of surface water would be substantially altered;
2) Degrade water quality below levels established by regulatory agencies; or
3) Increase risk to human health and safety, or for economic damage, by siting incompatible land uses and facilities within areas susceptible to flooding or ponding.

4.10.1 Alternative 1

Alternative 1 would require dredging to develop and maintain the marina (including periodic shoal dredging), for maintaining and using Pier 1 for ferry service, and possibly for developing the new ferry terminal pier proposed for the west side of Treasure Island.

The overall area of paved surfaces at NSTI would increase under this alternative. Assuming that approximately 75 percent of open space areas on NSTI are developed, Alternative 1 would generate an additional 37 acres (15 ha) of paved surfaces; therefore, the volume of stormwater discharges also would increase.

The volume of wastewater discharged as treated effluent would remain below the permitted capacity of the sewage treatment plant (see Section 4.11.3).

Significant and Mitigable Impacts

Impact: Exposure of individuals and property to ponding from high tides (Factor 3). The installation of residential development in low-lying areas on Treasure Island would result in increased exposure of occupants, visitors, and property to ponding hazards due to seepage through the dike and underlying sediments during some high tide events. The rate of flow from the bay to the interior of the island is proportional to the difference in elevation between the bay and the water table on the island, so the rate of seepage increases with higher tidal stands. This seepage sometimes leads to water ponding in low-lying areas of the island. Compared to baseline conditions, there would be a net increase of about 2,395 residents, plus approximately 13,700 daily visitors. The exposure of people and structures to this type of flooding is considered a potential significant and mitigable impact.

Mitigation. Filling low-lying portions of the residential area to at least 9 feet (3 m) NGVD prior to development would mitigate this impact by ensuring that the ground surface is above the maximum average daily elevation of the bay. In addition, other low-lying areas within 500 feet (152 m) of the Treasure Island perimeter should be similarly filled before development is allowed.

Implementing this mitigation would reduce the impact to a not significant level.

Impact: Exposure of individuals and property to flooding (Factor 3). Developing and reusing Treasure Island under Alternative 1 could expose occupants, visitors, and property to flooding hazards caused by dike overtopping during storms, which could be a significant impact. High tide could reach about 13 to 14 feet (4 to 4.3 m) NGVD. As the existing perimeter dike is at elevations ranging from about 7.7 to 13.8 feet (2.3 to 4.2 m) NGVD, events of this magnitude would result in waves overtopping the dike in some areas.

Sea level rise also could increase potential flooding problems at NSTI. Predictions of future accelerated sea level rise due to global warming vary widely. The effect of sea level rise is increased on a land mass that is concurrently subsiding. The EPA projects a 50 percent likelihood that sea levels will rise about 4 inches (10 cm) (an average of 0.14 inches [0.36 cm]/year) by 2025 and about 8 inches (20 cm) (an average of 0.16 inches [0.39 cm]/year) by 2050. Such increases are the middle range of sea level rise estimates, which range from zero to over 18 inches (46 cm) (an average of 0.03 feet [0.009 m]/year) by 2050 (EPA 1995).

When the highest current tide (approximately 6.4 feet [2 m]) is superimposed on the EPA's estimates for rise in sea level (approximately 8 inches [20 cm]), high tides could reach approximately 7 feet (2 m) and 1 inch (2.5 cm) NGVD. Such estimates do not include compounding caused by high storm waves of approximately 7.5 feet (2 m) occurring simultaneously with high tides. They also do not include the effects of continued settlement of the island, which has been estimated to be on the order of approximately 1 foot (0.3 m) over the next 50 years (San Francisco 1995b). Therefore, significant flooding could still occur, even with raised dikes. This is considered a significant and mitigable impact.

> *Mitigation.* Set back development inboard of the perimeter dike to allow room for periodic dike raising without substantially increasing bay fill. Raise the dike as necessary to account for site settlement, changes in maximum tidal heights, and rises in sea levels. In addition, inspect the dike after each major storm to identify repair needs, and repair the dike promptly.

Implementing this mitigation measure would reduce the impacts to a not significant level.

Tsunami and seiche wave heights are expected to be less than about 3 feet (0.9 m) (San Francisco 1995b). For flooding to occur, tsunamis would need to coincide with combined tide and wave heights of over 7.5 feet (2 m). The likelihood of a major tsunami (e.g., a 100- or 500-year event) occurring simultaneously with a high tide is highly remote. For example, if we estimate that over the next 100 years bay water levels (accounting for tidal levels, base swell, wind-driven waves, rise in sea level, and settlement of the dikes) will exceed the equivalent of 7.5 feet NGVD about 20 percent of the time, then the probability of a 100-year tsunami or seiche occurring simultaneously with such a high tide would only be about 0.2 percent per year, or equivalent to about a once in 500 years event. This is not sufficiently probable to be considered a significant impact.

Not Significant Impacts

Dredging and dredge material disposal (Factors 1 and 2). Dredging associated with this alternative could disturb and disperse sediments, including any contaminated sediments, into the water column, reducing dissolved oxygen and increasing suspended particulates (COE 1992). Dredging also would cause temporary increases in water column sediment and turbidity as the sediments are raised through the water column. Contaminants released by dredging activities could significantly degrade water quality at or near the dredge sites, unless precautionary measures are taken.

Sediments will be tested in place prior to dredging. If contaminants are identified at concentrations capable of causing adverse water quality effects, appropriate measures will be evaluated and adopted prior to undertaking dredging. Dredging contaminated sediments requires use of special dredging equipment, such as an environmental or closed bucket, high solids slurry pumps, marine excavators, and silt curtains. The site will be dredged using appropriate dredging technology suitable to the site-specific conditions and in accordance with future permit requirements placed by the appropriate regulatory agencies.

Sediment sampling conducted in late January through early February 1996 at the former Clipper Cove Skeet Range indicated that there are contaminated sediments in the marina area with elevated levels of lead and polychlorinated aromatic hydrocarbons (PAHs) (DON 1997q). Dredging operations typically do not cause significant short- or long-term fluctuations in salinity, temperature, or pH. However, temporary turbidity increases occur when the scow receiving the dredged materials is allowed to overflow with sediment-laden water so that it can be filled to capacity.

Dredging would require permits and approvals from BCDC, San Francisco Bay RWQCB, and the COE. Prior to dredging, and in compliance with the CWA (Section 404, EPA's 404(b)(1) Guidelines of 1980 (40 C.F.R. Part 230)), all materials proposed for excavation and dredging must be tested for heavy metals, hydrocarbons, PCBs, tributyltin, pesticides, and any other contaminants of concern to the RWQCB. Careful delineation and segregation of any contaminated material would minimize the volume of contaminated sediments generated. Compliance with all applicable regulatory requirements would ensure that potential impacts would not continually violate water quality standards or requirements and therefore would be not significant. No mitigation is proposed.

Marine disposal of contaminated dredged sediments also could contaminate receiving waters. Uncontaminated dredge sediments could increase turbidity and suspended sediments at marine disposal sites. Runoff from drying and dewatering dredge materials also could adversely affect adjacent bay waters. However, similar to dredging, the dredge material disposal process is strictly regulated by federal and state agencies. Any contaminated dredging material must be disposed of in approved upland facilities. All sediment disposal programs and methods would need to comply with applicable LTMS sediment disposal priorities, which favor reusing sediments on land instead of disposing of them in the bay or ocean. Complying with the LTMS Implementation Plan for dredge material disposal and all other applicable regulatory requirements would ensure that dredging activities would not violate water quality standards or requirements; therefore, impacts would be not significant. No mitigation is proposed.

Construction impacts (Factors 1 and 2). Alternative 1 would result in construction of buildings, other structures, and infrastructure within the reuse plan area. Construction operations would lead to silt-laden runoff from construction sites due to storm events and watering to reduce PM_{10} emissions. Dewatering of construction sites also could be employed if extensive ground excavation, such as for deep foundations, were required. This runoff, which could contain relatively high levels of petroleum hydrocarbons, would contribute to degrading local and regional surface water quality. Construction would not impact groundwater in the regional aquifer because NSTI is isolated from the water-bearing aquifers in the Oakland area. Groundwater in the shallow aquifer beneath the islands might be locally lowered during construction. However, this impact would be temporary and would not impact water operations elsewhere in the Bay Area.

A stormwater management plan would be developed for NSTI consistent with Clean Water Act requirements for the Stormwater Pollution Prevention Program (SWPPP). The stormwater management plan would address monitoring, source reduction, BMPs, and treatment strategies. Examples of some general actions required by BMPs include the following:

- Schedule excavation and grading work for dry weather;
- Use as little water as possible for dust control;
- Use revegetation, if feasible, for erosion control after clearing, grading, or excavating; and
- Follow other BMPs required by general construction NPDES permits.

Therefore, construction impacts would not violate water quality standards or requirements and would be not significant. No mitigation is proposed.

Water quality (Factors 1 and 2). Alternative 1 would result in a small increase in impervious surface area (see below, for Factor 3), resulting in the potential for an increased rate of discharge of stormwater to the bay. Higher flow velocities or increased ponding in low areas could cause slightly increased loading of urban pollutants (e.g., sediments, oil and grease, etc.). Since the percentage increase in the volume of stormwater runoff would be small, it is unlikely to result in a significant increase in the amount of pollutants that flow into the bay.

Contaminants commonly associated with urban development include leaking motor oils, fuel, and other vehicular fluids, fertilizers and pesticides from landscaping, and trash. These contaminants can be washed by rain and carried with runoff into the bay. Ferry service to and from Treasure Island also could contribute to pollutants in the bay. Similar to construction, an SWPPP and BMPs may be required to limit the introduction of these contaminants into the bay.

As recommended in the Draft Reuse Plan, Alternative 1 would include implementation of BMPs to improve water quality prior to discharging to the bay. BMPs for stormwater runoff include limiting oil and grease runoff from parking areas, limiting contaminants in wash-down of the themed attraction, and managing herbicides and pesticides for open space areas and yards. Wherever possible, grassy swales and detention ponds should be used to provide on-site treatment of urban pollutants prior to water discharges to the bay.

Alternative 1 also could lead to dewatering of the high groundwater table beneath Treasure Island if deep foundations or utilities were to be built. Since groundwater beneath Treasure Island contains petroleum hydrocarbons, metals, and other contaminants, and this project would contribute runoff to the bay, this dewatering would need to comply with BMPs contained in the state's NPDES permit and local RWQCB permits. It is anticipated that most groundwater removed during dewatering activities would be discharged to the on-site wastewater treatment plant. Any contaminated water not treatable by the plant would be disposed of in an appropriately permitted facility. Discharge of the removed groundwater into the on-site drainage system would be allowed only after obtaining a San Francisco discharge permit. In reviewing the permit for discharge, the city would ensure that contaminant levels would be reduced to the extent required to be protective of the bay and in compliance with applicable permits from the RWQCB. If direct discharge to surface water is determined as the appropriate method for disposal of groundwater removed during dewatering, permits issued by the RWQCB under the NPDES program would be required. Therefore, the impact of dewatering would not be significant.

Exposure of individuals and property to flooding (Factor 3). Although nearly all stormwater (except that which evaporates) must be discharged to the bay to prevent flooding, Alternative 1 would increase the amount of impervious surfaces, particularly in the residential area in the northwest portion of the site, and therefore could increase the average volume and speed of stormwater runoff. Developing sports fields on the central portion of Treasure Island, on the other hand, would reduce the area of impervious surface, and slow the rate of runoff. Because much of the island is already covered with impervious surfaces, the proposed net increase would not be substantial. It is estimated that Alternative 1 would generate an additional 37 acres (15 ha) of impervious surfaces. The small increase in the runoff rate is not expected to substantially increase the potential for flooding.

4.10.2 Alternative 2

Under Alternative 2, a golf course would be developed on the northern portion of Treasure Island, and development would occur on the southern half of the island. Similar to Alternative 1, dredging would be required for expanding and maintaining the marina, maintaining and using Pier 1, and constructing a ferry terminal on the west side of Treasure Island. Although stormwater runoff in the northwest portion of Treasure Island (where the golf course is proposed) would decrease, the overall amount of paved surfaces at NSTI would increase under this alternative.

Golf course development is estimated to result in a net loss of approximately 25 acres (10.1 ha) of paved surfaces. However, assuming that approximately 75 percent of open space areas on Treasure Island is developed, Alternative 2 would generate an additional 37 acres (15 ha) of paved surfaces, for a net increase of 12 acres (4.9 ha) of paved area. Therefore, the volume of stormwater discharges also would increase. The volume of wastewater discharged as treated effluent would remain below the permitted capacity of the sewage treatment plant.

Significant and Mitigable Impacts

Impact: Exposure of individuals and property to flooding (Factor 3). Compared to baseline conditions, this alternative would subject fewer residents (a net decrease of approximately 3,790) but more daily visitors (a net increase of 5,500) on the northern half of Treasure Island, where a golf course is proposed, to existing flood hazards. Flood hazards on the southern portion of the site would be similar to those described for Alternative 1. This is considered a significant and mitigable impact.

> *Mitigation.* Mitigation measures for flooding from dike overtopping would be the same as those described for Alternative 1.

Implementing these mitigation measures would reduce the impact to a not significant level. As described for Alternative 1, flooding due to tsunamis or seiches is not considered a significant impact.

Not Significant Impacts

Not significant impacts related to dredging and dredge material disposal, construction impacts, and water quality are the same as those described for Alterrative 1. Ponding from high tides also would be considered a not significant impact because only minimal structures (e.g., golf club house, golf shop) are planned in the northern portion of the island where existing ponding occurs.

4.10.3 Alternative 3

Under Alternative 3, most existing facilities would be reused and existing interim uses, such as the firefighting training facility, would continue. Dredging would be required only for maintaining the existing marina. Dike improvements are proposed along the northwest and southeast portions of Treasure Island in the areas subject to rotational dike failure. It is anticipated that the overall amount of paved surfaces at NSTI would remain roughly the same under this alternative because minimal new development is proposed, so the volume of stormwater discharges would remain roughly the same. The volume of wastewater discharged as treated effluent would remain below the permitted capacity of the sewage treatment plant.

Significant and Mitigable Impacts

Impact: Exposure of individuals and property to flooding (Factor 3). Alternative 3 could subject occupants, visitors, and property to substantial flood hazards throughout Treasure Island. Compared to operational baseline conditions, there would be fewer residents (a net decrease of 990) but more daily visitors (an increase of 2,740) throughout NSTI exposed to these existing hazards. This is considered a significant and mitigable impact.

> *Mitigation.* Mitigation measures for flooding from dike overtopping would be the same as those described for Alternative 1.

Implementing these mitigation measures would reduce the impact to a not significant level. As described for Alternative 1, potential flooding due to tsunamis or seiches is not considered a significant impact.

Impact: Exposure of individuals and property to ponding from high tides (Factor 3). Occupants of structures in the low-lying areas of the residential portion of Treasure Island would be susceptible to substantial ponding hazards. This is considered a significant and mitigable impact.

> *Mitigation.* Mitigation measures for ponding during high tides would be the same as those described for Alternative 1.

Implementing these mitigation measures would reduce the impact to a not significant level.

Not Significant Impacts

Dredging and dredge material disposal (Factors 1 and 2). The only dredging activity proposed under this alternative is maintenance dredging at the existing marina. This level of dredging would be commensurate with historic maintenance dredging activities at NSTI and would not be considered a significant effect. No mitigation is proposed.

Construction impact (Factors 1 and 2). Construction-generated stormwater runoff from the development of Alternative 3 would be substantially less than but similar in nature to what would result for Alternative 1. Lower levels of runoff are expected because several existing buildings would be reused and there would be limited new construction. Impacts would not continually violate water quality standards or requirements and would be not significant. No mitigation is proposed.

Water quality (Factors 1 and 2). Compared to baseline conditions, Alternative 3 would generate about 17 percent fewer daily vehicle trips, and there would be no expected increase in boating activity. Therefore, potential water quality impacts associated with urban pollutants in stormwater runoff and boat discharges would not be significant. The existing firefighting training school is a contained facility, and all runoff is discharged directly to the sanitary sewer for treatment. No materials are burned, and no fire suppression chemicals are used during training exercises; therefore, there would be no significant impacts on runoff water quality generated at this facility. No mitigation is proposed.

4.10.4 No Action Alternative

Under the No Action Alternative, property available for disposal at NSTI would continue under federal ownership in an inactive caretaker status, and existing interim leases would be allowed to expire. There would be minimal use of the property and facilities under this alternative. Dike maintenance would provide continued flood protection under most conditions, although in large storm events it is expected that waves would overtop the dikes occasionally, resulting in flooding of low-lying areas unless the dike elevation is raised or sufficient pumping capacity is installed to drain off the water. Cleanup of hazardous materials, petroleum products, or waste sites also would be continued by Navy. There would be no additional impervious surfaces; therefore, there would not be an increase in runoff into the stormwater system relative to current conditions (except if the dikes were overtopped). Ponding of stormwater in low-lying areas would continue, as would settling of the sediments underlying the island, resulting in the potential for continued and possibly increased localized flooding. These impacts would be controlled through maintenance, such as by installing additional pumping capacity as needed, and would be not significant. Existing residual urban pollutants would continue to be discharged to the bay in stormwater runoff, resulting in not significant impacts on water quality. No dredging would be required. No impacts to water resources would occur under this alternative.

4.11 UTILITIES

Utility services addressed in this section are potable water and fire protection distribution, wastewater collection and treatment, stormwater collection, electrical and natural gas, telecommunications, and solid waste systems. Factors considered in determining whether an alternative would have significant impacts on utilities included the extent or degree to which its implementation would:

1) Increase utility demand to a level in excess of current or planned capacity for major utility system components, such as reservoirs, wastewater treatment plants, or landfills; or

2) Would cause the utility provider to violate applicable legal or regulatory environmental standards and requirements.

The impacts presented in this section have been evaluated against the baseline environmental conditions presented in Chapter 3. Navy recognizes that changes in the environmental conditions may have occurred in the period between the baseline years and the present. Although these changes may result in different, and in many cases, lesser impacts to certain resources, changes to the impact analysis based on any interim change in resource conditions is not appropriate.

Resolving utility issues related to ownership of certain portions of NSTI property and the utility infrastructure that crosses that property by Caltrans would be the responsibility of San Francisco.

4.11.1 Alternative 1

Under Alternative 1, a new wastewater treatment plant would be constructed, and a new utility corridor would be constructed around the perimeter of Treasure Island and under an east-west roadway in the center of the island. This utility corridor would carry storm and sanitary sewer mains, water mains, reclaimed water mains, and electricity, gas, and telecommunications lines. Because construction of these facilities is part of Alternative 1 reuse, impacts related to air quality, noise, and other environmental issues are described within various sections of chapters 4 and 5.

Not Significant Impacts

Impacts to utility systems, including potable water and fire protection distribution, wastewater collection and treatment, stormwater collection, energy, telecommunications, and solid waste, are considered not significant because they would not increase demand in excess of current or planned capacity nor would it cause utility providers to violate applicable regulations and standards or require unplanned construction of major additional infrastructure. These impacts are discussed in the sections below.

Potable water and fire protection distribution (Factors 1 and 2). Baseline domestic water usage was 0.96 MGD (3.6 million liters per day) (see Table 4-19). The average daily domestic water demand was estimated by applying per capita average water demands to the number of employees, residents, theme park visitors, hotel guests, and acres of sports fields anticipated under this alternative. The projected average daily domestic water demand for the reuse plan area at buildout is estimated to be

Table 4-19
Estimated Water and Wastewater Demand by Alternative

	Estimated Demand (MGD)	
	Potable Water	**Wastewater**
NSTI Capacity	2.0	2.0
Baseline Conditions[1]	0.96	0.77[2]
Alternative 1	2.1	1.5
Alternative 2	1.6	0.49
Alternative 3	0.92	0.55

[1] Source: DON 1997c
[2] Baseline wastewater demand was estimated by assuming that 80 percent of potable water consumed is discharged as wastewater.

2.1 MGD (7.9 million liters per day). Thus, the total change from baseline consumption under Alternative 1 would be an increase of approximately 1.04 MGD (3.9 million liters per day). Under this alternative, and in accordance with the Reuse Plan, the water supply system would be replaced with new pipes that could accommodate the increase. With implementation of water conservation measures and a new recycled wastewater system described in the Reuse Plan (San Francisco 1996e), the potable water demand would be reduced by an unknown amount.

The existing transmission pipeline attached to the SFOBB, with a capacity of approximately 2.5 MGD (9.5 million liters per day) (based on a pump rate of about 1,750 gallons [6,624 liters] per minute), and water supply from the San Francisco Water Department are adequate to accommodate the increase in demand (San Francisco Water Department 1998). EBMUD would continue to provide emergency backup service to the property (EBMUD 1997). This impact would not be significant because it would not require the construction of major additional infrastructure, such as a water treatment plant, and all necessary infrastructure improvements would be implemented as part of this alternative. No mitigation is proposed.

Wastewater collection and treatment (Factors 1 and 2). Assuming that 80 percent of potable water consumed (not including sports field irrigation) is discharged as wastewater, sewage generation with development of Alternative 1 would be approximately 1.5 MGD (5.7 million liters per day). This amount of wastewater would be within the capacity of the existing wastewater treatment plant on Treasure Island (approximately 2 MGD [9.5 million liters per day]) and also would be within the capacity of the new wastewater treatment plant. The wastewater collection system experiences inflow and infiltration problems (DON 1994b), and the increase may periodically exceed the capacity of the existing collection system. A replacement sewer system is planned under this alternative that could accommodate the new uses and would be required to meet applicable discharge standards. Therefore, the increase in sewage generation would not be significant, and no mitigation is proposed.

Stormwater collection (Factor 1). Development of the reuse plan area would replace undeveloped areas and undeveloped parcels with urban-type development. While sports fields and other open spaces would provide some pervious surfaces to absorb rainwater, the overall amount of impervious surface would increase by 37 acres, thereby increasing the amount of surface water runoff.

In accordance with the Reuse Plan, new stormwater collection infrastructure would be designed to accommodate projected increases in stormwater flow. Other systemwide improvements could include implementing alternative technologies, including use of wetlands to capture stormwater discharges. On-site storm drainage improvements would be required as part of development approvals. This impact would not be considered significant because infrastructure improvements implemented as part of this alternative would provide adequate capacity for the increased stormwater flow. No mitigation is proposed.

Electricity and natural gas (Factor 1). The steam system supplying heat to a number of buildings is dismantled, and buildings proposed for reuse that were previously heated by steam would require either the installation of individual boilers or connection to the natural gas infrastructure. Most of the electrical distribution system at NSTI was upgraded in the early 1980s. With some exceptions, the system is in adequate condition and is capable of providing service to existing load demands (San Francisco 1995b). The natural gas distribution system is in adequate condition for current needs.

The electrical and natural gas infrastructure would be modified or expanded to serve the individual needs of the future users of NSTI. As of October 1, 1998, the San Francisco PUC is purchasing natural gas through California consolidated purchase. Replacement of the steam plant with individual building heating systems would result in a more efficient use of natural gas. The capacity of the existing transmission line is adequate to supply future uses of the property. No mitigation is proposed.

Telecommunications (Factor 1). This alternative would require expanding telecommunication switch capacity to serve those portions of NSTI that were served by Navy telecommunications systems and expanding service to the residential areas. The switch would be designed with adequate capacity, or with the capability to expand, to serve future demands at NSTI. These actions would be phased in with reuse and individual developments. This impact would be considered not significant because all necessary infrastructure improvements would be implemented as part of this alternative. No mitigation is proposed.

Solid waste (Factor 1). It is estimated that proposed development under Alternative 1 would generate approximately 9,549 tons (8,665 metric tons) of solid waste per year, an average of 26 tons (29 metric tons) per day. This generation would be a decrease of about 5,691 tons (5,164 metric tons) per year of solid waste from the baseline generation of 15,240 tons (13,829 metric tons) per year presented in Section 3.11, which is equivalent to a decrease of 16 tons (18 metric tons) per day.

Solid waste from development under Alternative 1 would be delivered to the Davis Street Transfer Station and then transported to the Altamont Landfill. This landfill can accept a maximum of approximately 11,150 tons (10,117 metric tons) per day and will reach capacity in approximately 30 years. Based on an excess of approximately 5,000 tons in daily capacity, this solid waste disposal facility has ample capacity to accommodate the solid waste generated daily under Alternative 1. No new facilities would be required; therefore, the impact under Alternative 1 would not be significant. No mitigation is proposed.

Construction and demolition activities would increase the amount of solid waste generated at NSTI. This alternative would involve demolishing approximately 3,059,959 square feet (284,279 m^2) of NSTI structures, or about 70.5 percent of the built space. Such demolition would generate approximately 801,097 cubic yards (612,482 m^3) of solid waste, equivalent to approximately 657 percent of the solid waste generated at NSTI in 1993. Assuming that all the projected demolition occurs within two years after Navy disposal and that no reuse or recycling occurs, the increase in the average amount of demolition solid waste transported daily to the Altamont Landfill would be approximately 151 tons (137 metric tons). This amount would not significantly contribute to the daily tonnage received by the landfill. As development proceeds, the daily tonnage would decrease, due to the cessation of demolition activities and the lower waste generation rates for constructing buildings. No new solid waste disposal facilities would be required; therefore, the impact under Alternative 1 would not be significant, and no mitigation is proposed.

The solid waste generated under this alternative would need to be accommodated within San Francisco's effort to divert 50 percent of solid waste from landfills, as required by the California Integrated Waste Management Act, Cal. Pub. Res. Code § 40000 et seq. San Francisco would remain in compliance with this act by developing a solid waste management plan. This plan would contain programs and procedures to meet the requirements of this regulation and would emphasize reusing and recycling solid waste, particularly construction and demolition debris. At a minimum, the plan would include San Francisco's solid waste recycling and reuse programs. Construction and demolition contractors could be required to submit individual solid waste management plans consistent with the overall plan, detailing the types of waste to be generated, material handling procedures, and the methods of disposal. This is not considered a significant impact, and no mitigation is proposed.

4.11.2 Alternative 2

Under Alternative 2, a new wastewater treatment plant would be constructed. A new utility corridor would be constructed around the perimeter of Treasure Island under Alternative 2, but it would not extend to the perimeter adjacent to the proposed golf course. Because construction of these facilities is part of Alternative 2 reuse, impacts related to air quality, noise, and other environmental issues are described within various sections of chapters 4 and 5.

Not Significant Impacts

Potable water and fire protection distribution (Factor 1). The average daily demand for water under this alternative reuse development would be approximately 1.6 MGD (6.1 million liters per day), which would be an increase of approximately 0.64 MGD (2.4 million liters per day) over baseline demand at NSTI (Table 4-19). More than half of the projected potable water demand would be attributable to golf course development. As with Alternative 1, the water supply system would be replaced with new pipes that could accommodate the increased demand. Water supply capacity is available to meet demand for potable water and fire protection; therefore, the impact under Alternative 2 is not significant, and no mitigation is proposed.

Wastewater collection and treatment (Factor 1). The average daily wastewater flow generated by Alternative 2 would be approximately 0.49 MGD (1.8 million liters per day). This average daily flow would result in an increase of approximately 0.45 MGD (1.7 million liters per day) over baseline average daily flows. As with Alternative 1, a new wastewater treatment plant would be designed to accommodate reuse development. The wastewater collection system experiences inflow and infiltration problems. However, a replacement sewer system is planned under this alternative that could accommodate the new uses, and it would be required to meet applicable discharge standards. This impact would not be significant because it would not induce the construction of major additional infrastructure, and all necessary infrastructure improvements would be implemented as part of this alternative. No mitigation is proposed.

Stormwater collection (Factor 1). Although stormwater runoff in the northwest portion of Treasure Island (where the golf course is proposed) would decrease, the overall amount of paved surfaces at NSTI could increase by 12 acres under this alternative, so the volume of stormwater discharges also would increase. On-site storm drainage improvements would be required as part of development approvals, and the new stormwater collection infrastructure would be designed to accommodate projected increases in stormwater flow. This impact would not be considered significant, and no mitigation is proposed.

Electricity and natural gas (Factor 1). Under Alternative 2, the electrical and natural gas infrastructure would be modified or expanded to serve the individual needs of the future users of NSTI. Therefore, this would not be a significant impact. No mitigation is proposed.

Telecommunications (Factor 1). Alternative 2 would require expanding telecommunication switch capacity to serve those portions of NSTI that were served by Navy telecommunications systems and expanding service to the residential areas. As described under Alternative 1, these actions would be phased in with reuse and individual developments. This would not be a significant impact. No mitigation is proposed.

Solid waste (Factor 1). Alternative 2 would generate approximately 4,062 tons (3,686 metric tons) of solid waste per year, which is 11,178 tons (10,142 metric tons) per year less than baseline. These rates represent an average of 11 tons (10 metric tons) of solid waste generated per day, a decrease of 31 tons (28 metric tons) per day. This waste would be disposed of at the Altamont Landfill. This landfill could adequately accommodate solid waste generated under Alternative 2. No additional solid waste facilities would be required to be constructed. Impacts would not be significant, and no mitigation is proposed.

This alternative would have a greater impact on demolition waste management than Alternative 1 due to greater demolition of existing residential units on the northern part of Treasure Island. Demolition would create approximately 939,598 cubic yards (718,374 m^3) of solid waste, equal to about 771 percent of baseline generation. This alternative envisions the demolition of approximately 3,588,991 square feet (333,428 square m) of existing facilities, or about 82.7 percent of the built space. Under this alternative, there would be fewer facilities constructed than under Alternative 1 and less construction debris. As described for Alternative 1, San Francisco would remain in compliance with the California Integrated Waste Management Act by developing a solid waste management plan. No mitigation is proposed.

4.11.3 Alternative 3

Under Alternative 3, the new utility corridor would be limited to the south end of Treasure Island. Because construction of the corridor is part of Alternative 3 reuse, impacts related to air quality, noise, and other environmental issues are described within various sections of chapters 4 and 5. Where significant impact would occur, mitigation measures are identified.

Not Significant Impacts

Potable water and fire protection distribution (Factor 1). The average daily demand for water under this alternative reuse development would be approximately 0.92 MGD (3.5 million liters per day), which would be a decrease of approximately 0.04 MGD (0.15 million liters per day) over baseline demand at NSTI (Table 4-19). As with Alternative 1, system capacity could accommodate reuse development under Alternative 3; therefore, the impact under Alternative 3 would not be significant, and no mitigation is proposed.

Wastewater collection and treatment (Factor 1). The average daily wastewater flow generated by Alternative 3 would be approximately 0.55 MGD (2.1 million liters per day). This average daily flow would result in an increase of approximately 0.51 MGD (1.9 million liters per day) over baseline average daily flows. As with Alternative 1, system capacity could accommodate reuse development under Alternative 3. The wastewater collection system experiences inflow and infiltration problems. However, under this alternative a replacement sewer system is planned that could accommodate the new uses and would be required to meet applicable discharge standards. This impact would not be significant, and no mitigation is proposed.

Stormwater collection (Factor 1). The overall amount of paved surfaces at NSTI would remain roughly the same under this alternative because minimal new development is proposed, so the volume of stormwater discharges would remain roughly the same. San Francisco's assessment of the capacity and condition of the stormwater system found several potential problems. However, on-site storm drainage improvements would be required as part of development approvals, and any new stormwater collection infrastructure would be designed to accommodate projected stormwater flows. This impact would not be considered significant, and no mitigation is proposed.

Electricity and natural gas (Factor 1). Under Alternative 3, the increase in development and increase in energy efficiency likely would result in an increase in the annual amount of energy consumed. The electrical and natural gas infrastructure would be modified or expanded to serve the individual needs of the future users of NSTI. This would not be considered a significant impact. No mitigation is proposed.

Telecommunications (Factor 1). Alternative 3 would require expanding telecommunication switch capacity to serve those portions of NSTI that were served by Navy telecommunications systems and expanding service to the residential areas. As described under Alternative 1, these actions would be phased in with reuse and individual developments. This would not be considered a significant impact. No mitigation is proposed.

Solid waste (Factor 1). Solid waste generation under Alternative 3 would be approximately 4,050 tons (3,675 metric tons) of solid waste per year, or approximately 11 tons (10 metric tons) per day. This amount of solid waste would be about 11,190 tons (10,154 metric tons) of solid waste per year less than baseline generation, an average daily decrease of 31 tons (28 metric tons).

Solid waste generated under Alternative 3 would be disposed of at the Altamont Landfill. Development under this alternative would comply with San Francisco goals, policies, and programs, as applicable, designed to reduce the amount of solid waste disposed of at landfills by 50 percent by the year 2000.

Landfill space at the Altamont Landfill could adequately accommodate solid waste generated under Alternative 3. No additional solid waste facilities would be required to be constructed. Impacts would not be significant, and no mitigation is proposed.

Under Alternative 3, approximately 1,359,874 square feet (126,336 square m), or about 31 percent, of facilities would be demolished, yielding approximately 356,015 cubic yards (272,193 m^3) of solid waste. Such an amount would be equivalent to almost three times the amount of solid waste generated under baseline conditions. However, as described for under Alternative 1, San Francisco would remain in compliance with the California Integrated Waste Management Act by developing a solid waste management plan. This would not be a significant impact, and no mitigation is proposed.

4.11.4 No Action Alternative

Under the No Action Alternative, the utility systems would continue to be operated and maintained by the San Francisco PUC. Due to the reduction in employment and activity, the No Action Alternative would result in reduction in demand for all utilities over baseline conditions. Demand for potable water, sewage, electricity, telecommunications, and solid waste disposal would be reduced to levels necessary for caretaker status. Storm drain conditions would not change. The No Action Alternative would have no impact on either the capacity or function of on-site utility systems. No construction of any on-site utility systems would be required.

4.12 PUBLIC SERVICES

Public services addressed in this section are police protection, fire protection, and emergency services. The analysis of the need for additional police and emergency service facilities is based on the number of people to be served, whereas the need for additional fire protection facilities is based on the amount of development. Factors considered in determining whether an alternative would have significant impacts on public services included the extent or degree to which its implementation would:

1) Require or result in unplanned construction of new facilities that would cause changes or alterations to the physical environment; or
2) Result in a demand for public services or facilities that would exceed the available or planned capacity of those services.

The impacts presented in this section have been evaluated against the baseline environmental conditions presented in Chapter 3. Navy recognizes that changes in the environmental conditions may have occurred in the period between the baseline years and the present. Although these changes may result in different, and in many cases, lesser impacts to certain resources, changes to the impact analysis based on any interim change in resource conditions is not appropriate.

4.12.1 Alternative 1

Not Significant Impacts

As discussed below, impacts to fire protection, police protection, and emergency medical services are considered not significant. There is land available on NSTI to accommodate any new public service facilities, such as an ambulance company. In addition, funding for new facilities or services could be made available through a variety of mechanisms, such as development impact fees, special taxes, and other public revenues. Developing NSTI property would provide an expanded funding base for San Francisco. The method of funding for expanded public services would be determined during the permitting process for specific development projects, development agreements entered into between San Francisco and developers, or city development policy enactments.

Fire protection (Factors 1 and 2). Alternative 1 would increase demand on San Francisco Fire Department fire prevention and protection services because the amount of development on the site would increase. Individual development projects within the site would be required to meet existing San Francisco Fire Department regulations codified in the 1998 San Francisco Fire Code regarding construction materials and methods, emergency access, water mains, fire flow, fire hydrants, sprinkler systems, building setbacks, and other relevant regulations. Adherence to the San Francisco Fire Department regulations would reduce the risk of uncontrollable fire and increase the ability to efficiently provide fire protection services to the reuse plan area.

As discussed in Section 2.4.2, under this alternative two fire stations would be operated, a new station on Treasure Island and an existing station on Yerba Buena Island. Both stations would be necessary to maintain the department's response time goal of three minutes because the San Francisco Fire Department's nearest station (36 Bluxome Street) is approximately 4.5 miles (7 km) from NSTI (San Francisco Fire Department 1996). Both stations would be required for one engine company to respond to calls on-site if the other were occupied with an incident on the SFOBB. Because the two stations would meet the demands created by the new development on the site, there would be no significant impact related to provision of new or expanded facilities. Each station would require a staff of 1 officer and 3 fire fighters per shift, so that approximately 8 officers and approximately 30 fire fighters would be needed altogether. This would represent an approximate 2.5 percent increase in total department staff. The themed attraction developer would be responsible for contracting with the San Francisco Fire Department or another provider for services requiring additional personnel, if required; no new fire department facilities are anticipated for the themed attraction. No mitigation is proposed.

Police protection (Factors 1 and 2). Development of the site under Alternative 1 would increase the need for police emergency protection services. The need for police protection services in San Francisco is assessed on the basis of the number of people to be served. At buildout of Alternative 1, the San Francisco Police Department would need to add about 21 officers, 3 sergeants, and 2 patrol cars to cover the additional responsibility (San Francisco Police Department 1998). The added officers would represent an approximate 1.2 percent increase in departmental personnel. Increased police services would be provided to meet projected needs. Under this alternative, the provision of this personnel and equipment would be accommodated at existing facilities and at the new police station that would be constructed on Treasure Island. Because these planned facilities would meet the demands created by the new development on the site, there would be no significant impact related to the provision of police protection services.

The San Francisco Police Department would review future development plans for projects to evaluate visibility, lighting, circulation patterns, emergency access, building design, and other security issues. This would maximize their ability to respond to emergencies.

The themed attraction developer would be responsible for contracting with the San Francisco Police Department or another provider for services requiring additional personnel, if required. Impacts on the environment would be not significant, and no mitigation is proposed.

Emergency medical services (Factors 1 and 2). Alternative 1 would increase demand on local emergency medical services because the number of people living and working on the site and the amount of urban development on the site would increase. Under this alternative, the San Francisco Paramedic Division would locate one ambulance company at the new fire station on Treasure Island to serve the site. To meet this increased demand, the division would need to add eight paramedics to its staff (San Francisco Department of Public Health 1996, 1997). The themed attraction developer would be responsible for contracting with the paramedic division or another provider for services requiring additional personnel, if required; no new paramedic facilities are anticipated for the themed attraction. This impact is not significant, and no mitigation is proposed.

4.12.2 Alternative 2

Not Significant Impacts

Fire protection (Factors 1 and 2). Similar to Alternative 1, Alternative 2 would require operating two fire stations, a new station on Treasure Island and an existing station on Yerba Buena Island. Fire protection impacts would be the same as those described for Alternative 1. This impact would not be significant, and no mitigation is proposed.

Police protection (Factors 1 and 2). Similar to Alternative 1, Alternative 2 would construct a new police station on Treasure Island. Police protection impacts would be the same as those described for Alternative 1. This impact would not be significant, and no mitigation is proposed.

Emergency medical services (Factors 1 and 2). Similar to Alternative 1, Alternative 2 would involve the San Francisco Paramedic Division locating one ambulance company on Treasure Island to serve the site. Emergency medical service impacts would be the same as those described for Alternative 1. This impact would not be significant, and no mitigation is proposed.

4.12.3 Alternative 3

Not Significant Impacts

Fire protection (Factors 1 and 2). Under this alternative, San Francisco would not build a new fire station; the San Francisco Fire Department would operate the existing fire stations on Treasure Island and Yerba Buena Island. Although there would be less overall development, fire protection impacts would be similar to those described for Alternative 1. This impact would not be significant, and no mitigation is proposed.

Police protection (Factors 1 and 2). Under this alternative, a new police station would be constructed on Treasure Island to replace existing facilities, similar to Alternative 1. Although there would be fewer residents, employees, and visitors, police protection impacts would be similar to those described for Alternative 1. This impact would not be significant, and no mitigation is proposed.

Emergency medical services (Factors 1 and 2). Similar to Alternative 1, Alternative 3 would involve the San Francisco Paramedic Division locating one ambulance company on Treasure Island to serve the site. Although there would be less overall development, emergency medical service impacts would be similar to those described for Alternative 1. This impact would not be significant, and no mitigation is proposed.

4.12.4 No Action Alternative

The No Action Alternative would not result in additional demand for public services and would have no impact. Public services provided by San Francisco and private contractors under current Navy agreements and contracts would be expected to continue under caretaker status.

4.13 HAZARDOUS MATERIALS AND WASTE

Factors considered in determining whether an impact would have a significant impact related to hazardous materials and wastes included the extent or degree to which an alternative would:

1) Create a hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials, substances, or wastes; and

2) Create a hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment.

4.13.1 Alternative 1

Development of this alternative would result in a variety of residential, commercial, and recreation uses that, depending on the specific type of operation, could use hazardous materials or could generate hazardous wastes. Use and maintenance of residential landscaping might involve pesticides, fertilizers, and other household chemicals. Commercial land uses, such as activities associated with offices, film production, and retail and service industries, could require use of hazardous substances, such as fuels, solvents, corrosives, and flammables. Recreation uses likely would use pesticides and fertilizers in their operations.

Significant and Mitigable Impacts

Installation Restoration Program (IRP) (Factor 1). Construction activities at NSTI associated with future development of the housing unit area, including demolition of existing structures, may interfere with remedial actions under CERCLA.

Mitigation. The Navy is in the process of implementing various remedial actions at NSTI pursuant to and in accordance with the requirements of CERCLA and the NCP that will remove, manage, or isolate any potentially hazardous substances present on the property prior to conveyance. These remedial actions will ensure that human health and the environment will be protected based on continued residential use of the area. If the CERCLA remedy for a particular site includes land use controls, the acquiring entity or entities will be required to comply with the land use controls during construction or operations to ensure continued protection of human health and the environment. No CERCLA ROD has been signed for NSTI and therefore discussion of the specifics of possible land use controls would be premature. However, based on the approach used for closure of other nearby military installations, it is expected that land use controls would be managed according to a tiered process. The first tier would be a permitting process administered by San Francisco for disturbance of soil and groundwater. If necessary, a second tier would follow that would include further characterization and potentially a response action.

Subsequent redevelopment of the housing area which would involve demolition of existing structures and the grading and reconfiguring of the soil would likely be subject to land use controls on the property, including compliance with a City-administered soil management plan that would require soil and groundwater disturbance be permitted subject to proper characterization and management. In addition, deeds conveying the affected property will contain a notice that areas of the property not subject to remediation efforts (such as areas beneath existing foundations) may require additional characterization and possible response actions subject to appropriate regulatory oversight. Adherence to land use controls and regulatory requirements would mitigate potentially significant impacts to an acceptable level.

Not Significant Impacts

Construction

Asbestos Containing Material (ACM) (Factor 1). Demolition and/or renovation of existing structures would occur under Alternative 1. The exact number of structures to be demolished or renovated is not known. These activities have the potential to generate air emissions of asbestos from ACM. Any renovation or demolition would be subject to federal, state, and local requirements designed to minimize the potential for asbestos fiber releases and associated health risks. In order to be issued a permit to demolish or renovate (Cal. Health and Safety Code § 19827.5), the acquiring entity would be required to comply with applicable OSHA regulations and the Asbestos NESHAP, 40 C.F.R. Part 61, Subpart M (1998). The BAAQMD, which regulates airborne pollutants, would be notified 10 days prior to any demolition or abatement work. The acquiring entity would be required to employ a contractor trained and certified in the proper handling of ACM during demolition and renovation work. The acquiring entity also would be required to notify the local office of Cal OSHA prior to the start of work and would be required to register with the Office of the California Department of Health Services in Sacramento to obtain a Hazardous Waste Generation number. Adherence to these regulatory requirements would reduce potential impacts to a not significant level. No mitigation is proposed.

Lead Based Paint (LBP) (Factor 1). Demolition and/or renovation of existing structures would occur under Alternative 1. These activities have the potential to generate air emissions of lead-contaminated dust from LBP. LBP was in common use at NSTI and elsewhere prior to 1978. In accordance with DoD policy and the Residential Lead-based Paint Hazard Reduction Act of 1992 (42 U.S.C. § 4851 et seq.), housing at NSTI constructed prior to 1978 will be inspected for LBP hazards. The 200 housing units on Treasure Island proposed for reuse under this alternative were constructed in 1989 and therefore would not be subject to inspection. Of the 90 existing units on Yerba Buena Island proposed for residential reuse, 36 were constructed before 1960 and 54 were constructed in 1966. The units constructed in 1966 would be subject to inspection, and the units constructed before 1960 would be subject to inspection and abatement.

Any LBP hazards discovered in housing constructed prior to 1960 will be abated before the housing is conveyed out of federal ownership, unless the transferee intends to demolish the housing and assumes responsibility for the proper handling of and disposal of LBP waste during demolition. Results of LBP surveys and lead warning statements will be included in any contract for transfer or lease, and the acquiring entity or entities will assume responsibility for properly managing LBP on buildings, in accordance with all applicable federal, state, and local laws and regulations. Adherence to these regulatory requirements would reduce potential impacts to a not significant level. No mitigation is proposed.

<u>*Polychlorinated Biphenyls (PCBs)* (Factor 1).</u> PCB-containing equipment and PCB release sites have been identified at NSTI. PCB surveys by Navy at NSTI are ongoing, and all PCB release sites will be remediated prior to property conveyance. Navy will comply with the restrictions on the distribution of PCBs in commerce found in Section 6 of the Toxic Substances Control Act (TSCA) (15 U.S.C. § 2605), and implementing EPA regulations, including the requirement that it disclose the existence of known PCB-containing electrical equipment at the time of lease, transfer, or conveyance. The acquiring entities would be required to comply with all applicable provisions of TSCA and other applicable laws and regulations designed to minimize the risks posed by PCBs. Any new releases of PCBs to the environment would be subject to the cleanup requirements of TSCA, CERCLA, and state law. Adherence to these regulatory requirements would reduce potential impacts to a not significant level. No mitigation is proposed.

<u>*Storage tanks* (Factor 1).</u> All current tanks will be closed per approved closure plans. No significant impacts to construction or operation would result. Reuse activities associated with this alternative might require removing ASTs or USTs. Reused and new tanks installed by the acquiring entities would be subject to all applicable federal, state, and local regulations, including San Francisco's tank operation and removal ordinance, Chapter 21 of the San Francisco Municipal Code. These regulations include acceptable leak detection methods, spill and overfill protection, cathodic protection, secondary containment for hazardous waste tank systems and piping, liability insurance, and removal regulations. Adherence to these regulatory requirements would reduce potential impacts to a not significant level. No mitigation is proposed.

<u>*Installation Restoration Program (IRP)* (Factor 1).</u> Construction activities at NSTI that may interfere with remediation would be subject to institutional controls identified in CERCLA RODs. For any future project, the property owner must be informed of the past use so that remediation sites can be considered in the more detailed designs of future projects. Contractors would be informed of the past use and would be required to implement health and safety plans for work around remediation sites. Contractors would develop contingency plans to address contaminated soil and groundwater. If contaminated soil or groundwater is encountered, work would halt until the contaminated area of construction is remediated. Adherence to these institutional controls and regulatory requirements would reduce potential impacts to a not significant level. No mitigation is proposed.

<u>Operation</u>

<u>*Hazardous materials use and hazardous waste generation* (Factors 1 and 2).</u> Land use under Alternative 1 could use and generate small amounts of hazardous substances in commercial and recreation areas. The presence of these materials would create the potential for incidents of uncontrolled releases of hazardous materials to the environment through accidental spills, equipment failure, and other unanticipated events. However, no significant impacts related to hazardous materials use or hazardous waste generation are anticipated under Alternative 1 because federal, state, and

local laws require procedures and practices to ensure that hazardous materials are properly used, stored, and disposed of to prevent or minimize injury to human health and the environment.

Hazardous wastes generated by reuse operations would be handled and disposed of according to current regulatory guidelines. The acquiring entity and any tenants and business operators with which the acquiring entity establishes property usage agreements would be responsible for hazardous materials and waste management under federal, state, and local laws and regulations. Depending on the types and quantities of hazardous materials used, each acquiring entity would be subject to the requirements of the Emergency Planning and Community Right-to-Know Act (EPCRA) (42 U.S.C. § 11001 et seq.), the Resource Conservation and Recovery Act (RCRA) (42 U.S.C. § 6901 et seq.), and state hazardous materials business plans and risk management prevention programs for emergency planning review and community right-to-know inventory reporting. Adherence to these strict regulatory requirements would reduce potential impacts to a not significant level. No mitigation is proposed.

Radioactive materials (Factors 1 and 2). Under this alternative, small quantities of radioactive materials could be used for medical diagnosis and treatment in medical offices. Use and storage of such materials are tightly regulated under federal and state regulations. Adherence to these regulatory requirements would reduce potential impacts to a not significant level. No mitigation is proposed.

Medical/biohazardous wastes (Factors 1 and 2). Under this alternative, medical office tenants may produce small quantities of medical or biohazardous wastes. Handling, storing, and disposing of such wastes is strictly regulated by federal and state law, which also requires the establishment of medical or biohazardous material business plans and risk management prevention programs. Adherence to these regulatory requirements would reduce potential impacts to a not significant level. No mitigation is proposed.

Pesticides (Factors 1 and 2). Pesticide use may vary under this alternative but is expected to be minimal. All household and commercial use of pesticides would be controlled and regulated by the City Pesticide Management Program, Chapter 39 of the San Francisco Administrative Code, and applicable federal, state, and local regulations. Adherence to these regulatory requirements would reduce potential impacts to a not significant level. No mitigation is proposed.

4.13.2 Alternative 2

The total built area under this alternative would be somewhat less than that for Alternative 1, and combined employee and resident populations would be about two-thirds less than Alternative 1. Overall hazardous materials use and hazardous waste generation would be lower for this alternative than for Alternative 1 due to the lesser amount of planned residential, commercial, and other uses that may require the use of hazardous materials and that may generate hazardous wastes.

Significant and Mitigable Impacts

Installation Restoration Program (IRP) (Factor 1). Development of a golf course in the northern part of the island would involve demolition of existing structures and the grading and reconfiguring of the soil, which may interfere with remedial actions under CERCLA.

> *Mitigation.* The Navy is in the process of implementing various remedial actions at NSTI pursuant to and in accordance with the requirements of CERCLA and the NCP that will remove, manage, or isolate any potentially hazardous substances present on the property prior to conveyance. If a remedy for a particular site includes land use controls, the acquiring entity or entities will be required to comply with the land use controls during construction or operations to ensure continued protection of human health and the environment. Similar to Alternative 1, any work impacting the property under land use controls would comply with a City-administered soil management plan. Deeds conveying the affected areas will contain a notice that the property not subject to remediation efforts (such as areas beneath existing foundations) may require additional characterization and possible response actions subject to appropriate regulatory oversight. Therefore, compliance with all applicable federal, state, and local regulations in the handling and use of hazardous substances and adherence to land use controls would mitigate potentially significant impacts to an acceptable level.

Not Significant Impacts

Pesticides (Factors 1 and 2). Creating a golf course instead of housing in the northern part of NSTI would increase pesticide use in that location, as compared to other alternatives. Pesticide use is controlled by federal, state, and local regulations, including the San Francisco Pest Management Program. Moreover, the City and County of San Francisco would develop and implement a pesticide, herbicide, and fertilizer management plan. For example, golf course design and operation could include BMPs for the storage, handling, and use of pesticides or fertilizers. Golf course operation also could include integrated pest management to limit pesticide use. The use of BMPs and integrated pest management would be based on factors such as topography, proximity to water resources, mowing, and irrigation. BMPs would help to limit soil and water contamination from daily operations. Compliance with these regulations would minimize pesticide impacts to a not significant level, and no mitigation is proposed.

4.13.3 Alternative 3

The construction and operational impacts under this alternative would be similar to, but less than, those identified for Alternative 1. The total built area and combined employee and resident populations would be about half that of Alternative 1. Because the existing facilities would be used and no new housing would be constructed, impacts associated with this alternative would be less extensive than those anticipated for alternatives 1 and 2. Overall hazardous materials use and hazardous waste generation would be lower for this alternative than for Alternative 1 due to the lesser amount of planned residential and other uses that may require the use of hazardous materials and that may generate hazardous wastes.

Significant and Mitigable Impacts

Installation Restoration Program (IRP) (Factor 1). If subsequent redevelopment of the housing area involving demolition of existing structures and the grading and reconfiguring of the soil were to occur, it may interfere with remedial actions conducted under CERCLA.

> *Mitigation.* The Navy is in the process of implementing various remedial actions at NSTI pursuant to and in accordance with the requirements of CERCLA and the NCP that will remove, manage, or isolate any potentially hazardous substances present on the property prior to conveyance. If a remedy for a particular site includes land use controls, the acquiring entity or entities will be required to comply with the land use controls during construction or operations to ensure continued protection of human health and the environment. Similar to alternatives 1 and 2, any work impacting the property under land use controls would comply with a City-administered soil management plan. Deeds conveying the affected areas will contain a notice that the property not subject to remediation efforts (such as areas beneath existing foundations) may require additional characterization and possible response actions subject to appropriate regulatory oversight. Therefore, compliance with all applicable federal, state, and local regulations in the handling and use of hazardous substances and adherence to land use controls would mitigate potentially significant impacts to an acceptable level.

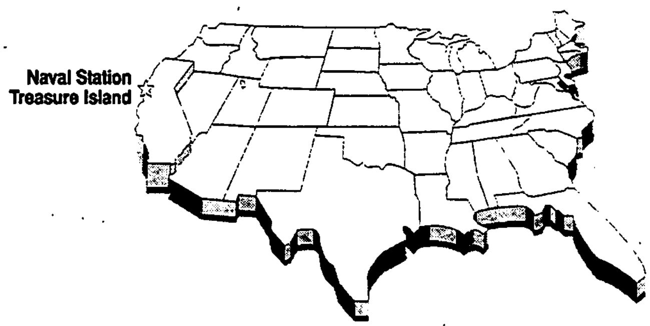
4.13.4 No Action Alternative

Under the No Action Alternative, Navy would retain ownership of NSTI property. Except for the existing leases, which would be allowed to expire, buildings would be vacated. The property would be under caretaker status, the area fenced off, buildings would be sealed and decommissioned, and no new construction would occur. Ongoing remediation efforts would continue at all restoration sites, which would be cleaned to standards consistent with the current program requirements.

All remediation efforts would be conducted in compliance with federal, state, and local regulations. However, under this alternative, NSTI would not be transferred for reuse, and therefore cleanup efforts would not be accelerated pursuant to the President's fast-track cleanup directive. The scope and timing of investigations and cleanup would reflect the caretaker status of the property and would proceed in accordance with the IRP. However, cleanup may slow without the possibility of reuse.

ACM left in existing buildings would not be impacted under caretaker status. Normal maintenance operation in buildings would not release ACM.

The No Action Alternative would have no impact to hazardous materials and environmental contamination on NSTI. Maintenance would be undertaken so that human health and the environment would be protected.



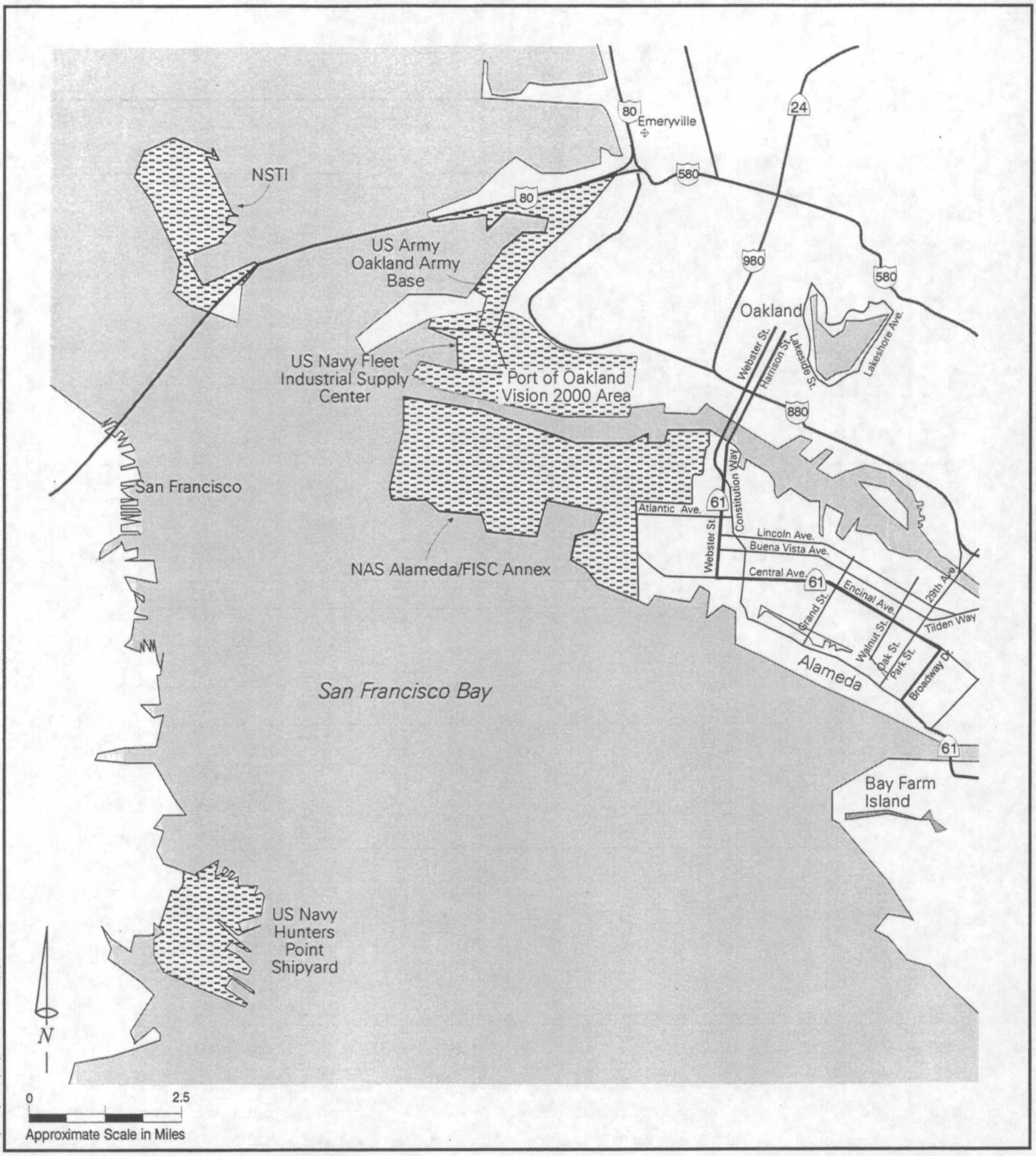
5. CUMULATIVE PROJECTS AND IMPACTS

CHAPTER 5
CUMULATIVE PROJECTS AND IMPACTS

Council on Environmental Quality (CEQ) regulations implementing NEPA require that the cumulative impacts of a proposed action be assessed (40 C.F.R. Parts 1500-1508). A cumulative impact is an "impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions" (40 C.F.R. § 1508.7). Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 C.F.R. § 1508.7).

CEQ's guidance for considering cumulative effects, states that NEPA documents "should compare the cumulative effects of multiple actions with appropriate national, regional, state, or community goals to determine whether the total effect is significant." (CEQ 1997). In this section, the region of influence for each resource is the same as described in Chapter 4. The area from which potential cumulative projects was drawn is the East and West bays of the San Francisco Bay Area, including Alameda and San Francisco counties. Because NSTI is an island and not immediately adjacent to lands where other projects are likely to occur, the area from which cumulative projects can reasonably be drawn is fairly limited (Alameda County and San Francisco). While it is likely that many other projects may occur in this area (i.e., construction projects, roadway modifications, dredging activities), most such projects would be either too small or too remote to have a meaningful interaction with the action. Cumulative projects considered below are either similar to the proposed action, large enough to have far reaching effects, or in proximity to the proposed action.

Other base disposal and reuse activities in Alameda and San Francisco counties are within this area and would be implemented concurrent with the NSTI reuse alternatives. Military bases near NSTI undergoing reuse activities and contributing to the cumulative analysis are shown on Figure 5-1. Other major nonmilitary projects in the more immediate vicinity of the project that could contribute to local cumulative impacts are considered. These nonmilitary projects include replacement of the SFOBB east span and waterfront development in San Francisco.



In addition to NSTI, there are four other Navy bases in the East and West Bay undergoing closure and reuse: NAS Alameda/FISC Annex, Fleet and Industrial Supply Center, Oakland, Oakland Army Base, and Hunters Point Naval Shipyard.

LEGEND:

Military Sites Undergoing Civilian Reuse

Regional Base Closures and Reuse in the San Francisco Bay Area

San Francisco Bay Area, California

Figure 5-1

5.1 CUMULATIVE ASSUMPTIONS

CEQ's cumulative effects guidance sets out several different methods to determine the significance of cumulative effects, such as checklists, modeling, forecasting, and economic impact assessment where changes in employment, income and population are assessed (CEQ 1997). This EIS uses a checklist methodology of resource areas and regional projects within the ROI to determine cumulative effects on ecosystems and it uses economic analysis and forecasting for determining socioeconomic and infrastructure impacts. ABAG *Projections '96* has been used for this cumulative analysis in addition to cumulative impacts analyses reported for other projects in close proximity to NSTI listed in Figure 5-1. ABAG *Projections '96* data is presented in Section 3.3, Socioeconomics. The cumulative traffic impact analysis was based on the regional MTC transportation model, which included land use forecasts developed by ABAG for year 2010. Year 2010 is a frequently used benchmark established by regional transportation agencies such as the MTC for long-range planning of regional transportation improvements.

5.2 BAY AREA BASE CLOSURES

Concurrent ongoing and proposed specific base closures and reuse relatively near NSTI could reasonably contribute to cumulative impacts; these projects are identified in Table 5-1 and their locations are shown on Figure 5-1. A joint Final NEPA/CEQA EIS/EIR was completed for the Fleet and Industrial Supply Center, Oakland (FISCO) in August 1997. A Final EIS/EIR for the Disposal and Reuse of Hunters Point Shipyard in San Francisco was issued in March 2000. A Final EIS for the Naval Air Station (NAS) Alameda/Fleet and Industrial Supply Center (FISC) Annex in Alameda was issued in October 1999. The Draft EIS for the Oakland Army Base was issued in September 1999. Several additional projects have occurred as a result of Bay Area base closure decisions and subsequent property transfer requests. Two of these projects—the Job Corps facility and the Coast Guard Station expansion—are on Treasure Island and Yerba Buena Island, respectively.

Job Corps

DOL uses buildings 363, 364, 365, and 368 on Treasure Island for its federal Job Corps training facility. DOL was granted approximately 36 acres (14 ha) of Treasure Island, with improvements thereon, for the continued use of this training facility. The Job Corps trains underprivileged youth to serve local communities. The Job Corps at Treasure Island would provide approximately 300 new jobs and maintain a student enrollment of approximately 850 new students. Approximately 750 new students would reside on Treasure Island but approximately 100 students and all staff are expected to commute (DOL 1997). Job Corps trainees could provide restaurant service, medical, and technical support services to island uses, employees, visitors, and residents.

Coast Guard

The US Coast Guard has been granted approximately 11 acres (4 ha) on Yerba Buena Island, with improvements thereon, to support its continuing operations. No additional employees or residents are expected as a result of the expansion of the station area. An additional 11 acres of submerged lands is scheduled to transfer to Coast Guard in 2002.

Table 5-1
Regional Base Closure and Reuse

Project	Proximity to NSTI	Project Size	Historical Uses	Project Description	Completion Date of Planning Document	Projected Project Completion Date	Historical Population	Projected Future Population	Net Population Change
NAS Alameda/FISC Annex	3 to 5 miles	2,842 acres	Military	Reuse property for civilian residential and nonresidential purposes.	October 1999 (Final EIS)	2020	5,736	21,939-28,097	22,361-16,203
FISCO/Port of Oakland, Vision 2000 Program	3 to 5 miles	541 acres of FISC Oakland; additional acres for joint intermodal terminal facility	Port and rail facilities- military and civilian	Change to civilian use and provide major port and rail expansion. Site will become one of the 3 largest port facilities in the western United States.	August 1997 (Final EIS/EIR)	2010	0	0	0
Oakland Army Base	3 to 3.5 miles	422 acres	Military	Currently unknown civilian reuse of base.	September 1999 (Draft EIS)	2010	0	0	0
Hunters Point Naval Shipyard	6 miles	936 acres	Military	Mixed-use	October 1998 (Revised Draft EIS/EIR); March 2000 (Final EIS)	2025	39	1,050-3,900	1,011-3,861

USFWS Wildlife Refuge

As part of the closure of NAS Alameda/FISC Annex, the USFWS was granted 900 acres (362 ha) of dry and submerged land for use as part of the San Francisco Bay National Wildlife Refuge Complex. The refuge provides habitat and nesting for the only substantial colony of California least tern in the San Francisco Bay.

5.3 NONMILITARY PROJECTS

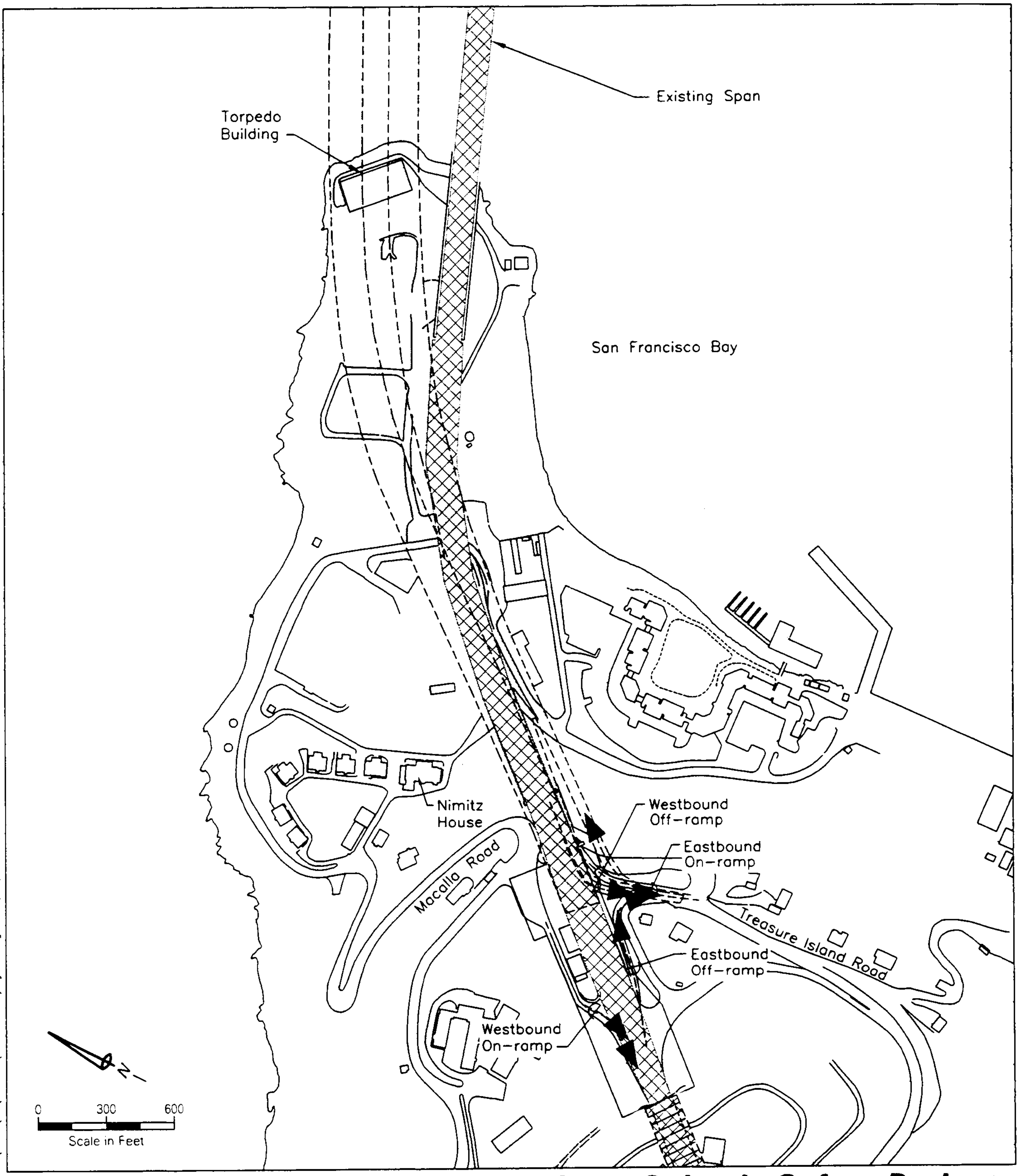
Two concurrent local nonmilitary developments or plans are considered in this analysis. The first is the seismic upgrade of the SFOBB, including replacing the east span. The second development is implementing the San Francisco Waterfront Land Use Plan. A Final EIR for the Waterfront Land Use Plan was certified in 1996.

SFOBB

The SFOBB East Spans Seismic Safety Project involves construction of a new east span and dismantling of the existing east span of the SFOBB. A Final EIS for the SFOBB east span project was published in May 2001 and a ROD was issued on July 11, 2001. Replacement Alternative N-6 with the self-anchored suspension bridge design option was selected as the final replacement alternative (FHWA 2001). The replacement bridge would be located north of the existing east span (see Figure 5-2). This alternative involves constructing a new bridge with two side-by-side decks, each consisting of five lanes. Approximately 1,968 feet (600 m) east of the tunnel on Yerba Buena Island, the alignment would transition from a double-deck viaduct to two parallel structures. The western limit of construction for the selected replacement alternative is the eastern portal of the Yerba Buena Island tunnel; however, the limits of work may extend to the western approach of the west span in San Francisco due to project-related traffic controls and signage. Parts of the Yerba Buena Island east viaduct would be retrofitted, modified, partially demolished, and reconstructed. SFOBB construction is scheduled to be completed in 2007. Most of the reuse improvements on Yerba Buena Island, according to the initial Draft Reuse Plan phasing schedule, is to occur between 2007 and 2011, after the new SFOBB east span is completed. While little or no concurrent construction between the two projects is expected, the effects of constructing the two projects sequentially on Yerba Buena Island may still result in cumulatively significant impacts. Please refer to the EIS for the east spans realignment for discussion of impacts of that project (see http://www.dot.ca.gov/dist4/sfobb/sfobbfeis.htm). It is estimated that the project will begin by 2004 and be completed within seven years.

San Francisco Waterfront Land Use Plan

The San Francisco Waterfront Plan (Waterfront Plan) covers a project area of about 730 acres (296 ha) along approximately 7.5 miles (12 km) of waterfront (April 1996). The overarching goal of the Waterfront Plan is "reuniting the City with its waterfront" through implementation of the Waterfront Plan. Implementing the Waterfront Plan could add as many as 460 persons to the population of San Francisco or less than 1 percent of the projected city population growth of 50,700 in the period 1995 to 2010. As many as 230 new housing units and as many as 6,850 new jobs could be added in the Waterfront Plan project area (San Francisco 1997b). The Waterfront Plan takes into



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The replacement alternative for the new east span of the SFOBB is north of the existing span. Existing Yerba Buena Island on- and off-ramps are also shown. The redesign of new ramps on Yerba Buena Island is the subject of continuing discussion between Caltrans and the City and County of San Francisco.

Source: Caltrans 1993, 1994

SFOBB East Span Seismic Safety Project - Replacment Alternative for New East Span

Figure 5-2

account a number of other projects that are in various stages of development. These projects include:

- Mid-Embarcadero Roadway/Terminal Separator Structure-This project entailed replacing the Embarcadero Freeway with a surface roadway. It was completed in 2000.
- Hyde Street Harbor and Pier 45-This project involved adding berths and constructing support facilities for the fishing community.
- Ferry Building Renovation-The Port is currently restoring the historic Ferry Building, adding retail and offices space.
- Downtown Ferry Terminal Improvements-These improvements would renovate the ferry landings/terminals at Pier ½ and Pier 1.
- Cogeneration Facility-The California Energy Commission has recommended construction of a cogeneration plant.
- Rincon Hill Area-A 450,000 square feet sports and recreation and entertainment facility is being considered for the base of Rincon Hill, South of Market Street.
- China Basin Mixed Use Opportunity Area-The development of the Pacific Bell baseball park for the San Francisco Giants has been completed.
- China Basin Channel/Mission Bay-Development in the Mission Bay and China Basin Channel areas contemplates potential construction of 2000 multi-family residences and up to 400,000 square feet of an urban entertainment retail area. This project is out of the Waterfront Plan area.

5.4 ANALYSIS OF CUMULATIVE IMPACTS

The cumulative impacts of these concurrent developments and the Waterfront Plan, as well as the military base closure and reuse projects presented in Table 5-1, are discussed by resource area below. Implementing Navy disposal action, as essentially a transfer of title, would not contribute to any direct cumulative impacts to any of the resources analyzed in this document. Therefore, the discussion of cumulative impacts for each resource does not include further analysis of Navy disposal. Relevant significant and not mitigable, significant and mitigable, and not significant cumulative impacts associated with NSTI reuse are described below.

Land Use

All three reuse alternatives would result in developing additional urban uses, and all three would entail a significant change in the historic land use of NSTI. The most basic impact is the change from military use to combined residential, public and light industrial. The change in land use is similar in nature to the other base closures in the area, although the reuse alternatives for NSTI have a smaller percentage industrial component. Combined with future regional development, each reuse alternative would contribute to a cumulative increase in urbanization of the area and the region. The increased urbanization process within the region would be required to proceed in accordance with land use plans of the local communities, as each community's General Plan governs all future development within its jurisdictional boundaries. These plans contain policies, implementation measures, and programs designed to ensure that future development would be compatible with existing and planned land uses, would proceed in an orderly fashion, and would contribute to community goals and objectives for land use. After implementation of mitigation to amend the general plans and zoning codes of San Francisco, the inconsistency with local land use plans would be eliminated. Each of the three reuse alternatives would be a component of this region-wide process, and would be implemented in a manner that would not create land use conflicts with existing or future land uses in the area. Therefore, the reuse alternatives' incremental contribution to regional cumulative land use impacts would not be significant.

The incremental contribution of implementing the reuse alternatives in combination with reconstructing the SFOBB east span could result in cumulatively significant land use impacts. The selected SFOBB replacement alternative would result in planned land uses for redevelopment of Yerba Buena Island, in accordance with the Draft Reuse Plan. This is a conceptual plan for NSTI reuse; therefore, the assumption is that the SFOBB construction would not significantly affect implementation of the overall reuse concept on Yerba Buena Island.

Construction-generated traffic and noise impacts as a result of reuse activities and SFOBB construction could have adverse localized effects on both the physical desirability and economic viability of land uses on Yerba Buena Island and Treasure Island. For example, construction activities could adversely affect noise-sensitive film industry activities on Treasure Island in Buildings 2 and 3. Planned reuse of Yerba Buena Island would be affected, particularly the planned residential and public development proposed in areas near the new SFOBB alignment and subject to noise and traffic of construction. (Please see the SFOBB east spans realignment EIS at http://www.dot.ca.gov/dist4/sfobb/sfobbfeis.htm for a discussion of impacts of the SFOBB project.) These localized cumulative land use impacts, however, would be temporary. In addition, the magnitude of cumulative impact is difficult to predict since it would depend on the timing of construction for reuse and the SFOBB. Separate construction periods for reuse and the SFOBB, as currently planned, would result in a lesser impact at any one time but extended over a longer period, while concurrent construction would result in greater impact at any one time.

Visual Resources

The viewsheds of San Francisco Bay consist of a diverse combination of urban development, industrial, military, and natural landscape. In combination with other similar projects, the cumulative visual effect would result in a movement away from a military and industrial theme and toward a mixed use development. Each of the reuse alternatives would result in a change from a military base and associated structures to a mixed-use development. The development would be similar in character to the surrounding development in San Francisco, including reuse of regional Navy bases, converted wharves and warehouses, Ferry terminals and marinas, and would not contribute to significant cumulative effects on visual resources.

Development under each of the NSTI reuse alternatives would not substantially alter existing views; however, these changes, in conjunction with replacing the SFOBB, could result in cumulative impacts to the visual character of Yerba Buena Island. The proposed parallel roadway alignment for the SFOBB would result in a much wider bridge footprint and a greater number of support piers

(Caltrans and FHWA 2001). The effect of physical changes from reuse and SFOBB construction, as well as changes in shadow and lighting, may substantially alter the visual character of the eastern side of the island from viewpoints on both Treasure and Yerba Buena islands over time.

Realignment of the SFOBB east span would also require removing woodland vegetation from Yerba Buena Island, including oak woodland habitat near Macalla Road and eucalyptus groves on the east side of Yerba Buena Island. Future reuse of Yerba Buena Island, which includes reuse in previously developed portions of the island, combined with a new east span structure, could cumulatively alter the visual character of NSTI. According to the SFOBB east spans project EIS, all vegetation removed on Yerba Buena Island would be replanted with native or drought tolerant species (Caltrans and FHWA 2001).

Visual impacts from construction activities, such as from construction staging or lighting, would be short-term. These impacts, combined with potential construction impacts from reuse construction, would not be cumulatively significant, following mitigation by project construction requirements.

Socioeconomics

The three reuse alternatives would contribute to regional employment and population growth. However, housing at NSTI under alternatives 1 and 2 would be comparable to the projected increase in jobs and therefore would be consistent with San Francisco population and housing growth forecasts. Population and employment increases projected under the three reuse alternatives would be in addition to those provided by the Job Corps (which will add approximately 1,150 trainees and teaching and administrative employees to the local population on Treasure Island). The incremental contribution of NSTI jobs would not have a significant effect on regional housing demand under these two reuse alternatives and would therefore not be cumulatively considerable. While SFOBB construction could temporarily displace occupants of NSTI housing, this impact would be short-term and would not cumulatively add to effects from reuse activities on Yerba Buena Island because these two projects would not be expected to be constructed simultaneously.

Under Alternative 2, Treasure Island housing would be eliminated over time. As a result, any employment growth could result in increased long-term housing demand. The need for affordable housing to Bay Area workers is a region-wide policy issue of great importance. However, an imbalance of housing to jobs is not a physical environmental effect, but rather an economic and social issue. The physical impacts of NSTI's housing supply shortfall under Alternative 2 relate primarily to project-induced and cumulative traffic and air quality effects, discussed below.

There is a possibility that the uses contemplated for Treasure Island reuse will overlap or compete with proposed developments in the San Francisco waterfront area, such as the Rincon Hill Arena project and proposals for an entertainment retail center in the China Basin/Mission Bay Plan area. However, planning of these entertainment areas will be coordinated by San Francisco and such similar developments are not expected to cause adverse socio-economic impacts. Similar projects may provide additional jobs to San Francisco residents and any additional housing demand created by Rincon Hill and China Basin entertainment complexes would be covered by potential development of 2,000 multi-family residences in the China Basin project. (San Francisco 1997b)

Cultural Resources

The demolition of historic military properties as part of disposal and reuse of Bay Area Navy installations, including Point Molate, NAS Alameda, Mare Island Naval Shipyard, and Hunters Point Naval Shipyard, could result in a significant cumulative impact to cultural resources. Although transfer of each of these installations has been or will be accompanied by a MOA between Navy and SHPO, as well as other invited signatories, to ensure protection of historic resources, demolition of historic properties may occur at some installations (i.e., Mare Island Naval Shipyard) under certain reuse alternatives. While alternatives 1 and 3 would preserve historic structures on NSTI and would not contribute to a cumulative impact, Alternative 2 would add to the significant cumulative impact through demolition of historic buildings and structures at NSTI.

The selected alignment for the SFOBB east span could also adversely affect significant cultural resources on both Navy and non-Navy land on Yerba Buena Island. For example, noise and vibration generated by driving piles and other construction activities, as well as potential interruptions in access and construction staging, could affect historic Yerba Buena Island buildings, such as the Senior Officers Quarters Historic District (see Figure 3-4 in Section 3.4). The area east of Quarters 1 may be used for construction staging as part of the SFOBB east span project. Construction activities for the SFOBB would substantially reduce Navy and the reuse entity's ability to maintain these historic properties. Permanent visual, shadow, noise, and vibration effects resulting from construction of the SFOBB alignment also could result in deterioration of historic characteristics of structures on Yerba Buena Island. In addition, physical disturbances, such as possible demolition and adaptation of cultural resources in the area, could result in an irreversible loss of finite resources.

Known prehistoric archeological resources are confined to non-Navy land on Yerba Buena Island. Cumulative significant impacts to these resources could occur under all three reuse alternatives in conjunction with the proposed SFOBB east span project if subsurface archeological remains are discovered during Reuse Plan implementation (see Figure 3-3 in Section 3.4).

Mitigation for these cumulative impacts would involve prohibiting demolition of significant historic buildings and structures, the adaptive reuse of these properties following the Secretary of the Interior's *Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings*, and the appropriate treatment of historic and prehistoric archeology, should such resources be uncovered. In addition, resources should be documented before destruction in accordance with HABS/HAER standards.

Transportation

The traffic analysis presented in Section 4.5 calculated traffic to be generated by each of the reuse alternatives for NSTI, added it to projected traffic from probable future development, distributed the trips to the transportation network, and then determined the impact. The analysis assumed full buildout of the alternatives in year 2010 and other future development. The future conditions in the traffic analysis takes into account both the growth expected at NSTI and the growth forecast for San Francisco and the Bay Area, and is therefore inherently cumulative.

Cumulative impacts would occur under the three reuse alternatives related to traffic congestion and an increased demand for parking at ferry terminals that would provide service to and from NSTI. Jack London Square/Alameda Main Street and Golden Gate Fields are outside the San Francisco's jurisdiction. The significance of this cumulative impact at these locations is not known with certainty; it would be a localized impact. Potential specific mitigation measures also cannot be known at this time. Given the lack of specific development projections and the high degree of uncertainty concerning possible effects on the environment, potential cumulative impacts attributable to increased traffic congestion and parking demand at East Bay ferry terminals are considered too speculative to evaluate.

FHWA and Caltrans have approved the proposal to construct a new east span of the SFOBB and to dismantle the existing structure (FHWA 2001). The replacement alternative provides for the bridge to use structures separating the double-decked lanes into two parallel structures. The eastbound on-ramp on the east side of the YBI tunnel would be rebuilt to current standards under the SFOBB project; however, the reconstruction and funding for other new ramps on Yerba Buena Island was not included as part of the SFOBB project. Future improvements to the other ramps are possible under a separate project because MTC has made them eligible for future funding in the Regional Transportation Plan. The replacement alternative would maintain existing vehicular capacity and may improve traffic operations, but congestion is unlikely to be effected (Caltrans and FHWA 2001). The SFOBB is projected to be at capacity during peak hours in the future, whether or not reuse occurs. The three reuse alternatives would contribute a small increment to projected traffic volumes, which would be considered cumulatively significant. The contribution to cumulative congestion attributable to the reuse alternatives could be reduced by implementing the TDM measures identified in Section 4.5, Transportation.

Construction-related traffic would be noticeable on island roadways and could contribute to localized congestion. Construction of the SFOBB would also require temporary closure of roadways on Yerba Buena Island such as Macalla Road and Southgate Road. The area east of Quarters 1 may be used for construction staging as part of the SFOBB east span project. Cumulative impacts would be reduced to the extent that, as initially planned, the scheduled SFOBB construction and reuse construction activities on Yerba Buena Island would occur at different times. Additional mitigation for this cumulative impact would involve providing alternate routes and regulating on-island roadways with flaggers, particularly along Macalla Road, to ensure there are no conflicts with oversized construction vehicles using these roads. Other measures that could be undertaken include requiring that construction contractors limit the number of vehicles on the islands, including construction worker private vehicles, and providing alternative means of transportation for construction workers. Project-specific proposals also should include temporary replacement parking, as necessary.

Air Quality

The geographic scope of impacts on air quality is the San Francisco Bay Area Air Basin. Falling within the boundaries of the San Francisco Bay Area Air Basin are stationary source emissions within the project boundaries, mobile source emission from people travelling to and from the project site, and power plant emissions from facilities providing power to the project area. All of these affect the concentration of pollutants at locations distant from the site within the basin. Cumulative air quality concerns include potential local carbon monoxide effects due to cumulative traffic congestion and cumulative regional emissions of ozone and PM_{10} precursors. As indicated in the modeling analysis presented in Section 4.6, there is little potential for cumulatively adverse carbon monoxide impacts along the SFOBB, even when traffic volumes reach that facility's capacity limits.

Ozone precursor and PM_{10} precursor emissions associated with NSTI reuse (see Table 4-16 in Section 4.6) would be added to similar emissions from other sources of regional growth and would contribute to cumulative air pollutant emissions in the Bay Area. Cumulative air quality issues in the San Francisco Bay Area are being addressed through regional air quality plans such as the BAAQMD 1997 Clean Air Plan. The projected changes in land use and vehicle travel patterns from the reuse alternatives would not have significant cumulative air quality impacts because projected reuse-generated emissions would not alter existing air quality conditions. Implementing TDM measures discussed in Section 4.5, Transportation, can reduce cumulative air quality impacts.

NSTI reuse, if undertaken concurrently with the proposed SFOBB east span project, could contribute to significant cumulative construction and demolition air quality impacts from dust and vehicle emissions. The primary emission-generating activities would be new construction, roadway reconstruction, and demolition. This cumulative impact can be mitigated by implementing the dust control measures during construction and demolition activities described in Section 4.6, Air Quality.

Noise

Noise conditions are inherently rather localized, since noise levels decrease rather quickly with increasing distance from the noise source. Very few noise sources are audible at distances beyond two miles. Cumulative noise effects are limited primarily to local effects of cumulative traffic conditions or combined effects of adjacent development. The isolation of NSTI from other urban development in the Bay Area limits cumulative noise issues to traffic noise along the SFOBB corridor. The contribution of traffic associated with reuse to this cumulative traffic noise would be inconsequential. The reuse alternatives could, however, introduce new uses to the areas near the SFOBB, which could be affected by noise associated with the proposed SFOBB east span project.

The EIS for the SFOBB east span project projects that peak-noise levels generated by that project would exceed noise abatement criteria for sensitive land uses but would generally be less than existing traffic noise levels due to use of steel-reinforced concrete and a side-by-side roadway design (rather than stacked decks). Reuse activities in combination with SFOBB construction activities may result in temporary cumulative noise impacts. Reuse construction on Yerba Buena Island is planned to occur following SFOBB construction, which would minimize concurrent cumulative impacts. Cumulative impacts may nevertheless occur as a result of sequential construction noise events. Reuse construction noise would be minimized through limitations on activities, as described in Section 4-7. Caltrans will work with the property recipient regarding appropriate noise abatement approaches on Yerba Buena Island to mitigate noise impacts from SFOBB construction (Caltrans and FHWA 2001).

Biological Resources

NSTI reuse would not combine with other projects to result in cumulatively significant effects on biological resources. Effects on biological resources from reuse of NSTI are limited to mudflats and eelgrass habitat at NSTI and dredging for the proposed marina. These NSTI project effects, however, would not incrementally add to effects of other projects to cause significant impacts to wetlands, shoreline, or other marine biological resources.

In regard to long-term population growth and secondary impacts on land use and wetlands, the proposed NSTI reuse would not substantially increase urbanization or population pressure in the ROI and therefore would not contribute to such increases that could cause alterations of wetland or other sensitive habitats. In regard to the cumulative effects of the reuse of NSTI and those of other Bay Area base closures identified in the ROI, the disposal and reuse of NAS Alameda/FISC Alameda or the reuse of the Presidio Army Base in San Francisco are expected to have beneficial impacts on marine and biological resources and therefore there would be no significant cumulative adverse effects from the base closures.

Implementing either alternative 1 or 2, in combination with replacing the SFOBB east span, could result in cumulative impacts to mudflat habitat along Yerba Buena Island, including potential impacts to eelgrass beds. Mitigation proposed for the reuse alternatives would prohibit access to these mudflats. SFOBB replacement would be expected to result in the loss of a small area of eelgrass at the Oakland touchdown. Mitigation proposed for this loss includes a conceptual mitigation plan to replace affected mudflat habitat and eelgrass beds (Caltrans and FHWA 2001). Therefore cumulative impacts from the proposed reuse of NSTI and construction of SFOBB would not be significant.

Proposed dredging activity under NSTI reuse could incrementally add to cumulative impacts to nonsensitive marine species and habitats both locally, as a result of the SFOBB east span project, and in other portions of the Bay proposed for dredging, such as the Oakland Inner Harbor as part of the reuse of FISCO. Impacts of dredging are generally short-term, limited in area, and mitigable at the source on a project-specific basis through compliance with stringent federal and state regulatory requirements. In addition, the small amount of potential dredging at NSTI is contemplated by and consistent with the Bay Area Long Term Management Strategy (LTMS) (COE 2000b). Prior to testing for sediment, disposal locations would be determined and LTMS permitting agencies would be advised of and appropriate permits would be applied for. Therefore, the contributions of the reuse alternatives to cumulative impacts to marine species and habitats from dredging would not be significant.

Geology and Soils

NSTI is in an active seismic area subject to periodic earthquakes. Each of the three reuse alternatives, in conjunction with future development at closing Navy bases in the Bay Area and in the region, would expose more persons to earthquake hazards. Other geotechnical constraints, such as liquefaction and lateral spreading, might present hazards in specific areas. In addition, vegetation removal would present potential erosion conditions. Adherence to recommendations contained in site-specific geotechnical reports, building codes, and grading ordinances, and implementation of region-wise erosion control plans would avoid significant cumulative impacts because exposure would not result in risks higher than commonly accepted in northern California.

Water Resources

Possible cumulative impacts from development of structures in coastal areas include impacts to changes in flooding patterns, loss of sand, and loss of near shore areas. Land use and drainage patterns would not be substantially altered and no impacts are expected in these areas. The possible cumulative water resources impacts of NSTI reuse and other projects in the ROI would be the impacts of dredging and dredge material disposal on the water quality of central San Francisco Bay. Significant cumulative impacts could occur as a result of concurrent dredging activities for NSTI reuse, SFOBB replacement, FISCO reuse, and the Vision 2000 program for deepening Oakland Inner Harbor; however, impacts of dredging are generally short-term, limited in area, and mitigable at the source on a project-by-project basis through compliance with applicable regulatory requirements, including the LTMS. The impacts of dredging at NSTI are expected to be consistent with the federal and State established plan for dredged spoils in the San Francisco Bay. Depending on the selected disposal option, dredge material disposal may have cumulatively significant water quality impacts. Compliance with applicable dredge disposal priorities, which favor reusing sediments on land, would minimize this impact to a not significant level.

Utilities

Each of the three reuse alternatives in combination with cumulative regional development would result in increased demand for utilities in San Francisco (potable water and fire protection distribution, wastewater collection and treatment, stormwater collection, electrical and natural gas, telecommunications, and solid waste systems). The increased regional demand could require construction of new and enlarged utility systems and upgrading of existing utility infrastructure. Construction of utility systems and facilities to serve regional growth and development would proceed under the direction of the utility providers. Each of the reuse alternatives would include development of utility systems and facilities that would adequately serve the reuse development without impacting services in the region and therefore would not conflict with general plans of San Francisco or neighboring municipalities. Therefore, there would be no cumulative impact.

Realignment of the SFOBB east span, in accordance with the east spans realignment alternative selected by FHWA its July 11, 2001 ROD, would require demolishing the old east span and would remove a Navy potable water line through which EBMUD provides emergency backup service to NSTI. If this line were not replaced, the site would lose this emergency backup service. This is a significant and mitigable cumulative impact resulting from the SFOBB project. Mitigation would involve replacing the potable water pipeline along the new east span of the SFOBB to provide emergency backup service to Treasure Island and Yerba Buena Island.

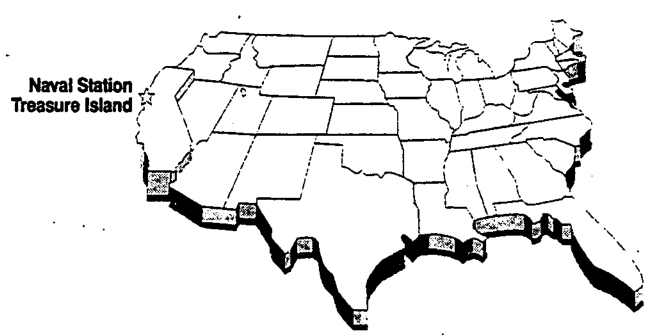
Public Services

The three reuse alternatives, in conjunction with other area development on Treasure and Yerba Buena Islands and in the region, would result in a cumulative increase in demand for public services. However, development restrictions would not allow for construction of a reuse alternative until all public services can be provided. Further, reuse of NSTI would not result in the realignment or development of other projects in the ROI, which may further increase the demand for public services. Therefore, NSTI reuse development under any of the three reuse alternatives would not have an incremental cumulative impact on the ability to provide these services.

Hazardous Materials and Waste

Similar reuse of contaminated properties (i.e., military base closures) could result in a greater potential for exposure of the public to hazardous substances. Implementing various remedial actions pursuant to CERCLA at each of these sites to remove, manage, or isolate any potentially hazardous substances prior to conveyance would minimize the potential for a significant cumulative impact. Acquiring entities at these installations have been required to comply with Land Use Controls during construction or operations to ensure continued protection of human health and the environment and deeds conveying these properties have, in some cases, contained notices that areas not subject to remediation efforts (such as under foundations) may require additional characterization and possible response actions to appropriate regulatory oversight.

Implementation of the three reuse alternatives would result in the use of hazardous materials and the generation of hazardous wastes. Such waste would also be generated by other Navy bases in the Bay Area that are closing, the Job Corps facility on Treasure Island, and possible waterfront development in San Francisco. Future development at NSTI and other installations would be required to comply with all applicable federal, state, and local regulations governing the use, storage, transfer, and disposal of hazardous materials, as well as the measures stated above. Therefore, development at NSTI under any of the three reuse alternatives would not incrementally contribute to a cumulative impact from hazardous materials or waste. In addition, while remediation at NSTI and other Bay Area Navy bases being conducted in accordance with CERCLA is not subject to NEPA, it would nevertheless have a beneficial impact on the regions environment.



6. OTHER CONSIDERATIONS REQUIRED BY NEPA

CHAPTER 6
OTHER CONSIDERATIONS REQUIRED BY NEPA

This section addresses other topics required by NEPA in an EIS. These include: an analysis of significant unavoidable adverse impacts to the environment; the relationship between local short-term uses of the environment and long-term productivity; the identification of any irreversible and irretrievable commitments of resources; a discussion of Executive Order 12898 (Environmental Justice, 59 Fed. Reg. 7629 [Feb. 11, 1994]); and a discussion of Executive Order 13045 (Environmental Health and Safety Risks to Children, 62 Fed. Reg. 19885 [April 21, 1997]).

6.1 SIGNIFICANT UNAVOIDABLE ADVERSE EFFECTS

An EIS must describe any significant unavoidable impacts for which either no mitigation or only partial mitigation is feasible. The impact analysis presented in Chapters 4 and 5 of this EIS indicates that significant unavoidable adverse effects would occur only under Alternative 2 and the No Action Alternative.

Implementation of Alternative 2 would require demolition of Building 2 and Building 3 on Treasure Island, buildings eligible for listing on the NRHP. This would result in the loss of significant historic resources. This adverse effect can be lessened or reduced by recording the affected resources to the standards of HABS/HAER, but recordation would not eliminate the adverse effect caused by the demolition of NRHP-eligible resources.

6.2 RELATIONSHIP BETWEEN SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

NEPA requires that an EIS consider the relationship between short-term uses of the environment and the maintenance and enhancement of long-term productivity. The analysis covers the extent to which both disposal and reuse involve tradeoffs between short-term environmental gains at the expense of long-term losses, or vice versa.

Because most of NSTI has been developed, redevelopment under any of the three reuse alternatives would do little to negatively affect the short or long-term productivity of the area. Disposal and subsequent reuse of NSTI could however result in both short- and long-term environmental gains that would enhance productivity of the site. Improved vehicle access and increased public recreation opportunities along the San Francisco Bay shoreline under reuse would be both a short- and long-term gain. Long-term gains would also include increases in jobs and housing and generation of sufficient revenue to support the investment necessary to upgrade the Treasure Island perimeter dike and undertake other facility ground improvements that would improve the seismic safety of the site.

Disposal and reuse of NSTI could result in potential environmental impacts, as identified in Chapters 4 and 5 of this EIS, such as those to transportation, biological resources, and water resources. If not mitigated, these impacts could result in decreases in the long-term productivity of the environment on NSTI. Disposal and subsequent reuse of NSTI could also reduce long-term military productivity, should there be a future need for these facilities.

6.3 IRREVERSIBLE OR IRRETRIEVABLE COMMITMENT OF RESOURCES

NEPA requires that an EIS analyze the extent to which the proposed alternatives' primary and secondary effects would commit nonrenewable resources to uses that future generations probably would be unable to reverse. Disposal and subsequent reuse of Navy property and structures would constitute an irreversible or irretrievable commitment of military resources and land uses. Disposal of the property and development under any of the reuse alternatives would permanently preclude future military use, should such a need arise in the future.

Reuse of the property would provide for responsible long-term resource management and, except for Alternative 2, makes no irreversible resource commitments. Alternative 2 would include the planned removal of historic Building 2 and Building 3 on Treasure Island, which would be a permanent loss of these resources.

Implementing any of the reuse alternatives would require short-term commitments of both renewable and nonrenewable energy and material resources for demolition, and commitments for construction of the structures and infrastructure improvements required for implementation. These developments would represent a very large commitment of financial resources but would not represent an irreversible commitment of NSTI surplus property to the proposed uses.

Equipment used during construction and demolition activities at NSTI would consume petroleum fuels, such as gasoline and diesel. This temporary energy expenditure would occur over the short term and would not substantially increase the overall demand for electricity or natural gas. Implementing the reuse alternatives would consume large volumes of nonrenewable fossil fuel as a result of increased trips generated by automobile, bus, and ferry trips. Additional energy would also be expended at the wastewater treatment plant. The increase in development likely would result in an increase in the annual amount of energy consumed in heating, air conditioning, and other operational uses of energy. Infrastructure improvements would be provided corresponding to each new phase of development to meet increased demand.

6.4 ENVIRONMENTAL JUSTICE

This section summarizes potential impacts from disposal and reuse of the site on issues of environmental justice, as mandated by Executive Order 12898. The Executive Order on "Federal

Actions to Address Environmental Justice in Minority Populations and Low-income Populations," issued on February, 11, 1994, requires that the impacts of federal actions on minority and low-income populations be addressed to avoid disproportionate adverse impacts to these groups.

On April 21, 1995, the Secretary of Defense submitted a formal environmental justice strategy and implementation plan to the EPA. To comply with the executive order, this EIS included the following actions:

- Gathering economic, racial, and demographic information generated from the 1990 census to identify areas of low-income and high minority populations in San Francisco and Alameda counties that would potentially be exposed to project impacts;
- Assessing the disposal and reuse alternatives for disproportionate impacts resulting from on-site activities associated with reuse of project site facilities; and
- Encouraging community participation and input through public hearings and meetings and extensive public notification, which are described in Chapter 1 and Chapter 6 of this document.

6.4.1 Criteria and Methodology

Under the provisions of Executive Order 12898, "[m]itigation measures outlined or analyzed in an environmental assessment, environmental impact statement, or record of decision, whenever feasible, should address significant and adverse environmental effects of proposed federal actions on minority communities and low-income communities." Relative to environmental justice, a significant impact would occur if the proposed action, including the consideration of all resource issues, would result in disproportionate negative effects on minority populations or low-income populations. To determine whether low-income or minority populations could be disproportionately affected by the disposal and reuse of NSTI, low-income and minority populations were first identified. Potential effects in areas where these populations live were next identified and these effects were further evaluated to determine if there would be any disproportionate effect. The area considered in this analysis includes NSTI, San Francisco, and Alameda County.

6.4.2 Minority Population and Low-income Population Overview

As presented in Table 6-1, the population of NSTI in 1990 was predominately White (65 percent), as it was in the Bay Area region (69 percent), in San Francisco (54 percent), and in Alameda County (60 percent). The residential population of NSTI in 1990 was entirely composed of military personnel and their dependents. The non-white (i.e., racial minority) population at NSTI was roughly proportional to the region and in the surrounding communities of San Francisco and Alameda counties.

Median income of NSTI households in 1990 was about 16 percent lower than the San Francisco median income and 25 percent lower than Alameda County's (see Table 3-7 in Section 3.3,

Table 6-1
Racial Composition of NSTI, Bay Area, San Francisco, and Alameda County Population, 1980 and 1990

Location		White		Black		American Indian		Asian Pacific Islander		Other		Hispanic	
		1980	1990	1980	1990	1980	1990	1980	1990	1980	1990	1980	1990
NSTI	#	2,565	2,911	321	718	44	38	794	702	211	140	293	389
	%	65.2	64.6	8.2	1.6	1.1	0.8	20.2	15.5	5.4	3.1	7.4	8.6
Bay Area	#	3,940,084	4,147,971	466,274	533,188	37,187	39,035	462,890	919,279	273,349	384,104	632,640	899,243
	%	76.0	68.9	9.0	8.9	0.7	0.6	8.9	15.3	5.3	6.4	12.2	14.9
San Francisco	#	395,081	388,341	86,414	78,931	3,548	3,354	147,426	211,000	46,505	42,333	83,373	96,640
	%	58.2	53.6	12.7	10.9	0.5	0.5	21.7	29.1	6.8	5.8	12.3	13.3
Alameda County	#	740,612	762,557	203,612	229,316	7,446	8,354	85,899	193,282	67,810	85,673	129,962	176,017
	%	67.0	59.6	18.4	17.9	0.6	0.7	7.8	15.1	6.1	6.8	11.8	13.8

Note: Percentages may not add to 100 due to rounding. Hispanic origin is for information only and is not considered a separate race. Persons of Hispanic origin are also counted under one of the other race columns.

Source: US Department of Commerce 1980, 1990.

Socioeconomics). At the time of the 1990 census approximately 9 percent of all households in the Bay Area, 13 percent of San Francisco households, and 11 percent of Alameda County households were below the poverty level.

6.4.3 Potential Disproportionate Impacts to Minority Populations or Low-income Populations

The potentially affected area adjacent to NSTI does not include disproportionately high minority populations or low-income populations compared to adjacent communities. In addition, impacts under any of the three reuse alternatives would either not be significant or, if significant, would be adequately mitigated such that no disproportionate impact would be expected to occur. As a result, none of the reuse alternatives appear likely to have a disproportionate impact on minority populations or low-income populations to warrant further analysis beyond that conducted in each of the environmental issue areas.

Socioeconomic impacts under any of the reuse alternatives would not occur or would not be considered significant if they were to occur, and would not be expected to disproportionately affect minority or low income populations (see Section 4.3). Each of the reuse alternatives would create a net gain in employment, and jobs that would be provided at the theme park should offer opportunities for minority populations and low-income populations. In addition, TIHDI's Notice of Interest for NSTI includes homeless housing, support services, employment, and economic development programs and services for the homeless, which would benefit low-income populations.

The No Action Alternative would have a significant and not mitigable socioeconomic impact, as summarized in Section 6.1. Under the No Action Alternative, caretaker status of NSTI would result in a substantial decrease in employment. While most of the lost jobs would be from relocation of military personnel to other installations, some would be local, civilian support jobs. There is no indication that the workers in these jobs would be predominantly minority or low-income and therefore would be disproportionately affected.

The significant and not mitigable environmental impact of reuse alternative 2 identified in this EIS would affect cultural resources, as summarized in Section 6.1. Under Alternative 2, the loss of buildings 2 and 3 on Treasure Island, which meet the criteria for listing in the National Register, would have localized impacts at the individual sites and potential cumulative regional impacts throughout the Bay Area, but would not have a disproportionate adverse impact on minority populations or low-income populations.

There may be potentially significant but mitigable on-site health and safety implications resulting from exposure to environmental contamination/hazardous materials on the site during reuse (as discussed in Section 4.13), but there is no indication that any such potential impacts would disproportionately accrue to minority populations or low-income populations. Health and safety impact concerns could also extend off-site under the reuse alternatives. Air quality is one such issue, but given that any such impacts would be experienced on a regional basis, no disproportionate impacts to minority populations or low-income populations are anticipated.

Some unauthorized fishing has historically taken place at Pier 23 and other areas on NSTI; it is possible that under the reuse plan public access for fishing would be broadened. Under these circumstances, therefore, minority or low-income populations that conduct subsistence fishing might gain increased access to fishing opportunities. It should be noted that California EPA has identified regarding possible health consequences from eating fish caught in San Francisco Bay, due to high levels of the following chemicals: mercury, dioxins, PCBs, DDT, dieldrin, and chlordane (California EPA 2001). It is recommended that under the selected alternative, warning signs in a variety of languages be posted in areas that provide public access for fishing to warn of possible health risks from consuming fish caught in San Francisco Bay.

6.5 PROTECTION OF CHILDREN FROM ENVIRONMENTAL HEALTH RISKS

On April 17, 1997 Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks, was signed by President Clinton. The policy of the Executive Order states that:

"A growing body of scientific knowledge demonstrates that children may suffer disproportionately from environmental health risks and safety risks. These risks arise because: children's neurological, immunological, digestive, and other bodily systems are still developing; children eat more food, drink more fluids, and breathe more air in proportion to their body weights than adults; children's size and weight may diminish their protection from standard safety features; and children's behavior patterns may make them more susceptible to accidents because they are less able to protect themselves. Therefore, to the extent permitted by law and appropriate, and consistent with the agency's mission, each federal agency:

- shall make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children; and
- ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks.

Under the definitions provided in Executive Order 13045, covered regulatory actions included those that may be "economically significant" (under Executive Order 12866) and "concern an environmental health risk or safety risk that an agency has reason to believe may disproportionately affect children." Further, Executive Order 13045 defines "environmental health risks and safety risks" [to] "mean risks to health and safety that are attributable to products or substances that the child is likely to come in contact with or ingest (such as the air we breathe, the food we eat, the water we drink or use for recreation, the soil we live on, and the products we use or are exposed to)."

Environmental health risks and safety risks mean risks to health or to safety that are attributable to products or substances that the child is likely to come into contact with or to ingest. To comply with Executive Order 13045, this section of the EIS discusses child-specific environmental health risk and safety risk issues.

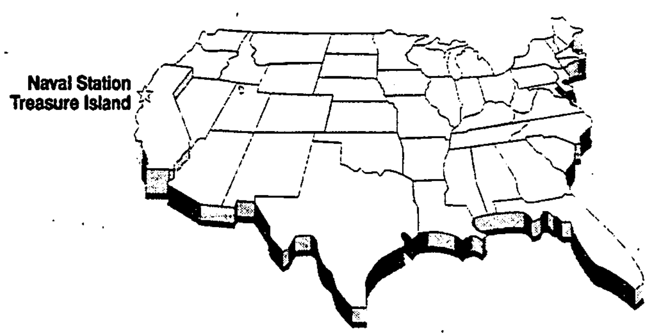
Areas on NSTI where there may be potentially high concentrations of children include schools, day care centers, and residential areas. The only school on NSTI is the Treasure Island Elementary School, leased to the San Francisco Unified School District by Navy. This school has a capacity of up to a total of 1,000 students, kindergarten through 5th grade. The former child development center in Building 502 closed in mid-1997.

Under Alternatives 1 and 3, the existing school would be retained and a child development center would re-occupy Building 502. Residential development is also proposed under the three reuse alternatives. The largest amount of residential development would occur under Alternatives 1 and 3, where new residences would be developed in the northern half of Treasure Island and on Yerba Buena Island. Under Alternative 2, residences would only be developed on Yerba Buena Island.

There may be potentially significant, but mitigable on-site health and safety impacts resulting from exposure to environmental contamination/hazardous materials on the site during reuse (as discussed in Section 4.13), but there is no indication that any such potential impacts would disproportionately accrue to children. Areas of contamination are scheduled for cleanup prior to reuse, with restoration to levels appropriate to subsequent reuse categories. Children would not be expected to be exposed during the cleanup process.

Health and safety impact concerns could also extend off-site with the reuse alternatives. Air quality impacts (as discussed in Section 4.6) are a potential concern, but given that any such impacts would be of a small incremental level and would be experienced on a regional basis rather than a localized basis, no disproportionate impacts to children are anticipated.

As explained for environmental justice, a significant and not mitigable impact to historic resources under Alternative 2 would not disproportionately affect children. For all significant and mitigable environmental impacts identified in this EIS, implementing identified mitigation measures as described would ensure that no disproportionate impacts to environmental health risks and/or safety risks to children would occur under any of the reuse alternatives.



7. CONSULTATION AND COORDINATION

CHAPTER 7
CONSULTATION AND COORDINATION

7.1 AGENCY COORDINATION

The federal, state, and local agencies were consulted prior to and during the preparation of this EIS. Agencies were notified of plans for closure and disposal activities by mail; by scheduled public meetings associated with the reuse planning process; by publication of an NOI announcing preparation of a Draft EIS; and by a public scoping meeting. The agencies' viewpoints were solicited with regard to activities and issues within their jurisdiction. The agencies contacted are listed below.

7.1.1 Federal Agencies

Department of Defense
- US Navy, Naval Station Treasure Island
- US Navy, Engineering Field Activity West
- US Navy, Public Works Center San Francisco Bay

Department of the Interior
- US Fish and Wildlife Service

Department of Labor

Department of Transportation
- US Coast Guard

7.1.2 State Agencies

State Department of Transportation
- Caltrans – District 4

State Lands Commission

State Office of Historic Preservation

7.1.3 Regional Agencies

San Francisco Bay Conservation and Development Commission

East Bay Municipal Utilities District

San Francisco Bay Regional Water Quality Control Board

7.1.4 City and County of San Francisco

California Academy of Science

Department of Public Health

Department of Public Works
Fire Department
Hetch Hetchy Water and Power
Municipal Railway (Muni)
Office of Emergency Services
Planning Department
Police Department
Public Utilities Commission
Solid Waste Management Program
Treasure Island Homeless Development Initiative
Unified School District
Water Department

7.1.5 Public Service Agencies

Altamont Landfill and Resource Recovery Facility

7.2 PUBLIC COORDINATION

Extensive public coordination has occurred, and will continue to occur, as part of this proposed action. Public involvement opportunities to date include the reuse planning process and the EIS notification process, including the NOI/NOP and one scoping meeting. Sections 7.2.1 through 7.2.3 provide more information on the outreach activities and responses associated with the reuse planning process, NOI/NOP process, and public scoping meeting, respectively. Additionally, a public hearing was held on the Draft EIS.

7.2.1 Reuse Planning Process

The process to convert NSTI to civilian use involved an extensive reuse planning and community outreach process San Francisco, acting as the LRA, prepared the reuse plan for NSTI. During the reuse planning process, efforts were made to encourage and incorporate public participation and communication into the reuse planning process. Community outreach and involvement were critical components in the reuse plan development. This process provided several opportunities to inform agencies and the public of the availability of NSTI assets and to identify potential commercial interests in surplus military property.

A major portion of the outreach process involved conducting community workshops to define issues and to discuss reuse opportunities. In addition to the community workshops, all meetings of the Treasure Island Citizens Reuse Committee (CRC) were open to the public.

Based on the community outreach program and public interest, the LRA Draft Reuse Plan was prepared. Section 2.2 of this EIS summarizes the alternatives development and screening process leading to the final selection of a reuse plan.

7.2.2 Notice of Intent/Notice of Preparation to Prepare the Draft EIS/EIR

The entire scoping process was conducted jointly with San Francisco, as a joint document under NEPA and CEQA. In conformance with the requirements of NEPA, an NOI to prepare a Draft

EIS/EIR for the Disposal and Reuse of NSTI was published by Navy in the *Federal Register* and distributed to potentially interested parties, including regulatory agencies, local jurisdictions, service providers, and others. (A copy of the NOI/NOP is provided in Appendix D.) Likewise, in conformance with the requirements of CEQA, an NOP to prepare Draft EIS/EIR for the Disposal and Reuse of NSTI was distributed by San Francisco to similar groups. The NOI and NOP mailing list is included in Chapter 10.

7.2.3 Public Scoping Meeting

An additional effort to inform the public and to solicit input on the scope of the EIS/EIR from affected jurisdictions, interested members of the public, and organized groups was afforded through a public scoping meeting. The NSTI public scoping meeting was held on October 9, 1996 at the San Francisco Ferry Building. Presentations were given by representatives of Navy and San Francisco. An opportunity for oral comments followed. Six oral comments were received; no written comments were received at the meeting. Twelve written comments on the NOI/NOP were received via mail.

A complete transcript of the public scoping meeting is available from:

Timarie Seneca
US Navy, Southwest Division
BRAC Operations Office
1230 Columbia Street, Suite 1100
San Diego, California 92101-8517
(619) 532-0991

The environmental issues raised in the six oral and twelve written comments were considered during the course of the impact assessment process, and are briefly summarized below.

<u>Oral Comment Summary</u>

Public Involvement Process

A commentor expressed concern about the public comment period and notice for the reuse plan, as well as inadequate discussion of alternatives in the reuse plan.

Land Use

A request was made for analysis of different land use intensities. It was suggested that a new alternative that reuses housing without the addition of any new housing be analyzed. Expanding the marina facilities and increasing parking areas with the marina were proposed.

Socioeconomics

Issues were raised regarding the inclusion of the concerns of veterans, as well as inclusion of economic, educational, and technical programs in the reuse plan.

Biological Resources

It was recommended that wildlife habitat and wildlife viewing opportunities be included on Treasure Island and Yerba Buena Island. The addition of wetlands was a suggested alternative. A point was made that such opportunities also had economic, recreational, and sewage treatment benefits.

Public Plans, Policies, and Regulatory Agencies

Concerns were expressed for the consistency of development with the Tidelands Trust and the Sustainable San Francisco Plan.

Written Comment Summary

Alternatives

- The Department of the Navy was encouraged to examine a full range of alternatives that maximize environmental quality and that incorporate pollution prevention and conservation measures.
- A clear definition of the region of influence and an unambiguous statement of purpose and need must be provided.
- Navy is required to identify both a Preferred Alternative and an Environmentally Preferable Alternative.
- The public should be able to participate in the refinement of the reuse alternatives during the EIS process beyond the minimum requirements of NEPA.
- The reuse plan developed by the Urban Lands Institute should be considered as an alternative.
- The Reduced Impact Alternative should include reuse of the existing housing on Treasure Island, as well as 300 units on Yerba Buena Island for affordable housing.

Land Use

- The Coast Guard's current and future land use on Yerba Buena Island should be considered in the EIS.
- Existing and projected land use conflicts should be identified, and the EIS should offer opportunities that would reduce them.
- A portion of the lands comprising Naval Station Treasure Island remains subject to the common law tidelands trust. Upon the cessation of military use, the State Lands Commission has agreed to allow San Francisco the continued use of existing buildings located on public trust lands (submerged and tidal lands) for their intended use for an appropriate period, even where the uses do not fall within the range of public trust uses.
- Designate the shoreline promenade, referred to in the Reuse Plan, as part of the planned 400-mile recreational Bay Trail system.

- It appears that the reuse alternatives involve land uses that are not permitted on public trust land; the impacts of non-compliance with the Tidelands Trust Doctrine must be fully detailed and mitigated.

Visual Resources and Urban Design

- The EIS should identify potential aesthetic effects particularly on the Bay shoreline.

Socioeconomics and Population

- Nearby residential areas should be documented and the potential effects on these areas fully analyzed.
- The effects on minority communities should be analyzed in accordance with Executive Order 12898, and opportunities for minority input should be presented in the EIS process.
- The potential for providing affordable housing on Treasure Island and parts of Yerba Buena Island by reusing existing housing should be considered.

Cultural Resources

- In accordance with the National Historic Preservation Act, the EIS should identify all historic, prehistoric and archaeological resources at Treasure Island and provision made to protect any cultural resources encountered during project implementation.
- The reuse plan should incorporate systematic inventory and recording of historic resources, protection of historic resources, and cultural resource reviews.

Transportation

- Transportation across the Bay Bridge and over the Bay by ferry should be given particular consideration.
- Transportation effects should be taken in context with other transit changes in the region.
- Direct and indirect effects of reuse, which should be fully documented in the EIS, might result in increased transit if additional employment is generated.
- A complete traffic study was recommended to identify the impacts to State Route 80. A request was made that the impact of additional traffic on the Bay Bridge, the inadequate design of the existing on/off ramps, and the need for restricted accessibility to pedestrians be addressed.
- Give consideration to safe pedestrian and bicycle access to Treasure Island, particularly shoreline areas.

Air Quality

- Information regarding the current air quality attainment status and the generation of criteria pollutants under the proposed alternatives should be analyzed with respect to attainment status.

Noise

- Noise contours should be used to show existing and proposed noise levels. These should be overlain by known sensitive areas to indicate potential impacts.

Biological Resources

- It is important that the project's effects on protected and endangered species and critical fisheries habitat be addressed.
- A wildlife habitat component should be included in the alternatives.
- Consideration should be given to the preservation of remnant indigenous biological communities on Yerba Buena Island in land use planning.
- The current reuse options should be more ecologically sustainable; the current options use large amounts of natural resources and generate waste.
- Seabird nesting sites for MBTA-protected species at NSTI, such as the western gull, the Brandt's cormorant, pelagic cormorant, and the black oystercatcher, should be protected from development or other disturbance.

Water Resources

- The proposed development and reuse should not hinder the Department of Defense's obligation to meet water quality standards.
- The EIS should address NPDES requirements, effects on Waters of the United States, baseline conditions, and dredging.

Public Services and Utilities

- The EIS should discuss and encourage pollution prevention and energy conservation opportunities.
- The net effect on regional water supplies and demand as a result of the project's actions should be surveyed.
- Water conservation measures should be encouraged.

Hazardous Materials and Waste

- Areas of existing and historical hazardous waste storage, disposal, and contamination should be identified and any plans to disturb these areas discussed. Of particular concern was the potential for adverse health effects on people who consume fish caught in the bay.
- The EIS should ensure that the reuse alternatives do not expose people to contaminated soils on Treasure Island. Petroleum pollution on Treasure Island poses a threat to both surface and ground water, and the stormwater conveyance system conducts the contaminants throughout the island and into the Bay. It was suggested as mitigation that stormwater be treated prior to its return to the Bay.

Public Plans, Policies, and Regulatory Agencies

- The regional planning efforts of the City, County, and Port of San Francisco and the City and Port of Oakland should be taken into account to avoid potential future conflicts.

Cumulative Effects

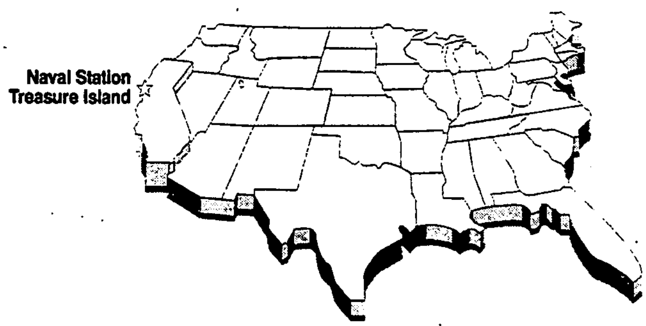
- The EIS should contain a discussion of the cumulative effects of the project on its region of influence. The discussion should describe the incremental impact of an alternative in conjunction with past, current, and future projects. Special consideration should be given to disposal and reuse of Hunter's Point Naval Shipyard, Mare Island, Alameda NAS, the Fleet and Industrial Supply Center, the Oakland Naval Medical Center, and the Oakland Army Base, as well as long term plans for the San Francisco waterfront.

Impacts

- Significance criteria and baseline conditions should be clearly defined.
- There are more environmental effects to consider than those identified on the Initial Study checklist.

Mitigation

- Potential mitigation measures should be identified in the draft EIS that would provide the basis for specific commitments that would be carried forward through the rest of the environmental process.



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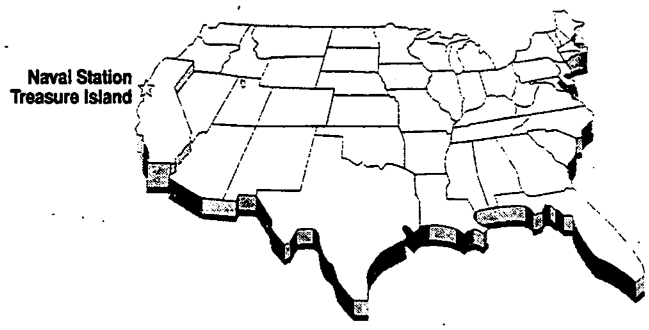

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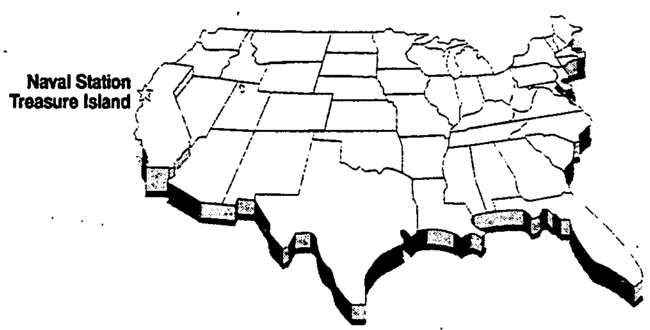

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California State Lands Commission
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Association of Bay Area Governments
Bay Area Air Quality Management District
Bay Area Rapid Transit District Planning
California Regional Water Quality Control Board
East Bay Municipal Utility District
Metropolitan Transportation Commission

COUNTY AGENCIES

City and County of San Francisco, Planning Department
County of Alameda, Planning Department
County of Marin, Planning Department
County of San Mateo, Planning Department
County of Solano, Planning Department

OTHER INTEREST GROUPS

Arc Ecology
Bay Area Council
Citizens for a Better Environment
Citizens Reuse Committee
Coalition for San Francisco Neighborhoods
Coalition on Homelessness
Golden Gate Audubon Society
Landmarks Preservation Advisory Board
Natural Resources Defense Council

Nature Conservancy
San Franciscans for Reasonable Growth
San Francisco Bay Chapter of the Sierra Club
San Francisco Planning & Urban Research Association
San Francisco Tomorrow
Save San Francisco Bay Association
Social Economic Environmental Justice Advocates
Sustainable San Francisco
Technical Advisory Committee
Treasure Island Development Authority
Treasure Island Homeless Development Initiative
Treasure Island Firefighters
Treasure Island Yacht Club

LIBRARIES

Colorado State University Libraries
Document Library, City Library – San Francisco Civic Center
Government Publications Department, San Francisco State University
Hastings College of the Law - Library
Institute of Government Studies, University of California
Marin County Library, Civic Center Branch
Oakland Public Library, Eastmont Branch
Oakland Public Library, Main Library
San Francisco Public Library, Main Library
San Mateo County Library, Administrative Offices
Stanford University Libraries, Jonsson Library of Government Documents

LOCAL JURISDICTIONS

City of Alameda, Planning Department

City of Berkeley, Planning Department

City of Brisbane, Planning Department

City of Daly City, Planning Department

City of Emeryville, Planning Department

City of Larkspur, Planning Department

City of Oakland, Planning Department

City of San Mateo, Planning Department

City of Sausalito, Community Development Planning Department

City of South San Francisco, Planning Department

City of Tiburon, Planning Department

City of Vallejo, Planning Department

City and County of San Francisco
Board of Supervisors
City Attorney's Office
Department of Building Inspection
Department of City Planning
Department of Public Health
Department of Public Works
Division of General Engineering Services
Fire Department Regional Training Center
Fire Department, Division of Planning & Research
San Francisco Landmarks Preservation Advisory Board
Mayor's Office
Planning Commission
Police Department
Port of San Francisco
Public Utilities Commission
Real Estate Department
Recreation & Park Department
Redevelopment Agency, Office of Base Conversion

Port of Oakland

UTILITIES/PUBLIC SERVICES

Pacific Gas and Electric
TI Utilities Manager
San Francisco Unified School District
Water Department Distribution Division

Numerous special interest, other interested individuals, and San Francisco Bay area media representatives also are included on the mailing list for the Draft EIS.

APPENDIX A
GLOSSARY AND INDEX

APPENDIX A
GLOSSARY AND INDEX

A.1 GLOSSARY

100-year flood zone	Land area having a one percent chance of being flooded during a given year.
Ambient air quality standards	Standards established on a state or Federal level that define the limits for airborne concentrations of designated criteria pollutants (nitrogen dioxide, sulfur dioxide, carbon monoxide, ozone, lead), to protect public health with an adequate margin of safety (primary standards) and public welfare, including plant and animal life, visibility, and materials (secondary standards) (also see Attainment area, below).
Aquifer	A layer of underground sand, gravel, or spongy rock in which water collects.
Arterial	A roadway from which local routes branch.
Artifact	Any product or human cultural activity; more specifically, any tools, weapons, artworks, etc., found in archeological contexts.
Asbestos	A carcinogenic substance formerly used widely as an insulation material by the construction industry; often found in older buildings.
Assemblage	The complete inventory of artifacts from a single, defined archaeological unit (such as a stratum or component).
Attainment area	An area which meets the National Ambient Air Quality Standards for a criteria pollutant under the Clean Air Act or meets state air quality standards.
A-weighted decibel (dBA)	A number representing the sound level which is frequency weighted according to a prescribed frequency response established by the American National Standards Institute (ANSI-S1.4-1971) and accounts for the response of the human ear.
Best-management practices (BMPs)	Includes schedule of activities, prohibition of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

Burial	Human remains disposed of by interment. Burials may be *simple* (containing the remains of one person) or *complex* (containing the remains of two or more individuals), *primary* (including the remains as originally interred), or *secondary* (where a reinternment follows a temporary disposal elsewhere).
Capacity (transportation)	The maximum rate of flow at which vehicles can be reasonably expected to traverse a point or uniform segment of a lane or roadway during a specified time period under prevailing roadway, traffic, and control conditions.
Capacity (utilities)	The maximum load a system is capable of carrying under existing service conditions.
Caretaker	The US Navy process of maintaining a closed facility.
Clean Air Act (CAA)	The CAA legislates that air quality standards set by Federal, state, and county regulatory agencies establish maximum allowable emission rates and pollutant concentrations for sources of air pollution on Federal and private property. Also regulated under this law is proper removal and safe disposal of asbestos from buildings other than schools.
Clean Water Act (CWA)	The CWA is the major Federal legislation concerning improvement of the nations water resources. It provides for development of municipal and industrial wastewater treatment standards and a permitting system to control wastewater discharges to surface waters. The act contains specific provisions for regulation of ships' wastewater and disposal of dredge spoils within navigable waters. Section 404 of the act regulates disposal into waters of the United States, including wetlands.
Climate	The prevalent or characteristic meteorological conditions (and their extremes) of any given location or region.
Community Environmental Response Facilitation Act (CERFA)	A 1992 amendment to CERCLA, CERFA expedites the identification of uncontaminated real property within closing Federal military facilities which offer the greatest opportunity for reuse and redevelopment.
Community noise equivalent level (CNEL)	Noise compatibility level established by California Administrative Code, Title 21, Section 5000. The 24-hour average A-weighted sound level with a 5 dB weighting added to levels occurring between 10:00 PM and 7:00 AM.
Comprehensive Environmental Response, Compensation, And Liability Act (CERCLA)	CERCLA, also known as Superfund, was enacted in 1980 to ensure that a source of funds is available to clean up abandoned hazardous waste dumps, compensate victims, address releases of hazardous materials, and establish liability standards for responsible parties. The act also requires creation of a National Priorities List (NPL) which sets forth the sites considered to have the highest priority for cleanup under Superfund.
Contamination	The degradation of naturally occurring water, air, or soil quality either directly or indirectly as a result of human activities.
Council on Environmental Quality (CEQ)	Established by NEPA, the CEQ consists of three members appointed by the President. CEQ regulations (40 CFR 1500-1508, as of July 1, 1986) describe the process for implementing NEPA, including preparation of environmental assessments and environmental impact statements, and timing and extent of public participation.

Cultural	(1) The nonbiological and socially transmitted system of concepts, institutions, behavior, and materials by which a society adapts to its effective natural and human environment; (2) Similar or related assemblages of approximately the same age from a single locality or district, thought to represent the activities of one social group.
Cultural history	The archeological sequence of cultural activity through time, within a defined geographic space or relating to a particular group.
Cultural resource	Prehistoric or historic districts, sites, buildings, objects, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or any other reason.
Cumulative impacts	The combined impacts resulting from the addition of incremental impact of the proposed action to other past, present, and reasonably foreseeable future actions, regardless of which agency or person undertakes them.
Day-night average sound level (Ldn)	The 24-hour average-energy sound level expressed in decibels, with a 10 decibel penalty added to sound levels between 10:00 PM and 7:00 AM to account for increased annoyance due to noise during the night.
Decibel (dB)	A unit of measurement on a logarithmic scale which describes the magnitude of a particular quantity of sound pressure or power with respect to a standard reference value.
Developed	When land, a lot, a parcel, or an area has been built upon, or where public services have been installed prior to residential or commercial construction.
Disposal	Legal transfer of Navy property to other ownership.
Dredging	Removal of mud from the bottom of water bodies using a scooping machine.
Easement	An interest in land owned by another that entitles its holder to a specific limited use
Effluent	Waste material discharged into the environment.
Endangered species	A species that is threatened with extinction throughout all or a significant portion of its range.
Endangered Species Act (ESA)	The ESA requires Federal agencies to determine the effects of their actions on endangered species and their critical habitats.
Environmental impact statement (EIS)	A document required of Federal agencies by NEPA for major projects or legislative proposals significantly affecting the environment. A tool for decision making, the EIS describes the positive and negative effects of the undertaking and lists alternative actions.
Equivalent noise levels (Leq)	Equivalent noise levels are used to develop single-value descriptions of average noise exposure over various periods of time.
Fault	Fracture in earth's crust accompanied by a displacement of one side of the fracture with respect to the other and in a direction parallel to the fracture.

Feasibility study (FS)	The feasibility study, part of the CERCLA remediation process, identifies and evaluates all applicable site cleanup alternatives. For most sites, a long list of alternatives are possible. A risk assessment is performed as part of the study to quantify the level of risk to the public and environment posed by the site. Often, the risk assessment determines which alternative is selected for final remediation. Each alternative is evaluated for effectiveness in protecting human health and the environment, ease of implementation, and overall cost. Typically, the remedial investigation and FS are performed concurrently.
Feature	A large, complex archeological artifact or part of a site such as a hearth, cairn, housepit, rock alignment, or activity area.
Flora	Plants; organisms of the plant kingdom taken collectively.
Ground water	Water within the earth that supplies wells and springs.
Hazard Ranking System (HRS)	This system provides a uniform method of scoring or ranking of the potential risk of a facility site where a hazardous substance has been present. The EPA developed the HRS to prioritize their cleanup efforts. The EPA evaluates the draft HRS packages and proposes any facilities scoring over 28.5 or higher for inclusion on the National Priorities List (NPL). Facilities which are listed on the NPL receive the highest priority.
Hazardous material	A substance or mixture of substances that poses a substantial present or potential risk to human health or the environment. Any substance designated by the EPA to be reported if a designated quantity of the substance is spilled in the waters of the United States or if it is otherwise released into the environment.
Hazardous waste	A waste or combination of wastes which, because of its quantity, concentration, or physical, chemical, or infectious characteristics, may either cause or significantly contribute to an increase in mortality or an increase in serious irreversible illness; or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed. Regulated under RCRA.
Historic	A period of time after the advent of written history dating to the time of first Euro-American contact in an area. Also refers to items primarily of Euro-American manufacture.
Historic district	National Register of Historic Places designation of a geographically defined area (urban or rural) possessing a significant concentration, linkage, or continuity of sites, structures, or objects united by past events or aesthetically by plan of physical development.
Impacts	An assessment of the changes in the characteristics of an environmental resource caused by the project; ; an aggregation of all the adverse effects, usually measured using a qualitative and nominally subjective technique. Impacts analyzed under CEQA must be related to a physical change.
Infrastructure	The basic installations and facilities on which the continuance and growth of a locale depend (roads, schools, power plants, transportation, and communication systems).

Installation Restoration Program (IRP)	A program established by the Department of Defense to meet requirements of CERCLA of 1980 and SARA of 1986 which identifies, assesses, and cleans up or controls contamination from past hazardous waste disposal practices and hazardous material spills.
Level of Service (LOS)	In transportation analysis, a qualitative measure describing operational conditions within a traffic stream and how they are perceived by motorists and/or pedestrians. Usually given a letter grade from A to F, with A being free-flow; E, capacity; and F, forced-flow. Factors considered in LOS analyses include speed, travel time, traffic interruptions, freedom of maneuver, safety, driving comfort, and convenience. In public services, a measure describing the amount of public services available to community residents, generally expressed as the number of personnel providing service per 1,000 population.
Liquefaction	The transformation during an earthquake of unconsolidated, water-saturated sediment into a liquid form.
Long-term	Impacts that would occur over an extended period of time, whether they start during the construction or operations phase. Most impacts from the operations phase are expected to be long term since program operations essentially represent a steady-state condition (i.e., impacts resulting from actions that occur repeatedly over a long period of time). However, long-term impacts could also be caused by construction activities if a resource is destroyed or irreparably damaged or if the recovery rate of the resource is very slow.
Marsh	A type of wetland that does not accumulate appreciable peat deposits and is dominated by herbaceous vegetation. Marshes may be either fresh or salt water and tidal or nontidal.
McKinney Act	The McKinney Act gives recognized providers of assistance to the homeless a high priority in acquiring unneeded land and buildings on Federal properties. The property can be used only for the homeless and only for two years. Homeless providers must be able to finance upgrades of facilities, pay a proportionate share of municipal service costs, and fund its program operations.
Migratory Bird Treaty Act	This act prohibits the taking or harming of a migratory bird, its eggs, nests, or young without the appropriate permit.
Mitigation	A method or action to reduce or eliminate project impacts, including application of existing plans, policies, and laws.
Multi-family housing	Townhouse or apartment units that accommodate more than one family though each dwelling unit is only occupied by one household.
National Environmental Policy Act (NEPA)	Public Law 91-190, passed by Congress in 1969, established a national policy designed to encourage consideration of the influence of human activities on the natural environment. NEPA also established the Council on Environmental Quality. NEPA procedures require that environmental information be made available to the public before decisions are made.
National Historic Preservation Act (NHPA)	The NHPA protects cultural resources. Section 106 of the act requires a Federal agency to take into account the potential effect of a proposed action on properties listed on or eligible for listing on the National Register of Historic Places.

National Pollution Discharge Elimination System (NPDES)	The NPDES is a provision of the Clean Water Act which prohibits discharge of pollutants into waters of the United States unless a special permit is issued by the EPA or state.
National Priorities List (NPL)	A list of sites (regulated by either a Federal or state agency) where releases of hazardous materials may have occurred and may cause an unreasonable risk to the health and safety of individuals, property, or the environment.
National Register Resources	Properties listed on the National Register of Historic Places, properties formally determined eligible for listing on the National Register, and those properties appearing to qualify for listing on the National Register.
Native American Graves Protection and Repatriation Act (NAGPRA)	NAGPRA defines the ownership and control of Native American human remains and associated funerary objects discovered or recovered from Federal or tribal land.
Native Americans	Used in the collective sense to refer to individuals, bands, or tribes who trace their ancestry to indigenous populations of North America prior to Euro-American contacts.
Native vegetation	Plant life that occurs naturally in an area without agricultural or cultivational efforts. It does not include species that have been introduced from other geographical areas and have become naturalized.
Natural gas	A natural fuel containing primarily methane and ethane that occurs in certain geologic formations.
Nonnative species	Species that have invaded or been introduced into an area.
PCB-contaminated equipment	Equipment which contains a concentration of PCBs from 50 to 449 ppm or greater. Disposal and removal are regulated by the EPA.
Peak hour	The hour of highest traffic volume on a given section of roadway between 7:00 AM and 9:00 AM or between 4:00 PM and 6:00 PM.
Permit	An authorization, license, or equivalent control document to implement the requirements of an environmental regulation.
Polychlorinated biphenyls (PCBs)	Any of a family of industrial compounds produced by chlorination of biphenyl. These compounds are noted chiefly as an environmental pollutant that accumulates in organisms and concentrates in the food chain with resultant pathogenic and teratogenic effects. They also decompose very slowly.
Potable water	Water that is suitable for drinking.
Prehistoric	The period of time before the written record.
Prehistory	The archeological record of nonliterate cultures; the cultural past before the advent of written records.

Preliminary assessment (PA)	The PA, part of the CERCLA remediation process, identifies areas of potential contamination and evaluates each area to determine if a threat to human health or the environment exists. A PA report is developed from readily available information such as past inventory records, aerial photographs, employee interviews, existing analytical data, and a site visit. A PA may recommend no further action, additional work, or a removal action.
Radon	A colorless, naturally occurring, radioactive, inert gaseous element formed by radioactive decay of radium in soil or rocks.
Record of Decision (ROD)	The document prepared under the Federal government pursuant to NEPA that documents the reasoning behind the decision.
Recycling	The process of minimizing the generation of waste by recovering usable products that might otherwise become waste.
Region of influence (ROI)	For each resource, the region affected by the proposed action or alternatives and used for analysis in the affected environment and impact discussion.
Remedial action	During the remedial action (RA) phase, part of the CERCLA remediation process, the selected cleanup technology is implemented. RA can be as simple as soil excavation or as complicated as a complete ground water treatment system that operates for many years. Remedial action work plans for long term remediations will include Operation and Maintenance (O&M) plans. O&M efforts continue until the cleanup is complete.
Remedial investigation (RI)	This investigation, part of the CERCLA remediation process, is performed to more fully define the nature and extent of the contamination at a site and evaluate possible methods of cleaning up the site. During the investigation, ground water, surface water, soil, sediment, and biological samples are collected and analyzed to determine the type and concentration of each contaminant. Samples are collected at different areas and depths to help determine the spread of contamination.
Removal actions	In the event of an immediate threat or potential threat to human health or the environment, a short term mitigating or cleanup action may be implemented. The goal of the removal action is to isolate the contamination hot spot and its source from all biological receptors. Usually, removal actions do not completely clean up a site, and additional remediation steps are required.
Resource Conservation and Recovery Act (RCRA)	RCRA was enacted in 1976 as the first step in regulating the potential health and environmental problems associated with hazardous waste disposal. RCRA and the regulations developed by EPA to implement its provisions provide the general framework of the national hazardous waste management system, including the determination of whether hazardous wastes are being generated, techniques for tracking wastes to eventual disposal, and the design and permitting of hazardous waste management facilities.
Runoff	The noninfiltrating water entering a stream or other conveyance channel shortly after a rainfall event.
Seismicity	Relative frequency and distribution of earthquakes.
Short-term	Transitory effects of the proposed program that are of limited duration and are generally caused by construction activities or operations start-up.

Significance	The importance of a given impact on a specific resource as defined under the Council on Environmental Quality regulations.
Single-family housing	A conventionally built house consisting oaf a single dwelling unit occupied by one household.
Site	The location of past cultural activity; a defined space with more or less continuous archeological evidence.
Site discovery	A site is an area that has or has had the potential for a hazardous substance release. A single facility may contain several sites to be studied. Potential sites are occasionally discovered by searching through records or during construction projects.
Site inspection (SI)	An inspection conducted after a preliminary assessment when additional information is needed to evaluate the site. The collection and analysis of soil, sediment, and surface or ground water samples may help determine the need for further study. The site inspection collects any information needed for hazard ranking. The SI may recommend a site for no action, further study, or an immediate removal action.
Soil	A natural body consisting of layers or horizons of mineral and/or organic constituents of variable thickness and differing from the parent material in their morphological, physical, chemical, and mineralogical properties and biological characteristics.
Soil types	A category or detailed mapping unit used for soil surveys based on phases or changes within a series (e.g.. slope, salinity).
Solid waste management	Supervised handling of waste materials from their source through recovery processes to disposal.
State Historic Preservation Officer (SHPO)	The official within each state, authorized by the state at the request of the Secretary of the Interior, to act as a liaison for purposes of implementing the National Historic Preservation Act.
Stratigraphy	The study of cultural and natural strata or layers in archeological and geological deposits, particularly with the aim of determining the relative age of strata.
Superfund Amendments and Reauthorization Act (SARA)	SARA was enacted in 1986 to increase the Superfund to $8.5 billion, modify contaminated site cleanup criteria scheduling, and revise settlement procedures. It also provides a fund for leaking underground storage tank cleanups and a broad, new emergency planning and community right to know program.
Surface water	All water naturally open to the atmosphere and all wells, springs, or other collectors which are directly influenced by surface water.
Threatened species	Plant and wildlife species likely to become endangered in the foreseeable future.
Toxic	Harmful to living organisms.
Toxic Substances Control Act (TSCA)	TSCA provides authority to test and regulate chemicals to protect human health. Substances regulated under TSCA include asbestos and PCBs.

Traffic, peak hour	The highest number of vehicles observed to traverse a section of roadway during 60 consecutive minutes.
Transfer	Deliver US government property to another Federal agency.
US Environmental Protection Agency (USEPA)	The independent Federal agency established in 1970 to regulate Federal environmental matters and oversees the implementation of Federal environmental laws.
Waters of the United States	Waters that are subject to Section 404 of the Clean Water Act. These include both deep water aquatic habitats and special aquatic sites, including wetlands.
Zoning	The division of a municipality into districts for the purpose of regulating land use, types of buildings, required yards, necessary off-street parking, and other prerequisites to development. Zones are generally shown on a map and the text of the zoning ordinance specifies requirement for each zoning category.

A.2 INDEX

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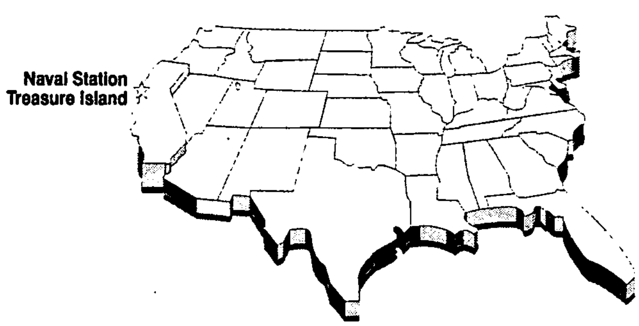


APPENDIX B
OVERVIEW OF FEDERAL AND STATE DISPOSAL LAWS AND REGULATIONS

APPENDIX B
OVERVIEW OF FEDERAL AND STATE DISPOSAL LAWS AND REGULATIONS

B.1 FEDERAL REUSE PLANNING PROGRAMS AND PROCEDURES

This section briefly highlights some of the key federal planning programs and procedures that guide the base closure process at NSTI.

B.1.1 Defense Base Closure and Realignment Act of 1990 (10 U.S.C. § 2687)

This act established procedures to minimize the economic hardships on local communities adversely affected by base closures and to facilitate the economic recovery of such communities. In order to maximize the local benefit from the reutilization and redevelopment of the installation, the Secretary of the military department must consider local economic needs and priorities in the disposal process.

For NSTI, the Treasure Island Development Authority (TIDA) is recognized as the local redevelopment authority (LRA). The LRA is the entity recognized by the DoD through its Office of Economic Adjustment to prepare and direct the implementation of the reuse plan. In determining economic needs and priorities, and in preparing the Record of Decision (ROD) for an EIS, the federal lead agency must take into account and give substantial deference to the reuse plan developed by the LRA for the installation. A reuse plan is provided for the reuse or redevelopment of the closed military installation.

B.1.2 President Clinton's Five Point Program

This program was announced by former President Clinton in July 1993 in an effort to offset the negative effects of military base closures on local communities. The program emphasizes expeditious disposal of federal property for uses that will create new jobs for the local community. Job creation and economic development are given the highest priority in the reuse of closed military bases.

B.1.3 National Defense Authorization Act of 1994 (Pub. L. No. 103-160, 107 Star. 1547)

This act is an amendment to the DBCRA of 1990. Under this act, the federal government should attempt to facilitate the economic recovery of communities that experience adverse economic circumstances as a result of base closure or realignment. The federal government works with such communities to identify and implement means of redeveloping and revitalizing closed military installations in a beneficial manner and accelerate the environmental cleanup and restoration of closed military installations. The federal government may also make real property at closed military installations available to local communities at less than fair market value, or without consideration, if appropriate.

B.1.4 Stewart B. McKinney Homeless Assistance Act of 1987, as amended (Public Law No. 100-77)

Under this act, a homeless services provider may prepare and submit an application to acquire surplus federal property for purposes of assisting the homeless. As authorized by the act, DON must report the potential availability of all underutilized, unutilized, excess and/or surplus buildings and land to HUD. The suitability of these properties for use by the homeless is then determined by HUD. Homeless assistance providers have 60 days after the notice of availability is published in the Federal Register to express interest in the property to HHS and 90 days to submit an application. HHS has 25 days from receipt of the application to review and approve/deny it. With extremely limited exceptions, once an application is submitted to and approved by HHS, the holding agency (in this case DON) must assign the property to HHS for conveyance to the approved applicant.

An assignment of real property to another federal agency is categorically excluded under NEPA. However, under the provisions of 45 C.F.R. § 12.10, the other federal agency would be required to complete an environmental evaluation and to otherwise comply with NEPA prior to making a final conveyance of the property.

B.1.5 Base Closure Community Redevelopment and Homeless Assistance Act (42 U.S.C. § 11411)

The provisions of the Base Closure Community Redevelopment and Homeless Assistance Act, passed as part of the National Defense Authorization Act of 1994, support and put into law the intent of the President's efforts to support local communities affected by closure. This act, also referred to as the "Redevelopment Act," creates a locally controlled reuse process for redevelopment of a closing base. The act requires that the DoD recognize a local redevelopment authority for each closing installation in order to develop a reuse plan for each installation. The LRA is responsible for completing the screening and use of the base for state, local government, and homeless uses. The Department of Housing and Urban Development (HUD) reviews the community redevelopment plan to ensure that homeless needs have been adequately considered.

B.1.6 Surplus Property Act of 1994 (50 U.S.C. app. § 1601) and Federal Property and Administrative Services Act of 1949 (40 U.S.C. 471)

These acts established the authority for the transfer of excess real property to other federal agencies and the disposal of surplus property. The acts and implementing regulations provide for public benefit conveyances for health, education, and other purposes to tax exempt, nonprofit organizations, and public entities. The acts and regulations establish the process for the disposal of property through negotiated sales to public entities and through advertised competitive bidding.

B.2 STATE AND LOCAL PLANNING PROGRAMS AND PROCEDURES

This section briefly highlights some of the key local planning programs and procedures that guide the reuse process of NSTI.

B.2.1 California Planning and Zoning Law (Government Code Title 7, Division 1, §§ 65000-66037)

This law established regulations for long-term policies for use of property and related improvements, as well as the framework for zoning and subdivision regulations to implement those policies by city, county, and other local government agencies. California State law requires each city to adopt a comprehensive, long-term general plan for its physical development.

B.2.2 California Community Redevelopment Law (Health and Safety Code, § 33000 et. seq.)

This law establishes regulations for use by cities and counties to revitalize deteriorating and blighted urban areas. It authorizes a city or a county to establish a redevelopment agency and one or more redevelopment project areas. The law provides a redevelopment agency with powers that are typical for a local governmental agency and two unique powers: the ability to use the power of eminent domain (condemnation) to acquire property for resale to another private entity or organization; and the power to collect property tax increment in order to finance the redevelopment programs of the community, including the provision of public infrastructure and other improvements. Most of the NSTI reuse planning area is within the boundaries of a proposed redevelopment project area.

B.2.3 California Local Military Base Recovery Area Act (Government Code § 7105-7117)

In order to stimulate business and industrial growth in areas affected by military base closures, the State Legislature established the concept of local military base recovery areas (LAMBRAs) that could provide relaxed regulatory controls, tax credits, and other economic incentives to private sector investors. Local jurisdictions can apply for LAMBRA status for a base, provided it is not already within a state-designated enterprise zone. The act authorizes the California Trade and Commerce Agency (CTCA) to designate no less than one LAMBRA in each of the state's five regions, and limits the Agency to designating no more than eight LAMBRAs.

B.2.4 Governor Wilson's Executive Order W-81-94

This Executive Order by Governor Pete Wilson directs State agencies to pursue successful economic conversion of military bases by implementing State programs, regulatory pursuits, and allocation of resources for State-funded capital outlay projects. It includes provisions to expedite economic assistance and regulatory and resource reviews. It also designates the Director of the Office of Planning and Research (OPR) as the State lead public contact for redevelopment of military bases, and directs OPR to coordinate a comprehensive program to implement recommendations provided by the Governor's Military Base Reuse Task Force through State and Federal legislation. All State departments and agencies are directed to cooperate in this effort.

APPENDIX C
SUPPORTING CORRESPONDENCE

AS recd April 11 '95

"C94-179"

United States Department of the Interior

FISH AND WILDLIFE SERVICE
911 NE. 11th Avenue
Portland, Oregon 97232-4181

IN REPLY REFER TO:
FWS/ARW-RE

1995

Dennis P. Drennan, Jr.
Director, Real Estate Division
Department of the Navy
Naval Facilities Engineering Command
900 Commodore Drive
San Bruno, California 94066-2402

Dear Mr. Drennan:

The U.S. Fish and Wildlife Service (Service) has been informed by Duane Marti of the U.S. Bureau of Land Management that the U.S. Navy will be disposing of Naval Station Treasure Island, which includes Yerba Buena Island.

The Service recognizes Yerba Buena Island as habitat for colonial seabirds. According to a 1990 census, the island supported small nesting colonies of Brandt's cormorants (4 nests), pelagic cormorants (2 nests), western gulls (31 nests), and black oystercatcher (1 breeding bird). The Brandt's cormorant colony and the pelagic cormorant colony are the only ones in San Francisco Bay. The Brandt's and pelagic cormorants are located at site 03 within site SFB-SF-07 as depicted on the enclosed map. Gulls are located at sites 01 through 05. The oystercatcher is located at site 01.

While we recognize that Yerba Buena Island does not warrant incorporation into the National Wildlife Refuge System, the natural resources of the island should be protected. Access to and activities around the nesting birds on Yerba Buena Island should be restricted. We recommend that the following covenant be included in any deed conveying the property to a non-Federal entity:

> The owner shall not use, or authorize the land to be used by others specifically during the breeding and nesting period between March 15 through August 30 of each year, for any purpose that would substantially or adversely interfere with its use as a seabird nesting area.

If you have any questions, please contact Richard Moore, Realty Supervisor, at (503) 231-6209 in Portland, Oregon. Thank you for your cooperation.

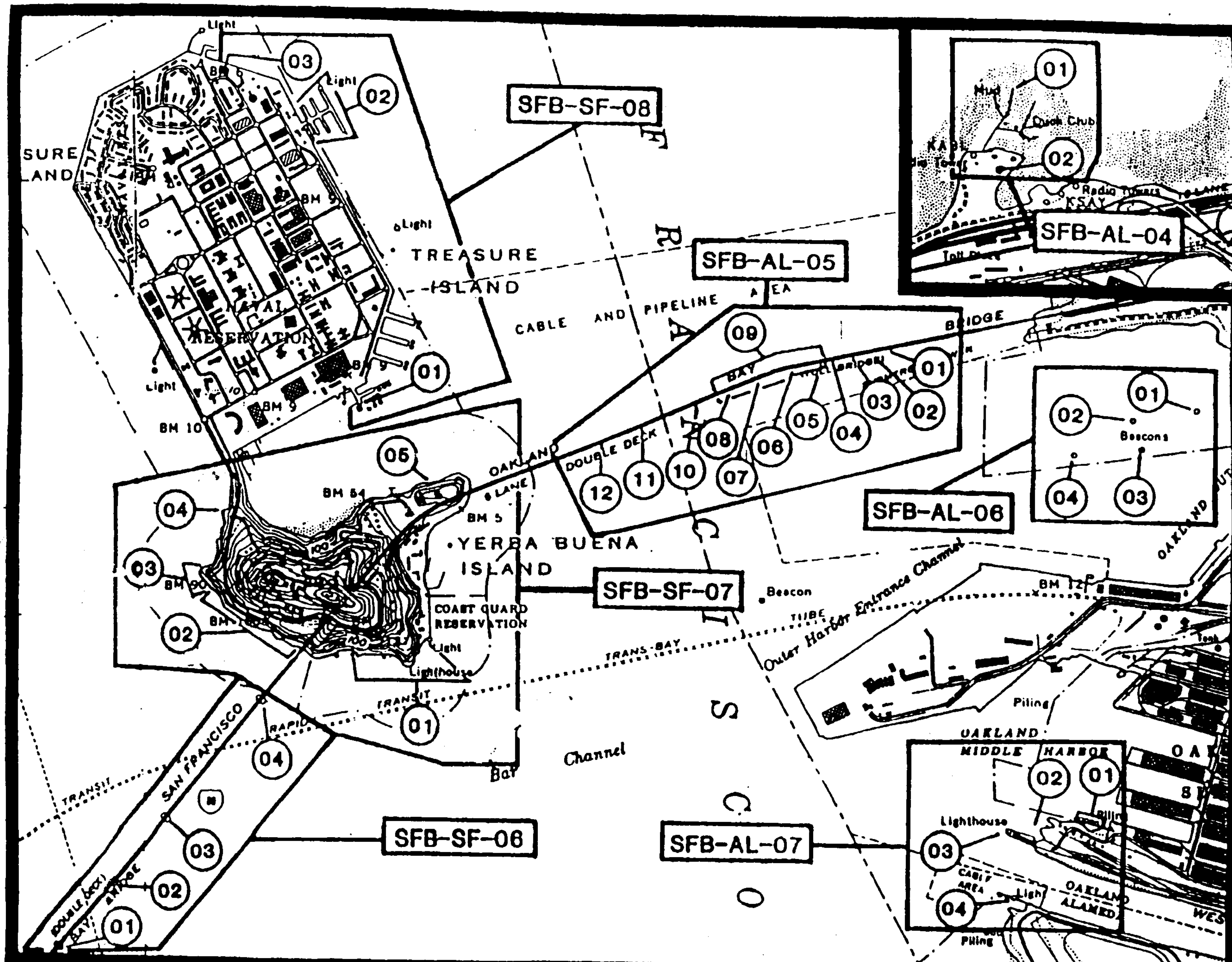
Sincerely,

David L. McMullen

Regional Director

Enclosure

Encl



MAP 99. Section from U.S.G.S. maps "San Francisco North" and "Oakland West".

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
Sacramento Field Office
3310 El Camino Avenue, Suite 130
Sacramento, California 95821-6340

IN REPLY REFER TO:

1-1-97-I-839

February 27, 1997

Mr. Douglas Pomeroy
Group Leader, Base Conversion/Biology Section
U.S. Department of the Navy
Engineering Field Activity, West
Naval Facilities Engineering Command
900 Commodore Drive
San Bruno, California 94066-5005

Subject: Request for Concurrence for the Proposed Closure of Naval Station Treasure Island, San Francisco County, California, on Federally Listed Plant Species

Dear Mr. Pomeroy:

The U.S. Fish and Wildlife Service (Service) has reviewed the Navy's Special-Status Plant Survey and Habitat Assessment prepared for Yerba Buena Island. The Service concurs that closure of Naval Station Treasure Island, including Yerba Buena Island, is not likely to adversely affect any federally listed plant species.

No further action pursuant to the Endangered Species Act of 1973, as amended, is necessary for listed plants. We have included an attachment of federally listed animal species in the area of Treasure Island for use in developing the draft Environmental Impact Statement (DEIR). Several special-status avian species are known to occur within the project vicinity (i.e. California brown pelican, western snowy plover, California least tern, American peregrine falcon) and should be addressed individually in the DEIR. Please feel free to contact the Service should you require further information or technical assistance. We look forward to reviewing the DEIR upon its completion.

If you have questions regarding this response, please contact Meri Moore of my staff at (916) 979-2752.

Sincerely,

for Wayne S. White
Field Supervisor

Attachment

cc: CDFG, Environmental Services, Sacramento, CA
FWS, Habitat Conservation, Sacramento, CA

THREATENED & ENDANGERED ANIMALS IN THE AREA OF
OR AFFECTED BY PROJECTS IN THE AREA OF
TREASURE ISLAND, CALIFORNIA
JANUARY 27, 1997

OAKLAND WEST

Eagle, bald, Haliaeetus leucocephalus (T)
Falcon, American peregrine, Falco peregrinus anatum (E)
Frog, California red-legged frog, Rana aurora draytonii (T)
Goby, tidewater, Eucyclogobius newberryi (E)
Mouse, salt marsh harvest, Reithrodontomys raviventris (E)
Pelican, California brown, Pelecanus occidentalis californicus (E)
Plover, western snowy, Charadrius alexandrinus nivosus (T)
Rail, California clapper, Rallus longirostris obsoletus (E)
Salamander, California tiger, Ambystoma californiense (C)
Salmon, Coho - central CA coast, Oncorhynchus kisutch (T)
Salmon, winter-run chinook, Oncorhynchus tshawytscha (E)
Salmon, winter-run chinook critical habitat, Oncorhynchus tshawytscha (E)
Smelt, delta, Hypomesus transpacificus (T)
Splittail, Sacramento, Pogonichthys macrolepidotus (PT)
Steelhead, Central California, Oncorhynchus mykiss (PE)
Tern, California least, Sterna antillarum (=albifrons) browni (E)
Whipsnake, Alameda, Masticophis lateralis euryxanthus (PE)

SAN FRANCISCO NORTH

Butterfly, San Bruno elfin, Incisalia mossii bayensis (E)
Butterfly, mission blue, Icaricia icarioides missionensis (E)
Eagle, bald, Haliaeetus leucocephalus (T)
Falcon, American peregrine, Falco peregrinus anatum (E)
Frog, California red-legged frog, Rana aurora draytonii (T)
Mouse, salt marsh harvest, Reithrodontomys raviventris (E)
Pelican, California brown, Pelecanus occidentalis californicus (E)
Plover, western snowy, Charadrius alexandrinus nivosus (T)
Rail, California clapper, Rallus longirostris obsoletus (E)
Salamander, California tiger, Ambystoma californiense (C)
Salmon, Coho - central CA coast, Oncorhynchus kisutch (T)
Salmon, winter-run chinook, Oncorhynchus tshawytscha (E)
Salmon, winter-run chinook critical habitat, Oncorhynchus tshawytscha (E)
Smelt, delta, Hypomesus transpacificus (T)
Splittail, Sacramento, Pogonichthys macrolepidotus (PT)
Steelhead, Central California, Oncorhynchus mykiss (PE)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

IN REPLY REFER TO:
1-1-00-SP-1247

March 21, 2000

Mr. Terry Witherspoon
Project Manager
Tetra Tech, Inc.
180 Howard Street, Suite 250
San Francisco, California 94105-1617

Subject: Species List for EIR/EIS, Disposal and Reuse of Naval Station Treasure Island, San Francisco County, California

Dear Mr. Witherspoon:

We are sending the enclosed list in response to your March 20, 2000, request for information about endangered and threatened species (Enclosure A). The list covers the following U.S. Geological Survey 7½ minute quad or quads: San Francisco South and Oakland West Quads.

Please read *Important Information About Your Species List* (enclosed). It explains how we made the list and describes your responsibilities under the Endangered Species Act. Please contact Harry Mossman, Biological Technician, at (916) 414-6650, if you have any questions about the attached list or your responsibilities under the Endangered Species Act. For the fastest response to species list requests, address them to the attention of Mr. Mossman at this address. You may fax requests to him at 414-6710 or 6711.

Sincerely,

Ken Sanders

For Karen J. Miller
Chief, Endangered Species Division

Enclosures

ENCLOSURE A

Endangered and Threatened Species that May Occur in or be Affected by

PROJECTS IN SAN FRANCISCO COUNTY

Reference File No. 1-1-00-SP-1247

March 21, 2000

Listed Species

Mammals

sei whale, *Balaenoptera borealis* (E)
blue whale, *Balaenoptera musculus* (E)
finback (=fin) whale, *Balaenoptera physalus* (E)
right whale, *Eubalaena glacialis* (E)
humpback whale, *Megaptera novaeangliae* (E)
sperm whale, *Physeter catodon (=macrocephalus)* (E)
salt marsh harvest mouse, *Reithrodontomys raviventris* (E)
Guadalupe fur seal, *Arctocephalus townsendi* (T)
Critical Habitat, Steller (=northern) sea-lion, *Eumetopias jubatus* (T)
Steller (=northern) sea-lion, *Eumetopias jubatus* (T)

Birds

California brown pelican, *Pelecanus occidentalis californicus* (E)
California clapper rail, *Rallus longirostris obsoletus* (E)
western snowy plover, *Charadrius alexandrinus nivosus* (T)
bald eagle, *Haliaeetus leucocephalus* (T)

Reptiles

leatherback turtle, *Dermochelys coriacea* (E)
loggerhead turtle, *Caretta caretta* (T)
green turtle, *Chelonia mydas (incl. agassizi)* (T)
olive (=Pacific) ridley sea turtle, *Lepidochelys olivacea* (T)

Amphibians

California red-legged frog, *Rana aurora draytonii* (T)

Fish

tidewater goby, *Eucyclogobius newberryi* (E)
Critical habitat, winter-run chinook salmon, *Oncorhynchus tshawytscha* (E)
winter-run chinook salmon, *Oncorhynchus tshawytscha* (E)
delta smelt, *Hypomesus transpacificus* (T)
Central California steelhead, *Oncorhynchus mykiss* (T)
Sacramento splittail, *Pogonichthys macrolepidotus* (T)

Invertebrates

mission blue butterfly, *Icaricia icarioides missionensis* (E)
San Bruno elfin butterfly, *Incisalia mossii bayensis* (E)

Plants

Presidio manzanita, *Arctostaphylos hookeri ssp. ravenii* (E)
Presidio clarkia, *Clarkia franciscana* (E)
San Francisco lessingia, *Lessingia germanorum* (E)
Marin dwarf-flax, *Hesperolinon congestum* (T)
marsh sandwort, *Arenaria paludicola* (E) *
beach layia, *Layia carnosa* (E) *

Proposed Species

Birds

short-tailed albatross, *Diomedea albatrus* (PE)

Candidate Species

Amphibians

California tiger salamander, *Ambystoma californiense* (C)

Species of Concern

Mammals

gray whale, *Eschrichtius robustus* (D)
Pacific western big-eared bat, *Corynorhinus (=Plecotus) townsendii townsendii* (SC)
greater western mastiff-bat, *Eumops perotis californicus* (SC)
long-eared myotis bat, *Myotis evotis* (SC)
fringed myotis bat, *Myotis thysanodes* (SC)
long-legged myotis bat, *Myotis volans* (SC)
Yuma myotis bat, *Myotis yumanensis* (SC)
San Francisco dusky-footed woodrat, *Neotoma fuscipes annectens* (SC)
salt marsh vagrant shrew, *Sorex vagrans halicoetes* (SC)

Birds

little willow flycatcher, *Empidonax traillii brewsteri* (CA)
black rail, *Laterallus jamaicensis coturniculus* (CA)
bank swallow, *Riparia riparia* (CA)
American peregrine falcon, *Falco peregrinus anatum* (D)
tricolored blackbird, *Agelaius tricolor* (SC)
grasshopper sparrow, *Ammodramus savannarum* (SC)
Bell's sage sparrow, *Amphispiza belli belli* (SC)
American bittern, *Botaurus lentiginosus* (SC)
ferruginous hawk, *Buteo regalis* (SC)
Vaux's swift, *Chaetura vauxi* (SC)
lark sparrow, *Chondestes grammacus* (SC)
olive-sided flycatcher, *Contopus cooperi* (SC)
hermit warbler, *Dendroica occidentalis* (SC)
white-tailed (=black shouldered) kite, *Elanus leucurus* (SC)

Pacific-slope flycatcher, *Empidonax difficilis* (SC)
common loon, *Gavia immer* (SC)
saltmarsh common yellowthroat, *Geothlypis trichas sinuosa* (SC)
loggerhead shrike, *Lanius ludovicianus* (SC)
Alameda (South Bay) song sparrow, *Melospiza melodia pusillula* (SC)
long-billed curlew, *Numenius americanus* (SC)
ashy storm-petrel, *Oceanodroma homochroa* (SC)
rufous hummingbird, *Selasphorus rufus* (SC)
Allen's hummingbird, *Selasphorus sasin* (SC)
red-breasted sapsucker, *Sphyrapicus ruber* (SC)
elegant tern, *Sterna elegans* (SC)
Xantus' murrelet, *Synthliboramphus hypoleucus* (SC)
Bewick's wren, *Thryomanes bewickii* (SC)

Reptiles

northwestern pond turtle, *Clemmys marmorata marmorata* (SC)
southwestern pond turtle, *Clemmys marmorata pallida* (SC)
California horned lizard, *Phrynosoma coronatum frontale* (SC)

Amphibians

foothill yellow-legged frog, *Rana boylii* (SC)

Fish

green sturgeon, *Acipenser medirostris* (SC)
river lamprey, *Lampetra ayresi* (SC)
Pacific lamprey, *Lampetra tridentata* (SC)
longfin smelt, *Spirinchus thaleichthys* (SC)

Invertebrates

Opler's longhorn moth, *Adela oplerella* (SC)
sandy beach tiger beetle, *Cicindela hirticollis gravida* (SC)
globose dune beetle, *Coelus globosus* (SC)
Ricksecker's water scavenger beetle, *Hydrochara rickseckeri* (SC)
bumblebee scarab beetle, *Lichnanthe ursina* (SC)

Plants

San Francisco Bay spineflower, *Chorizanthe cuspidata var. cuspidata* (SC)
San Francisco wallflower, *Erysimum franciscanum* (SC)
fragrant fritillary, *Fritillaria liliacea* (SC)
San Francisco gumplant, *Grindelia hirsutula var. maritima* (SC)
Marin checkermallow, *Sidalcea hickmanii ssp. viridis* (SC)
Mission Delores campion, *Silene verecunda ssp. verecunda* (SC)
San Francisco owl's-clover, *Triphysaria floribunda* (SC)
San Francisco popcornflower, *Plagiobothrys diffusus* (CA) *

alkali milk-vetch, *Astragalus tener var. tener* (SC) •
compact cobweb thistle, *Cirsium occidentale var. compactum* (SC) •
Diablo helianthella (=rock-rose), *Helianthella castanea* (SC) •
Kellogg's (wedge-leaved) horkelia, *Horkelia cuneata ssp. sericea* (SC) •
adobe sanicle, *Sanicula maritima* (SC) •
San Francisco manzanita, *Arctostaphylos hookeri ssp. franciscana* (SC) ••
coast lily, *Lilium maritimum* (SC) ?•

KEY:

(E)	*Endangered*	Listed (in the Federal Register) as being in danger of extinction.
(T)	*Threatened*	Listed as likely to become endangered within the foreseeable future.
(P)	*Proposed*	Officially proposed (in the Federal Register) for listing as endangered or threatened.
(PX)	*Proposed Critical Habitat*	Proposed as an area essential to the conservation of the species.
(C)	*Candidate*	Candidate to become a *proposed* species.
(SC)	*Species of Concern*	Other species of concern to the Service.
(D)	*Delisted*	Delisted. Status to be monitored for 5 years.
(CA)	*State-Listed*	Listed as threatened or endangered by the State of California.
•	*Extirpated*	Possibly extirpated from the area.
••	*Extinct*	Possibly extinct
	Critical Habitat	Area essential to the conservation of a species.

ENCLOSURE A

Endangered and Threatened Species that May Occur in
or be Affected by Projects in the Selected Quads Listed Below
Reference File No. 1-1-00-SP-1247
March 21, 2000

QUAD : 466C SAN FRANCISCO NORTH

Listed Species

Mammals

Guadalupe fur seal, *Arctocephalus townsendi* (T)

sei whale, *Balaenoptera borealis* (E)

blue whale, *Balaenoptera musculus* (E)

finback (=fin) whale, *Balaenoptera physalus* (E)

right whale, *Eubalaena glacialis* (E)

Critical Habitat, Steller (=northern) sea-lion, *Eumetopias jubatus* (T)

Steller (=northern) sea-lion, *Eumetopias jubatus* (T)

sperm whale, *Physeter catodon (=macrocephalus)* (E)

salt marsh harvest mouse, *Reithrodontomys raviventris* (E) *

Birds

western snowy plover, *Charadrius alexandrinus nivosus* (T)

bald eagle, *Haliaeetus leucocephalus* (T)

California brown pelican, *Pelecanus occidentalis californicus* (E)

California clapper rail, *Rallus longirostris obsoletus* (E) *

Amphibians

California red-legged frog, *Rana aurora draytonii* (T)

Fish

delta smelt, *Hypomesus transpacificus* (T)

Critical habitat, coho salmon - central CA coast, *Oncorhynchus kisutch* (T)

coho salmon - central CA coast, *Oncorhynchus kisutch* (T)

Central California steelhead, *Oncorhynchus mykiss* (T)

Critical habitat, winter-run chinook salmon, *Oncorhynchus tshawytscha* (E)

winter-run chinook salmon, *Oncorhynchus tshawytscha* (E)

Central Valley spring-run chinook salmon, *Oncorhynchus tshawytscha* (T)

Sacramento splittail, *Pogonichthys macrolepidotus* (T)

Invertebrates

mission blue butterfly, *Icaricia icarioides missionensis* (E)

San Bruno elfin butterfly, *Incisalia mossii bayensis* (E)

Plants

Presidio manzanita, *Arctostaphylos hookeri ssp. ravenii* (E)

marsh sandwort, *Arenaria paludicola* (E) *

Presidio clarkia, *Clarkia franciscana* (E)

Marin dwarf-flax, *Hesperolinon congestum* (T)

beach layia, *Layia carnosa* (E) *

San Francisco lessingia, *Lessingia germanorum* (E)

Proposed Species

Birds

short-tailed albatross, *Diomedea albatrus* (PE)

Fish

Critical Habitat, Central Valley spring-run chinook, *Oncorhynchus tshawytscha* (PX)

Candidate Species

Amphibians

California tiger salamander, *Ambystoma californiense* (C)

Fish

Central Valley fall/late fall-run chinook salmon, *Oncorhynchus tshawytscha* (C)

Species of Concern

Mammals

Pacific western big-eared bat, *Corynorhinus (=Plecotus) townsendii townsendii* (SC)

gray whale, *Eschrichtius robustus* (D)

greater western mastiff-bat, *Eumops perotis californicus* (SC)

long-eared myotis bat, *Myotis evotis* (SC)

fringed myotis bat, *Myotis thysanodes* (SC)

long-legged myotis bat, *Myotis volans* (SC)

Yuma myotis bat, *Myotis yumanensis* (SC)

San Francisco dusky-footed woodrat, *Neotoma fuscipes annectens* (SC)

Point Reyes jumping mouse, *Zapus trinotatus orarius* (SC)

Birds

tricolored blackbird, *Agelaius tricolor* (SC)

Bell's sage sparrow, *Amphispiza belli belli* (SC)

ferruginous hawk, *Buteo regalis* (SC)

little willow flycatcher, *Empidonax traillii brewsteri* (CA)

American peregrine falcon, *Falco peregrinus anatum* (D) saltmarsh common yellowthroat, *Geothlypis trichas sinuosa* (SC)

black rail, *Laterallus jamaicensis coturniculus* (CA)

ashy storm-petrel, *Oceanodroma homochroa* (SC)

Reptiles

northwestern pond turtle, *Clemmys marmorata marmorata* (SC)

southwestern pond turtle, *Clemmys marmorata pallida* (SC)

California horned lizard, *Phrynosoma coronatum frontale* (SC)

Amphibians

foothill yellow-legged frog, *Rana boylii* (SC)

Fish

longfin smelt, *Spirinchus thaleichthys* (SC)

Invertebrates

Opler's longhorn moth, *Adela oplerella* (SC)

sandy beach tiger beetle, *Cicindela hirticollis gravida* (SC)

globose dune beetle, *Coelus globosus* (SC)

Ricksecker's water scavenger beetle, *Hydrochara rickseckeri* (SC)

bumblebee scarab beetle, *Lichnanthe ursina* (SC)

Plants

San Francisco manzanita, *Arctostaphylos hookeri ssp. franciscana* (SC) **

alkali milk-vetch, *Astragalus tener var. tener* (SC) *

San Francisco Bay spineflower, *Chorizanthe cuspidata var. cuspidata* (SC)

San Francisco gumplant, *Grindelia hirsutula var. maritima* (SC)

Kellogg's (wedge-leaved) horkelia, *Horkelia cuneata ssp. sericea* (SC) *

San Francisco popcornflower, *Plagiobothrys diffusus* (CA) *

adobe sanicle, *Sanicula maritima* (SC) *

Marin checkermallow, *Sidalcea hickmanii ssp. viridis* (SC)

Mission Delores campion, *Silene verecunda ssp. verecunda* (SC)

San Francisco owl's-clover, *Triphysaria floribunda* (SC)

QUAD : 466D OAKLAND WEST

Listed Species

Mammals

salt marsh harvest mouse, *Reithrodontomys raviventris* (E)

Birds

western snowy plover, *Charadrius alexandrinus nivosus* (T)

bald eagle, *Haliaeetus leucocephalus* (T)

California brown pelican, *Pelecanus occidentalis californicus* (E)

California clapper rail, *Rallus longirostris obsoletus* (E)

California least tern, *Sterna antillarum (=albifrons) browni* (E)

Reptiles

Alameda whipsnake, *Masticophis lateralis euryxanthus* (T)

Amphibians

California red-legged frog, *Rana aurora draytonii* (T)

Fish

tidewater goby, *Eucyclogobius newberryi* (E)

delta smelt, *Hypomesus transpacificus* (T)

coho salmon - central CA coast, *Oncorhynchus kisutch* (T)

Central California steelhead, *Oncorhynchus mykiss* (T)

Critical habitat, winter-run chinook salmon, *Oncorhynchus tshawytscha* (E)

winter-run chinook salmon, *Oncorhynchus tshawytscha* (E)

Central Valley spring-run chinook salmon, *Oncorhynchus tshawytscha* (T)

Sacramento splittail, *Pogonichthys macrolepidotus* (T)

Proposed Species

Fish

Critical Habitat, Central Valley spring-run chinook, *Oncorhynchus tshawytscha* (PX)

Plants

Santa Cruz tarplant, *Holocarpha macradenia* (PT) *

Candidate Species

Amphibians

California tiger salamander, *Ambystoma californiense* (C)

Fish

Central Valley fall/late fall-run chinook salmon, *Oncorhynchus tshawytscha* (C)

Species of Concern

Mammals

Pacific western big-eared bat, *Corynorhinus (=Plecotus) townsendii townsendii* (SC)

Berkeley kangaroo rat, *Dipodomys heermanni berkeleyensis* (SC) *

greater western mastiff-bat, *Eumops perotis californicus* (SC)

- long-eared myotis bat, *Myotis evotis* (SC)
- fringed myotis bat, *Myotis thysanodes* (SC)
- long-legged myotis bat, *Myotis volans* (SC)
- Yuma myotis bat, *Myotis yumanensis* (SC)
- San Francisco dusky-footed woodrat, *Neotoma fuscipes annectens* (SC)
- Alameda Island mole, *Scapanus latimanus parvus* (SC)
- salt marsh vagrant shrew, *Sorex vagrans halicoetes* (SC)

Birds

- tricolored blackbird, *Agelaius tricolor* (SC)
- Bell's sage sparrow, *Amphispiza belli belli* (SC)
- ferruginous hawk, *Buteo regalis* (SC)
- little willow flycatcher, *Empidonax traillii brewsteri* (CA)
- American peregrine falcon, *Falco peregrinus anatum* (D)
- saltmarsh common yellowthroat, *Geothlypis trichas sinuosa* (SC)
- black rail, *Laterallus jamaicensis coturniculus* (CA)
- Alameda (South Bay) song sparrow, *Melospiza melodia pusillula* (SC)

Reptiles

- northwestern pond turtle, *Clemmys marmorata marmorata* (SC)
- southwestern pond turtle, *Clemmys marmorata pallida* (SC)
- California horned lizard, *Phrynosoma coronatum frontale* (SC)

Amphibians

- foothill yellow-legged frog, *Rana boylii* (SC)

Fish

- longfin smelt, *Spirinchus thaleichthys* (SC)

Invertebrates

- Bridges' Coast Range shoulderband snail, *Helminthoglypta nickliniana bridgesi* (SC)
- Ricksecker's water scavenger beetle, *Hydrochara rickseckeri* (SC)
- San Francisco lacewing, *Nothochrysa californica* (SC)

Plants

- alkali milk-vetch, *Astragalus tener var. tener* (SC) *
- San Francisco Bay spineflower, *Chorizanthe cuspidata var. cuspidata* (SC) *
- northcoast bird's-beak, *Cordylanthus maritimus ssp. palustris* (SC) *
- Kellogg's (wedge-leaved) horkelia, *Horkelia cuneata ssp. sericea* (SC) *

adobe sanicle, *Sanicula maritima* (SC) *

KEY:

(E)	*Endangered*	Listed (in the Federal Register) as being in danger of extinction.
(T)	*Threatened*	Listed as likely to become endangered within the foreseeable future.
(P)	*Proposed*	Officially proposed (in the Federal Register) for listing as endangered or threatened.
(PX)	*Proposed Critical Habitat*	Proposed as an area essential to the conservation of the species.
(C)	*Candidate*	Candidate to become a *proposed* species.
(SC)	*Species of Concern*	May be endangered or threatened. Not enough biological information has been gathered to support listing at this time.
(D)	*Delisted*	Delisted. Status to be monitored for 5 years.
(CA)	*State-Listed*	Listed as threatened or endangered by the State of California.
(*)	*Extirpated*	Possibly extirpated from this quad.
(**)	*Extinct*	Possibly extinct.
	Critical Habitat	Area essential to the conservation of a species.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
777 Sonoma Avenue, Ste. 325
Santa Rosa, California 95404

April 12, 2000 F/SWR:4 BMM

Terry Witherspoon
Tetra Tech, Incorporation
180 Howard Street, Suite 250
San Francisco, California 94105-1617

Dear Terry Witherspoon:

Thank you for your letter requesting a list of species of concern from the National Marine Fisheries Service (NMFS) that are found in the project area impacted by the Disposal and Reuse of Naval Station Treasure Island in San Francisco County, California.

The following fish species federally-listed under the Endangered Species Act are located within the project area:

Sacramento River winter-run chinook salmon (Oncorhynchus tshawytscha)- endangered
Central Valley ESU spring-run chinook salmon- (Oncorhynchus tshawytscha) - threatened
Central California Coast ESU steelhead (Oncorhynchus mykiss) - threatened
Central Valley ESU steelhead (Oncorhynchus mykiss) - threatened

The project is located within designated critical habitat for the above listed species.

The project location is also designated as Essential Fish Habitat (EFH) for fish species managed with the following Fishery Management Plans under the Magnuson-Stevens Fishery Conservation and Management Act:

Pacific Groundfish Fishery Management Plan
Coastal Pelagics Fishery Management Plan

Information on EFH and the Fishery Management Plans, as well as species lists for the project area, are located on our website under Habitat Conservation Division (http://swr.ucsd.edu).

Two species of marine mammals are located in the project area: the California sea lion and the Harbor seal. These species are protected by the Marine Mammal Protection Act.

The U. S. Fish and Wildlife Service (USFWS) may also have listed species or critical habitat under its jurisdiction in the project area. Please contact USFWS at 2800 Cottage Way, Sacramento, California 95825, or (916) 414-6600, regarding the presence of listed species or critical habitat under their jurisdiction that may be affected by your project.

If you have any questions concerning these comments, please contact Brian Mulvey at (707) 575-6056.

Sincerely,

James R. Bybee
Habitat Program Manager
Northern California Region

cc: Christina Fahy, NMFS

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

IN REPLY REFER TO:
1-1-02-SP-306

November 26, 2001

Ms. Jeannette Weisman
Biologist
Tetra Tech, Inc.
180 Howard Street, Suite 250
San Francisco, California 94105

Subject: Species List for Environmental Impact Statement for Disposal and Reuse of Naval Station Treasure Island, San Francisco County, California

Dear Ms. Weisman:

We are sending the enclosed list in response to your November 19, 2001, request for information about endangered and threatened species (Enclosure A). The list covers the following U.S. Geological Survey 7½ minute quad or quads: San Francisco North and Oakland West Quads.

Please read *Important Information About Your Species List* (enclosed). It explains how we made the list and describes your responsibilities under the Endangered Species Act. Please contact Harry Mossman, Biological Technician, at (916) 414-6674, if you have any questions about the attached list or your responsibilities under the Endangered Species Act. For the fastest response to species list requests, address them to the attention of Mr. Mossman at this address. You may fax requests to him at 414-6712 or 6713.

Sincerely,

Cecilia L. Brown

for Jan C. Knight
Chief, Endangered Species Division

Enclosures

Important Information
About Your Species List

How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute *quads*. The United States is divided into these quads, which are about the size of San Francisco. If you requested your list by quad name or number, that is what we used. Otherwise, we used the information you sent us to determine which quad or quads to use.

Animals

The animals on your species list are ones that occur within, *or may be affected by projects within*, the quads covered by the list. Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.

Plants

Any plants on your list are ones *that have actually been observed* in the quad or quads covered by the list. We have also included either a county species list or a list of species in nearby quads. We recommend that you check your project area for these plants. Plants may exist in an area without ever having been detected there.

Surveying

Some of the species on your list may not be affected by your project. A trained biologist or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list. For plant surveys, we recommend using the enclosed *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Species.* The results of your surveys should be published in any environmental documents prepared for your project.

State-Listed Species

If a species has been listed as threatened or endangered by the State of California, but not by us nor by the National Marine Fisheries Service, it will appear on your list as a Species of Concern. *However you should contact the California Department of Fish and Game for official information about these species.* Call (916) 322-2493 or write Marketing Manager, California Department of Fish and Game, Natural Diversity Data Base, 1416 Ninth Street, Sacramento, California 95814.

Your Responsibilities Under the Endangered Species Act

All plants and animals identified as *listed* on Enclosure A are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the *take* of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal. Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

> If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a *formal consultation* with the Service. Such consultation would result in a *biological opinion* addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.
>
> If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an *incidental take permit*. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project. Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that mitigates for the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the mitigation plan in any environmental documents you file.

Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as *critical habitat*. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Maps and boundary descriptions of the critical habitat may be found in the *Federal Register*. The information is also reprinted in the *Code of Federal Regulations* (50 **CFR** 17.95).

Candidate Species

We recommend that you address impacts to *candidate* species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

Your list may contain a section called *Species of Concern*. This term includes former *category 2 candidate species* and other plants and animals of concern to the Service and other Federal, State and private conservation agencies and organizations. Some of these species may become candidate species in the future.

Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6580.

Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed, candidate and special concern species in your planning, this should not be a problem. We also continually strive to make our information as accurate as possible. Sometimes we learn that a particular species has a different range than we thought. This should not be a problem if you consider the species on the county or surrounding-quad lists that we have enclosed. If you have a long-term project or if your project is delayed, please feel free to contact us about getting a current list. You can also find out the current status of a species by going to the Service's Internet page: *www.fws.gov*

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404

In reply please refer to:
DEC - 3 2001 151422-SWR-01-SR-937:ME

Jeanette Weisman, Biologist
Tetra Tech Inc.
180 Howard Street, Suite 250
San Francisco, California 94105

Dear Ms. Weisman:

Thank you for your letter dated November 21, 2001, regarding the presence of Federally listed threatened or endangered species or critical habitat that may be affected by the U.S.Navy's proposed Disposal and Reuse of Naval station Treasure Island, in San Francisco, California.

Available information indicates that the following listed species (Evolutionarily Significant Units) and designated critical habitat may occur in the project areas:

Sacramento River winter-run chinook salmon (*Oncorhynchus tshawytscha*)
endangered (January 4, 1994, 59 FR 440)
critical habitat (June 16, 1993, 58 FR 33212)
Central Valley spring-run chinook salmon (*Oncorhynchus tshawytscha*)
threatened (September 16, 1999, 64 FR 50394)
critical habitat (February 16, 2000, 65 FR 7764)
Central California Coast coho (*Oncorhynchus* kisutch)
threatened (October 31, 1996, 64 FR 56138)
critical habitat (May 5, 1999, 64 FR 24049)
Central California Coast steelhead (*Oncorhynchus mykiss*)
threatened (August 18, 1997, 62 FR 43937)
critical habitat (February 16, 2000, 65 FR 7764)
Central Valley steelhead (*Oncorhynchus mykiss*)
threatened (March 19, 1998, 63 FR 13347)
critical habitat (February 16, 2000, 65 FR 7764)

The project location is also within an area designated as Essential Fish Habitat (EFH) for fish species managed with the following Fishery Management Plans (FMP) under the Magnuson-

Stevens Fishery Conservation and Management Act:

Pacific Groundfish FMP - (English sole, spiny dogfish, big skate, leopard shark, etc.)
Coastal Pelagics FMP - (northern anchovy, Pacific sardine)
Pacific Coast Salmon FMP - (chinook salmon)

If you have questions concerning these comments, please contact Maura Eagan of my staff at (707) 575-6092.

Sincerely,

Patrick J. Rutten
Northern California Supervisor
Protected Resources Division

cc: Jim Lecky, NMFS

U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
WASHINGTON, D.C. 20410-7000

OFFICE OF THE ASSISTANT SECRETARY FOR
COMMUNITY PLANNING AND DEVELOPMENT

November 26, 1996

Larry Florin
Manager of Military Base Conversion
City and County of San Francisco
401 Van Ness Avenue, Room 336
San Francisco, CA 94102

Dear Mr. Florin:

I am pleased to inform you that the Department of Housing and Urban Development (HUD) has approved your base reuse plan for the Naval Station Treasure Island under the Base Closure Community Redevelopment and Homeless Assistance Act of 1994. This means that you can now move forward with implementing your plan.

Specifically, we have determined that the plan meets the requirements under the Act regarding outreach to homeless assistance providers and balancing the economic redevelopment, other development, and homeless needs of your community. We are pleased that the City and County of San Francisco and the Treasure Island Homeless Development Initiative agreed on a mutually acceptable arrangement that is reflected in the enclosed legally binding agreement which provides for participation in housing and economic development opportunities for the clients of fourteen homeless providers.

Congratulations on your success in balancing the diverse needs of your community. The creative combination of interim use of the base housing and funding from part of the proceeds of its future development is a model for base redevelopment.

I wish you continued success in implementing your base reuse plan. HUD stands ready to assist you in your revitalization efforts.

Sincerely,

Andrew Cuomo
Assistant Secretary

Enclosure

STATE OF CALIFORNIA — THE RESOURCES AGENCY PETE WILSON, Governor

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
P.O. BOX 942896
SACRAMENTO 94296-0001
(916) 653-6624
FAX: (916) 653-9824

October 15, 1997

REPLY TO: USN970708A

Louis S. Wall, Cultural Resources Program Coordinator
Environmental Planning Branch
Engineering Field Activity, West
Naval Facilities Engineering Command
900 Commodore Drive
SAN BRUNO CA 94066-24402

Dear Mr. Wall:

RE: CLOSURE OF NAVAL STATION TREASURE ISLAND, SAN FRANCISCO

Thank you for fowarding the above referenced undertaking to my office for review and comment pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations found at 36 CFR Part 800.

The undertaking is the closure of Naval Station Treasure Island, San Francisco pursuant to the Base Realignment and Closure Act. As part of its responsibilities under Section 106 the Navy has evaluated properties at the Naval Station to determine if any are eligible for inclusion in the National Register of Historic Places. The documentation for the Navy's determinations is found in "Cultural Resource Inventory and Evaluation Investigations: Yerba Buena Island and Treasure Island Naval Station Treasure Island, San Francisco, California," prepared by JRP Historical Consulting Services in March 1997, and in "Archeological Inventory and Assessment of Naval Station Treasure Island Disposal and Reuse Project, San Francisco County, California," prepared by PAR Environmental Services in June 1997. As a result of these studies, the Navy has determined that the following properties are eligible for inclusion in the National Register of Historic Places: Senior Officers' Quarters Historic District, Yerba Buena Island; Quarters 8, Quarters 9, and Building 262, Yerba Buena Island; and that archeological sensitivity zones 1 through 4 have the potential to yield important information about the prehistory or history of Yerba Buena Island, and may qualify for listing in the National Register. The Navy has noted that consensus determinations of eligibility between the SHPO and the Navy exist for Buildings 1, 2, and 3 on Treasure Island, and has not asked for my concurrence in their National Register eligibility at this time. The Navy has further determined that the balance of buildings and archeological properties at the Naval Station are not eligible for inclusion in the National Register. My comments on your various determinations appear below.

Senior Officers' Quarters Historic District, Yerba Buena Island: You have determined that this district is eligible for inclusion in the National Register under criteria A and C at the local level of significance. The period of significance for the district extends from 1900-1947. Contributors include Quarters 1-7 (Quarters 1 is individually listed in the National Register), Building 83, Building 205, and Building 230. Boundaries for the district are outlined at Figure 1 of the District Record form. The period of significance extends from 1900-1947. I agree with the concept of the proposed historic district, but I think it is important to clarify some additional characteristics of the district at this time. While you have acknowledged that landscape elements tie buildings in the district together, you have not identified them as contributors to the district. I recommend that you include the site of the district as an additional contributor including collectively the 1940 tennis court, walkways, terraced gardens, masonry walls, greensward in front of Quarters 1-4, and whatever other elements you believe appropriate. Also, what non-contributors exist within the district boundaries? There is one small building identified by the initials G.H. near Building 205., I am assuming this is a non-contributor, along with Building 200 which you have show inside the boundaries. Is this assumption correct? .

Quarters 8, Yerba Buena Island: I concur with your determination that Quarters 8, built in 1905, is individually eligible for inclusion in the National Register under criteria A and C at the local level of significance. Its period of significance extends from 1905-1947.

Quarters 9, Yerba Buena Island: I concur with your determination that Quarters 9, built c. 1916, is individually eligible for inclusion in the National Register under criteria A and C at the local level of significance. Its period of significance extends from 1916-1947.

Building 262, Yerba Buena Island: I concur with your determination that Building 262, constructed in 1891 and known historically as the Torpedo Assembly Building, is individually eligible for inclusion in the National Register under criteria A and C at the state level of significance. Its period of significance extends from 1891-1947.

Archeological Sensitivity Zones 1 through 4: I agree that Sensitivity Zones 1 through 4 appear to have the potential to contain important information in history and prehistory. This information has largely been recovered over the years during construction activities in the various sensitivity areas. Your current submittal, however, documents evidence that each of the sensitivity zones has been sufficiently damaged over the years to possess only limited integrity. Thus far, the Navy has formally identified CA-SFr-4 (sensitivity zone 1), while the three other sensitivity zones (2 through 4) have not been recorded nor have trinomials been assigned. I agree that while lacking definitive information on the sensitivity zone deposits they <u>may</u> still be eligible for the National Register as the Navy asserts. To date, however, there is nothing to support a determination that any of the sensitivity zones or CA-SFr-4 <u>are</u> eligible for the National Register.

Miscellaneous Archeological Properties: The Navy requests that I concur with its determination that none of the <u>other</u> prehistoric sites or historic archeological features are eligible for inclusion in the National Register. Other than CA-SFr-4 and the sensitivity zones discussed above, what other prehistoric sites/features are there? I am also very interested to know how the Navy supports its determination that the historic era features P-35-000135 through P-38-000156 are not eligible. It seems that certain of these features, for example the 1916 Recruit Mess Hall/Kitchen Complex (P-38-000135), might have buried deposit. The Navy should determine whether this a possibility before formalizing its National Register eligibility determination for the 22 historic era features.

Non-eligible Buildings/Structures: I concur with your determination that the buildings/structures listed in Table 3.2 of JRP Historical Consulting Services "Cultural Resource Inventory and Evaluation Investigations", pp. 4-10 are not eligible for inclusion in the National Register.

Treasure Island: Treasure Island was built in 1936 by the San Francisco District Corps of Engineers on the Yerba Buena Shoals. JRP Historical Consulting Services describe the feat, "filling a 400 acre island with millions of cubic yards of rock and sand—in about 18 months" as a "Herculean task." You have not addressed the eligibility of this property. What are the views of the Navy regarding the National Register eligibility of this structure (excluding later improvements) created by the engineering talents of the Corps of Engineers?

I look forward to hearing from you at your earliest convenience regarding the Senior Officers' Quarters Historic District on Yerba Buena Island, archeological properties outside of the identified sensitivity zones on Yerba Buena Island, and Treasure Island. If you have questions or comments regarding historic buildings or structures, please contact staff historian Lucinda Woodward at (916) 653-9116. Questions or comments regarding prehistoric or historic sites or features should be addressed to staff archeologist Steve Grantham at (916) 653-8920.

Sincerely,

Cherilyn Widell
State Historic Preservation Officer

APPENDIX D
NOTICE OF INTENT

NOTICE OF INTENT

FEDERAL REGISTER NOTICE

Subject: Notice of Intent to Prepare a Joint Environmental Impact Statement (EIS)/Environmental Impact Report (EIR) for the Disposal and Potential Reuse of Naval Station Treasure Island, San Francisco, California

Pursuant to Section 102 (2)(C) of the National Environmental Policy Act (NEPA), the Council of Environmental Quality Regulations (40 CFR Part 1505.6), and the California Environmental Quality Act (CEQA) Section 15170, the Department of the Navy in coordination with the City and County of San Francisco, is preparing a joint Environmental Impact Statement (EIS)/Environmental Impact Report (EIR) for disposal and proposed reuse of the Naval Station Treasure Island (NSTI) property and structures located in the City and County of San Francisco, California. The Navy will be the lead agency for NEPA documentation and the City and County of San Francisco will be the lead agency for CEQA documentation. NSTI was selected for closure and disposal by the Defense Realignment and Closure Commission of 1993, acting under the Base Closure and Realignment Act (Public Law 101-510) of 1990, and its subsequent amendments. NSTI is scheduled for closure in September, 1997.

NSTI is located in the San Francisco Bay between the cities of Oakland and San Francisco within the boundaries of the City and County of San Francisco although it is not presently under state or local legislative jurisdiction. NSTI occupies about 403 acres on Treasure Island, with about 150 military buildings, 908 family housing units, and nine barrack-style housing facilities, and also occupies about 115 acres on Yerba Buena Island, with approximately 10 military buildings and 105 housing units. Yerba Buena Island is bisected by the upper and lower decks of the San Francisco-Oakland Bay Bridge.

The EIS/EIR will address Navy disposal of the property, including a Navy "no action alternative," and the potential environmental impacts resulting from community reuse development proposed in the Naval Station Treasure Island Reuse Plan prepared by the City and County of San Francisco. The reuse plan's Land Use Plan, dated July 1996, will serve as the basis for the EIS/EIR reuse alternatives. Three community reuse alternatives are expected to be evaluated in the EIS/EIR: the Maximum Density Alternative, Reduced Density Alternative, and Residential Neighborhood Alternative. The Navy "no action" alternative will evaluate NSTI as closed but remaining in federal caretaker status.

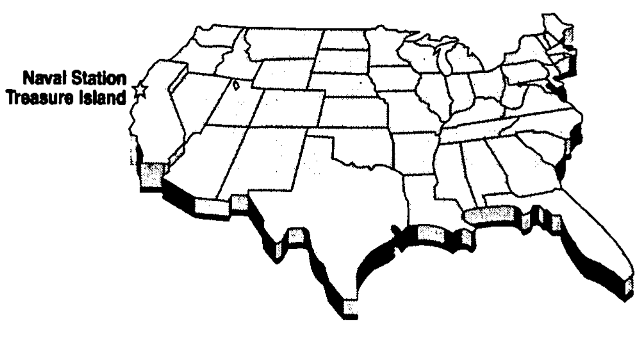
The Maximum Density Alternative includes publicly oriented uses such as a themed attraction, sports fields, film production center, hotels, museum, and conference center. It also includes institutional uses, educational and child care facilities, a fire fighting training school, community services, recreational facilities, public open space along the Treasure Island shoreline and Yerba Buena north and west facing hillsides, and up to 2,800 residential units. The Reduced Impact Alternative includes the publicly oriented, institutional uses, and recreational facilities identified above, as well as the public open space along the Treasure Island shoreline and Yerba Buena north and west facing hillsides. However, there would be no housing developed on Treasure Island under

NOTICE OF INTENT *(continued)*

this alternative. Up to 300 housing units would be located on Yerba Buena Island. The Residential Neighborhood Alternative focuses on the creation of new housing opportunities at NSTI, with up to 5,000 dwelling units located on Treasure Island, and up to 300 units located on Yerba Buena Island. It includes publicly oriented uses such as a film production center and a small hotel, as well as institutional uses, educational and child care facilities, recreational facilities, and public open space along the Treasure Island shoreline and Yerba Buena Island north and west facing hillsides.

Federal, state, and local agencies, and interested individuals are encouraged to participate in the EIS/EIR scoping process to assist the Navy in determining the range of issues and alternatives to be addressed. A public scoping hearing to receive oral and written comments will be held on Wednesday, October 9, 1996 at 7:00 p.m. in the Port Commission Meeting Room, Third Floor, Suite 3100, Ferry Building, San Francisco, California. Navy and City and County of San Francisco representatives will briefly summarize the community reuse planning process, the environmental impact assessment processes, and will then solicit public comments. In the interest of allowing everyone a chance to participate, speakers will be requested to limit their oral comments to five (5) minutes. Longer comments should be summarized at the public meeting and/or mailed to the address listed at the end of this announcement.

All written comments should be submitted within 30 days of the published date of this notice to Ms. Mary Doyle (Code 185), Engineering Field Activity West, Naval Facilities Engineering Command, 900 Commodore Drive, San Bruno, California 94066-5006, telephone (415) 244-3024, fax (415) 244-3737. For information concerning the EIR, please contact the City and County of San Francisco, Planning Department, Ms. Carol Roos, telephone (415) 558-6389, or fax (415) 558-6426. For further information regarding the Naval Station Treasure Island Reuse Plan, please contact Ms. Alison Kendall, City and County of San Francisco, Planning Department, telephone (415) 558-6290, or fax (415) 558-6426.



APPENDIX E
REUSE ALTERNATIVE ASSUMPTIONS

APPENDIX E
REUSE ALTERNATIVE ASSUMPTIONS

Reuse Alternative Assumptions

In addition to the assumptions made for each reuse alternative (Tables E-2 to E-4 at the end of this appendix), certain analyses required further assumptions. These are described below by resource area. Only those resource areas that required further assumptions are listed. The absence of a resource area in this list means that the analysis for that resource area was possible without further assumptions or that assumptions are provided in a separate appendix, as is the case with Transportation and Socioeconomics. Figure E-1, Building Numbers, identifies the location of buildings referenced in Tables E-2 through E-4 and is presented at the end of this appendix.

Although the Draft Reuse Plan presents a possible phasing strategy for reuse development, phasing was not assumed in the analysis in this EIS. As stated in the Reuse Plan, "phasing is illustrative and is expected to vary depending on actual market conditions, funding, and policy decisions" (San Francisco 1996e). The EIS therefore assesses the socioeconomic and environmental conditions at full buildout for each of the alternatives in order to avoid inaccurate impact characterization under a phased reuse implementation.

Subsequent to completion of the federal screening process and Navy determination that the property at Treasure Island was surplus to the needs of the United States on July 6, 1995, FHWA acquired 97 acres (39 ha) on Yerba Buena Island held by Navy. FHWA conveyed this property to Caltrans for construction of the east span of the SFOBB. The deed conveying the right-of-way also granted Caltrans a temporary construction easement over a substantial part of the remaining property on the Yerba Buena Island, as well as permanent aerial easements over two parcels of land. The easements impose substantial restrictions on Navy's ability to access and utilize the underlying property. For that reason, Navy is effectively precluded at this time from taking those actions that are required of it to make the property suitable for conveyance. The Navy's analysis of the impacts of disposal and reuse of federal property to

San Francisco is limited to the Navy property that can presently be determined to be suitable for transfer.

Land transferred to FHWA was previously considered as part of the reuse area in the 1995 Draft Reuse Plan and specific residential, publicly oriented, and open space uses were contemplated. While the EIS is based on the 1995 Draft Reuse Plan, the development plan presented is intended to be illustrative of the implications of plan policies and guidelines and "is by no means reflective of the only way development may occur" (San Francisco 1996e). For this reason, the analysis assumes that uses that were proposed for this area are central to the objectives of the reuse plan and would be accommodated in some manner within the remaining reuse plan area (i.e. other locations or on reduced acreages).

While it may not be feasible to accommodate all open space proposed for the FHWA/Caltrans area elsewhere within the reuse plan area, loss of some open space would not have a measurable effect on the analysis in the EIS. Open space mainly has a beneficial impact under reuse by providing recreational space and visual enhancement, and contributes very little to socioeconomic and environmental impacts. For example, loss of open space as a result of the FHWA transfer would be estimated to result in a decrease of approximately 0.4% of the daily trips generated by community reuse. This change would be within the reasonable range of error for traffic estimates and, more importantly, well within the range of expected variation given likely changes in community reuse. Although it is no longer part of the reuse plan area, since much of the open space area transferred to FHWA is steeply sloping and has limited potential for development, areas not necessary for construction or operation of the SFOBB may remain as open space.

Visual Resources Assumptions

Alternative 1

Under Alternative 1, a mix of land uses would be established that emphasizes publicly oriented development, open space/recreation, and residential development. Key assumptions about proposed development components that could affect visual resources or shadow include:

Shoreline on Treasure Island. The dike would remain at its present height (14 feet [4 m] NGVD), with modest widening and no highly visible structural strengthening; a 100-foot (30.5-m) wide shoreline open space corridor with landscaping, paths and overlooks (as described in the urban design section of the reuse plan [p. 65]).

Hotels on Treasure Island. Two building complexes with height up to 75 feet (23 m), as shown in reuse plan Figure 3 (Illustrative Plan); San Francisco would apply some massing restrictions to the design of these buildings; the footprints of the buildings would not exceed 10 percent of the 75-foot (23-m) height-limit area.

Themed attraction. General appearance would be similar to Disneyland or Africa/USA, with lighting displays at night, fountains, elaborate landscaping in places, some tall structure such as a roller coaster, and at least 1 landmark structure for distant visibility in a central location (assumed to be a slender structure up to 100 feet [30.5 m] high); other buildings up to 60 feet (18 m), with building density similar to that of existing conditions.

Offices. 60-foot (18-m) height limit, with densities similar to the existing conditions.

Sports complex. No major landmark structures; building heights up to 60 feet (18 m), with the majority of the area comprising open playing fields for soccer, basketball, tennis courts, etc.

New residential on Treasure Island. 2,300 new units, replacing approximately 700 existing units on 80 acres (32.5 ha) (at an average density of almost 30 units per acre [0.4 ha]) and heights up to 40 feet (12 m) high (4-story multi-family dwellings). Two hundred existing residential units of the 1400 series would remain.

Small hotel/bed and breakfast on Yerba Buena Island. Sited on the hilltop location, with 60-foot (18-m) height limit and building density similar to that shown in the reuse plan, Figure 3 (Illustrative Plan).

New residential on Yerba Buena Island. 250 units, with approximately 170 new units and approximately 80 new infill units within existing residential areas higher on the hill. Buildings are assumed to be multi-family and up to 40 feet (12 m) in height (4-story).

Open space and vegetation. Loss of vegetation and open space would occur on both Treasure Island and Yerba Buena Island, but new development would minimize loss of large trees (including mature Eucalyptus trees on Yerba Buena Island) by rebuilding on current building footprints.

Demolition. Buildings unsuitable for reuse would be demolished at various locations on Treasure Island and at the hilltop (Tower Park area) on Yerba Buena Island; most residential structures elsewhere on Yerba Buena Island would remain or be rebuilt on the same general footprint.

Roads and SFOBB access. No change in the appearance or configuration of the roadways and bridge ramps.

Ferry terminals at Pier 1 and Treasure Island west side. Would include covered terminal buildings of modest scale (not landmark), similar in scale to Jack London Square on Oakland.

Alternative 2

Key assumptions on major development components that could affect visual resources include:

Shoreline area. Similar to that described for Alternative 1, except that the shoreline open space would be wider (assumed 150 feet [46 m]) in most areas.

Themed attraction. As for Alternative 1, with 1 landmark structure for distant visibility but lower overall density and more open space/landscaping.

Urban entertainment center. 300,000 square feet (27,870 square m) on 6 acres (2.5 ha), located behind the museum on Clipper Cove, and up to 3 stories (40 feet [12 m]).

Amphitheater. 91,476 square feet (8,498 square m) on 7 acres (3 ha), assumed to be without a distinctive architectural feature, and approximately 40 feet (12 m) high.

Sports facilities. Similar to existing facilities.

Hotels on Treasure Island. Similar to Alternative 1, with a 700 room hotel (with 100,000 square-foot (9,290 square-m) conference facility) and 500 room resort hotel, assumed to be up to 75 feet (23 m) and configured as described for Alternative 1.

Small hotel/bed and breakfast on Yerba Buena Island. 150 units on 14 acres (6 ha)(i.e., much lower density than Alternative 1); assumes limited razing of existing housing in the area, with mainly conversion of use; height/mass of hotel assumed to be less than 40 feet (12 m), which is less than Alternative 1 limit of 60 feet (12 m).

Demolition. Several large buildings in northern half of the island would be razed, as well as housing in the hotel/bed and breakfast area on Yerba Buena Island and Buildings 2 and 3.

New residential on Yerba Buena Island. 200 units on 7 acres (3 ha); height/mass/lower density than Alternative 1; 2-story maximum.

Golf course. 147 acres (59.5 ha) on site of present housing, assumed to be regraded and landscaped.

Wildlife area. 18 acres (7 ha), with viewing areas.

Alternative 3

Key assumptions on major development components that could affect visual resources include:

Shoreline area. New seawall and landscaping restricted to the southern perimeter of Treasure Island.

Small themed attraction. 39 acres (16 ha), with much lower intensity of development than in the other alternatives; includes 1 landmark structure for distant visibility (100 feet [30.5]); other new buildings similar in height to existing buildings.

Small hotel/bed and breakfast Yerba Buena Island. As described for Alternative 1.

New residential Yerba Buena Island. 70 new units on 9 acres (3.5 ha), at the lowest density of all alternatives; 2 to 3 stories.

Demolition. Most buildings remain intact (including hangars and barracks buildings); some razing of buildings, particularly in the themed attraction area.

Ferry pier. No new west side ferry pier.

Water Resources Assumptions

All Three Reuse Alternatives

Levee. The height of the levee was assumed to be raised as necessary to 15 feet (4.5 m) NGVD around the entire perimeter of Treasure Island.

Dredging. All ferry piers and marina area 15 to 20 feet (4.5 to 6 m) below MLLW.

Utilities Assumptions

Alternative 1

Under this alternative, a new reinforced utility corridor would be constructed along the perimeter of Treasure Island in conjunction with the geotechnical perimeter improvements. This corridor would contain primary infrastructure for the potable water distribution, wastewater collection, stormwater collection, electrical, natural gas, and telecommunications systems. The utility corridor also might include a recycled wastewater distribution system. Construction of the corridor would occur as a long-term phased development.

For infrastructure improvements not associated with the utility corridor, a long-term phased replacement plan coordinated with reuse and redevelopment likely would be implemented. The plan likely would coordinate upgrades and replacement with development of specific portions of the property. During the initial phases of reuse, existing infrastructure would be used to the extent possible with minor system upgrades, as necessary. Some of the required infrastructure improvements include:

- replacement of potable water pipelines composed of PVC and concrete-lined steel with ductile iron piping;
- replacement or repair of the potable water storage reservoirs;
- replacement of the wastewater collection system with a gravity-fed system composed of vitrified clay pipe; and
- construction of a new tertiary-level wastewater treatment plant.

Alternative 2

The utility corridor constructed under this alternative would not extend to the shoreline perimeter adjacent to the golf course. Infrastructure improvements and repairs not associated with this corridor likely would be implemented as part of a separate long-term phased program coordinated with reuse and redevelopment.

Alternative 3

The new utility corridor would only be built on the southern Treasure Island perimeter. Infrastructure improvements and repairs not associated with this corridor likely would occur as needed to support the program of reuse and redevelopment.

Hazardous Materials and Waste Assumptions

All Three Reuse Alternatives

The reuse alternatives call for a mix of land uses, most of which could involve the use and storage of hazardous materials. The alternatives include developed recreational and entertainment, institutional, and commercial land uses that, depending on the specific type of operation, could generate hazardous wastes. Hazardous materials likely to be used upon implementation of a reuse alternative based on land use categories are identified in Table E-1.

Table E-1
Hazardous Materials Use by Land Use Category

Land Use	Operation Process	Hazardous Materials
Entertainment and publicly-oriented uses	Activities associated with themed attraction, hotel, and entertainment, including building and facilities maintenance and boat/ferry service and operations	Petroleum products, solvents, heavy metals, corrosives, catalysts, aerosols, fuels, heating oils, flammables, pesticides
Recreation/open space	Maintenance of existing recreation facilities and development of new facilities, including golf course, bike path, sports complex, swimming pools, and other recreation facilities	Pesticides, fertilizers, chlorine, heating oils, paints, thinners, cleaners, solvents, aerosols
Institutional	Public education, higher education, research labs, training facilities, vocational schools	Laboratory chemicals, corrosives, flammables, solvents, heating oils, solvents, lubricants, cleaners, pesticides, paints, thinners
Commercial	Activities associated with offices, film production, retail, service industries, restaurants	Fuels, heating oils, pesticides, dry cleaning chemicals, solvents, corrosives, flammables
Residential	Use and maintenance of single-family and multi-family units, landscaping	Pesticides, fertilizers, fuels, oils, chlorine, and household chemicals

Source: Developed by San Francisco 1997.

Table E-2
Alternative 1 Assumptions

TREASURE ISLAND LAND USE	Acres	FAR[1]	Buildout sf	Other	Existing Buildings to Be Reused
Publicly Oriented					
Themed Attraction	59	n/a		13,700 average daily visitors	
Hotel/Conference/Lodging	18	n/a		300 room hotel (unknown buildout sf) and 1,000 room hotel (unknown buildout sf)	
Retail/Specialty/Restaurant	8	n/a	225,000	includes three "landmark" restaurants	1, 227, 271
Entertainment center	0		0		
Amphitheater	0		0		
Movie Theater	0		0		
Wedding Chapel	0		0		
Museum	3	n/a	15,000	museum (see also retail/specialty/restaurant and mixed use/office)	1
Mixed Use/Office	11	n/a	100,000		1, 450, 140
Film Production	31	n/a	501,000	401,000 sf existing; expand by 100,000 sf	2, 3, 180, 111
Marina (land)	2	n/a	20,000	20,000 sf yacht club	
Marina (water)				12 water acres; 103 existing slips; 200 new slips and 100 new buoys	
Other publicly oriented uses	14	0.30	182,952	new development	
Total Publicly Oriented	**146**				
Residential					
Existing Residential	22	n/a		200 units	1400 series
New Residential	80	n/a		2,300 units	
Neighborhood Retail	1	n/a	24,000		
Total Residential	**103**				
Institutional and Community					
Elementary school	9	n/a		existing facility	existing buildings
Child development center	4	n/a	10,123	existing facility	502
Fire training school	5	n/a	69,887	existing facilities	600-617
Warehouse/Storage	0		0		
WWTP	10	0.20	87,120	new facility	
Brig	5	n/a	26,310	existing facilities	670, 671
Fire station	4	0.20	34,848	new facility	
Police station	3	0.20	26,136	new facility	
Other institutional facilities	0		0		
Total Institutional and Community	**40**				
Open Space/Recreation					
Golf course	0		0		
Sports fields/complex	47	0.20	409,464	new and existing facilities (square feet calculated from FAR, not sf of existing buildings)	402, 497, 229
Shoreline promenade/open space	30	n/a			
Ferry Terminals/Piers	0		0	new ferry dock and breakwater on west side of NSTI; Pier 1 would provide ferry docking	Pier 1
Wildlife Habitat	0		0		
Total Open Space/Recreation	**77**				
Total Treasure Island Disposal Acreage	**366**			**402 acres minus federal-to-federal transfer acres**	
Total Treasure Island Building Square Footage			**1,731,840**		

Table E-2
Alternative 1 Assumptions *(continued)*

YERBA BUENA ISLAND LAND USE	Acres	FAR[1]	Buildout sf	Other	Existing Buildings to Be Reused
Publicly Oriented					
Hotel/Bed and Breakfast	1	n/a		150 room hotel (hilltop)	
Conference/Reception	4	n/a	90,241	Quarters 1-7 (30,241 sf) and new 60,000 sf conference facility	Quarters 1-7
Restaurant	0	n/a		restaurant is part of new 60,000 sf conference facility	
Total Publicly Oriented Uses	5				
Residential					
Existing Housing	23	n/a		approximately 90 units	100, 200, 300 series, excluding 326, 324, 320 and 162T (tank)
New Housing	4	n/a		approximately 250 units	
Mixed Use	1	n/a	12,000	approximately 10 live-work units	
Total Residential	**28**				
Institutional and Community	0				
Open Space/Recreation	**43**	**n/a**			
Total Yerba Buena Island Disposal Acreage	**76**			**115 acres minus federal-to-federal transfers and existing Coast Guard acres**	
Total Yerba Buena Island Building Square Footage			**102,241**		

[1] A Floor Area Ratio (FAR) of 0.20 was used for community facilities; 0.25 was used for neighborhood commercial facilities; 0.30 was used for visitor serving facilities

Table E-3
Alternative 2 Assumptions

TREASURE ISLAND LAND USE	Acres	FAR[1]	Buildout sf	Other	Existing Buildings to Be Reused
Publicly Oriented					
Themed Attraction	74	n/a		5,480 average daily visitors	2, 3
Hotel/Conference/Lodging	26	n/a		700 room hotel (unknown buildout sf) with 100,000 sf conference; 500 room tourist hotel (unknown buildout sf)	
Retail/Specialty/Restaurant	0		0		
Entertainment center	6	n/a	300,000		
Amphitheater	7	0.30	91,476	5,000 seats	
Movie Theater	0		0		
Wedding Chapel	1		9,884	existing facility	187
Museum	4		149,799	existing facility	1
Mixed Use/Office	0		0		
Film Production	0		0		
Marina (land)	0		0		
Marina (water)				65 water acres; between 500 and 675 slips and buoys	
Other publicly oriented uses	14	0.30	182,952	new development	
Total Publicly Oriented	**132**				
Residential					
Existing Residential	0		0		
New Residential	0		0		
Neighborhood Retail	0		0		
Total Residential	**0**				
Institutional and Community					
Elementary school	0		0		
Child development center	0		0		
Fire training school	5	n/a	69,887	existing facilities	600-617
Warehouse/Storage	0		0		
WWTP	5	0.20	43,560	new facility	
Brig	4	n/a	26,310	existing facilities	670, 671
Fire station	2	0.20	17,424	new facility	
Police station	2	0.20	17,424	new facility	
Other institutional facilities	0		0		
Total Institutional and Community	**18**				
Open Space/Recreation					
Golf course	147	n/a	20,000	20,000 sf clubhouse	
Sports fields/complex	18	n/a	36,325	square feet includes only existing facilities	402, 497
Shoreline promenade/open space	33	n/a			
Ferry Terminals/Piers	0		0	new ferry dock and breakwater on west side of NSTI; Pier 1 would provide ferry docking	Pier 1
Wildlife Habitat	18	n/a			
Total Open Space/Recreation	**216**				
Total Treasure Island Disposal Acreage	**366**			**403 acres minus federal-to-federal transfer acres**	
Total Treasure Island Building Square Footage			965,041		

Table E-3
Alternative 2 Assumptions *(continued)*

YERBA BUENA ISLAND LAND USE	Acres	FAR[1]	Buildout sf	Other	Existing Buildings to Be Reused
Publicly Oriented					
Hotel/Bed and Breakfast	14	n/a		150 room hotel/bed and breakfast	
Conference/Reception	5	n/a	30,241	Quarters 1-7	Quarters 1-7
Total Publicly Oriented Uses	**19**				
Residential					
Existing Housing	12	n/a		approximately 50 units	100, 200, 300 series, excluding buildings within the hotel/bed and breakfast area
New Housing	7	n/a		approximately 200 units	
Mixed Use	0		0		
Total Residential	**19**				
Institutional and Community	**0**				
Open Space/Recreation	**38**				
Total Yerba Buena Island Disposal Acreage	**76**			**115 acres minus federal-to-federal transfers and existing Coast Guard acres**	
Total Yerba Buena Island Building Square Footage			**42,241**		

[1] A Floor Area Ratio (FAR) of 0.20 was used for community facilities; 0.25 was used for neighborhood commercial facilities; 0.30 was used for visitor serving facilities

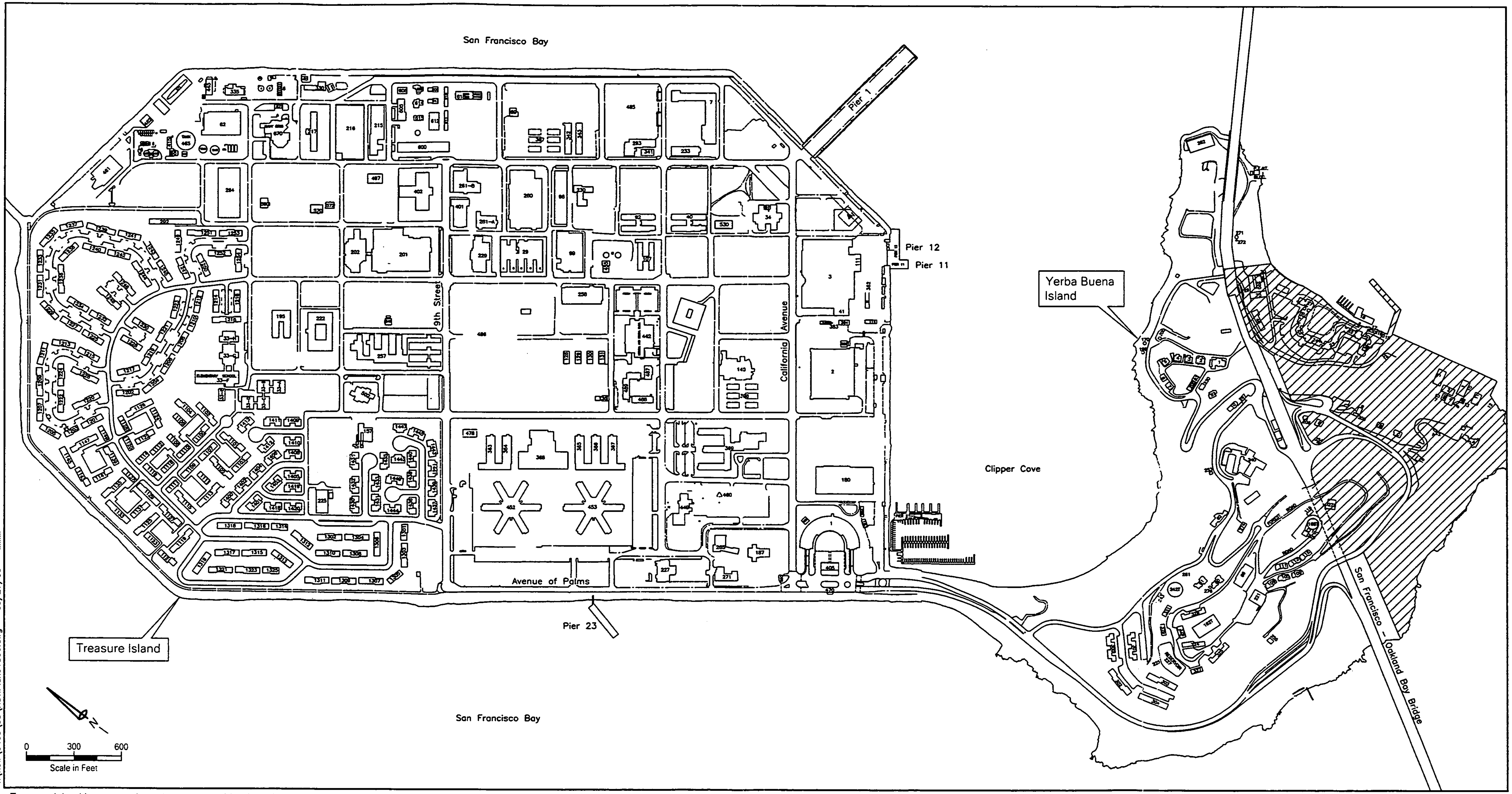
Table E-4
Alternative 3 Assumptions

TREASURE ISLAND LAND USE	Acres	FAR[1]	Buildout sf	Other	Existing Buildings to Be Reused
Publicly Oriented/Visitor Attraction					
Themed Attraction	39	n/a		2,740 average daily visitors	
Hotel/Conference/Lodging	6	n/a	80,000	80,000 sf conference	140
Retail/Specialty/Restaurant	1	n/a	13,200	Fogwatch restaurant	227
Entertainment center	0		0		
Amphitheater	0		0		
Movie Theater	0		0		
Wedding Chapel	2	n/a	9,884	existing facility	187
Museum	4	n/a	15,000	portion of existing facility (see also mixed use/office)	1
Mixed Use/Office	6	n/a	214,605	existing facilities (square feet calculated by using existing building 1 sf minus 15,000 sf, plus the square feet for building 265 and 450)	1, 265, 450
Film Production	33	n/a	501,000	existing facilities	2, 3, 180, 111
Marina (land)	2	n/a	20,000	20,000 sf yacht club	
Marina (water)				6 water acres; 103 existing slips	
Other publicly oriented uses	20	n/a	256,080	existing facility (7,788) plus possible new development (19 acres x 0.30 FAR x 43,560 = 248,292 sf)	271
Total Publicly Oriented	113				
Residential					
Existing Residential	110	n/a	360,370	905 units and 75 beds in barracks (360,370 sf)	1100, 1200, 1300, 1400 series; Barracks 452 and 453
New Residential	0		0		
Neighborhood Retail	0		0		
Total Residential	110				
Institutional and Community					
Elementary school	9	n/a		existing facility	existing buildings
Child development center	4	n/a	10,123	existing facility	502
Fire training school	5	n/a	69,887	existing facility	600-617
Warehouse/Storage	4	0.20	34,848	new facility	
WWTP	3	n/a		existing facility	415, 416, 417, 421, 465, 466, 467, 468
Brig	5	n/a	36,543	existing facilities	670, 671, 217
Fire station	2	n/a	10,215	existing facility	157
Police station	3	n/a	2,836	new facility in existing buildings	462, 463
Other institutional facilities	8	n/a	129,147	existing facilities	233, 7, 461
Total Institutional and Community	43				
Open Space/Recreation					
Golf course	0		0		
Sports fields/complex	40	n/a	150,557	existing facilities (150,557 sf) and possible new facilities (unknown sf)	402, 497, 201, 202
Shoreline promenade/open space	60	n/a			
Ferry Terminals/Piers	0		0	Piers 1 and 12 would provide ferry docking	Piers 1 and 12
Wildlife Habitat	0		0		
Total Open Space/Recreation	100				
Total Treasure Island Disposal Acreage	366			403 acres minus federal-to-federal transfer acres	
Total Treasure Island Building Square Footage			1,914,285		

Table E-4
Alternative 3 Assumptions *(continued)*

YERBA BUENA ISLAND LAND USE	Acres	FAR[1]	Buildout sf	Other	Existing Buildings to Be Reused
Publicly Oriented					
Hotel/Bed and Breakfast	3	n/a		150 room hotel (hilltop)	
Conference/Reception	5	n/a	30,241	existing buildings	Quarters 1-7
Total Publicly Oriented Uses	**8**				
Residential					
Existing Housing	31	n/a		approximately 90 units	100, 200, 300 series, excluding 326, 324, 320, 162T (tank)
New Housing	9	n/a		approximately 70 units	
Mixed Use	0		0		
Total Residential	40				
Institutional and Community	0				
Open Space/Recreation	28				
Total Yerba Buena Island Disposal Acreage	76			**115 acres minus federal-to-federal transfers and existing Coast Guard acres**	
Total Yerba Buena Island Building Square Footage			**42,391**		

[1] A Floor Area Ratio (FAR) of 0.20 was used for community facilities; 0.25 was used for neighborhood commercial facilities; 0.30 was used for visitor serving facilities



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Treasure Island has approximately 150 nonresidential buildings and 905 housing units. The NSTI portion of Yerba Buena Island includes 90 housing units and 10 other buildings for storage, communications, fire safety, and administration.

Legend

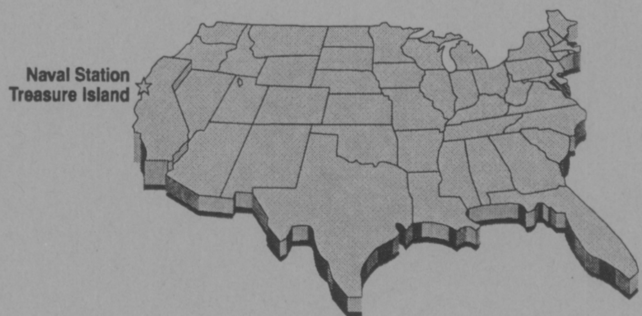
US Coast Guard

Building Numbers

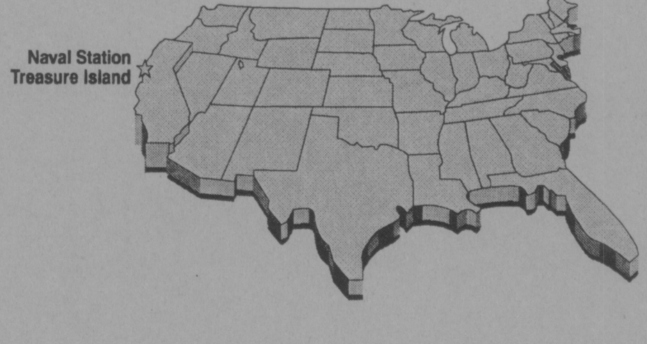
Naval Station Treasure Island, California

Source: ULI 1996; Developed by CCSF 1998

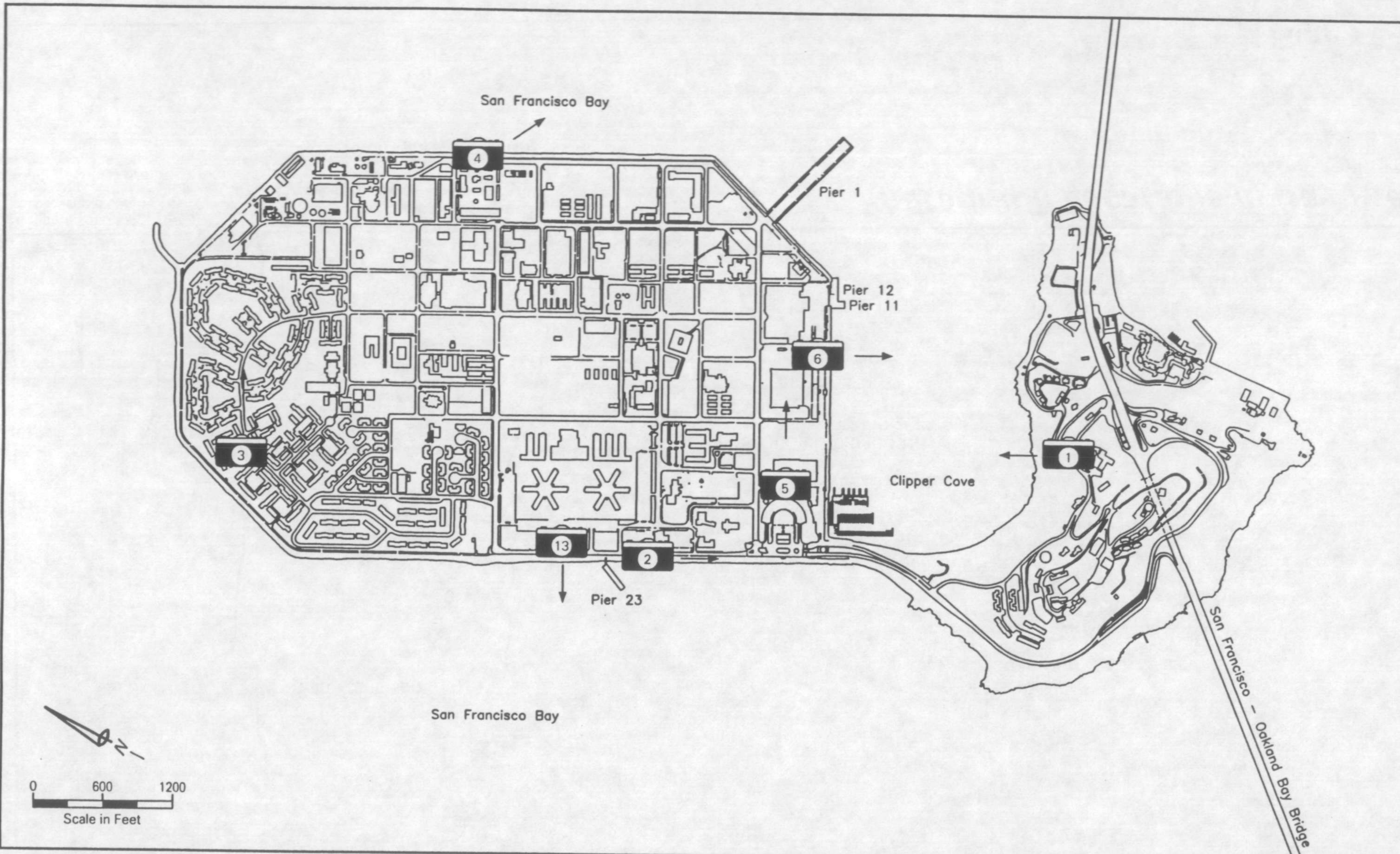
Figure E-1



APPENDIX F
SUPPORTING TECHNICAL INFORMATION



Appendix F.1
Photographic Documentation



F-1

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Upon reuse, Treasure Island and Yerba Buena Island would provide recreational viewing opportunities for the public.

Legend:

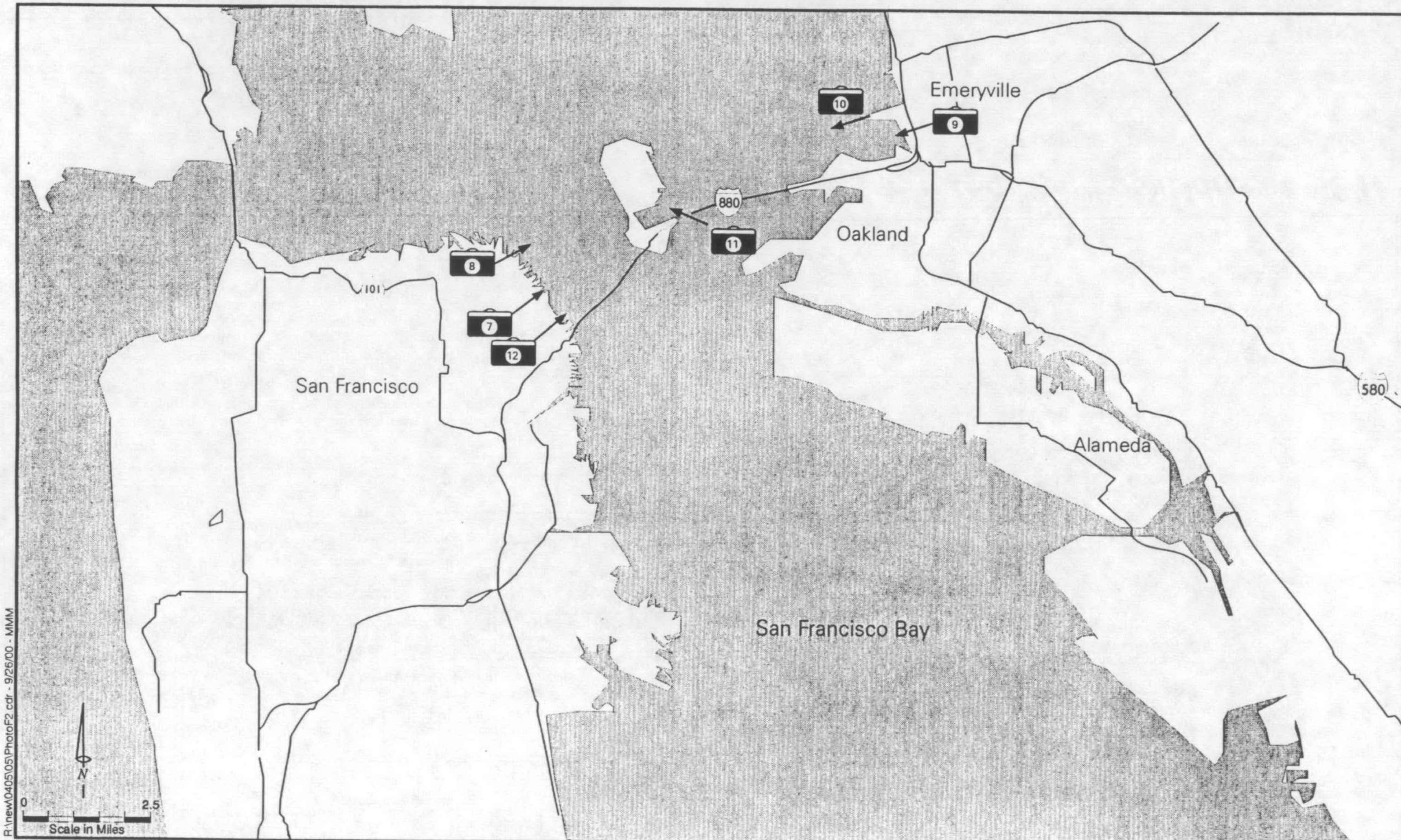
2 Photograph Location

Photograph Direction

Photograph Locations at NSTI

Naval Station Treasure Island, California

Figure F-1



Treasure Island and Yerba Buena Island can be seen from various vantage points throughout the Bay Area.

LEGEND:

10 Photograph Location

Photograph Direction

Photograph Locations in Bay Area

Bay Area, California

Figure F-2

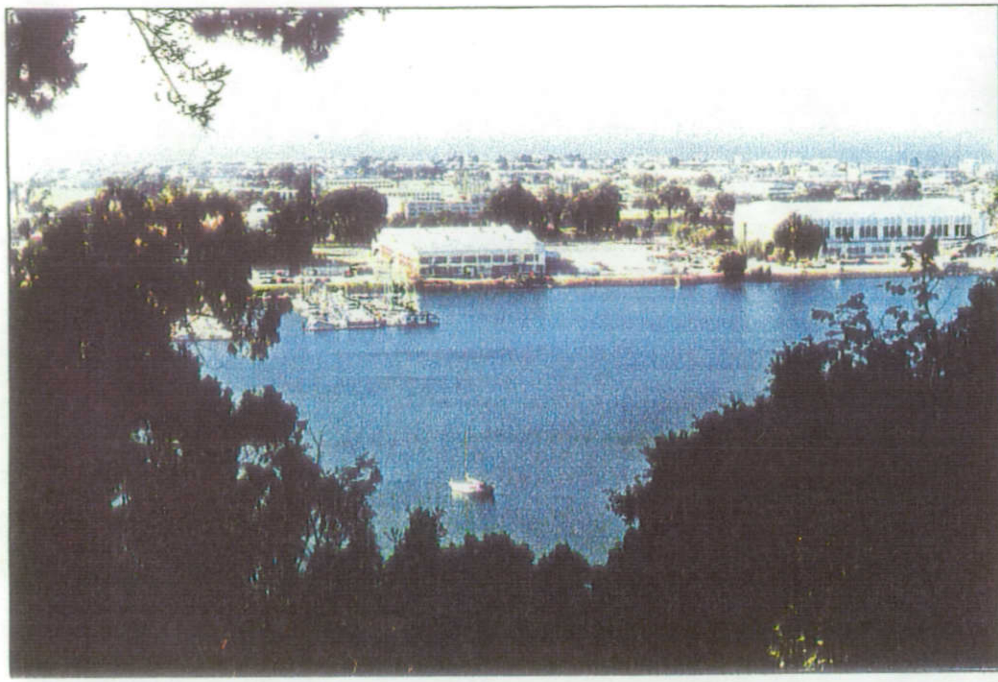


Photo 1: Overview of Treasure Island from Yerba Buena Island

Photo 3: View of the Residential Area

Photo 2: View of the Entry Area, Seen from the Avenue of Palms

Photo 4: View of the East Side Waterfront

Photo 5: View of the Former Hangar (Building 2)

Photo 6: View of Clipper Cove from Treasure Island

Photo 7: View from Recreational Pier 7, San Francisco Embarcadero

Photo 9: View from Interstate 80 in Emeryville

Photo 8: View from Coit Tower Vista Point in San Francisco

Photo 10: View from Emeryville Waterfront

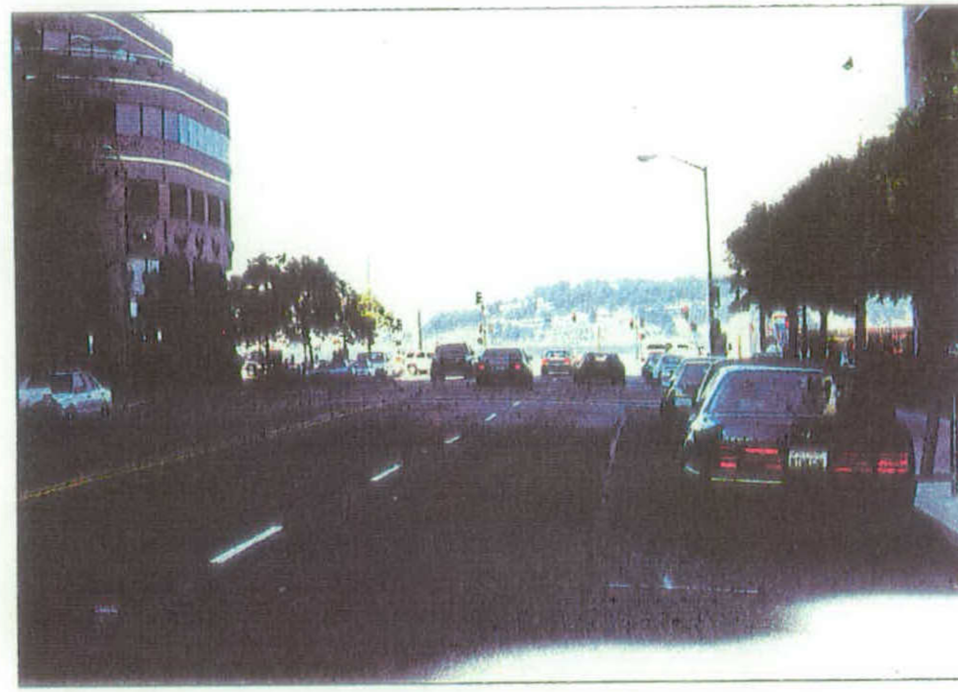


Photo 12: View Along the Howard Street View Corridor Near Spear Street

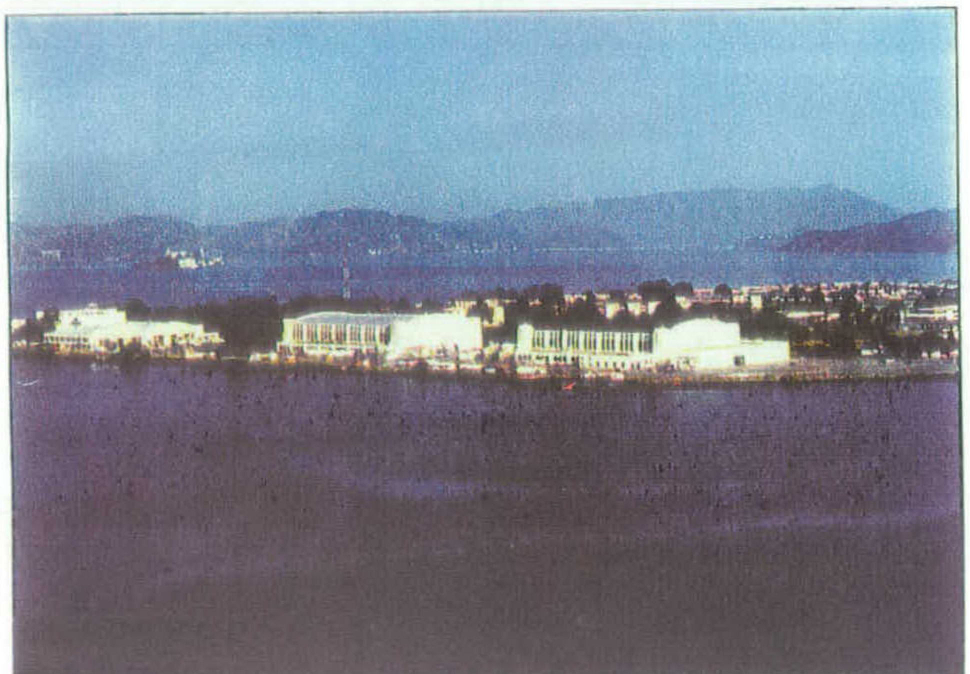
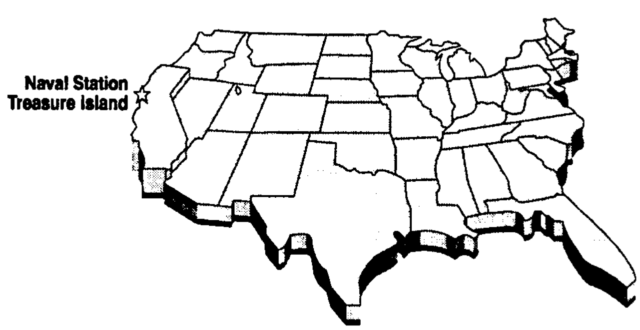


Photo 11: View of Treasure Island from a Bus Traveling West on the Bay Bridge

Photo 13: View from Pier 23 toward San Francisco



Appendix F.2
Socioeconomics

F.2 SOCIOECONOMICS

Population and Employment Assumptions

This appendix describes the assumptions that were used to estimate population and employment impacts associated with the three NSTI reuse alternatives considered in the EIS. Sources are noted throughout the text with full references provided at the end of the appendix.

Population Estimation Assumptions

For the purpose of this analysis, household size for existing housing units at NSTI was estimated to be 3.2 persons, while household size for newly constructed units was estimated to be 2.3 persons (Mara Feeney & Associates estimate). The rationale for these assumptions is presented in the following paragraphs.

Factors that might attract larger households to Treasure Island include the availability of an elementary school and childcare center. However, the access constraints could be a major deterrent to families with children who might have to be shuttled to a variety of after-school activities, medical appointments, shopping, etc.

According to the 1990 US Census, the average household size in San Francisco was 2.3, and at NSTI was 3.7, reflecting the larger size of military families in comparison to typical San Francisco households. At NSTI, existing military family housing units have two to four bedrooms. It seems likely that in the future these units would be allocated to relatively large households (e.g., Coast Guard personnel with larger household sizes as reflected in the census data; or larger San Francisco families having the greatest need for space, and/or TIHDI to provide support services for families or groups of adults).

A variety of assumptions have been made regarding household size in current base closure and reuse studies. The Presidio Planning Socioeconomic Analysis Report assumed an average household size of 3.2 for Presidio reuse, based on San Francisco's average *family* size in 1990, as opposed to average household size (Jones & Jones, Inc. 1994). The NSTI Reuse Plan assumed 1.5 persons per household for new construction at Yerba Buena Island and 1.8 persons per household for new housing construction on Treasure Island (San Francisco 1996). The Mayor's Office currently is assuming an average household size of 2.5 persons per household in its NSTI projections (EPS 1997).

Based on a consideration of the above information, it was decided that using two different household sizes—one for existing units and one for new units (which are likely to be built at higher densities)—would provide the most accurate population estimates. Therefore, for existing units, a household size of 3.2 persons is assumed, while a household size of 2.3 is projected for new units.

Population associated with live-work units was estimated at 1.25 persons per unit (Mara Feeney & Associates estimate). Treasure Island population estimates also include the brig inmate population, which is estimated to be 90 (HMH 1997).

Employment Estimation Assumptions

The employment density factors in Table F-1 were used to estimate employment from land uses proposed under each NSTI reuse scenario (Tables F-2 to F-4).

Table F-1
Employment Multipliers for Each Land Use

Land Use	Employment Density Factor	Source
Publicly Oriented		
Themed Attraction	0.7 jobs per 1,000 visitors, with FTEs[1] calculated as half of total jobs	EPS 1997a
Hotels	1 employee per room	San Francisco 1996; ROMA 1994; EPS 1997
Conference Facilities	1 employee per 5,000 sf	EPS 1997
Retail and Restaurants	1 employee per 500 sf	Jones & Jones, Inc. 1994; ROMA 1994; EPS 1997
Entertainment Center/ Amphitheater	1 employee per 2,500 sf	Mara Feeney & Associates estimate
Wedding Chapel	1 FTE[1]	Mara Feeney & Associates estimate
Museum	1 employee per 2,500 sf	San Francisco 1996; EPS 1997
Mixed Use/Office	1 employee per 385 sf	Jones & Jones, Inc. 1994
Film Production	1 employee per 1,000 sf	EPS 1997
Marina	3 employees per 100 slips/buoys	Mara Feeney & Associates estimate
Yacht Club	1 employee per 1,000 sf	Mara Feeney & Associates estimate
Other public-oriented Uses	1 employee per 1,000 sf	Mara Feeney & Associates estimate
Residential		
New Residential	1 job per live-work unit and 1 employee per 500 sf neighborhood retail	Jones & Jones, Inc. 1994
Institutional and Community		
Elementary School	1 teacher per 30 students (approx.) and 1 staff person per 200 students	San Francisco 1996
Child Development Center	1 staff person per 12 children (approx.) or one employee per 1,000 sf (approx.)	San Francisco 1996
Fire Training School	20 staff year-round	HMH 1997
Warehousing	1 employee per 5,000 sf	Jones & Jones, Inc. 1994
Wastewater Treatment Plant	1 employee per 5,000 sf	Mara Feeney & Associates estimate
Police and Fire Stations	1 employee per 1,000 sf	Mara Feeney & Associates estimate
Other Institutional	1 employee per 1,000 sf	Jones & Jones, Inc. 1994
Open Space/Recreation		
Sports Complex	1 employee per 60,000 sf (ballfields) and 1 employee per 10,000 sf (gymnasium)	EPS 1997

Table F-2
Estimated Population and Employment for Alternative 1

TREASURE ISLAND LAND USE	Estimated Population	Estimated Employment[1]
Publicly Oriented		
Themed Attraction		1,750
Hotel/Conference/Lodging		1,300
Retail/Specialty/Restaurant		450
Entertainment center		
Amphitheater		
Movie Theater		
Wedding Chapel		
Museum		6
Mixed Use/Office		260
Film Production		501
Marina (land)		20
Marina (water)		12
Other publicly oriented uses		183
Total Publicly Oriented		**4,482**
Residential		
Existing Residential	640	
New Residential	5,290	
Neighborhood Retail		48
Total Residential	**5,930**	**48**
Institutional and Community		
Elementary school		32
Child development center		10
Fire training school		20
Warehouse/Storage		
WWTP		17
Brig	90	60
Fire station		35
Police station		26
Other institutional facilities		
Total Institutional and Community	**90**	**200**
Open Space/Recreation		
Golf course		
Sports fields/complex		7
Shoreline promenade/open space		
Ferry Terminals/Piers		2
Wildlife Habitat		
Total Open Space/Recreation		**9**
Total Treasure Island	**6,020**	**4,739**
YERBA BUENA ISLAND LAND USE		
Publicly Oriented		
Hotel/Bed and Breakfast		150
Conference/Reception		18
Restaurant		
Total Publicly Oriented Uses		**168**
Residential		
Existing Housing	288	
New Housing	575	
Mixed Use	13	10
Total Residential	**876**	**10**
Institutional and Community		
Open Space/Recreation		**1**
Total Yerba Buena Island	**876**	**179**
NSTI TOTALS	**6,896**	**4,918**

[1]Full-time equivalent.

Table F-3
Estimated Population and Employment for Alternative 2

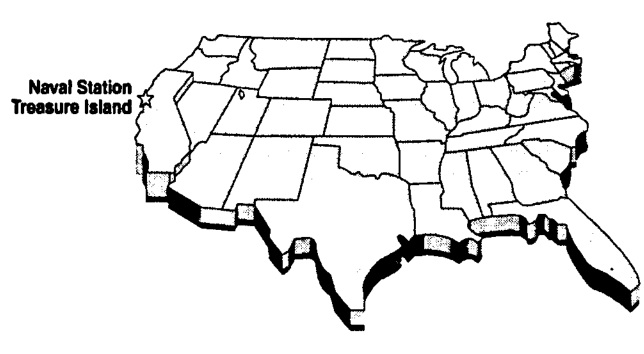
TREASURE ISLAND LAND USE	Estimated Population	Estimated Employment[1]
Publicly Oriented		
Themed Attraction		700
Hotel/Conference/Lodging		1,400
Retail/Specialty/Restaurant		
Entertainment center		150
Amphitheater		4
Movie Theater		
Wedding Chapel		1
Museum		60
Mixed Use/Office		
Film Production		
Marina (land)		
Marina (water)		15
Other publicly oriented uses		183
Total Publicly Oriented		**2,513**
Residential		
Existing Residential		
New Residential		
Neighborhood Retail		
Total Residential		
Institutional and Community		
Elementary school		
Child development center		
Fire training school		
Warehouse/Storage		
WWTP		9
Brig	90	60
Fire station		17
Police station		17
Other institutional facilities		
Total Institutional and Community	**90**	**103**
Open Space/Recreation		
Golf course		20
Sports fields/complex		1
Shoreline promenade/open space		
Ferry Terminals/Piers		2
Wildlife Habitat		
Total Open Space/Recreation		**23**
Total Treasure Island	**90**	**2,639**
YERBA BUENA ISLAND LAND USE		
Publicly Oriented		
Hotel/Bed and Breakfast		150
Conference/Reception		6
Restaurant		24
Total Publicly Oriented Uses		**180**
Residential		
Existing Housing	160	
New Housing	460	
Mixed Use		
Total Residential	**620**	
Institutional and Community		
Open Space/Recreation		**1**
Total Yerba Buena Island	**620**	**181**
NSTI TOTALS	**710**	**2,820**

[1]Full-time equivalent.

Table F-4
Estimated Population and Employment for Alternative 3

TREASURE ISLAND LAND USE	Estimated Population	Estimated Employment[1]
Publicly Oriented/Visitor Attraction		
Themed Attraction		350
Hotel/Conference/Lodging		16
Retail/Specialty/Restaurant		26
Entertainment center		
Amphitheater		
Movie Theater		
Wedding Chapel		1
Museum		6
Mixed Use/Office		557
Film Production		501
Marina (land)		20
Marina (water)		3
Other publicly oriented uses		256
Total Publicly Oriented		**1,736**
Residential		
Existing Residential	2,971	
New Residential		
Neighborhood Retail		
Total Residential	**2,971**	
Institutional and Community		
Elementary school		32
Child development center		10
Fire training school		20
Warehouse/Storage		7
WWTP		5
Brig	90	60
Fire station		10
Police station		3
Other institutional facilities		129
Total Institutional and Community	**90**	**276**
Open Space/Recreation		
Golf course		
Sports fields/complex		3
Shoreline promenade/open space		
Ferry Terminals/Piers		
Wildlife Habitat		
Total Open Space/Recreation		**3**
Total Treasure Island	**3,061**	**2,015**
YERBA BUENA ISLAND LAND USE		
Publicly Oriented		
Hotel/Bed and Breakfast		150
Conference/Reception		6
Restaurant		24
Total Publicly Oriented Uses		**180**
Residential		
Existing Housing	288	
New Housing	161	
Mixed Use	0	
Total Residential	**449**	
Institutional and Community		
Open Space/Recreation		1
Total Yerba Buena Island	**449**	**181**
NSTI TOTALS	**3,510**	**2,196**

[1]Full-time equivalent.



Appendix F.3
Transportation

F.3 TRANSPORTATION

Transportation Analysis Methodology and Assumptions

This appendix presents the methodology and assumptions used in the transportation analysis of this EIS.

Existing Freeway Volumes

Table F-5 presents 24-hour volumes and average daily vehicle trips (ADT's) from traffic counts conducted by Caltrans for the Bay Bridge/I-80 during weekday and weekend periods (Caltrans 1993).

Ramp Volumes

Table F-6 presents the westbound and eastbound traffic volumes on the on- and off-ramps between Yerba Buena Island and the Bay Bridge/I-80. 1994 Caltrans traffic count information for 1994 was used for the ramps.

Land Use Program

The reuse alternatives in Section 2, Alternatives Considered, were defined using 26 classifications of land use assigned to approximately 15 delineated areas of the NSTI property. For purposes of the traffic analysis, these 15 areas were aggregated into 8 Traffic Analysis Zones (TAZs), 7 on Treasure Island and 1 on Yerba Buena Island. The 8 TAZs are shown on the Figure F-3 for Alternatives 1, 2, and 3, respectively. Land use classifications were then used to calculate total trips that would be generated from projected reuses.

Table F-7 presents aggregated acreages, units, or trips for the individual land use categories for each of the community reuse alternatives. Tetra Tech, EIS preparer, developed land use data for the reuse alternatives based on information from the Reuse Plan and the San Francisco Planning Department.

Policy Summary

The following policies from the Draft Reuse Plan address regional access, street systems, transit, and water transportation were developed during the community reuse planning process.

- Develop waterborne transportation as the primary means of access to Treasure Island;
- Establish transit and pedestrian-based development on Treasure Island;
- Establish a multimodal internal circulation system that emphasizes non-auto modes; and
- Promote a regional system of ferry landings that are accessible by a diversity of travel modes.

Table F-5
24-hour Mainline Counts and Total Daily Trips

Time	I-80 Westbound Weekday (vph)	I-80 Westbound Weekend (vph)
12 - 1 AM	1,249	2,080
1 - 2	792	1,226
2 - 3	597	747
3 - 4	689	727
4 - 5	1,342	812
5 - 6	4,689	1,886
6 - 7	9,798	3,227
7 - 8	10,762	4,365
8 - 9	10,026	5,865
9 - 10	8,461	7,760
10 - 11	7,423	8,476
11 - 12	6,898	8,940
12 - 1 PM	6,435	8,373
1 - 2	6,408	8,527
2 - 3	6,475	7,534
3 - 4	7,554	7,152
4 - 5	8,289	7,597
5 - 6	8,505	7,804
6 - 7	7,528	7,753
7 - 8	5,752	7,052
8 - 9	4,170	5,280
9 - 10	4,064	5,759
10 - 11	3,804	5,488
11 - 12	2,429	4,083
Daily Total	134,139	128,513

Source: Caltrans 1993.

Time	I-80 Eastbound Weekday (vph)	I-80 Eastbound Weekend (vph)
12 - 1 AM	2,499	4,491
1 - 2	1,442	3,367
2 - 3	986	2,669
3 - 4	679	1,368
4 - 5	735	946
5 - 6	1,653	1,218
6 - 7	4,517	2,293
7 - 8	7,925	3,936
8 - 9	8,356	5,307
9 - 10	6,216	6,281
10 - 11	5,900	7,077
11 - 12	6,442	7,028
12 - 1 PM	6,585	6,937
1 - 2	7,056	6,974
2 - 3	8,855	8,021
3 - 4	10,266	8,792
4 - 5	9,156	7,608
5 - 6	9,747	9,625
6 - 7	9,931	9,193
7 - 8	8,505	6,961
8 - 9	6,071	5,411
9 - 10	6,157	5,585
10 - 11	5,458	6,074
11 - 12	4,833	6,009
Daily Total	139,970	133,171

Table F-6
Ramp Volumes - 1994 Conditions

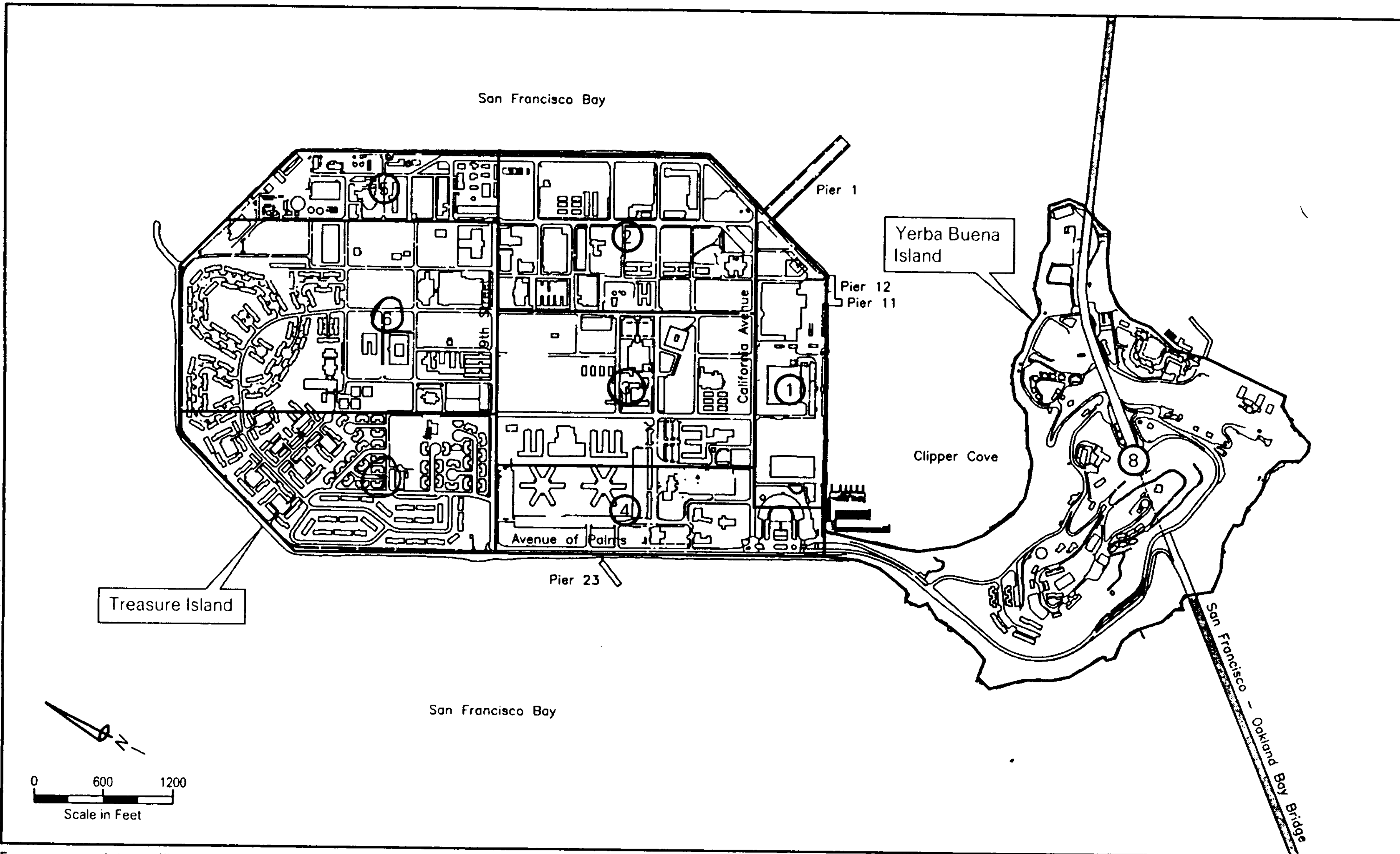
I-80 Westbound (Weekday)

Time	Macalla Rd. Vph	On-Ramp T.I. Road vph	Total vph	Off-Ramp T.I. Road (vph)
12 - 1 AM	1	24	25	28
1 - 2	0	12	12	20
2 - 3	0	6	6	15
3 - 4	3	3	6	10
4 - 5	0	8	8	27
5 - 6	2	26	28	178
6 - 7	15	53	68	470
7 - 8	42	86	128	198
8 - 9	32	64	96	98
9 - 10	18	62	80	142
10 - 11	23	83	106	179
11 - 12	25	120	145	150
12 - 1 PM	29	93	122	177
1 - 2	31	85	116	127
2 - 3	21	165	186	183
3 - 4	45	179	224	210
4 - 5	24	142	166	242
5 - 6	22	65	87	183
6 - 7	19	62	81	168
7 - 8	16	47	63	135
8 - 9	12	40	52	122
9 - 10	32	84	116	104
10 - 11	5	48	53	65
11 - 12	3	22	25	46
Daily Total	420	1,579	1,999	3,277

Source: Caltrans 1994.

I-80 Eastbound (Weekday)

Time	T.I. Road vph	Off-Ramp T.I. Road vph	Total vph	On-Ramp T.I. Road (vph)
12 - 1 AM	10	7	17	27
1 - 2	4	3	7	8
2 - 3	8	4	12	7
3 - 4	3	1	4	7
4 - 5	5	1	6	12
5 - 6	22	3	25	63
6 - 7	118	52	170	344
7 - 8	122	16	138	226
8 - 9	64	32	96	139
9 – 10	73	17	90	127
10 - 11	74	23	97	125
11 - 12	79	20	99	161
12 - 1 PM	74	31	105	149
1 - 2	79	29	108	157
2 - 3	82	23	105	248
3 - 4	85	32	117	313
4 - 5	78	33	111	206
5 - 6	78	16	94	136
6 - 7	64	15	79	148
7 - 8	57	45	102	102
8 - 9	54	12	66	71
9 - 10	50	25	75	79
10 - 11	39	15	54	50
11 - 12	27	14	41	24
Daily Total	1,349	469	1,818	2,929



For purposes of the traffic analysis, NSTI was divided into eight Traffic Analysis Zones, seven on Treasure Island and one on Yerba Buena Island.

Legend:

Traffic Analysis Zone (TAZ) boundary

(2) TAZ number

Traffic Analysis Zones for Community Reuse Alternatives

Naval Station Treasure Island, California

Source: Developed by KORVE 1997

Figure F-3

Table F-7
Land Use Program for the Community Reuse Alternatives

	Alternative One Land Use	Size	Unit	Alternative Two Land Use	Size	Unit	Alternative Three Land Use	Size	Unit
ZONE 1:	Museum	15	ksf	Themed Attraction	19	acres	ZONE 1: Museum	15	ksf
	Film Production	501	ksf	Entertainment Center	300	ksf	Film Production	501	ksf
	Marina	403	slips	Museum	49.799	ksf	Marina	503	slips
				Marina	500	slips			
ZONE 2:	Themed Attraction	59	acres	Themed Attraction	41	acres	Themed Attraction	39	acres
	Outdoor Recreation	6.1	acres	Amphitheater	5000	seats	Open Space	36	acres
				Outdoor Recreation	10.6	acres	Community / Institutional	89.628	ksf
ZONE 3:	Office	100	ksf	Themed Attraction	.15	acres	Office	178.8375	ksf
	Community / Institutional	183	ksf	Community / Institutional	182.952	ksf	Conference	80	ksf
	Job Corps	635	trips	Job Corps	635	trips	Job Corps	635	trips
							Community / Institutional	128.04	ksf
ZONE 4:	Restaurant	225	ksf	Office	100	ksf	Restaurant	13.2	ksf
	Retail	24	ksf	Hotel	1200	rooms	Wedding Chapel	9.884	ksf
	Open Space	30	acres	Open Space	15.3	acres	Office	35.7675	ksf
	Hotel	1300	rooms	Conference	100	ksf	Community / Institutional	12.804	ksf
				Wedding Chapel	9.884	ksf	Open Space	24	acres
							Warehouse	34.848	ksf
ZONE 5:	Water Treatment Plant	10	acres	Police, Fire & Medical	60.984	ksf	Fire School	244	trips
	Brig	109	trips	Fire School	244	people	Community / Institutional	25.608	ksf
	Fire School	244	trips	Open Space	15.3	acres	Water Treatment Plant	3	acres
	Police, Fire & Medical	61	ksf	Brig	109	trips	Brig	109	trips
				Water Treatment Plant	10	acres	Police, Fire & Medical	2.61	ksf
				Community / Institutional	34.848	ksf			
ZONE 6:	Outdoor Recreation	40.9	acres	Outdoor Recreation	7.2	acres	Outdoor Recreation	3.5	acres
	Residential	1250	units	Open Space	20.4	acres	Police, Fire & Medical	10.441	ksf
	Elementary School	152	trips	Golf Course	8	holes	Elementary School	152	trips
	Child Development Center	10	ksf				Child Development Center	10.123	ksf
ZONE 7:	Residential	1250	units	Golf Course	10	holes	Residential	980	units
							Police, Fire & Medical	2.61	ksf
ZONE 8:	Open Space	58	acres	Open Space	57	acres	Open Space	57	acres
	Conference	4	acres	Conference	30.241	ksf	Conference	30.241	ksf
	Restaurant	12	ksf	Restaurant	12	ksf	Restaurant	12.15	ksf
	Hotel	150	rooms	Hotel	150	rooms	Hotel	150	rooms
	Mixed	12000	sq. ft.	Residential	250	units	Residential	160	units
	Residential	340	units	Community / Institutional	0	ksf	Community / Institutional	348.48	ksf
	Community / Institutional	348	ksf						
TOTALS:	Amphitheatre			Amphitheatre	5000	seats	Amphitheatre		
	Brig	109	trips	Brig	109	trips	Brig	109	trips
	Child Development Center	10	ksf	Child Development Center			Child Development Center	10	ksf
	Community/Institutional	531	ksf	Community/Institutional	218	ksf	Community/Institutional	605	ksf
	Conference	4	acres	Conference	130	ksf	Conference	110	ksf
	Elementary School	152	trips	Elementary School			Elementary School	152	trips
	Entertainment Center			Entertainment Center	300	ksf	Entertainment Center		
	Film Production	501	ksf	Film Production			Film Production	501	ksf
	Fire School	244	trips	Fire School	244	trips	Fire School	244	trips
	Golf Course			Golf Course	18	holes	Golf Course		
	Hotel	1450	rooms	Hotel	1350	rooms	Hotel	150	rooms
	Job Corps	635	trips	Job Corps	635	trips	Job Corps	635	trips
	Marina	403	slips	Marina	500	slips	Marina	503	slips
	Mixed Use	12000	sq. ft.	Mixed Use			Mixed Use		
	Museum	15	ksf	Museum	50	ksf	Museum	15	ksf
	Office	100	ksf	Office	100	ksf	Office	215	ksf
	Open Space	88	acres	Open Space	108	acres	Open Space	117	acres
	Outdoor Recreation	47	acres	Outdoor Recreation	18	acres	Outdoor Recreation	3.5	acres
	Police Fire Medical	61	ksf	Police Fire Medical	61	ksf	Police Fire Medical	16	ksf
	Residential	2840	units	Residential	250	units	Residential	1140	units
	Restaurant (Quality)	237	ksf	Restaurant	12	ksf	Restaurant	25	ksf
	Retail	24	ksf	Retail			Retail		
	Themed Attraction	59	acres	Themed Attraction	75	acres	Themed Attraction	39	acres
	Warehouse			Warehouse			Warehouse	35	ksf
	Water Treatment Plant	10	acres	Water Treatment Plant	10	acres	Water Treatment Plant	3	acres
	Wedding Chapel			Wedding Chapel	10	ksf	Wedding Chapel	10	ksf

Regional Access Policies

- Establish ferry service to Treasure Island in conjunction with publicly oriented uses, and increase service as visitor volumes expand;
- Place a priority on making seismic improvements to the causeway; and
- Encourage Caltrans to consider seismic and geometric improvements to the SFOBB as part of the bridge retrofit.

Street System Policies

- Establish a network of streets that builds upon the existing Treasure Island grid to accommodate travel demand and distribute traffic;
- Emphasize shoreline-to-shoreline connections across the island that provide direct linkages from the destinations within the island to the water's edge, aid in orienting users to the site, and maximize opportunities for public access to the shoreline;
- Develop multimodal streets on Treasure Island that accommodate significant levels of bicycle and pedestrian traffic as well as shuttles, transit buses, and automobiles;
- Promote high visibility and accessibility of the ferry terminals through the design of the street system;
- Incorporate amenities in the design of the street network for pedestrians and bicyclists; and
- Maintain the existing street network on Yerba Buena Island.

Transit System Policies

- Establish bus and shuttle services on the islands; and
- Establish a coordinated transit plan for providing access to Treasure Island that brings together Muni, Alameda-Contra Costa Transit District (AC Transit), and ferry operations.

Water Transportation System Policies

- Upgrade facilities to accommodate ferry service on the east side, and establish a new ferry terminal on the west side of Treasure Island. Design both facilities to accommodate water taxis;
- Develop ferry access to be widely available, frequent, and attractive to patrons. Encourage the use of water taxis to supplement regularly scheduled ferries for occasional trips; and

- Ensure that all development agreements, owner participation agreements (OPAs) and leases contribute to the establishment of the Treasure Island ferry access system, commensurate with the level of demand projected for each use.

The following 15 policies from the *Naval Station Treasure Island Reuse Plan Transportation Background Report* were developed during the community reuse planning process to assist in the formulation of a Reuse Plan. These policies support the use of transit in the form of ferries and buses to NSTI, and the assumptions used in the estimation of trip generation.

1. Support the earliest possible development of ferry service to NSTI from both San Francisco and the East Bay.

2. Ferry access should be widely available, frequent and attractively priced. Regularly scheduled ferries would be supplemented by ferry taxis for occasional trips.

3. Support a visitor-oriented development that requires most visitors to travel by ferry and all visitors to travel via high occupancy modes. Enforce this policy by requiring ticket sales to be completed at landside terminals for tickets that combine ferry and admission. Prohibit visitor parking and ticket sales at the themed attraction to ensure that visitors would in fact take the ferry.

4. All children attending the planned elementary school would arrive via school bus. Pick up and drop off by parents would be prohibited, except for emergencies.

5. Bus transit services would continue to have a role at NSTI. Bus services would be developed connecting the ferry terminal to island destinations (island shuttle) and providing local on-site circulation.

6. Bus services between the island and the mainland would continue to play a role in moving people between the island and the mainland areas.

7. Ferry service should be initially established in the area of Pier 1/Pier ½ on the east side of the island, and would accommodate ferries from both the East Bay and San Francisco. This would serve as the "front door" to the visitor-oriented use. Convenient shuttle services would connect this location with other sites on the island.

8. Ferry service would ultimately be implemented at a new terminal on the west side of the island, separating the travel to and from the East Bay and San Francisco locations. Regularly scheduled ferry service would ultimately be offered from multiple locations in both East Bay and San Francisco. The initial services would be offered from San Francisco Ferry Building and Jack London Square in Oakland.

9. The ferry plan must consider the landside impacts, including parking demand on the landside and traffic impacts for travel to the ferry terminals.

10. All employers on the island would be encouraged to provide transit passes at no charge to employees to encourage transit use.

11. All employers providing parking on the island would be required to charge employees for parking, minimizing auto use.

12. All development agreements would include detailed Travel Demand Management (TDM) plans designed to show how the developer would ensure that traffic generation is minimized.

13. Any residential development planned for the NSTI, beyond the initial Phase I units, would be developed as a "unique community," which would limit auto ownership and auto use so as not to unduly impact the SFOBB.

14. Other TDM measures, including flextime, employer provided shuttles and subsidy of transit services should be aggressively pursued on the island.

15. Encourage the use of alternative fuels for all transit vehicles on the island, including the island shuttle.

Transportation Features Assumed for the Three Reuse Alternatives

The following discussion summarizes the transportation features assumed for the three Community Reuse Alternatives:

- The Treasure Island street grid system would maximize the use of existing streets and access points;
- All street rights-of-way on Treasure Island would contain sidewalks;
- Pedestrian and bicycle facilities would be provided;
- Ferry service would be provided between Treasure Island and San Francisco and the East Bay;
- Bus and shuttle service would be provided on NSTI and to NSTI from San Francisco and the East Bay;
- A coordinated transit plan for access to NSTI with the San Francisco Municipal Railway (Muni) and ferry operators would be established;
- A transportation demand management (TDM) program would be established. Measures that would be implemented would include the following:
  - establish ferry ridership targets for new users;
  - restrict visitor parking;
  - require employers to provide incentives to reduce vehicular demand;
  - establish an employee transportation coordinator;

- require that residential development develop and implement measures to minimize auto usage (limits on parking, road pricing, integrated community design);
- prohibit parking for certain uses such as the themed attraction;
- require school students from San Francisco to arrive by bus;
- establish parking restrictions;
- prohibit free parking;
- require TDM plans for all new users to meet transit ridership targets and require monitoring; and
- require facilities for bicycles in new uses, as well as in all ferries.

Planned Seismic Retrofit of the SFOBB/I-80. In evaluating the reuse alternatives it has been assumed that the SFOBB/I-80 structure and connecting ramps to NSTI would remain as they are. The substandard geometries of these ramps limit their vehicle processing capacities. This may be a conservative assumption because upgrades of the eastbound on-ramp may occur as discussed below depending on whether the east span of the SFOBB is replaced or seismically retrofitted.

The suspension bridge that connects San Francisco and Yerba Buena Island will undergo major work on its towers, superstructure, foundation, and approaches during the planning horizon. More substantial improvements are required for the eastern span. A new replacement span will be constructed in place of the existing bridge. Preliminary concept plans for a new east span indicate that a modified eastbound on-ramp built to Caltrans standards would be part of the design (Caltrans 1997). The modified ramp configuration would improve sight and merging distances. A bicycle lane from Oakland to Yerba Buena Island on the new east span is also a possible component of that project.

Transportation Plan Assumptions

In order to fulfill the transportation policies for NSTI listed above, a number of transportation improvements would need to be in place. The reuse planning effort developed a transportation plan for various phases of development on NSTI. For the EIS, each community reuse alternative was assigned a specific phase of the Transportation Plan; Alternatives 1 and 2 were assigned Phase 3 (generally year 2007 to 2011 of the Reuse Plan), and the Alternative 3 was assigned Phase 2 (year 2002 to 2006 of the Reuse Plan). The transportation service assumptions that were assumed for each community reuse alternative are summarized below. The transportation plan for the Reuse Plan was presented in the *Naval Station Treasure Island Reuse Plan Transportation Background Report.*

Alternatives 1 and 2 - Phase 3 of the Reuse Plan Transportation Plan

- Both Alternatives 1 and 2 depend heavily on ferry service to NSTI to handle the predicted levels of visitors. On Treasure Island, the southeastern pier (either Pier 1 or Pier 12) would still be in service. In addition, a new pier on the western side of the island would be constructed.

- Ferry access would be extended on both sides of the bay. New terminals could be created at Golden Gate Fields on Gilman Street, along the border of Albany and Berkeley, and at Candlestick Point in San Francisco.

  Due to the increased intensity of land uses, there would be a heightened demand for ferry service. The numbers of parking spaces identified in the plan that would be needed at ferry terminals are as follows:

  -- 1,100 parking spaces at the San Francisco Ferry Building;
  -- 1,100 parking spaces at Candlestick Point; and,
  -- 1,850 parking spaces in the East Bay, evenly split between Jack London Square and Golden Gate Fields.

- The Reuse Plan Implementation Strategy identified the need to provide off-site parking at the San Francisco Ferry Building, Jack London Square, Candlestick Point and the East Bay (Golden Gate Fields).

- Additional vessels would be needed to handle the ferry service increase in the bay. The new facilities at Golden Gate Fields and Candlestick Point would each require two dedicated ferries. In addition, there would be an extra vessel for the Ferry Building during peak periods, plus limited use of supplemental ferries during peak periods.

  Frequency during peak periods:
  -- 10 trips per hour from the Ferry Building (6 minute headways);
  -- 5 trips per hour from Candlestick Point (12 minute headways); and
  -- 8 trips per hour from the East Bay, divided between the 2 terminals (15-minute headways for each terminal).

- Shuttle bus service around the two islands would be provided. A total of four vehicles, plus one back-up vehicle would be provided. Furthermore, two additional back-up vehicles would be used to cover the peak periods, plus a secondary shuttle loop.

- The AC Transit T route would also be expanded, with headways shortened to 10 minutes during the peak and 15 minutes during the non-peak times. *Since this service is no longer provided, the service requirement to accommodate demand during the peak and non-peak periods was determined, and included in Section 4.5, Transportation as mitigation.*

Alternative 3 - Phase 2 of the Reuse Plan Transportation Plan

- The intensity of the land uses in Alternative 3 is sufficient to warrant the addition of ferry service to NSTI. Either Pier 1 or Pier 12 would be used, both located on the southeast corner of Treasure Island. Modifications would have to be made for either pier, so they can be used by conventional ferries, and in order to meet American with Disabilities Act (ADA) requirements.

- For the ferry service, four vessels would be in use, two each from the San Francisco Ferry Building and from Jack London Square in Oakland. At the Ferry Building, an additional float would be needed to handle the new ferry service, while no modifications would be needed for the Jack London Square service.

- Parking requirements for the new ferry service include a need for significant parking at the two terminal sites. The off-site parking requirement was identified to be 950 and 950 parking spaces, at Jack London and the Ferry Building, respectively.
- On NSTI, a shuttle bus service would be implemented. This service would be necessary to connect the Treasure Island ferry terminal to the major activity centers of the two islands. A fleet of 3 buses would be needed for this service, and would run approximately every 15 minutes.
- In addition to the on-island buses, there also would be expanded AC Transit T route service to both Treasure Island and Yerba Buena Island. No new stops are planned, but headways would be decreased to 15 minutes during the peak, and between 20 and 30 minutes off-peak. *Similar to Alternatives 1 and 2, since the AC Transit service is no longer provided, the service requirement to accommodate demand during the peak and non-peak periods was determined, and included in Section 4.5, Transportation, as mitigation.*

Travel Demand

Travel demand refers to new auto, transit and pedestrian traffic generated by proposed land uses. These include traffic (in trips) entering and leaving NSTI, as well as trips between the various land uses on NSTI. Preliminary trip generation estimates were conducted during the reuse planning effort. Trip generation, trip distribution and mode split estimates were determined for the various land uses proposed on NSTI. Due to the isolated nature of NSTI, standard San Francisco and national rates were adjusted. The reuse planning team conducted this effort in cooperation with the San Francisco Planning Department.

For this EIS, the work conducted by the reuse planning team and the San Francisco Planning Department was reviewed. In general, trip generation rates, distribution and mode split estimates developed by the reuse planning team were used. Travel demand information needed to be developed, however, for other land uses not evaluated for the Reuse Plan. In addition, auto occupancy factors for vehicle trips to NSTI, and vehicle trips to ferry terminals were reviewed, and adjusted in some cases.

Trip Generation

Tables F-8 and F-9 summarize the trip generation rates used to estimate community reuse alternative-generated traffic, for weekday and weekend conditions, respectively. Tables F-10 and F-11 present the work/non-work split for weekday and weekend conditions, respectively.

Overall community reuse alternative travel demand to and from NSTI was estimated from person-trip generation rates obtained from a variety of sources, including the San Francisco Planning Department's *Citywide Travel Behavior Survey (CTBS)* and *Guidelines for Environmental Review: Transportation Impacts* (July 1991), the *Port of San Francisco Waterfront Land Use Plan Draft EIR* (December 1996), *Hunters Point Transportation Plan* (1996), information from existing operations on

NSTI (e.g., brig and elementary schools), as well as input from the San Francisco Planning Department. Weekday and weekend person-trips projected to be generated in 2010 under the three reuse alternatives are shown in Tables F-12 and F-13, respectively, as summarized below.

The Reuse Plan for NSTI provides for a balanced mix of land uses that would serve to create a new neighborhood. As such, it is anticipated that there would be a substantial number of trips that would occur between the various land uses, such as between residential and retail uses and between themed attraction and restaurant uses. Such trips were classified as "internal" trips. Internal trips within NSTI would also occur due to the fact that the development would occur on the islands that have delay penalties for bridge crossings due to congestion and substandard ramp configurations, and, therefore, residents and visitors would limit the number of crossings they would make throughout the day.

Alternative 1 is estimated to generate approximately 117,980 weekday daily person-trips, including 7,020 weekday AM peak hour and 13,280 weekday PM peak-hour person-trips. Under weekend conditions, Alternative 1 would generate approximately 119,330 daily person-trips, including 12,390 midday peak-hour person-trips. Internal trips would represent approximately 40 percent of the daily and peak hour person-trips.

Under Alternative 2, approximately 75,710 weekday daily person-trips would be generated, including 2,960 weekday AM peak hour and 8,545 weekday PM peak hour person-trips (Table F-12). Under weekend conditions, Alternative 2 would generate approximately 103,565 daily person-trips, including 9,140 midday peak hour person-trips (Table F-13).

Table F-8
Trip Generation and In/Out Split—Weekday

Land Use	Units	Person-Trip Rate	Peak		AM Peak				PM Peak			
					Worker		Visitor		Worker		Visitor	
		Daily	AM	PM	In	Out	In	Out	In	Out	In	Out
Themed Attraction (1)	acres	30400.00	1.7%	9.8%	1.00	0.00	1.00	0.00	0.37	0.63	0.30	0.70
Themed Attraction	acres	12200.00	1.7%	9.8%	1.00	0.00	1.00	0.00	0.37	0.63	0.30	0.70
Themed Attraction	acres	6100.00	1.7%	9.8%	1.00	0.00	1.00	0.00	0.37	0.63	0.30	0.70
Office (2)	ksf	18.10	13.8%	17.3%	1.00	0.00	0.50	0.50	0.00	1.00	0.50	0.50
Hotel (3)	rooms	6.92	3.3%	9.5%	0.37	0.63	1.00	0.00	0.37	0.63	0.47	0.53
Retail (4)	ksf	168.00	0.0%	9.2%	1.00	0.00	0.50	0.50	0.00	1.00	0.50	0.50
Outdoor Recreation (5)	acres	50.00	4.0%	8.0%	0.70	0.30	1.00	0.00	0.30	0.70	0.30	0.70
Open Space (6)	acres	20.00	4.0%	8.0%	0.70	0.30	1.00	0.00	0.30	0.70	0.30	0.70
Marina (7)	slips	2.96	2.7%	6.4%	0.33	0.67	0.33	0.67	0.60	0.40	0.60	0.40
Museum (8)	ksf	50.00	0.0%	9.2%	1.00	0.00	1.00	0.00	0.30	0.70	0.30	0.70
Brig (9)	trips	109.00	37.9%	33.1%	0.67	0.33	0.90	0.10	0.40	0.60	0.40	0.60
Job Corps (10)	trips	635.00	43.0%	43.5%	1.00	0.00	0.50	0.50	0.00	1.00	0.50	0.50
Elementary School (11)	trips	152.00	49.3%	19.7%	1.00	0.00	0.60	0.40	0.00	1.00	0.00	1.00
Film Production (12)	ksf	1.14	0.0%	0.4%	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
Fire School (13)	trips	244.00	46.0%	50.0%	1.00	0.00	1.00	0.00	0.00	1.00	0.00	1.00
Conference (14)	ksf	5.93	9.8%	9.8%	1.00	0.00	0.90	0.10	0.00	1.00	0.10	0.90
Residential (15)	units	10.00	13.8%	17.3%	0.00	1.00	0.34	0.66	1.00	0.00	0.32	0.68
Restaurant (16)	ksf	96.51	1.0%	7.9%	0.94	0.06	0.94	0.06	0.70	0.30	0.70	0.30
Warehouse (17)	ksf	4.88	11.7%	15.2%	0.72	0.28	0.72	0.28	0.35	0.65	0.35	0.65
Golf Course (18)	holes	37.59	8.6%	8.9%	0.83	0.17	0.83	0.17	0.52	0.48	0.52	0.48
Water Treatment Plant (19)	acres	0.00										
Entertainment Center (20)	ksf	46.81	0.0%	3.0%	1.00	0.00	0.50	0.50	0.50	0.50	0.50	0.50
Amphitheater (21)	seats	2.01	0.0%	30.0%	1.00	0.00	0.50	0.50	0.50	0.50	0.50	0.50
Community / Institutional (22)	ksf	50.00	10.0%	10.0%	1.00	0.00	0.50	0.50	0.00	1.00	0.00	1.00
Child Development Center (23)	ksf	0.00										
Police, Fire & Medical (24)	ksf	24.00	10.0%	10.0%	1.00	0.00	0.50	0.50	0.20	0.80	0.20	0.80
Wedding Chapel (25)	ksf	0.00										
Mixed Use (26)	ksf	45.50	2.0%	2.0%	1.00	0.00	0.50	0.50	0.00	1.00	0.50	0.50

Sources:
(1) Korve Engineering, Distribution of visitors to So. Cal. themed attraction; N/N 3/25 memo to Dave Fellham
Trip generation based on projected number of visitors for each development alternative.
(2) CTBS Table A3, Table 39, AM Peak from ITE AM Peak/Weekday ADT relationship
(3) CTBS SD1, AM Peak from ITE relationship, PM Peak per 4/11/96 DCP memo, weekend rate per 4/1/96 DCP memo
(4) S.F. Waterfront EIR SD 2,3,4, weekend rate per 4/11/96 DCP memo
(5) Draft Hunter's Point Transportation Plan, 1996; weekday, weekend same per 4/23 memo
(6) Draft Hunter's Point Transportation Plan, 1996; passive open space
(7) ITE (420)
(8) Draft Hunter's Point/Weekday-weekend relationship from Exploritorium, 4/11/96, and work/non-work splits from CTBS Cultural
(9) San Francisco City and County Sheriff, based on 180 inmates
(10) Job Corps Environmental Evaluation
(11) 4/9/96 DCP Memorandum
(12) Conversation with Robin Eisman at SF Film and Video Arts Commission 4/10/96
(13) 4/10/96 DCP memo; Conversation with Assistant Director of Navy Fire Training Facility 4/10/96, Butte College Fire Sciences Dept. 4/6/96
(14) Presidio Transportation Planning & Analysis Technical Report, Oct 1993
(15) DCP Guidelines - ITE AM Peak/ADT relationship, weekend same as PM weekday, per 4/24/96 DCP memo
(16) ITE (831)
(17) ITE (150)
(18) ITE (430)
(19) Trip generation rate assumed to be 0.0, due to minimal number of trips. Korve Engineering, April 1997
(20) ITE (320)
(21) Trip generation rate based on two visitor trips per seat and one worker per 100 seats. All amphitheater events would occur in the evening, with one event per day. Korve Engineering, April 1997
(22) CTBS SD1 - Institutional
(23) Trip generation rate assumed to be 0.0. Majority of trips linked to Job Corps, Elementary School, and residential. Korve Engineering, April 1997
(24) ITE (630)
(25) Wedding Chapel not anticipated to generate trips on a daily basis. Korve Engineering, April 1997
(26) Draft Hunter's Point Transportation Plan, 1996

Table F-9
Trip Generation and In/Out Split—Weekend

		Person-Trip Rate		Midday			
				Worker		Visitor	
Land Use	Units	Daily	Peak	In	Out	In	Out
Themed Attraction (1)	acres	30400.00	5.5%	0.0%	1.00	0.90	0.10
Themed Attraction	acres	12200.00	5.5%	0.0%	1.00	0.90	0.10
Themed Attraction	acres	6100.00	5.5%	0.0%	1.00	0.90	0.10
Office (2)	ksf	0.00	17.3%	0.0%	1.00	0.50	0.50
Hotel (3)	rooms	6.92	8.2%	37.0%	0.63	0.47	0.53
Retail (4)	ksf	168.00	9.9%	0.0%	1.00	0.50	0.50
Outdoor Recreation (5)	acres	50.00	8.0%	30.0%	0.70	0.30	0.70
Open Space (6)	acres	20.00	8.0%	30.0%	0.70	0.30	0.70
Marina (7)	slips	3.22	27.0%	44.0%	0.56	0.44	0.56
Museum (8)	ksf	75.00	14.4%	70.0%	0.30	0.70	0.30
Brig (9)	trips	195.00	33.1%	40.0%	0.60	0.40	0.60
Job Corps (10)	trips	1646.00	12.1%	0.0%	1.00	0.50	0.50
Elementary School (11)	trips	0.00					
Film Production (12)	ksf	1.14	4.0%	50.0%	0.50	0.50	0.50
Fire School (13)	trips	1.00	9.2%	0.0%	1.00	0.00	1.00
Conference (14)	ksf	5.93	9.8%	50.0%	0.50	0.50	0.50
Residential (15)	units	10.00	17.3%	0.0%	1.00	0.50	0.50
Restaurant (16)	ksf	92.65	11.9%	53.0%	0.47	0.53	0.47
Warehouse (17)	ksf	1.22	9.8%	64.0%	0.36	0.64	0.36
Golf Course (18)	holes	42.43	10.8%	72.0%	0.28	0.72	0.28
Water Treatment Plant (19)	acres	0.00					
Entertainment Center (20)	ksf	46.81	10.0%	50.0%	0.50	0.50	0.50
Amphitheater (21)	seats	2.01	20.0%	50.0%	0.50	0.50	0.50
Community / Institutional (22)	ksf	75.00	5.0%	0.0%	1.00	0.00	1.00
Child Development Center (23)	ksf	0.00					
Police, Fire & Medical (24)	ksf	24.00	10.0%	20.0%	0.80	0.20	0.80
Wedding Chapel (25)	ksf	0.00					
Mixed Use (26)	ksf	45.50	10.0%	50.0%	0.50	0.50	0.50

Sources:
(1) Korve Engineering, Distribution of visitors to So. Cal. themed attraction; N/N 3/25 memo to Dave Fellham
Trip generation based on projected number of visitors for each development alternative.
(2) CTBS Table A3, Table 39, AM Peak from ITE AM Peak/Weekday ADT relationship
(3) CTBS SD1, AM Peak from ITE relationship, PM Peak per 4/11/96 DCP memo, weekend rate per 4/1/96 DCP memo
(4) S.F. Waterfront EIR SD 2,3,4, weekend rate per 4/11/96 DCP memo
(5) Draft Hunter's Point Transportation Plan, 1996; weekday, weekend same per 4/23 memo
(6) Draft Hunter's Point Transportation Plan, 1996; passive open space
(7) ITE (420)
(8) Draft Hunter's Point/Weekday-weekend relationship from Exploritorium, 4/11/96, and work/non-work splits from CTBS Cultural
(9) San Francisco City and County Sheriff, based on 180 inmates
(10) Job Corps Environmental Evaluation
(11) 4/9/96 DCP Memorandum
(12) Conversation with Robin Eisman at SF Film and Video Arts Commission 4/10/96
(13) 4/10/96 DCP memo; Conversation with Assistant Director of Navy Fire Training Facility 4/10/96, Butte College Fire Sciences Dept. 4/6/96
(14) Presidio Transportation Planning & Analysis Technical Report, Oct 1993
(15) DCP Guidelines - ITE AM Peak/ADT relationship, weekend same as PM weekday, per 4/24/96 DCP memo
(16) ITE (831)
(17) ITE (150)
(18) ITE (430)
(19) Trip generation rate assumed to be 0.0, due to minimal number of trips. Korve Engineering, April 1997
(20) ITE (320)
(21) Trip generation rate based on two visitor trips per seat and one worker per 100 seats. All amphitheater events would occur in the evening, with one event per day. Korve Engineering, April 1997
(22) CTBS SD1 - Institutional
(23) Trip generation rate assumed to be 0.0. Majority of trips linked to Job Corps, Elementary School, and residential. Korve Engineering, April 1997
(24) ITE (630)
(25) Wedding Chapel not anticipated to generate trips on a daily basis. Korve Engineering, April 1997
(26) Draft Hunter's Point Transportation Plan, 1996

Table F-10
Work, Non-work Splits—Weekday

Land Use	Daily		AM Peak #of		PM Peak #of	
	Workers	Visitors	Workers	Visitors	Workers	Visitors
Themed Attraction	0.10	0.90	0.19	0.81	0.19	0.81
Office	0.08	0.92	0.50	0.50	0.50	0.50
Hotel	0.10	0.90	0.45	0.55	0.45	0.55
Retail	0.08	0.92	0.08	0.92	0.08	0.92
Outdoor Recreation	0.05	0.95	0.05	0.95	0.05	0.95
Open Space	0.05	0.95	0.05	0.95	0.05	0.95
Marina	0.08	0.92	0.08	0.92	0.08	0.92
Museum	0.08	0.92	0.08	0.92	0.08	0.92
Brig	0.79	0.21	0.97	0.03	0.97	0.03
Job Corps	0.37	0.63	0.57	0.43	0.57	0.43
Elementary School	0.47	0.53	0.50	0.50	1.00	0.00
Film Production	1.00	0.00	1.00	0.00	1.00	0.00
Fire School	0.11	0.89	0.11	0.89	0.11	0.89
Conference	0.08	0.92	0.08	0.92	0.08	0.92
Residential	0.33	0.67	0.50	0.50	0.50	0.50
Restaurant (1)	0.08	0.92	0.08	0.92	0.08	0.92
Warehouse (2)	0.10	0.90	0.10	0.90	0.08	0.92
Golf Course (3)	0.08	0.92	0.08	0.92	0.08	0.92
Entertainment Center (4)	0.08	0.92	0.08	0.92	0.08	0.92
Amphitheatre (5)	0.005	0.995	0.00	0.00	0.10	0.90
Community/Institutional (6)	0.08	0.92	0.08	0.92	0.08	0.92
Police/Fire/Medical (7)	0.05	0.95	0.50	0.50	0.50	0.50
Mixed Use	0.08	0.92	0.08	0.92	0.08	0.92

Notes:
(1) Based on Specialty Retail
(2) From Korve Engineering, May 1997
(3) Based on Museum
(4) Based on Specialty Retail
(5) From Korve Engineering, May 1997
(6) Based on Museum
(7) Based on Office

Table F-11
Work, Non-work Splits—Weekend

Land Use	Daily # of Workers	Daily # of Visitors	Midday Peak # of Workers	Midday Peak # of Visitors
Themed Attraction	0.10	0.90	0.00	1.00
Office	0.00	0.00	0.00	0.00
Hotel	0.10	0.90	0.45	0.55
Retail	0.08	0.92	0.08	0.92
Outdoor Recreation	0.05	0.95	0.05	0.95
Open Space	0.05	0.95	0.05	0.95
Marina	0.08	0.92	0.08	0.92
Museum	0.08	0.92	0.08	0.92
Brig	0.79	0.21	0.97	0.03
Job Corps	0.37	0.63	0.57	0.43
Elementary School	0.00	0.00	0.00	0.00
Film Production	1.00	0.00	1.00	0.00
Fire School	0.00	0.00	0.00	0.00
Conference	0.08	0.92	0.08	0.92
Residential	0.10	0.90	0.10	0.90
Restaurant (1)	0.08	0.92	0.08	0.92
Warehouse (2)	0.10	0.90	0.10	0.90
Golf Course (3)	0.08	0.92	0.08	0.92
Water Treatment Plant	1.00	0.00	1.00	0.00
Entertainment Center (4)	0.08	0.92	0.08	0.92
Amphitheatre (5)	0.005	0.995	0.01	0.99
Community/Institutional (6)	0.08	0.92	0.08	0.92
Child Development Center	0.50	0.50	0.08	0.92
Police/Fire/Medical (7)	0.05	0.95	0.50	0.50
Wedding Chapel	0.50	0.50	0.08	0.92
Mixed Use	0.08	0.92	0.08	0.92

Notes:
(1) Based on Specialty Retail
(2) From Korve Engineering, May 1997
(3) Based on Museum
(4) Based on Specialty Retail
(5) From Korve Engineering, May 1997
(6) Based on Museum
(7) Based on Weekday percentages

Table F-12
Estimated Person-trip Generation by Travel Mode[1]
Weekday Daily, AM and PM Peak Hour (2010)[2]

Mode	Maximum Construction Alternative			Medium Construction Alternative			Minimum Construction Alternative		
	Daily	AM	PM	Daily	AM	PM	Daily	AM	PM
	Person-trips								
Auto	19,570	1,645	2,660	11,660	715	1,365	10,440	1,075	1,430
Vanpool/ Other	5,890	310	610	4,120	255	455	2,665	280	335
Bus	9,600	700	1,280	7,100	285	910	3,925	430	585
Ferry	34,635	1,530	3,900	35,040	555	4,410	9,580	735	1,260
Internal[3]	48,285	2,835	4,830	17,790	1,150	1,405	18,755	1,820	2,185
Total Person- trips	***117,980***	***7,020***	***13,280***	***75,710***	***2,960***	***8,545***	***45,365***	***4,340***	***5,795***

[1]Includes inbound and outbound trips.
[2]The AM peak hour of 8:00 to 9:00 AM occurs within the AM peak period of 6:00 to 9:00 AM. The PM peak hour of 5:00 to 6:00 PM occurs within the PM peak period of 3:00 to 7:00 PM.
[3]Internal person-trips are by walking, bicycle, and shuttle, internal to the two islands.

Source: Korve Engineering 1997.

Table F-13
Estimated Person-trip Generation by Travel Mode[1]
Weekend Daily and Midday Peak Hour (2010)[2]

Mode	Maximum Construction Alternative		Medium Construction Alternative		Minimum Construction Alternative	
	Daily	Midday	Daily	Midday	Daily	Midday
	Person-trips					
Auto	18,640	2,630	15,780	1,585	13,655	1,555
Vanpool/Other	6,340	585	7,080	525	5,180	340
Bus	8,760	1,110	8,170	875	4,650	510
Ferry	32,120	3,115	36,170	4,235	9,675	1,005
Internal[3]	53,470	4,950	36,365	1,920	40,780	2,550
Total Person-trips	***119,330***	***12,390***	***103,565***	***9,140***	***73,940***	***5,960***

[1]Includes inbound and outbound trips.
[2]The midday peak hour of 12:00 to 1:00 PM occurs within the midday peak period of 10:00 AM to 1:00 PM.
[3]Internal person-trips are by walking, bicycle, and shuttle, internal to the two islands.

Source: Korve Engineering 1997.

The number of daily and peak-hour person-trips generated by Alternative 2 would be less than the number generated by Alternative 1. During the weekday, the number of daily person-trips generated by Alternative 2 would be approximately 64 percent of Alternative 1, while during the weekend, the number of daily person-trips generated by Alternative 2 would be approximately 87 percent of Alternative 1. Internal trips would range between approximately 16 to 37 percent of daily and peak hour trips.

Under Alternative 3, it is estimated that approximately 45,365 daily person-trips would be generated during a typical weekday, including approximately 4,340 AM peak hour and approximately 5,795 PM peak hour person-trips (Table F-12). During weekend conditions, Alternative 3 would generate approximately 73,940 daily person-trips, including approximately 5,960 midday peak hour person-trips (Table F-13).

Except as noted, this alternative would generate fewer daily and peak hour person- trips than the other reuse alternatives. During the weekday and weekend trips, Alternative 3 would generate from approximately 40 to 60 percent of Alternative 1 person-trips and from approximately 60 to 70 percent of Alternative 2 person-trips. However, during the weekday AM peak hour, the number of person-trips would be greater than Alternative 2, reflecting the greater number of residential dwelling units in Alternative 3 (approximately 1,065 units in Alternative 3 versus approximately 250 units in Alternative 2).

Trip Distribution

Travel distribution to and from Treasure Island was based on existing factors from the *CTBS* and the *Waterfront Land Use Plan Draft EIR*. Trip distribution factors are specific to the type of trip generated. For example, work trips to the visitor-oriented attractions would not be expected to follow the same distribution patterns as those of the visitors. Table F-14 presents the trip distributions between NSTI and four areas—San Francisco, the East Bay, the North Bay and the South Bay.

Mode Split

Mode split assumptions were made primarily based on a combination of existing and modified policies that emphasized high occupancy modes and recognized the impact of capacity constraints on mode choice. See Policy Summary of this appendix. In general, mode splits were adjusted to recognize the limited roadway access to the islands and accordingly to emphasize non-auto travel modes. Table F-15 presents the mode split assumptions, while Tables F-16 and F-17 present, respectively, the average vehicle occupancy for vehicle trips to and from NSTI and to the ferry terminals.

Table F-14
Person-trip Distribution—Weekday and Weekend

	San Francisco		East Bay		South Bay/Peninsula		North Bay		Internal	
	Work	Visitor	Work	Visitor	Work	Visitor	Work	Visitor	Work	Visitor
Land Use	%	%	%	%	%	%	%	%	%	%
Themed Attraction	55.4	52.5	24.2	45.0	14.3	0.0	6.1	2.5	0.0	0.0
Office	56.6	11.6	25.4	5.8	13.7	1.4	4.3	1.2	0.0	80.0
Hotel	55.4	19.9	24.2	17.5	14.3	9.3	6.1	3.3	0.0	50.0
Retail	45.4	0.0	24.2	0.0	14.3	0.0	6.1	0.0	100.0	100.0
Outdoor Recreation	55.4	70.0	24.2	30.0	14.3	0.0	6.1	0.0	0.0	0.0
Open Space	55.4	70.0	24.2	30.0	14.3	0.0	6.1	0.0	0.0	0.0
Marina	55.4	52.5	24.2	45.0	14.3	0.0	6.1	2.5	0.0	0.0
Museum	55.4	58.0	24.2	29.0	14.3	7.0	6.1	6.0	0.0	0.0
Brig	55.4	50.0	24.2	50.0	14.3	0.0	6.1	0.0	0.0	0.0
Job Corps	55.4	50.0	24.2	50.0	14.3	0.0	6.1	0.0	0.0	0.0
Elementary School	55.4	100.0	24.2	0.0	14.3	0.0	6.1	0.0	0.0	0.0
Film Production	55.4	50.0	24.2	50.0	14.3	0.0	6.1	0.0	0.0	0.0
Fire School	55.4	50.0	24.2	50.0	14.3	0.0	6.1	0.0	0.0	0.0
Conference	55.4	58.0	24.2	29.0	14.3	7.0	6.1	6.0	0.0	0.0
Residential	69.1	15.8	17.2	3.4	1.7	0.3	2.0	0.4	10.0	80.0
Restaurant (1)	55.4	15.0	24.2	15.0	14.3	0.0	6.1	0.0	0.0	70.0
Warehouse (2)	55.4	50.0	24.2	50.0	14.3	0.0	6.1	0.0	0.0	0.0
Golf Course (3)	55.4	70.0	24.2	30.0	14.3	0.0	6.1	0.0	0.0	0.0
Water Treatment Plant	55.4	50.0	24.2	50.0	14.3	0.0	6.1	0.0	0.0	0.0
Entertainment Center (4)	55.4	52.5	24.2	45.0	14.3	0.0	6.1	2.5	0.0	0.0
Amphitheatre (5)	55.4	52.5	24.2	45.0	14.3	0.0	6.1	2.5	0.0	0.0
Community/Institutional (6)	55.4	15.0	24.2	15.0	14.3	0.0	6.1	0.0	0.0	70.0
Child Development Center	55.4	100.0	24.2	0.0	14.3	0.0	6.1	0.0	0.0	0.0
Police/Fire/Medical (7)	55.4	0.0	24.2	0.0	14.3	0.0	6.1	0.0	0.0	100.0
Wedding Chapel	55.4	20.0	24.2	17.5	14.3	9.3	6.1	3.3	0.0	50.0
Mixed Use	27.7	40.6	12.1	20.3	7.2	4.9	3.1	4.2	50.0	30.0

Notes:
(1) Based on Hotel, with modifications to reflect predominatly internal trips for visitors.
(2) Based on Film Production
(3) Based on Outdoor Recreation
(4) Based on Themed Attraction
(5) Based on Themed Attraction
(6) Based on Museum, with modifications to reflect predominatly internal trips for visitors.
(7) Based on Brig, with modifications to reflect predominatly internal trips for visitors.

Table F-15
Mode Split—Weekday and Weekend

		San Francisco		East Bay		South Bay/Peninsula		North Bay		Internal	
		Work	Non-Work	Work	Non-Work	Work	Non-Work	Work	Non-Work	Work	Non-Work
Land Use	Mode	%	%	%	%	%	%	%	%	%	%
Themed Attraction	Auto	34.0	0.0	39.0	0.0	57.4	0.0	51.0	0.0	0.0	0.0
Amphitheatre	Carpool	14.0	0.0	4.0	0.0	2.0	0.0	5.0	0.0	0.0	0.0
Entertainment Center	Bus	13.0	10.0	43.0	10.0	10.2	10.0	0.0	10.0	100.0	100.0
	Ferry	39.0	90.0	14.0	90.0	30.4	90.0	44.0	90.0	0.0	0.0
Office, Museum, Brig	Auto	34.0	36.0	39.0	47.0	57.4	60.0	51.0	71.0	0.0	0.0
Mixed Use, Job Corp	Carpool	14.0	30.0	4.0	28.0	2.0	16.0	5.0	19.0	0.0	0.0
Elem Sch; Police, Fire, Med	Bus	13.0	9.0	43.0	19.0	10.2	6.0	0.0	7.0	100.0	100.0
Comm/Inst	Ferry	39.0	26.0	14.0	6.0	30.4	18.0	44.0	3.0	0.0	0.0
Hotel	Auto	34.0	35.5	39.0	47.0	57.4	60.0	51.0	71.4	0.0	0.0
Conference	Carpool	14.0	30.0	4.0	28.0	2.0	16.0	5.0	19.4	0.0	0.0
Restaurant	Bus	13.0	9.0	43.0	19.0	10.2	6.0	0.0	7.2	100.0	100.0
	Ferry	39.0	25.5	14.0	6.0	30.4	18.0	44.0	2.0	0.0	0.0
Retail	Auto	34.0	50.0	39.0	50.0	57.4	0.0	51.0	0.0	0.0	0.0
	Carpool	14.0	0.0	4.0	0.0	2.0	0.0	5.0	0.0	0.0	0.0
	Bus	13.0	50.0	43.0	50.0	10.2	0.0	0.0	0.0	100.0	100.0
	Ferry	39.0	0.0	14.0	0.0	30.4	0.0	44.0	0.0	0.0	0.0
Outdoor Recreation	Auto	34.0	36.0	39.0	47.0	57.4	60.0	51.0	71.0	0.0	0.0
Golf Course	Carpool	14.0	30.0	4.0	28.0	2.0	16.0	5.0	19.0	0.0	0.0
	Bus	13.0	9.0	43.0	19.0	10.2	6.0	0.0	7.0	100.0	100.0
	Ferry	39.0	26.0	14.0	6.0	30.4	18.0	44.0	2.0	0.0	0.0
Open Space	Auto	34.0	84.0	39.0	84.0	57.4	84.0	51.0	84.0	0.0	0.0
Marina	Carpool	14.0	0.0	4.0	0.0	2.0	0.0	5.0	0.0	0.0	0.0
	Bus	13.0	12.0	43.0	12.0	10.2	12.0	0.0	12.0	100.0	100.0
	Ferry	39.0	4.0	14.0	4.0	30.4	4.0	44.0	4.0	0.0	0.0
Film Production	Auto	58.0	36.0	66.0	47.0	89.0	60.0	52.0	71.0	0.0	0.0
Warehouse	Carpool	19.0	30.0	0.0	28.0	5.0	16.0	10.0	19.0	0.0	0.0
	Bus	6.0	9.0	17.0	19.0	3.0	6.0	19.0	7.0	100.0	100.0
	Ferry	17.0	26.0	17.0	6.0	3.0	18.0	19.0	2.0	0.0	0.0
Fire School	Auto	34.0	34.0	39.0	39.0	57.4	57.4	51.0	51.0	0.0	0.0
	Carpool	14.0	14.0	4.0	4.0	2.0	2.0	5.0	5.0	0.0	0.0
	Bus	13.0	13.0	43.0	43.0	10.2	10.2	0.0	0.0	100.0	100.0
	Ferry	39.0	39.0	14.0	14.0	30.4	30.4	44.0	44.0	0.0	0.0
Residential	Auto	34.0	66.0	66.0	84.0	34.0	62.5	66.0	0.0	0.0	0.0
	Carpool	2.0	2.0	2.0	0.0	2.0	3.0	2.0	0.0	0.0	0.0
	Bus	16.0	24.0	24.0	12.0	16.0	9.0	24.0	10.0	100.0	100.0
	Ferry	48.0	8.0	8.0	4.0	48.0	25.5	8.0	90.0	0.0	0.0

		work	non-work
Vehicle Occupancy Rates:	Carpool	3.0	8.0
	Auto	1.5	3.0

Table F-16
Average Vehicle Occupancy for Trips to NSTI
(persons per vehicle)

Vehicle type	Work	Non-work
Vanpool/Other	3	8
Auto	1.5	3

Table F-17
Average Vehicle Occupancy for Vehicle Trips to Ferry Terminals
(persons per vehicle)

Vehicle type	Work	Non-work
Vanpool/Other	3	8
Auto	1.5	3

SFOBB/I-80 Analysis

Freeway Operation Analysis

This section presents the approach to and results of the freeway operation analysis conducted for the existing conditions and all the community reuse alternatives. It also includes the on- and off-ramp analysis for Yerba Buena Island. Table F-18 provides level of service definitions for freeway sections. Analyses of freeway operations were conducted for the following freeway sections and directions:

Westbound direction I-80 in the AM peak period
Westbound direction I-80 in the PM peak period
Eastbound direction I-80 in the AM peak period
Eastbound direction I-80 in the PM peak period

Table F-18
Level of Service Definitions for Freeway Sections

LOS	Average Speed (mph)
A	≥ 60
B	≥ 55
C	≥ 49
D	≥ 41
E	≥ 30
F	<30

Network Development

The freeway operations area studied included the section of I-80 freeway from east of Treasure Island to the west of the I-80/US 101 junction. This study area is approximately 4.3 miles (7 km) long and includes the mainline freeway and the associated ramps.

The analysis employed the FREQ11 software program, a freeway corridor simulation model developed by the Institute of Transportation Studies of the University of California at Berkeley. This program evaluates the basic freeway segments, ramp junctions, and weaving areas based on the 1985 *Highway Capacity Manual* (HCM) procedures as a system, and provides system wide average speeds and queue spillback data over a three-hour peak period. The purpose of the three-hour analysis period is to analyze the network before, during and after the peak hour to analyze the congestion build-up and dissipation. The calibrated AM and PM peak conditions network developed for the *Alternatives to Replacement of the Embarcadero Freeway and the Terminal Separator Structure* (November 1994) was used as a base for this exercise. This network included the section of I-80 freeway from west of Treasure Island to the west of the I-80/US 101 junction based on 1993/1994 traffic conditions.

For the NSTI Disposal and Reuse EIS, the FREQ11 freeway network was expanded to include NSTI and the on- and off-ramps associated with it in both the eastbound and westbound directions. Ramp volumes from 1994 Caltrans counts were used as an input into the expanded network.

In addition to the AM and PM peak networks, a third network, the weekend midday peak period, was developed. Since weekend ramp volumes were not available for year 1993/1994, it was assumed that ramp traffic volumes during the weekend midday peak period are similar to the AM peak. Mainline volumes for weekend conditions were obtained from Caltrans for 1996/1997 conditions, and these volumes were used as an input into the model.

The following input parameters were adjusted to calibrate the new model to the existing conditions as reported in *Alternatives to Replacement of the Embarcadero Freeway and the Terminal Separator Structure* and existing conditions observed in 1997:

- Speed flow curves for each freeway subsection was developed to reflect the maximum flow rate of 2,100 passenger cars per hour per lane.
- A speed-flow curve (65-mph) was used, based on the data on the I-80 freeway provided by FREQ11.
- Weaving section capacities were based on the existing operations. The weaving section capacities in the model were adjusted to reflect the existing operation.
- On- and off-ramp capacities were based on existing counts and HCM procedures. The field-measured counts were used at ramp locations where the actual ramp counts exceeded the HCM maximum recommended capacity.

Development of SFOBB/Yerba Buena Island Ramp Capacities

Since the existing ramps, especially the westbound and eastbound on-ramps, have substandard geometries, a number of approaches were taken to determine the on- and off-ramp capacities of these ramps. These methods included an HCM methodology procedure, linear regression methodology, and field measured maximum volume throughput counts.

Linear Regression Methodology

The HCM uses a methodology that calculates the capacity of an on-ramp merge area in terms of the maximum total flow that can enter the merge influence area. This is the sum of the ramp flow plus the flow in lanes one and two. A survey was conducted to find the relationship between the on-ramp volume, the time it takes for a given vehicle to enter the traffic stream from the on-ramp, the measured lane one (right-most lane) volume and the calculated lane two volume. A regression analysis was conducted with the above data, in which a relationship was not found between the collected data (i.e., R square value of 0.08).

HCM Methodology

The Yerba Buena on-ramps to I-80/SFOBB function similar to a STOP controlled T-intersection due to the existing configuration. As a result, the on-ramps were evaluated using the 1985 Highway Capacity Manual (Special Report 209, Transportation Research Board, 1994 Update) operations methodology, as outlined in Chapter 10 (Unsignalized Intersections). This method determines the capacity of the minor street intersection approach (on-ramp) by estimating the availability and the usefulness in gaps in major street traffic (so that vehicles on the minor street can merge with traffic on the major street). A survey was conducted to measure the time it takes for a given vehicle to enter the traffic stream from the on-ramp. This value (averaged by the total number of vehicles) was used as an accepted gap value. This method was not used because actual counts on the on-ramps exceeded the HCM maximum recommended capacity.

Field Measured Data

Using 1994 on-ramp and off-ramp traffic counts (a complete set of ramp volume counts for when NSTI was operational was only available for 1994 conditions) provided by Caltrans, the maximum number of serviced vehicles were used as the capacity of the on- and off-ramps. Caltrans data indicate that the eastbound on-ramp from Yerba Buena Island had the highest demand. In addition, during field surveys in 1994, a queue at the eastbound on-ramp was observed during the ramp peak hour, this signifying that the on-ramp was operating at capacity. The merging distances for the eastbound on-ramp is less than 50 feet (15 m) and the bridge piers severely restrict sight distances for drivers trying to get onto the bridge. With the operational constraints on the eastbound on-ramp, this ramp was used as a worst-case scenario, and an on-ramp capacity of 330 vph was used for all on-ramps. An off-ramp capacity of 560 vph was used for all off-ramps, except for the eastbound off-ramp west of the tunnel in which a lower capacity of 500 vph was used due to its steep grade and tight turning radius.

The capacity data input into the FREQ11 model for the freeway and ramps is presented in Table F-19.

Table F-19
Freeway and Ramp Capacity at Yerba Buena Island (vph)

Freeway Mainline	**Eastbound SFOBB/I-80**			**Westbound SFOBB/I-80**		
	off-ramp (west of YBI[1])	off-ramp (east of YBI[1])	on-ramp	on-ramp (east of YBI[1])	off-ramp	on-ramp (west of YBI[1])
10,500	500	560	330	330	560	330

[1]Yerba Buena Island.

Future Travel Forecasts

SFOBB/I-80

Year 2010 conditions AM and PM peak period traffic volumes were estimated using on the MTC travel demand model. An annualized growth rate, which was determined by comparing the existing 1994 counts and year 2015 model volumes obtained from the *Alternatives to Replacement of the Embarcadero Freeway and the Terminal Separator Structure Report*, was applied to existing 1994 traffic counts to derive Year 2010 baseline volumes. These growth rates were based on ABAG Projections '94. Recently developed San Francisco 2015 Cumulative Update to the ABAG Projections '96 land use database was not used in the analyses. Such data is useful only when the project under review is broadly physically integrated into the larger region. NSTI is connected to the region by 1 route – the SFOBB/I-80. Since the SFOBB/I-80 is already operating at capacity, the new data would not affect any analyses done using the Projections '94 data.

Based on the growth rate developed for the *Alternatives to the Replacement of the Embarcadero Freeway and Terminal Separator Structure EIS/EIR*, the AM peak traffic hour demand on the SFOBB is anticipated to increase over 1994 by approximately 6 percent in the westbound direction and 14 percent in the eastbound direction east of Treasure Island by the year 2010. Overall increases in traffic volumes during the PM peak hour are anticipated to be approximately 13 percent in the westbound direction and an additional 3 percent in the westbound direction east of Treasure Island by the year 2010.

For the EIS, year 2010 conditions needed to be developed for weekend conditions. The year 2010 weekend midday peak hour volumes were developed using 1996/1997 mainline traffic volumes for weekday and weekend conditions, and projected growth for weekday conditions. The existing relationship between the weekend midday peak and weekday AM peak period was calculated. This distribution was then applied to the projected year 2010 weekday AM peak hour volumes to obtain year 2010 weekend midday peak period mainline traffic volumes.

The weekend midday peak hour traffic demand growth on the SFOBB is projected to be similar to the AM peak. The increase would be approximately 6 percent in the westbound direction and 14 percent in the eastbound direction east of Treasure Island by the year 2010.

On- and Off-ramps

The land use components of Alternatives 1, 2, and 3 were used to determine the projected travel to and from NSTI during the weekday AM and PM peak hours, and the weekend midday peak hour.

Conditions in 2010 without the Project

SFOBB /I-80 Operations
During peak period of operation, traffic demand projected for future year 2010 conditions is expected to exceed the current maximum volumes on the SFOBB of 10,000 vph. However, existing metering practices in the westbound direction at the toll plaza would limit the number of vehicles that could access the SFOBB/I-80. Westbound traffic accessing the SFOBB/I-80 is restricted to approximately 10,500 vehicles during the AM peak hour and 9,000 vehicles during the PM peak hour. More vehicles are metered in the PM peak due to congestion and backups from I-80 in San Francisco. With the projected increases in traffic demand, the peak period is anticipated to spread over a longer period than under existing conditions. During both the AM and PM peak hours, the westbound traffic on the SFOBB/I-80 is projected to operate at capacity for more than three hours during the peak period.

In the eastbound direction, the capacity and congestion in downtown segments of I-80 restrict the number of vehicles accessing the SFOBB/I-80 to approximately 9,500 vph. This condition is anticipated to continue, as there are no planned improvements at the downtown San Francisco approach of the SFOBB/I-80. As in the westbound direction, the increase in eastbound demand results in the spread of the peak period.

Ramp Operations
As a result of the closure of the NSTI, traffic volume on the ramps connecting the SFOBB/I-80 with Yerba Buena Island would decrease. During both the weekday AM and PM peak hours, the ramp volumes are anticipated to be approximately a third of the 1994 levels. Under No Action conditions, total traffic entering and exiting NSTI in both the eastbound and westbound directions would be approximately 277 vph during the AM peak hour, and 249 vph during the PM peak hour. During the weekend midday peak hour, volumes are estimated to be similar to weekday AM conditions (277 vph). These vehicles would include trips to and from the Coast Guard Station, the museum, and sightseeing trips.

Analysis Results
Table F-20 presents a summary of the analysis results of the SFOBB/I-80 freeway operations for the peak hour conditions. Tables F-21 and F-22 present the SFOBB/I-80 operations for the three-hour FREQ11 run, for the eastbound and westbound directions, respectively. Traffic volumes, speeds and LOS are presented for five segments of the SFOBB/I-80. Table F-23 presents the SFOBB/I-80 results for weekend conditions. Table F-24 presents the SFOBB/I-80 ramp volumes and queues for the Yerba Buena Island on- and off-ramps.

Intersection Analysis
Operating characteristics of intersections are described by use of the concept of Level of Service (LOS). LOS designations are a qualitative description of an intersection's performance based on traffic delays. An intersection's LOS could range from LOS A, representing free-flow conditions, to LOS F, representing congested conditions. All intersections analyzed for the community reuse

alternatives are unsignalized, and Table F-25 provides detailed descriptions of the various LOS operating conditions for unsignalized intersections.

Operations at unsignalized intersections (both two-way and all-way stop-controlled) were evaluated using the methodology outlined in Chapter 10 of the 1994 Update to the *1985 Highway Capacity Manual*. For two-way stop-controlled intersections, the analysis method determines the conflicting traffic volumes, the capacity of the gaps in the major traffic stream, and estimates the average total delay for each movement. Total delay is defined as the total elapsed time from when a vehicle joins the queue until the vehicle departs from the stopped position at the head of the queue. Level of service is then based on the average total delay. Level of service for unsignalized intersections ranges from LOS A, which is generally free-flow conditions with easily made turns by the minor street traffic, to LOS F, which indicates very long delays for the minor street traffic. For all-way STOP-controlled intersections, the analysis methodology estimates the capacity and delay for each roadway approach based upon the intersection geometry and the turning movements at the intersection. The LOS is then determined based on the average total delay for the intersection as a whole.

Table F-26 presents a summary of the weekday and weekend peak hour analyses for the 5 study intersections.

Table F-20
Summary of SFOBB / I-80 Weekday and Weekend Peak Hour Traffic Conditions

Scenario / Time Period	Eastbound (1)		Westbound (2)	
	Speed (mph)	LOS (3)	Speed (mph)	LOS (3)
Weekday AM Peak Hour (7:30 - 8:30)				
Existing	57	B	45	E
No Action (Year 2010)	57	B	23	F
Maximum Alternative (Year 2010)	57	B	22	F
Medium Alternative (Year 2010)	57	B	23	F
Minimum Alternative (Year 2010)	57	B	23	F
Weekday PM Peak Hour (4:30 - 5:30)				
Existing	46	D	56	B
No Action (Year 2010)	46	D	18	F
Maximum Alternative (Year 2010)	46	D	17	F
Medium Alternative (Year 2010)	46	D	17	F
Minimum Alternative (Year 2010)	46	D	17	F
Weekend Midday Peak Hour (12:30 - 1:30)				
Existing	57	B	57	B
No Action (Year 2010)	57	B	57	B
Maximum Alternative (Year 2010)	56	B	57	B
Medium Alternative (Year 2010)	57	B	57	B
Minimum Alternative (Year 2010)	56	B	57	B

(1) Eastbound I-80/SFOBB east of the tunnel
(2) Westbound I-80/SFOBB east of the tunnel
(3) LOS is based on mainline travel speeds consistent with San Francisco CMP LOS designations

Source: Korve Engineering, Inc., May 1997

Table F-21
Freeway Mainline Travel Speeds, Volumes, and LOS (SFOBB / I-80 Eastbound) —Weekday Conditions

AM Peak Period

	Fremont On- to I-80 Mainline			I-80 Bay Bridge to T.I. Road Left Off-			T.I. Road Left Off- to T.I. Road Right Off-			T.I. Road Right Off- to T.I. Road On-			T.I. Road On- to I-80 Mainline	
Scenario / Time Period	Volume(vph)	Speed(mph)	LOS	Volume(vph)	Speed(mph)	LOS	Volume(vph)	Speed(mph)	LOS	Volume(vph)	Speed(mph)	LOS	Volume(vph)	Speed(mph)
Existing														
6:30 - 7:30 AM	6,889	53	D	6,889	57	B	7,051	57	B	6,721	57	B	7,049	57
7:30 - 8:30 AM	7,048	53	D	7,048	57	B	7,367	57	B	6,916	57	B	7,133	57
8:30 - 9:30 AM	6,328	53	D	6,328	57	B	6,870	57	B	6,249	57	B	6,387	57
No Action														
6:30 - 7:30 AM	7,135	52	D	7,135	57	B	6,984	57	B	7,046	57	B	7,127	57
7:30 - 8:30 AM	7,410	52	D	7,410	57	B	7,376	57	B	7,366	57	B	7,407	57
8:30 - 9:30 AM	6,922	52	D	6,922	57	B	6,835	57	B	6,867	57	B	6,908	57
Maximum Alternative														
6:30 - 7:30 AM	7,186	52	D	7,186	57	B	6,985	57	B	6,864	57	B	7,162	57
7:30 - 8:30 AM	7,483	52	D	7,483	57	B	7,376	57	B	7,310	57	B	7,459	57
8:30 - 9:30 AM	6,962	52	D	6,962	57	B	6,836	57	B	6,761	57	B	6,910	57
Medium Alternative														
6:30 - 7:30 AM	7,176	52	D	7,176	57	B	7,001	57	B	6,889	57	B	7,024	57
7:30 - 8:30 AM	7,468	52	D	7,468	57	B	7,376	57	B	7,317	57	B	7,385	57
8:30 - 9:30 AM	7,339	52	D	6,955	57	B	6,847	57	B	6,776	57	B	6,844	57
Minimum Alternative														
6:30 - 7:30 AM	7,185	52	D	7,185	57	B	6,984	57	B	6,864	57	B	7,053	57
7:30 - 8:30 AM	7,483	52	D	7,483	57	B	7,376	57	B	7,310	57	B	7,405	57
8:30 - 9:30 AM	6,961	52	D	6,961	57	B	6,835	57	B	6,760	57	B	6,855	57

PM Peak Period

	Fremont On- to I-80 Mainline			I-80 Bay Bridge to T.I. Road Left Off-			T.I. Road Left Off- to T.I. Road Right Off-			T.I. Road Right Off- to T.I. Road On-			T.I. Road On- to I-80 Mainline	
Scenario / Time Period	Volume(vph)	Speed(mph)	LOS	Volume(vph)	Speed(mph)	LOS	Volume(vph)	Speed(mph)	LOS	Volume(vph)	Speed(mph)	LOS	Volume(vph)	Speed(mph)
Existing														
3:30 - 4:30 PM	9,451	47	D	9,451	46	D	9,393	46	D	9,373	46	D	9,620	46
4:30 - 5:30 PM	9,456	47	D	9,456	46	D	9,394	46	D	9,359	46	D	9,473	46
5:30 - 6:30 PM	8,965	51	D	8,965	46	D	8,897	47	D	8,875	47	D	9,005	46
No Action														
3:30 - 4:30 PM	9,499	47	D	9,499	46	D	9,423	46	D	9,421	46	D	9,460	46
4:30 - 5:30 PM	9,457	47	D	9,457	46	D	9,399	46	D	9,393	46	D	9,471	46
5:30 - 6:30 PM	8,965	51	D	8,965	46	D	8,937	46	D	8,936	46	D	8,975	46
Maximum Alternative														
3:30 - 4:30 PM	9,450	47	D	9,450	46	D	9,206	46	D	9,140	46	D	9,290	46
4:30 - 5:30 PM	9,455	47	D	9,455	46	D	8,933	47	D	8,790	47	D	9,090	46
5:30 - 6:30 PM	8,965	51	D	8,965	46	D	8,706	47	D	8,633	47	D	8,783	47
Medium Alternative														
3:30 - 4:30 PM	9,450	47	D	9,450	46	D	9,360	46	D	9,339	46	D	9,476	46
4:30 - 5:30 PM	9,456	47	D	9,450	46	D	9,260	46	D	9,214	46	D	9,487	46
5:30 - 6:30 PM	8,965	51	D	8,965	46	D	8,869	47	D	8,847	47	D	8,984	46
Minimum Alternative														
3:30 - 4:30 PM	9,450	47	D	9,450	46	D	9,338	46	D	9,311	46	D	9,435	46

LOS is based on mainline travel speeds consistent with San Francisco CMP LOS designations

Source: Korve Engineering, Inc., May 1997

Table F-22
Freeway Mainline Travel Speeds, Volumes, and LOS (SFOBB / I-80 Eastbound)—Weekday Conditions

AM Peak Period

	I-80 Bay Bridge to Y.B. On-ramp			Y.B. On- to Y.B. Off-ramp			Y.B. Off- to Y.B. On-ramp			Y.B. On- to I-80 Mainline			I-80 Mainline to Fremont Off-ramp	
Scenario / Time Period	Volume(vph)	Speed(mph)	LOS	Volume(vph)	Speed(mph)	LOS	Volume(vph)	Speed(mph)	LOS	Volume(vph)	Speed(mph)	LOS	Volume(vph)	Speed(mph)
Existing														
6:30 - 7:30 AM	10,540	34	F	10,628	36	F	10,429	46	D	10,472	37	E	10,500	28
7:30 - 8:30 AM	9,571	45	E	9,644	45	E	9,540	46	D	9,572	55	C	9,823	25
8:30 - 9:30 AM	8,120	49	D	8,184	49	D	8,034	50	D	8,056	57	B	8,056	57
No Action														
6:30 - 7:30 AM	9,115	21	F	9,130	21	F	9,090	21	F	9,125	22	F	9,125	22
7:30 - 8:30 AM	9,568	23	F	9,575	23	F	9,553	23	F	9,571	24	F	9,571	24
8:30 - 9:30 AM	8,422	48	D	8,429	49	D	8,410	42	E	9,041	27	F	9,041	22
Maximum Alternative														
6:30 - 7:30 AM	8,729	20	F	8,876	21	F	8,725	20	F	9,005	22	F	9,055	22
7:30 - 8:30 AM	9,274	22	F	9,348	22	F	9,260	22	F	9,439	23	F	9,439	23
8:30 - 9:30 AM	8,883	27	F	8,957	21	F	8,887	20	F	9,057	22	F	9,057	22
Medium Alternative														
6:30 - 7:30 AM	9,297	22	F	9,336	22	F	9,198	21	F	9,291	23	F	9,291	23
7:30 - 8:30 AM	9,553	23	F	9,572	23	F	9,502	23	F	9,549	24	F	9,549	24
8:30 - 9:30 AM	8,473	42	E	8,494	27	F	8,431	24	F	9,046	22	F	9,046	22
Minimum Alternative														
6:30 - 7:30 AM	9,126	21	F	9,200	22	F	9,045	21	F	9,217	22	F	9,217	22
7:30 - 8:30 AM	9,474	23	F	9,510	23	F	9,431	22	F	9,517	24	F	9,517	24
8:30 - 9:30 AM	8,482	35	F	8,519	22	F	8,963	20	F	9,049	27	F	9,049	22

PM Peak Period

	I-80 Bay Bridge to Y.B. On-ramp			Y.B. On- to Y.B. Off-ramp			Y.B. Off- to Y.B. On-ramp			Y.B. On- to I-80 Mainline			I-80 Mainline to Fremont Off-ramp	
Scenario / Time Period	Volume(vph)	Speed(mph)	LOS	Volume(vph)	Speed(mph)	LOS	Volume(vph)	Speed(mph)	LOS	Volume(vph)	Speed(mph)	LOS	Volume(vph)	Speed(mph)
Existing														
3:30 - 4:30 PM	8,191	56	B	8,327	56	B	8,072	57	B	8,097	57	B	8,097	56
4:30 - 5:30 PM	8,347	56	B	8,423	56	B	8,210	56	B	8,233	56	B	8,199	19
5:30 - 6:30 PM	7,966	57	B	8,047	56	B	7,890	57	B	7,909	57	B	7,909	57
No Action														
3:30 - 4:30 PM	9,000	56	B	9,008	56	B	8,990	56	B	7,822	38	E	7,822	18
4:30 - 5:30 PM	7,960	18	F	7,975	18	F	7,941	17	F	8,001	18	F	8,001	18
5:30 - 6:30 PM	8,498	20	F	8,506	20	F	8,489	20	F	8,520	20	F	8,520	20
Maximum Alternative														
3:30 - 4:30 PM	7,722	48	D	7,764	37	E	7,568	32	F	7,790	23	F	7,745	17
4:30 - 5:30 PM	7,795	17	F	7,879	18	F	7,513	16	F	7,923	17	F	7,843	18
5:30 - 6:30 PM	8,406	19	F	8,449	20	F	8,259	19	F	8,474	19	F	8,435	20
Medium Alternative														
3:30 - 4:30 PM	7,687	47	D	7,724	37	E	7,650	32	F	7,798	23	F	7,798	18
4:30 - 5:30 PM	7,697	17	F	7,768	17	F	7,627	16	F	7,922	17	F	7,922	18
5:30 - 6:30 PM	8,365	19	F	8,401	19	F	8,329	19	F	8,476	19	F	8,476	20
Minimum Alternative														
3:30 - 4:30 PM	7,708	51	D	7,740	40	E	7,568	35	F	7,745	24	F	7,790	18

LOS is based on mainline travel speeds consistent with San Francisco CMP LOS designations

Source: Korve Engineering, Inc., May 1997

Table F-23
Freeway Mainline Travel Speeds, Volumes, and LOS (SFOBB / I-80 Eastbound)—Weekend Conditions

Eastbound Weekend Midday Peak

	Fremont On- to I-80 Mainline			I-80 Bay Bridge to T.I. Road Left Off-			T.I. Road Left Off- to T.I. Road Right Off-			T.I. Road Right Off- to T.I. Road On-			T.I. R I-80
Scenario / Time Period	Volume(vph)	Speed(mph)	LOS	Volume(vph)	Speed(mph)	LOS	Volume(vph)	Speed(mph)	LOS	Volume(vph)	Speed(mph)	LOS	Volume(vph)
Existing													
11:30 - 12:30 PM	6,584	53	D	6,584	57	B	6,510	58	A	6,487	58	A	6,640
12:30 - 1:30 PM	7,152	53	D	7,152	57	B	7,050	57	B	7,038	57	B	7,171
1:30 - 2:30 PM	7,435	53	D	7,435	57	B	7,329	57	B	7,304	57	B	7,409
No Action													
11:30 - 12:30 PM	7,378	52	D	7,378	57	B	7,330	57	B	7,328	57	B	7,369
12:30 - 1:30 PM	7,692	52	D	7,692	57	B	7,604	57	B	7,600	57	B	7,681
1:30 - 2:30 PM	7,434	52	D	7,434	57	B	7,390	57	B	7,389	57	B	7,430
Maximum Scenario													
11:30 - 12:30 PM	7,403	52	D	7,403	57	B	7,292	57	B	7,264	57	B	7,504
12:30 - 1:30 PM	7,795	52	D	7,795	56	B	7,587	57	B	7,533	57	B	7,863
1:30 - 2:30 PM	7,435	52	D	7,435	57	B	7,334	57	B	7,308	57	B	7,638
Medium Scenario													
11:30 - 12:30 PM	7,399	52	D	7,399	57	B	7,298	57	B	7,272	57	B	7,420
12:30 - 1:30 PM	7,778	52	D	7,778	56	B	7,589	57	B	7,543	57	B	7,838
1:30 - 2:30 PM	7,434	52	D	7,434	57	B	7,343	57	B	7,321	57	B	7,469
Minimum Scenario													
11:30 - 12:30 PM	7,391	52	D	7,391	57	B	7,312	57	B	7,297	57	B	7,457
12:30 - 1:30 PM	7,744	52	D	7,744	56	B	7,598	57	B	7,570	57	B	7,890
1:30 - 2:30 PM	7,434	52	D	7,434	57	B	7,363	57	B	7,350	57	B	7,510

Westbound Weekend Midday Peak

	I-80 Bay Bridge to Y.B. On-ramp			Y.B. On- to Y.B. Off-ramp			Y.B. Off- to Y.B. On-ramp			Y.B. On- to I-80 Mainline			I-80 M Fremo
Scenario / Time Period	Volume(vph)	Speed(mph)	LOS	Volume(vph)	Speed(mph)	LOS	Volume(vph)	Speed(mph)	LOS	Volume(vph)	Speed(mph)	LOS	Volume(vph)
Existing													
11:30 - 12:30 PM	7,600	57	B	7,727	57	B	7,586	57	B	7,609	57	B	7,609
12:30 - 1:30 PM	7,131	57	B	7,283	57	B	7,094	57	B	7,106	57	B	7,106
1:30 - 2:30 PM	7,087	57	B	7,233	57	B	7,094	57	B	7,111	57	B	7,111
No Action													
11:30 - 12:30 PM	8,064	57	B	8,071	57	B	8,050	57	B	8,067	57	B	8,067
12:30 - 1:30 PM	7,611	57	B	7,624	57	B	7,582	57	B	7,616	57	B	7,616
1:30 - 2:30 PM	7,498	57	B	7,504	57	B	7,485	57	B	7,504	57	B	7,504
Maximum Scenario													
11:30 - 12:30 PM	8,130	57	B	8,227	56	B	8,146	57	B	8,432	56	B	8,432
12:30 - 1:30 PM	7,744	57	B	7,937	57	B	7,770	57	B	8,100	57	B	8,100
1:30 - 2:30 PM	7,563	57	B	7,659	57	B	7,582	57	B	7,912	57	B	7,912
Medium Scenario													
11:30 - 12:30 PM	8,118	57	B	8,163	57	B	8,090	57	B	8,221	56	B	8,221
12:30 - 1:30 PM	7,717	57	B	7,807	57	B	7,664	57	B	7,925	57	B	7,925
1:30 - 2:30 PM	7,550	57	B	7,594	57	B	7,528	57	B	7,660	57	B	7,660
Minimum Scenario													
11:30 - 12:30 PM	8,093	57	B	8,148	57	B	8,099	57	B	8,257	56	B	8,257
12:30 - 1:30 PM	7,669	57	B	7,778	57	B	7,682	57	B	7,999	57	B	7,999

LOS is based on mainline travel speeds consistent with San Francisco CMP LOS designations

Source: Korve Engineering, Inc., May 1997

Table F-24
Volume and Maximum Queue on Connector Ramps—Weekday & Weekend Conditions

Ramp	No Action Volume (vph)	No Action Queue (veh.)	Maximum Alternative Volume (vph)	Maximum Alternative Queue (veh.)	Medium Alternative Volume (vph)	Medium Alternative Queue (veh.)	Minimum Alternative Volume (vph)	Minimum Alternative Queue (veh.)
Weekday AM Peak								
Westbound On- (east of Tunnel)	14	0	147	0	39	0	74	0
Westbound Off-	44	0	160	0	144	0	162	0
Westbound On- (west of Tunnel)	35	0	337	3	93	0	172	0
Eastbound Off- (west of Tunnel)	97	0	237	0	206	0	237	0
Eastbound Off- (east of Tunnel)	6	0	143	0	133	0	143	0
Eastbound On-	81	0	298	0	135	0	190	0
Weekday PM Peak								
Westbound On- (east of Tunnel)	15	0	85	0	72	0	66	0
Westbound Off-	34	0	375	0	142	0	161	0
Westbound On- (west of Tunnel)	61	0	352	22	295	0	272	0
Eastbound Off- (west of Tunnel)	55	0	536	22	191	0	241	0
Eastbound Off- (east of Tunnel)	6	0	146	0	46	0	60	0
Eastbound On-	78	0	300	0	273	0	247	0
Weekend Midday Peak								
Westbound On- (east of Tunnel)	14	0	194	0	90	0	109	0
Westbound Off-	44	0	176	0	151	0	102	0
Westbound On- (west of Tunnel)	35	0	569	239	261	0	318	0
Eastbound Off- (west of Tunnel)	97	0	232	0	210	0	161	0
Eastbound Off- (east of Tunnel)	6	0	59	0	50	0	31	0
Eastbound On-	81	0	480	150	295	0	320	0

*Note: On-ramp queue based on a measured capacity of 330 vph on the Treasure Island On-ramps.
Off-ramp queue based on a measured capacity of 560 for all off-ramps except the EB Treasure Island off-ramp (east of T.I.) with a capacity of 500 vph.

Source: Korve Engineering, Inc., May 1997

Table F-25
Level of Service Definitions for
Two-Way and All-Way Stop-Controlled Intersections

LOS	Average Total Delay (sec/veh)	Typical Traffic Condition
A	0 - 5	Little or no delay
B	5.1 - 10	Short traffic delays
C	10.1 - 20	Average traffic delays
D	20.1 - 30	Long traffic delays
E	30.1 - 45	Very long traffic delays
F	>45	(1)

(1) For two-way stop-controlled intersections, LOS F exists when there are insufficient gaps of suitable size to allow side street demand to cross safely through major street traffic stream. This LOS is generally evident from extremely long total delays experienced by side street traffic and by queuing on the minor approaches. When demand volume exceeds the capacity of the lane, extreme delays would be encountered with queuing, which may cause severe congestion affecting other traffic movements in the intersection. This condition usually warrants improvement to the intersection.

Source: *Highway Capacity Manual*, Special Report No. 209, Transportation Research Board, 1985, Updated 1994.

Table F-26
Intersection Level of Service—Year 2010 Conditions
Weekday AM and PM Peak Hours

Study Intersection	Maximum Construction Alternative				Medium Construction Alternative				Minimum Construction Alternative			
	AM		PM		AM.		PM		AM		PM	
	Delay (1)	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
Avenue of Palms/ California Avenue	6.2	B	28.9	D	0.7	A	3.4	A	2.8	B	3.8	A
Avenue C/ California	0.1	A	0.9	A	0.1	A	0.0	A	0.1	A	1.2	A
Avenue C/ 9th Street	0.2	A	2.4	B	0.2	A	0.1	A	0.3	A	2.5	A
Avenue H/ 4th Street	0.3	A	0.3	B	0.4	A	0.6	A	0.5	A	0.4	A
Avenue H/ 9th Street	2.5	A	4.5	A	1.1	A	1.3	A	1.2	A	1.2	A

Weekend Midday Peak Hour

Intersection	Alternative 1		Alternative 2		Alternative 3	
	Delay (1)	LOS	Delay	LOS	Delay	LOS
Avenue of Palms/California Avenue	21.9	D	3.4	A	3.5	A
Avenue C/ California Avenue	0.1	A	0.0	A	0.1	A
Avenue C/ 9th Street	0.2	A	0.2	A	0.5	A
Avenue H/ 4th Street	0.0	A	0.2	A	0.1	A
Avenue H/ 9th Street	4.1	A	1.1	A	1.1	A

Delay is expressed in seconds per vehicle.

Source: Korve Engineering 1997.

Transit Analysis

Ferry Service

The key determinants to the ferry requirement tables (Figures 40, 44 and 47 in the *Naval Station Treasure Island Reuse Plan Transportation Background Report*) were the number of vessels and trips required to meet the peak travel hour/peak direction requirements. For example, if the peak direction ferry travel demand to Treasure Island is 709 passengers, 3 vessels would be required during that hour assuming a standard vessel capacity of 300 persons and a single ferry route. Table F-27 summarizes peak hour/peak direction ferry travel demand to Treasure Island for the community reuse alternatives.

Table F-27
Summary of Treasure Island Ferry Trips
Peak Hour/Peak Direction

Analysis Period	Maximum Construction Alternative	Medium Construction Alternative	Minimum Construction Alternative
Weekday daily	34,632	35,036	9,578
Weekday AM peak	1,529	554	739
Weekday PM/peak direction	3,898/2,082	4,416/2,482	1,260/709
Weekend daily	32,118	36,170	9,681
Weekend midday peak/peak direction	3,118/1,706	4,233/2,262	1,004/633

If the peak demand hour is during a commute period, when all available vessels are in service, the entire fleet of vessels required to NSTI must be dedicated to that service. In contrast, if the peak travel demand for NSTI is midday or evenings during the weekdays or any time on the weekend, there would be some reserve capacity in the existing and projected Bay Area ferry fleet to provide additional trips to NSTI, and somewhat less than 100 percent of the fleet requirement would need to be dedicated to NSTI service. Because of this, the Reuse Plan ferry analysis focused on the weekday demand when excess vessels are not available. In comparing the daily and peak hour ferry demand calculated for the Reuse Plan and for the alternatives in the EIS, the following conclusions were developed.

- The Reuse Plan Phase 3 ferry plan would be adequate to serve the trip demand generated by Alternatives 1 and 2. Although the 30,668 trips using the ferries during Phase 3 of the Reuse Plan would be less than the 34,632 daily riders under Alternative 1 and less than the 35,036 under Alternative 2, the weekday PM peak hour/peak directional use was projected to be 2,300 for the Phase 3 plan, compared with the demand of 2,082 and 2,482 peak directional trips with Alternatives 1 and 2, respectively.

  Although Alternative 2 would generate eight percent more ferry trips during the 5:00 to 6:00 PM peak hour than the Reuse Plan Phase 3 ferry plan, due to differences in land uses from the Reuse Plan, Alternative 2 has somewhat different distributions to the Ferry Building, Candlestick Point, and the East Bay terminals. Thus, in comparison with the Phase 3 plan, Alternative 2 would result in 3 percent fewer trips to the Ferry Building, 15 percent more trips to the East Bay, and 19 percent more trips to Candlestick Point. However, since ferry increments serve up to 300 passengers, the comparison trips indicates that the same number of peak hour and peak period (the peak hour for ferry was assumed to be 7:00 to 8:00 PM), trips could carry the incremental peak hour demand. For example, 2 ferry trips are required to carry 506 persons from NSTI to Candlestick Point, the same number of ferry trips required to carry 436 persons between 5:00 and 6:00 PM in the Phase 3 plan.

Because of parking deficiencies at the Ferry Building and Jack London Square, the Phase 3 plan included additional vessels from Candlestick Point in San Francisco and Golden Gate Fields on the Albany/Berkeley border, locations where additional parking capacity is available. This level of service required three vessels from the Ferry Building, three vessels from Candlestick Point, and four from the two East Bay ferry terminals.

- The Reuse Plan Phase 2 would be adequate to serve the trip demand generated by Alternative 3. The Phase 2 plan was developed to serve weekday daily transportation of 10,222 trips by ferry, as compared to 9,578 daily weekday trips for Alternative 3. Assuming 15-knot vessels between the Ferry Building and Treasure Island, and 25-knot vessels operating from Jack London Square, a total of 4 vessels would be required to serve the travel demand.

  During development of the Reuse Plan ferry program, at least 2 ferry trips were assigned per hour from each terminal so that wait times would never exceed 30 minutes. Since 4 vessels could provide 2 trips per hour from Oakland and 3 trips per hour from the Ferry Building, they would have a capacity of 900 persons per hour in the peak direction from the Ferry Building and 600 passengers an hour from Jack London Square, significantly above the indicated demand for 790 passenger trips during the weekday PM peak hour for Alternative 3.

Proposals for additional ferry service from NSTI and Larkspur, Vallejo, Alameda and Oakland have been discussed as part of the community reuse alternative definition. While ferry service is expected from Oakland (and a stop at Alameda is possible), service from Larkspur and Vallejo is unlikely to be warranted, with passengers from those locations taking regularly scheduled service to the Ferry Building and transferring to the short route from the Ferry Building to NSTI. Demand from those locations would be insufficient to justify new vessels for dedicated service on Larkspur to NSTI or Vallejo to NSTI routes. Adding an additional NSTI stop to existing San Francisco trips from these terminals would have an adverse impact on existing ridership and would disrupt standard sequential schedules (typically service once every hour or two).

Bus Service

AC Transit bus service between NSTI, San Francisco, and the East Bay was discontinued in 1996. Subsequently, San Francisco Muni has provided bus service between NSTI and San Francisco. The *Naval Station Treasure Island Reuse Plan* Transportation Plan assumed that bus service would be provided to and from both San Francisco and the East Bay.

With the three proposed community reuse alternatives, the existing Muni service would be inadequate. The number of projected bus trips to Treasure Island was, therefore, calculated for each of the three community reuse alternatives. These trips were determined for both inbound and outbound of San Francisco and the East Bay. Due to the bus connections from the North Bay and South Bay within San Francisco (Golden Gate Transit and SamTrans, respectively), all transit trips from these two regions were combined with the San Francisco trips. Bus transit person-trips are summarized in Table 4-7 in Section 4.5, Transportation.

Under Alternative 1, approximately 9,600 weekday daily and approximately 8,760 weekend daily bus transit patrons are estimated between NSTI and the East, North, and South Bays (including San Francisco). During the weekday, approximately 700 AM and 1,280 PM peak bus transit person-trips are estimated, as well as 1,110 weekend midday bus person-trips.

Under Alternative 2, approximately 7,100 weekday daily and approximately 8,170 weekend daily bus transit patrons are estimated between NSTI and the East, North, and South Bays (including San Francisco). During the weekday, approximately 285 AM and 910 PM peak bus transit person-trips are estimated, as well as 875 weekend midday bus person-trips.

Approximately 3,925 weekday daily and approximately 4,650 weekend daily bus transit patrons are estimated under Alternative 3 between NSTI and the East, North, and South Bays (including San Francisco). During the weekday, approximately 430 AM and 585 PM peak hour bus transit person-trips are estimated, as well as 510 weekend midday bus person-trips.

For both eastbound and westbound travel, the average bus size was estimated to be 40 passengers and the maximum load factor was taken to be 1.55 passengers/seat, based on bus size and load factor standards for San Francisco Muni. From these values and the projected number of transit users, the headways necessary to ensure adequate transit service were calculated for weekday AM and PM peak hours and off-peak conditions. A similar effort was conducted for weekend midday and off-peak conditions. These headways are summarized in Table F-28.

Table F-28
Summary of Bus Service Requirements

Alternative	Weekday Headways	Weekend Headways
Maximum Construction	10 minutes	15 minutes
Medium Construction	15 minutes	15 minutes
Minimum Construction	20 minutes	

Parking Analysis

Long-term and short-term parking demand for all the proposed land uses was determined based on the methodology outlined in Appendix 5.1 of the *San Francisco Guidelines for Environmental Review: Transportation Impacts (SF Guidelines).* For the proposed residential uses, long-term parking demand was estimated for residents using a rate of 1.5 spaces per unit. For the proposed commercial uses (i.e., all uses other than residential), both long-term parking demand was estimated for employees and short-term parking demand was estimated for visitors.

Long-term parking demand for employees of the commercial uses was based on the estimated number of work trips by auto, while short-term parking demand for visitors was based on the estimated number of non-work trips by auto. As described in the *SF Guidelines*, the use of parking turnover rates[1] is required in order to estimate short-term parking demand. Parking turnover rates were obtained from the *Naval Station Treasure Island Reuse Plan Transportation Background Report* and are summarized in Table F-29 for each land use.

Table F-29
Parking Turnover Rates

Land Use	Parking Turnover Rate (Vehicles Per Space)
Brig, child development center, entertainment center, film production, fire school, golf, police, themed attraction, water treatment plant, and wedding chapel	1.0
Amphitheater, mixed-use, restaurant, and retail	1.5
Community/institutional, conference, elementary school, hotel, and job corps	2.0
Museum, office, and warehouse	4.0
Marina, open space, and outdoor recreation	5.0

Source: Naval Station Treasure Island Reuse Plan Transportation Background Report.

1 - A parking turnover rate represents the number of vehicles, in a parking lot or garage, that occupy one parking space during the day (i.e., the number of times one parking spaces turns over throughout the day).

DEPARTMENT OF THE NAVY
ENGINEERING FIELD ACTIVITY, WEST
NAVAL FACILITIES ENGINEERING COMMAND
900 COMMODORE DRIVE
SAN BRUNO, CALIFORNIA 94066-5006

IN REPLY REFER TO:

Record of Non-Applicability

Disposal and Reuse of Naval Station Treasure Island

Pursuant to Section 176(c) of the Clean Air Act, 42 U.S.C. § 7506(c), the General Conformity Rule, 40 C.F.R. Part 93, Subpart B, and the Chief of Naval Operations Interim Guidance on Compliance with the Clean Air Act General Conformity Rule, March 8, 1995, the Department of the Navy has determined that the actions to dispose of and reuse Naval Station Treasure Island are exempt from the requirement for a conformity determination. This finding is based on the following exemptions as stated in 40 C.F.R. § 93.153(c)(2):

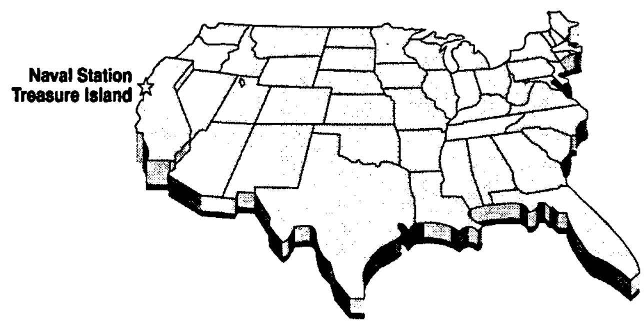
> (xi) The granting of leases, licenses such as for exports and trade, permits, and easements where activities conducted will be similar in scope and operation to activities currently being conducted.
>
> . . .
>
> (xiv) Transfers of ownership, interests, and titles in land, facilities, and real and personal properties, regardless of the form or method of transfer.
>
> . . .
>
> (xix) Actions (or portions thereof) associated with transfers of land, facilities, title, and real properties through an enforceable contract or lease agreement where the delivery of the deed is required to occur promptly after a specific, reasonable condition is met, such as promptly after the land is certified as meeting the requirements of CERCLA, and where the Federal agency does not retain continuing authority to control emissions associated with the land, facilities, title, or real properties.
>
> . . .
>
> (xx) Transfers of real property, including land, facilities, and related personal property from a Federal entity to another Federal entity and assignments of real property, including land, facilities, and related personal property from a Federal entity to another Federal entity for subsequent deeding to eligible applicants.

The Environmental Protection Agency's preamble to the General Conformity Rule explained the exemption for Federal land transfers as follows: "Under the exclusive definition of indirect emissions, Federal land transfers are unlikely to be covered since the Federal agency will not maintain authority over reuse activities on that land. Consequently, Federal land transfers are included in the regulatory list of actions that will not exceed the de minimis levels and thus are exempt from the final conformity rules." 58 Fed. Reg. 63231 (1993).

Based on the foregoing regulations and policies, I have determined that the Navy's actions to dispose of and reuse Naval Station Treasure Island are exempt from the requirement for a conformity determination.

ERNEST R. HUNTER
Captain, CEC, US Navy
Commanding Officer

5/18/1999
DATE



Appendix F.4
Air Quality

Table F-30
Characteristics of Roadway Network Used for CALINE4 Dispersion Modeling

ROADWAY	SEGMENT	LINK SEGMENT COORDINATES X1	Y1	X2	Y2	LINK HEIGHT	LINK SEGMENT LENGTH	LANES	PM PEAK HOUR VOLUMES BY SCENARIO NO ACTION	MINIMUM	MEDIUM	MAXIMUM
UPPER DECK	EAST 1UD	2100	5170	1970	3890	55	1287	5	9000	8300	8300	8300
	EAST 2UD	1970	3890	1950	3590	55	301	5	9000	8300	8300	8300
	EAST 3UD	1950	3590	1980	3325	40	267	5	9000	8300	8300	8300
	EAST 4UD	1980	3325	2160	2810	25	546	5	9000	8300	8300	8300
	EAST 5UD	2160	2810	2480	2030	25	843	5	9000	8300	8300	8300
	TUNNELUD	2480	2030	2670	1510	25	554	5	9000	8300	8300	8300
	WEST 1UD	2670	1510	2790	1210	25	323	5	9000	8300	8300	8300
	WEST 2UD	2790	1210	3310	-140	55	1447	5	9000	8300	8300	8300
LOWER DECK	EAST 1LD	2100	5170	1970	3890	30	1287	5	9500	9500	9500	9500
	EAST 2LD	1970	3890	1950	3590	30	301	5	9500	9500	9500	9500
	EAST 3LD	1950	3590	1980	3325	15	267	5	9500	9500	9500	9500
	EAST 4LD	1980	3325	2160	2810	0	546	5	9500	9500	9500	9500
	EAST 5LD	2160	2810	2480	2030	0	843	5	9500	9500	9500	9500
	TUNNELLD	2480	2030	2670	1510	0	554	5	9500	9500	9500	9500
	WEST 1LD	2670	1510	2790	1210	0	323	5	9500	9500	9500	9500
	WEST 2LD	2790	1210	3310	-140	30	1447	5	9500	9500	9500	9500

Table F-31
Receptor Coordinates

RECEPTOR	X-COORD (FEET)	Y-COORD (FEET)	OFFSET (FEET)
N OF SEGMENT EAST3	1915	3452	50
	1890	3449	75
	1866	3446	100
	1766	3435	200
	1667	3424	300
S OF SEGMENT EAST3	2015	3463	50
	2040	3466	75
	2064	3469	100
	2164	3480	200
	2263	3491	300
N OF SEGMENT EAST5	2274	2401	50
	2251	2392	75
	2227	2382	100
	2135	2344	200
	2042	2306	300
S OF SEGMENT EAST5	2366	2439	50
	2389	2448	75
	2413	2458	100
	2505	2496	200
	2598	2534	300
N OF SEGMENT WEST1	2684	1341	50
	2660	1332	75
	2637	1323	100
	2544	1286	200
	2451	1249	300
S OF SEGMENT WEST1	2776	1379	50
	2800	1388	75
	2823	1397	100
	2916	1434	200
	3009	1471	300

Table F-32
PM Peak Hour Operating Modes, Freeway Traffic

TRIP PURPOSE	TRIP PURPOSE MIX	HOT STABLE FRACTION		COLD START FRACTION	HOT START FRACTION
H-W	50.00%	90.00%		9.25%	0.75%
H-S	10.00%	90.00%		5.27%	4.73%
H-O	20.00%	90.00%		6.81%	3.19%
O-W	10.00%	90.00%		6.24%	3.76%
O-O	10.00%	90.00%		2.87%	7.13%
CHECKSUM:	100.00%	90.00%	WTD MEAN:	7.42%	2.58%

	COLD START	HOT START
CATALYST	7.44%	2.56%
NONCATALYST	5.70%	4.30%

CATALYST FRACTION FOR LDA + LDT + MDT + MCY: 98.97%

START MODE - FIRST 505 SECONDS OF VEHICLE TRAVEL
STABLE MODE - TRAVEL AFTER 505 SECONDS OF VEHICLE OPERATION

START MODE SPLIT FACTORS:

	CATALYST VEHICLES		NONCAT VEHICLES	
TRIP PURPOSE	COLD STARTS	HOT STARTS	COLD STARTS	HOT STARTS
H-W	92.63%	7.37%	80.04%	19.96%
H-S	52.89%	47.11%	33.61%	66.39%
H-O	68.35%	31.65%	43.38%	56.62%
O-W	62.64%	37.36%	40.73%	59.27%
O-O	28.90%	71.10%	8.25%	91.75%
WTD MEAN:	74.43%	25.57%	56.96%	43.05%

Table F-33
Basic Freeway Traffic Emission Rates

SUMMARY OF EMFAC7F INPUT ASSUMPTIONS:

CALENDAR YEAR: 2010 I&M PROGRAM: YES

VEHICLE MIX ASSUMPTIONS:

LDA	LDT	MDT	HDG	HDD	BUS	MCY
70.00%	22.20%	2.27%	2.07%	1.49%	0.99%	0.98%

AIR TEMPERATURE FOR EXHAUST RATES. SUMMER: 70 WINTER: 50

EVAPORATIVE EMISSIONS TEMPERATURE PATTERNS:

	MINIMUM	8 AM	9 AM	11 AM	1 PM	MAXIMUM
SUMMER	55	57	60	68	72	75
WINTER	40	40	42	51	58	60

OPERATING MODE ASSUMPTIONS:

COLD START	HOT START	HOT STABLE
7.42%	2.58%	90.00%

VEHICLE EMISSION RATES, GRAMS/MILE:

	GRAM/MILE RATES BY SPEED IN MPH					FIXED
	15	25	35	45	55	AMOUNT
ROG	0.44	0.25	0.20	0.16	0.16	
NOx	0.82	0.67	0.65	0.74	0.97	
CO-S	4.10	2.68	2.11	1.92	2.24	
CO-W	4.63	3.07	2.44	2.23	2.59	
PMEX	0.05	0.05	0.05	0.05	0.05	
PMTW	0.21	0.21	0.21	0.21	0.21	
HOT SOAK						0.21
DRNL/RSTL						1.21

NOTES: LDA = light duty autos
LDT = light duty trucks
MDT = medium duty trucks
HDG = heavy duty gasoline-fueled vehicles
HDD = heavy duty diesel-fueled vehicles
BUS = diesel-fueled urban buses
MCY = motorcycles
ROG = reactive organic gases (summer fuel volatility)
NOx = oxides of nitrogen (summer fuel volatility)
CO-S = carbon monoxide (summer fuel volatility)
CO-W = carbon monoxide (winter fuel volatility)
PMEX = exhaust particulate matter
PMTW = tire wear particulate matter
DRNL = summer diurnal evaporative emissions (grams/veh-day)
RSTL = summer resting loss evaporative emissions (grams/veh-day)
Hot Soak evaporative emission rate in grams/trip

Table F-34
Cold Start Emission Rates for Idle Adjustment Analyses

SUMMARY OF EMFAC7F INPUT ASSUMPTIONS:

CALENDAR YEAR: 2010 I&M PROGRAM: YES

VEHICLE MIX ASSUMPTIONS:

LDA	LDT	MDT	HDG	HDD	BUS	MCY
70.00%	22.20%	2.27%	2.07%	1.49%	0.99%	0.98%

AIR TEMPERATURE FOR EXHAUST RATES, SUMMER: 70 WINTER: 50

EVAPORATIVE EMISSIONS TEMPERATURE PATTERNS:

	MINIMUM	8 AM	9 AM	11 AM	1 PM	MAXIMUM
SUMMER	55	57	60	68	72	75
WINTER	40	40	42	51	58	60

OPERATING MODE ASSUMPTIONS:

COLD START	HOT START	HOT STABLE
100.00%	0.00%	0.00%

VEHICLE EMISSION RATES, GRAMS/MILE:

	GRAM/MILE RATES BY SPEED IN MPH					FIXED
	5	10	15	20	25	AMOUNT
ROG	1.96	1.06	0.75	0.63	0.57	
NOx	1.51	1.28	1.15	1.04	0.99	
CO-S	13.36	9.77	8.10	7.21	6.68	
CO-W	16.19	12.19	10.36	9.38	8.80	
PMEX	0.05	0.05	0.05	0.05	0.05	
PMTW	0.21	0.21	0.21	0.21	0.21	
HOT SOAK						0.21
DRNL/RSTL						1.21

NOTES: LDA = light duty autos
LDT = light duty trucks
MDT = medium duty trucks
HDG = heavy duty gasoline-fueled vehicles
HDD = heavy duty diesel-fueled vehicles
BUS = diesel-fueled urban buses
MCY = motorcycles
ROG = reactive organic gases (summer fuel volatility)
NOx = oxides of nitrogen (summer fuel volatility)
CO-S = carbon monoxide (summer fuel volatility)
CO-W = carbon monoxide (winter fuel volatility)
PMEX = exhaust particulate matter
PMTW = tire wear particulate matter
DRNL = summer diurnal evaporative emissions (grams/veh-day)
RSTL = summer resting loss evaporative emissions (grams/veh-day)
Hot Soak evaporative emission rate in grams/trip

Table F-35
Hot Stabilized Emission Rates for Idle Adjustment Analyses

SUMMARY OF EMFAC7F INPUT ASSUMPTIONS:

CALENDAR YEAR: 2010 I&M PROGRAM: YES

VEHICLE MIX ASSUMPTIONS:

LDA	LDT	MDT	HDG	HDD	BUS	MCY
70.00%	22.20%	2.27%	2.07%	1.49%	0.99%	0.98%

AIR TEMPERATURE FOR EXHAUST RATES. SUMMER: 70 WINTER: 50

EVAPORATIVE EMISSIONS TEMPERATURE PATTERNS:

	MINIMUM	8 AM	9 AM	11 AM	1 PM	MAXIMUM
SUMMER	55	57	60	68	72	75
WINTER	40	40	42	51	58	60

OPERATING MODE ASSUMPTIONS:

COLD START	HOT START	HOT STABLE
0.00%	0.00%	100.00%

VEHICLE EMISSION RATES, GRAMS/MILE:

POLLUTANT	GRAM/MILE RATES BY SPEED IN MPH 5	10	15	20	25	FIXED AMOUNT
ROG	1.62	0.71	0.41	0.29	0.23	
NOx	1.16	0.93	0.79	0.69	0.64	
CO-S	9.01	5.42	3.76	2.86	2.33	
CO-W	9.98	5.98	4.14	3.17	2.58	
PMEX	0.05	0.05	0.05	0.05	0.05	
PMTW	0.21	0.21	0.21	0.21	0.21	
HOT SOAK						0.21
DRNL/RSTL						1.21

NOTES: LDA = light duty autos
LDT = light duty trucks
MDT = medium duty trucks
HDG = heavy duty gasoline-fueled vehicles
HDD = heavy duty diesel-fueled vehicles
BUS = diesel-fueled urban buses
MCY = motorcycles
ROG = reactive organic gases (summer fuel volatility)
NOx = oxides of nitrogen (summer fuel volatility)
CO-S = carbon monoxide (summer fuel volatility)
CO-W = carbon monoxide (winter fuel volatility)
PMEX = exhaust particulate matter
PMTW = tire wear particulate matter
DRNL = summer diurnal evaporative emissions (grams/veh-day)
RSTL = summer resting loss evaporative emissions (grams/veh-day)
Hot Soak evaporative emission rate in grams/trip

Table F-36
Estimated Vehicle Delays by Roadway Segment

ROADWAY	SEGMENT	DELAY TIME (SECONDS) BY SCENARIO				ESTIMATED VOLUME:CAPACITY RATIOS BY SCENARIO			
		NO ACTION	MINIMUM	MEDIUM	MAXIMUM	NO ACTION	MINIMUM	MEDIUM	MAXIMUM
UPPER DECK	EAST 1UD	25	18	18	18	0.90	0.83	0.83	0.83
	EAST 2UD	6	4	4	4	0.90	0.83	0.83	0.83
	EAST 3UD	5	4	4	4	0.90	0.83	0.83	0.83
	EAST 4UD	11	8	8	8	0.90	0.83	0.83	0.83
	EAST 5UD	17	12	12	12	0.90	0.83	0.83	0.83
	TUNNELUD	11	8	8	8	0.90	0.83	0.83	0.83
	WEST 1UD	6	5	5	5	0.90	0.83	0.83	0.83
	WEST 2UD	29	21	21	21	0.90	0.83	0.83	0.83
LOWER DECK	EAST 1LD	32	32	32	32	0.95	0.95	0.95	0.95
	EAST 2LD	7	7	7	7	0.95	0.95	0.95	0.95
	EAST 3LD	7	7	7	7	0.95	0.95	0.95	0.95
	EAST 4LD	14	14	14	14	0.95	0.95	0.95	0.95
	EAST 5LD	21	21	21	21	0.95	0.95	0.95	0.95
	TUNNELLD	14	14	14	14	0.95	0.95	0.95	0.95
	WEST 1LD	8	8	8	8	0.95	0.95	0.95	0.95
	WEST 2LD	36	36	36	36	0.95	0.95	0.95	0.95

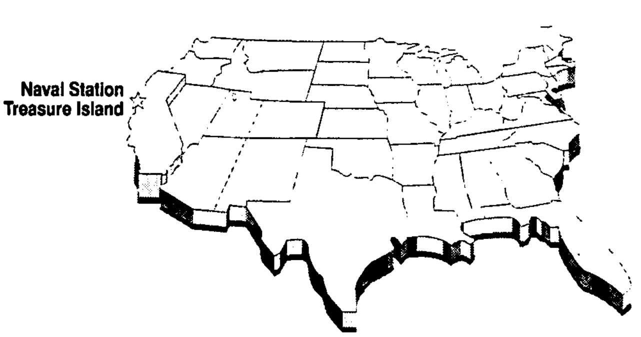
Table F-37
Emission Factor Adjustments for Excess Vehicle Idling Time: SFOBB Traffic, 2010

INPUT VARIABLES	EAST1UD	EAST2UD	EAST3UD	EAST4UD	EAST5UD	UNNELUD	WEST1UD	WEST2UD	EAST1LD	EAST2LD	EAST3LD	EAST4LD	EAST5LD	UNNELLD	WEST1LD	WEST2LD
SPEED (MPH) FOR BASE EMISSION RATE	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
LINK LENGTH, FEET	1287	301	267	546	843	554	323	1447	1287	301	267	546	843	554	323	1447
DELAY PER VEHICLE, SECONDS OF IDLE	25	6	5	11	17	11	6	29	32	7	7	14	21	14	8	36
BASE EMISSION RATE, GM/MI	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07
100% STABILIZED 5 MPH RATE, GM/MI	9.98	9.98	9.98	9.98	9.98	9.98	9.98	9.98	9.98	9.98	9.98	9.98	9.98	9.98	9.98	9.98
100% STABILIZED 16 MPH RATE, GM/MI	4.14	4.14	4.14	4.14	4.14	4.14	4.14	4.14	4.14	4.14	4.14	4.14	4.14	4.14	4.14	4.14
100% COLD START 16 MPH RATE, GM/MI	10.36	10.36	10.36	10.36	10.36	10.36	10.36	10.36	10.36	10.36	10.36	10.36	10.36	10.36	10.36	10.36
% CATALYST VEHICLES	98.97	98.97	98.97	98.97	98.97	98.97	98.97	98.97	98.97	98.97	98.97	98.97	98.97	98.97	98.97	98.97
% NON-CATALYST COLD STARTS	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70	5.70
% CATALYST COLD STARTS	7.44	7.44	7.44	7.44	7.44	7.44	7.44	7.44	7.44	7.44	7.44	7.44	7.44	7.44	7.44	7.44
OUTPUT																
HOT STABILIZED IDLE RATE, GM/MIN	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
ADJUSTED COLD START 5 MPH RATE, GM/MI	24.97	24.97	24.97	24.97	24.97	24.97	24.97	24.97	24.97	24.97	24.97	24.97	24.97	24.97	24.97	24.97
COLD START IDLE RATE, GM/MIN	2.0812	2.0812	2.0812	2.0812	2.0812	2.0812	2.0812	2.0812	2.0812	2.0812	2.0812	2.0812	2.0812	2.0812	2.0812	2.0812
% IDLE TIME IN EMFAC/MOBILE RATES	13.65	13.65	13.65	13.65	13.65	13.65	13.65	13.65	13.65	13.65	13.65	13.65	13.65	13.65	13.65	13.65
IDLE SECONDS IN EMFAC/MOBILE RATES	4.79	1.12	0.99	2.03	3.14	2.06	1.20	5.39	4.79	1.12	0.99	2.03	3.14	2.06	1.20	5.39
REQUIRED EXTRA IDLE SECONDS	20.71	4.84	4.31	8.80	13.61	8.94	5.19	23.31	27.04	6.33	5.59	11.48	17.72	11.61	6.81	30.35
WEIGHTED % COLD STARTS	7.42	7.42	7.42	7.42	7.42	7.42	7.42	7.42	7.42	7.42	7.42	7.42	7.42	7.42	7.42	7.42
WEIGHTED COLD/HOT IDLE RATE, GM/MIN	0.9244	0.9244	0.9244	0.9244	0.9244	0.9244	0.9244	0.9244	0.9244	0.9244	0.9244	0.9244	0.9244	0.9244	0.9244	0.9244
BASE EMISSION RATE, GM/MI	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07	3.07
ADDED IDLE ADJUSTMENT, GM/MI	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.71	1.71	1.71	1.71	1.71	1.71	1.71	1.71
ADJUSTED EMISSION RATE, GM/MI	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.78	4.78	4.78	4.78	4.78	4.78	4.78	4.78
ADJUSTMENT FACTOR, % INCREASE	42.6%	42.7%	42.8%	42.7%	42.8%	42.8%	42.6%	42.7%	55.7%	55.8%	55.5%	55.8%	55.7%	55.6%	55.8%	55.6%

Table F-38
Basic Input Parameters Used for CALINE4 Runs

MODEL PARAMETER	INPUT VALUES			
POLLUTANT CODE:	1			
POLLUTANT NAME:	CARBON MONOXIDE			
SURFACE ROUGHNESS:	75	cm		
MOLECULAR WEIGHT:	28.01			
SETTLING VELOCITY:	0	cm/sec		
DEPOSITION VELOCITY:	0	cm/sec		
NUMBER OF RECEPTORS:	16			
NUMBER OF LINKS:	30			
SCALE FACTOR:	0.3048	feet/meter		
LINK TITLE OPTION CODE:	1			
RECEPTOR TITLE OPTION CODE:	1			
ALTITUDE:	0	feet		
LINK TYPE CODE:	4	(bridge)	1	(tunnel ends)
LINK HEIGHT:	0-30	(lower deck)	25-55	(upper deck)
MIXING CELL WIDTH:	60			
RIGHT SIDE CANYON CODE:	0			
LEFT SIDE CANYON CODE:	0			
LINK CONTINUATION CODE:	1			
RUN TYPE CODE:	1			
TRAFFIC VOLUME CHANGE CODE:	1	(first link)	0	(other links)
EMISSION RATE CHANGE CODE:	1	(first link)	0	(other links)
INTERSECTION CHANGE CODE:	0			
MET SCENARIO CHANGE CODE:	1			
WIND SPEED:	1	meters/second		
WIND DIRECTION:	0	to	350	degrees in 10 degree increments
STABILITY CLASS:	5	(Class E, isothermal/mild inversion)		
MIXING HEIGHT LIMIT:	50	meters		
SIGMA THETA:	10	degrees		
BACKGROUND CONCENTRATION:	0	ppm		
AIR TEMPERATURE:	25	degrees C		

Note: The CALINE4 model source code was modified to accept large numbers of links and receptors, and to eliminate the inappropriate adjustment of concentration results to study area altitude and temperature; concentration results must be computed for 1 atmosphere pressure and 25 degrees C to provide a direct comparison to federal and state ambient air quality standards.



APPENDIX G
FISH MANAGEMENT PLAN SPECIES

Appendix G
Fish Management Plan (FMP) Species

Coastal Pelagics Fishery Management Plan

Northern anchovy - *Engraulis mordax*
Pacific sardine - *Sardinops sagax*
Pacific (chub) mackerel - *Scomber japonicus*
Jack mackerel - *Trachurus symmetricus*
Market squid - *Loligo opalescens*

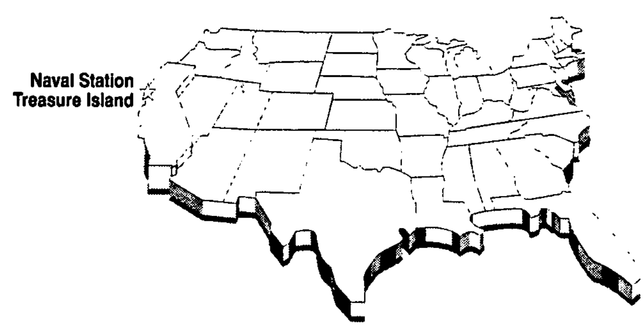
Pacific Groundfish Fishery Management Plan

Butter sole - *Isopsetta isolepis*
Curlfin sole - *Pleuronichthys decurrens*
Dover sole - *Microstomus pacificus*
English sole - *Parophrys vetulus*
Flathead sole - *Hippoglossoides elassodon*
Pacific sanddab - *Citharichthys sordidus*
Petrale sole - *Eopsetta jordani*
Rex sole - *Glyptocephalus zachirus*
Rock sole - *Lepidopsetta bilineata*
Sand sole - *Psettichthys melanostictus*
Starry flounder - *Platichthys stellatus*
Arrowtooth flounder - *Atheresthes stomias*
Ratfish - *Hydrolagus colliei*
Finescale codling - *Antimora microlepis*
Pacific rattail - *Coryphaenoides acrolepis*
Leopard shark - *Triakis semifasciata*
Soupfin shark - *Galeorhinus zyopterus*
Spiny dogfish - *Squalus acanthias*
Big skate - *Raja binoculata*
Longnose skate - *Raja rhina*
Pacific ocean perch - *Sebastes alutus*
Shortbelly rockfish - *Sebastes jordani*
Widow rockfish - *Sebastes entomelas*
Aurora rockfish - *Sebastes aurora*
Bank rockfish - *Sebastes rufus*
Black rockfish - *Sebastes melanops*
Black-and-yellow rockfish - *Sebastes chrysomelas*
Blackgill rockfish - *Sebastes melanostomus*
Blue rockfish - *Sebastes mystinus*
Bocaccio - *Sebastes paucispinis*
Bronzespotted rockfish - *Sebastes gilli*
Brown rockfish - *Sebastes auriculatus*
Calico rockfish - *Sebastes dallii*
California rockfish - *Scorpena guttatta*
Canary rockfish - *Sebastes pinniger*
Chilipepper - *Sebastes goodei*
China rockfish - *Sebastes nebulosus*
Copper rockfish - *Sebastes caurinus*
Cowcod rockfish - *Sebastes levis*
Darkblotched rockfish - *Sebastes crameri*
Dusky rockfish - *Sebastes ciliatus*
Flag rockfish - *Sebastes rubrivinctus*
Gopher rockfish - *Sebastes carnatus*
Grass rockfish - *Sebastes rastrelliger*
Greenblotched rockfish - *Sebastes rosenblatti*
Greenspotted rockfish - *Sebastes chlorostictus*
Greenstriped rockfish - *Sebastes elongatus*
Harlequin rockfish - *Sebastes variegatus*
Honeycomb rockfish - *Sebastes umbrosus*
Kelp rockfish - *Sebastes atrovirens*
Mexican rockfish - *Sebastes macdonaldi*
Olive rockfish - *Sebastes serranoides*
Pink rockfish - *Sebastes eos*
Quillback rockfish - *Sebastes maliger*
Redbanded rockfish - *Sebastes babcocki*
Redstripe rockfish - *Sebastes proriger*
Rosethorn rockfish - *Sebastes helvomaculatus*
Rosy rockfish - *Sebastes rosaceus*
Rougheye rockfish - *Sebastes aleutianus*
Sharpchin rockfish - *Sebastes zacentrus*
Shortraker rockfish - *Sebastes borealis*
Silvergrey rockfish - *Sebastes brevispinis*
Speckled rockfish - *Sebastes ovalis*
Splitnose rockfish - *Sebastes diploproa*
Squarespot rockfish - *Sebastes hopkinsi*
Starry rockfish - *Sebastes constellatus*
Stripetail rockfish - *Sebastes saxicola*
Tiger rockfish - *Sebastes nigrocinctus*
Treefish - *Sebastes serriceps*
Vermilion rockfish - *Sebastes miniatus*
Yelloweye rockfish - *Sebastes ruberrimus*
Yellowmouth rockfish - *Sebastes reedi*
Yellowtail rockfish - *Sebastes flavidus*
Longspine Thornyhead - *Sebastolobus altivelis*
Shortspine Thornyhead - *Sebastolobus alascanus*
Cabezon - *Scorpaenichthys marmoratus*
Kelp greenling - *Hexagrammos decagrammus*
Lingcod - *Ophiodon elongatus*
Pacific cod - *Gadus macrocephalus*
Pacific whiting - *Merluccius productus*
Sablefish - *Anoplopoma fimbria*

Pacific Coast Salmon Plan

Chinook salmon-*Oncorhynchus tshawytscha*
Coho Salmon-*Oncorhynchus kisutch*
Puget Sound Pink Salmon-*Oncorhynchus gorbuscha*

Sources: PFMC 1999, CPS FMP 1998, and NMFS 1998.



APPENDIX H
DRAFT MEMORANDUM OF AGREEMENT AMONG NAVY AND CALIFORNIA STATE HISTORIC PRESERVATION OFFICER FOR DISPOSAL AND REUSE OF NAVAL STATION TREASURE ISLAND

Memorandum of Agreement
Among
The Department of the DoN,
And
The California State Historic Preservation Officer
For the Disposal and Reuse of
Naval Station Treasure Island, San Francisco, California

WHEREAS, the Department of the DoN (DoN) has determined that the proposed leasing, disposal and reuse of Naval Station Treasure Island (NSTI) pursuant to the Defense Base Closure and Realignment Act of 1990 (undertaking) will have an effect on properties at NSTI that are listed on, eligible or potentially eligible for listing on, the National Register of Historic Places (historic properties); and

WHEREAS, the DoN has consulted with the Advisory Council on Historic Preservation (Council) and the California State Historic Preservation Officer (SHPO) pursuant to 36 CFR Part 800, regulations implementing Section 106 of the National Historic Preservation Act (16.U.S.C. 470f) (NHPA) and that the Council has declined to participate (See Attachment 1); and

WHEREAS, The City and County of San Francisco (City) has participated in the consultation, and has been invited to become a signatory to this Memorandum of Agreement (agreement); and

WHEREAS, the Treasure Island Development Authority (TIDA), recognized by the Department of Defense as the Local Redevelopment Authority for NSTI has participated in the consultation, and has been invited to become a signatory to this Memorandum of Agreement; and

WHEREAS, the DoN has informed consulting parties and members of the public about the undertaking and involved such parties and the public in the consultation process using agency procedures for public involvement under the National Environmental Policy Act; and

WHEREAS, pursuant to 36 CFR 800.3(f), Protection of Historic Properties and the *Secretary of the Interior's Standards and Guidelines for Federal Agency Historic Preservation Programs*, the DoN has invited the Bay Miwok, California Preservation Foundation and San Francisco Architectural Heritage to participate in the consultation.

NOW THEREFORE, the DoN, the SHPO, and TIDA agree that the interim leasing and disposal of historic properties shall be implemented in accordance with the following stipulations in order to take into account the effect of the undertaking on historic properties.

STIPULATIONS

The DoN will ensure that the following measures are carried out:

I. KNOWN HISTORIC PROPERTIES COVERED BY THIS AGREEMENT

A. The following historic properties and prospective historic properties are covered by this agreement (Attachment 2):

1. The Senior Officers Quarters Historic District (Yerba Buena Island)
2. Building 1 (Treasure Island), Administration Building, Golden Gate Exposition
3. Building 2 (Treasure Island), Hall of Transportation, Golden Gate Exposition
4. Building 3 (including Building 111) (Treasure Island), Palace of Fine and Decorative Arts and Annex, Golden Gate Exposition

II. KNOWN HISTORIC PROPERTIES NOT COVERED BY THIS AGREEMENT

A. By deed dated October 26, 2000, the Federal Highway Administration conveyed a right of way across Yerba Buena Island in fee to the California Department of Transportation together with aerial and construction easements for the San Francisco – Oakland Bay Bridge Seismic Retrofit Project. The restrictive nature of the easement has the effect of making the property underlying said easements no longer practicably accessible or useable by the DoN. The following historic properties *are not* covered by this agreement (Attachment 2):

1. Quarters 10 and its associated garage (building 267);
2. Building 262;
3. Archeological site CA-SFr-4/H; and
4. Two potential archaeological sites at Yerba Buena Island that are documented in the *Archeological Resource Inventory and Assessment of Naval Station Treasure Island Disposal and Reuse Project, San Francisco County, California, June 1997;*

III. NATIONAL REGISTER NOMINATIONS.

A. The DoN will nominate the following historic properties to the National Register (Attachment 2):

1. The Senior Officers Quarters Historic District (Yerba Buena Island)
2. Building 1 (Treasure Island), Administration Building, Golden Gate Exposition

3. Building 2 (Treasure Island), Hall of Transportation, Golden Gate Exposition

4. Building 3 (including Building 111) (Treasure Island), Palace of Fine and Decorative Arts and Annex, Golden Gate Exposition

B. The DoN will implement the terms of this stipulation in accordance with a mutually agreeable timetable developed by the DoN in consultation with the SHPO. Such consultation shall commence no later than 90 calendar days following execution of this agreement.

C. The DoN shall consult with the SHPO and the Bay Miwok Band prior to authorizing any archeological testing that may be proposed either in connection with the National Register eligibility determination process prescribed by this stipulation or for any other purpose.

1. The DoN will implement the terms of this III.C. in accordance with a mutually agreeable timetable developed by the DoN in consultation with the SHPO and the Bay Miwok.

III. HISTORIC ARTIFACTS AND RECORDS.

A. DoN owned historic artifacts and records that were included in the Treasure Island Naval and Marine Corps Museum are the responsibility of the Director of the Naval Historical Center, Washington DoN Yard, District of Columbia.

1. The museum collection is to be transferred to the San Francisco Airport Bureau of Exhibitions, Museums and Cultural Exchange via a deed of gift.

B. The DoN has coordinated the disposal of Naval Station Treasure Island photographs with the National Archives Pacific-Sierra Region, San Bruno, and will transfer them to the National Archives when the DoN's Caretaker Site Office no longer has need of them.

C. The DoN has turned over to the City Department of Public Works all plans, building drawings and construction photographs that were in the possession of the Naval Station Treasure Island Staff Civil Engineer's Office.

IV. Recordation

A. Prior to disposal of historic properties from Federal ownership or the authorization of any action under a lease which would irreversibly alter, damage or demolish a historic building or structure listed on, or eligible for listing on, the National Register:

1. The DoN shall contact the Pacific-Great Basin System Support Office, National Park Service (NPS); Sacramento, California to determine what level and kind of recordation is required for the property.

B. The DoN shall provide copies of the documentation required by paragraph A.1 to the SHPO, the City, and the San Francisco International Airport Bureau of Exhibitions, Museums, and Cultural Exchange.

V. Licensing and Leasing of Historic Properties.

A. In order to maintain and protect historic properties the DoN may enter into licenses and leases for the use of DoN real property at NSTI prior to disposal in accordance with Section 5 of the *Base Reuse Implementation Manual* (Attachment 3)

1. The DoN shall require all lessees to submit written plans for any proposed work on the historic properties for DoN review and approval. Work may not proceed until the lessee has received written approval from the DoN, which shall not be granted unless the proposed work conforms to the Secretary of the Interior's *Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings.*

a. DoN review of plans submitted for proposed work on historic properties shall be conducted by persons who shall, at a minimum, meet the Secretary of the Interior's Professional Qualification Standards in the appropriate disciplines (Attachment 4)

2. Any documentation requested in accordance with stipulation V.C.2. completed to the satisfaction of the DoN and SHPO, at the expense of the lessee.

3. No further consultation with the SHPO shall be required unless the DoN determines that the work cannot be performed as proposed or with reasonable modification to conform to the

Secretary's *Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings.*

a. If the DoN determines that the work cannot be modified to conform to the Standards the DoN may reject the proposed work.

4. Further consultation with the SHPO and/or ACHP will not be required for painting previously painted interior and exterior surfaces in non-traditional colors for temporary uses, provided that the painting is approved by the DoN, and the lessee has posted an adequate bond to insure that the property will be restored to its original color scheme when the temporary use is complete.

a. "Temporary" shall be defined as the period established by individual lease agreements with the DoN or until such time as the property is conveyed from federal ownership, whichever occurs first.

b. The DoN shall provide a list of non-traditional colors to lessee's planning to paint historic properties covered by this agreement and only those colors may be used to paint the subject properties.

c. The DoN shall retain the option that, prior to conveyance, lessee shall be required to restore historic properties to their original color scheme.

5. The DoN shall retain the right to inspect leased historic properties at least annually to ensure that the Standards are followed and shall take appropriate remedial action to assure compliance where deviations are observed.

VI. Long Term Preservation Planning

A. The City shall designate the historic properties listed in stipulation I., A, 1 – 4 as landmarks or as historic districts in accordance with the San Francisco Planning Code, Article 10, Preservation of Historical, Architectural, and Aesthetic Landmarks, Section 1004, Designation of Landmarks and Historic Districts (Attachment 5)

B. The City shall apprise prospective developers/lessees about the historic properties at NSTI, and of the financial tools and economic incentives that are available, including but not limited to the State Historic Building Code, federal and state tax credits, and other state programs, that are available for the preservation and adaptive use of historic properties.

1. This information shall be provided to the prospective lessee/developer in writing during initial contact/discussion.

C. To ensure appropriate treatment of human remains that might be discovered during construction or other land disturbing activities on Point Molate, the City will observe the measures in the *Professional Guide for the Preservation and Protection of Native American Remains and Associated Grave Goods* "(California Native American Heritage Council – Attachment 6).

VII. Personnel Qualifications Standards

A. Until such time that the historic properties are conveyed from Federal ownership, the DoN, in cooperation with the City, as applicable, shall ensure that all historic preservation work pursuant to this agreement, including but not limited to, the planning for, and physical rehabilitation of, historic properties is carried out by or under the direct supervision of a person or persons meeting, at a minimum, the Secretary of the Interior's Professional Qualification Standards in the appropriate disciplines.

VIII. Document Review and Comment

A. Unless otherwise stipulated in this agreement, the parties to this agreement shall be afforded thirty (30), days from receipt to comment on any documentation submitted by the DoN pursuant to this agreement. Should any Party decline to Participate or fail to respond within thirty (30) days to a written request for comments, the DoN may assume that Party's concurrence in the DoN's proposed action. Thereafter, the DoN may proceed with such action.

IX. Reporting

A. Until historic properties covered by this agreement are conveyed from Federal ownership, or the terms of the agreement have been fulfilled and/or the agreement has been terminated, the DoN, in cooperation with the City, shall provide written annual status reports to all signatories and consulting parties.

1. The annual report shall be submitted by December 15th of each year and shall address the following topics:

a. Status of the nomination of the Senior Officers Quarters Historic District (Yerba Buena Island)

b. Status of the nominations of Golden Gate Exposition Building: Building 1, Administration Building; Building 2, Hall of Transportation; Building 3 (including Building 111), Fine and Decorative Arts and Annex.

. c. Discussion of problems or unanticipated issues related to management of historic resources during the previous year.

X. DISCOVERIES

A. The City shall notify the DoN as soon as possible if it appears that the redevelopment of NSTI will affect a previously unidentified property that may be eligible for inclusion in the National Register, or may affect a known historic property in an unanticipated manner.

1. The City shall stop construction in the vicinity of the discovery and will take all reasonable measures to avoid or minimize harm to the property until the DoN can conclude consultation with the SHPO.

2. If the newly discovered property has not previously been included in, or determined eligible for inclusion in, the National Register, the DoN may assume that the property is eligible for purposes of this Agreement.

3. The DoN will notify the SHPO at the earliest possible time and consult to develop actions that will take into account the effects of the undertaking.

4. The DoN will notify the SHPO of any time constraints, and the DoN the City and the SHPO will mutually agree upon time frames for this consultation.

5. The DoN will provide the SHPO with written recommendations that take the effects of the undertaking into account.

a. If the SHPO does not object to the DoN's recommendations within the agreed-upon time frame, the DoN will modify the scope of work as necessary to implement its recommendations.

XI. RESOLUTION OF OBJECTIONS

A. Should any party to this agreement object in writing to the DoN regarding the manner in which the terms of this agreement are carried out, to any action carried out or proposed with respect to implementation of this agreement, or to any documentation prepared in accordance with and subject to the terms of this agreement, the DoN shall consult with the objecting signatory to resolve the objection.

1. The DoN shall determine a reasonable time frame for this consultation.

2. If resolution is reached within this time frame, the DoN may proceed with its action in accordance with the terms of the resolution.

3. If the DoN determines that the objection cannot be resolved within this time frame, the DoN shall forward all documentation relevant to the objection to the Council, pursuant to 36 CFR § 800.2(b)(2). The documentation shall include the DoN's proposed response to the objection,

4. Any comment provided by the Council, and any comment from the parties to this agreement, shall be taken into account by the DoN in reaching a final decision regarding the objection. The DoN shall promptly notify the Council and the parties to this agreement in writing of its final decision regarding the objection.

5. The DoN's responsibility to carry out all actions under this agreement that are not the subjects of the objection shall remain unchanged.

XII. PUBLIC OBJECTIONS

A. At any time during implementation of the stipulations in this agreement should an objection pertaining to such implementation be raised by a member of the public, the DoN shall notify the signatories to this Agreement about the objection and take the objection into account, consulting with the objector and, should the objector so request, with any signatories to this agreement to resolve the objection.

XIII. AMENDMENTS TO THE AGREEMENT

A. Any signatory or invited signatory to this Agreement may request that it be amended, whereupon the signatories, invited signatories and the consulting parties will consult in accordance with 36 CFR 800.6(c)(7) to consider such amendment.

B. If any signatory believes that this agreement should be amended, that signatory may at any time propose amendments, whereupon the signatories will consult to consider the amendment pursuant to 36 CFR § 800.6(c)(7) and § 800.6(c)(8).

1. This Agreement may be amended only upon the written concurrence of the signatories.

XIV. TERMINATION

A. If this agreement is not amended as provided for in Stipulation XIII. or if any signatory party proposes termination of this agreement for other reasons, the signatory party proposing termination shall in writing notify all other signatory parties and any concurring parties, explain the reasons for proposing termination, and consult with the other signatories and any concurring parties for no more than 30 days to seek alternatives to termination.

1. Should such consultation fail, the signatory party proposing termination may terminate this agreement by promptly notifying the other signatories and any concurring parties in writing.

2. Should this agreement be terminated before all historic properties covered by this agreement have been conveyed out of federal ownership or before the DoN, in consultation with all other signatory parties and concurring parties to this agreement, has determined that all of its terms have been fulfilled, and then beginning with the date of termination the DoN shall do the following:

a. Promptly consult with the other signatory parties and any concurring parties to develop a new agreement pursuant to 36 CFR Part 800.

b. Ensure that until a new agreement is executed for the undertaking, that neither the DoN nor the City will take or sanction any action or make an irreversible commitment that would result in an adverse effect to the historic properties covered by this agreement, or that would foreclose the SHPO's consideration of modification or alternatives that could avoid or mitigate the adverse effect on historic properties until the commenting process has been completed.

XV. DURATION OF THE AGREEMENT

A. Unless it is terminated pursuant to Stipulation XIV. above, this agreement shall remain in effect until all stipulations have been fulfilled as determined by the DoN in consultation with the other signatory parties, or until such time as the historic properties covered by this agreement are no longer under federal ownership, whichever occurs first.

XVI. Anti-Deficiency Act

A. All requirements set forth in this agreement requiring the expenditure of DoN funds are expressly subject to the availability of appropriations and the requirements of the Anti-Deficiency Act (31 U.S.C. Section 1341).

1. No obligation undertaken by the DoN under the terms of this Agreement shall require or be interpreted to require a commitment to expend funds not appropriated for a particular purpose.

B. If the DoN cannot perform any obligation set forth in this agreement because of the unavailability of funds, the DoN, SHPO and the City intend that the remainder of the agreement be executed.

1. Any obligation under the agreement, which cannot be performed because of the unavailability of funds, must be renegotiated between the DoN, SHPO and the City

EXECUTION OF THIS MEMORANDUM OF AGREEMENT by the DoN, the SHPO, the City of San Francisco, and TIDA, and subsequent implementation of its terms, shall be evidence that the DoN has afforded the Council an opportunity to comment on the leasing, disposal and reuse of NSTI and its effects on historic properties, that the DoN has taken into account the effects of the undertaking on historic properties, and that the DoN has satisfied its responsibilities under Section 106 of the National Historic Preservation Act and its implementing regulations codified at36 CFR Part 800.

SIGNATORY PARTIES:

UNITED STATES DEPARTMENT OF THE DON,

BY:_________________________ Date: ___________

G. J. BUCHANAN
Captain, CEC, USN Commanding Officer,
Engineering Field Division West

CALIFORNIA STATE HISTORIC PRESERVATION OFFICER

BY: _________________________ Date: ___________

Dr. Knox Mellon
State Historic Preservation Officer

INVITED SIGNATORIES

CITY AND COUNTY OF SAN FRANCISCO, CALIFORNIA

Approved as to Form:

By: ______________________ By: ______________________

City Attorney City Manager

TREASURE ISLAND REDEVELOPMENT AUTHORITY

BY: ______________________________ Date: ____________

____

Print Name & Title of Signer

CONSULTING PARTIES

BAY MIWOK BAND

BY:______________________________ Date: ______________________

Katherine Erolinda Perez
Bay Miwok Band

CALIFORNIA PRESERVATION FOUNDATION

BY:______________________________ Date:__________________________

Print Name & Title of Signer

SAN FRANCISCO ARCHITECTUAL HERITAGE

BY:______________________________ Date:__________________________

Print Name & Title of Signer