



PROPOSED PLAN/DRAFT REMEDIAL ACTION PLAN FORMER NAVAL STATION TREASURE ISLAND

Installation Restoration Site 27 Former Clipper Cove Skeet Range

San Francisco, California

June 2011

THE DEPARTMENT OF THE NAVY ANNOUNCES PROPOSED PLAN/DRAFT REMEDIAL ACTION PLAN

1.0 INTRODUCTION

The Department of the Navy presents this *Proposed Plan/Draft Remedial Action Plan (RAP)* for remediation of *Installation Restoration (IR) Site 27* (Site 27), the former Clipper Cove Skeet Range, at the former Naval Station Treasure Island (NAVSTA TI) in San Francisco, California (Figure 1). The Navy is presenting this plan in cooperation with the California Environmental Protection Agency (Cal/EPA) *Department of Toxic Substances Control (DTSC)*, the Cal/EPA *Regional Water Quality Control Board (Water Board)*, the *U.S. Environmental Protection Agency (EPA)*, and the Treasure Island Development Authority (TIDA).

The Navy is responsible for investigating and remediating contamination that resulted from historical Navy operations at former NAVSTA TI. This Proposed Plan/Draft RAP presents the Navy’s *preferred remedial alternative* to address *lead shot* in sediment associated with historical activities at Site 27. The Navy proposes to remediate Site 27 by:

- Removing contaminated sediment where there is a current complete exposure pathway, and backfilling the area to prevent exposure to diving ducks, the ecological receptor of concern.
- Implementing *institutional controls (IC)* throughout the site to restrict activities that might disturb sediment.

This Proposed Plan/Draft RAP summarizes the site history, the environmental investigations conducted at the site, and the remedial alternatives evaluated in accordance with the *Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)*, as amended by the *Superfund Amendments and Reauthorization Act (SARA)*, and explains the basis for choosing the preferred remedial alternative. The Navy will consider and respond to public comments on this Proposed Plan/Draft RAP in a responsiveness summary to be included in the *Record of Decision/Final Remedial Action Plan (ROD/Final RAP)* for Site 27.

Note: Specialized or technical terms are highlighted in bold the first time they appear and are defined in the glossary on page 14.

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— NOTICE —

Public Comment Period
June 2 to July 2, 2011

Public Meeting
June 14, 2011

Casa de la Vista, Building 271
Treasure Island
6:30 to 8:30 p.m

This public meeting is an opportunity for the community to hear about the Navy’s Proposed Plan and to provide formal oral and written comments.

ABOUT THIS PROPOSED PLAN/ DRAFT RAP

The Navy is issuing this Proposed Plan/Draft RAP as part of its public participation responsibilities under Section 117(a) of CERCLA, Section 300.430(f)(2) of the *National Oil and Hazardous Substances Pollution Contingency Plan (NCP)*, and Chapter 6.8 of the California Health and Safety Code (HSC). Figure 2 illustrates the status of Site 27 in the CERCLA and California Health and Safety Code Section 25356.1 Process.

This Proposed Plan/Draft RAP summarizes information detailed in the *remedial investigation (RI)* report and *feasibility study (FS)* report, along with other documents contained in the administrative record file for Site 27. The administrative record contains the reports and historical documents used to select remedial alternatives. The Navy encourages the public to review these documents to gain an understanding of Site 27 and the environmental assessments and investigations that have been conducted. The documents are available for public review at the locations listed on page 13.

A public comment period will be held from June 2 through July 2, 2011. Public comments can be submitted by mail, fax, or e-mail throughout the comment period to James Sullivan, BRAC Environmental Coordinator, BRAC Program Management Office West, 1455 Frazee Road, Suite 900, San Diego, California 92108-4310, (619) 532-0983 (fax), james.b.sullivan2@navy.mil. A public meeting will be held from 6:30 to 8:30 p.m. on June 14, 2011 at the Casa de la Vista, Building 271, Treasure Island. Members of the public may also submit written and oral comments on this Proposed Plan/Draft RAP at the public meeting.

In consultation with the regulatory agencies, the Navy may modify the preferred remedial alternative or select another remedial alternative based on feedback from the community or new information. Therefore, the community is encouraged to review and comment on this Proposed Plan/Draft RAP. A final decision on the remedy to be implemented will be documented in the ROD/Final RAP.

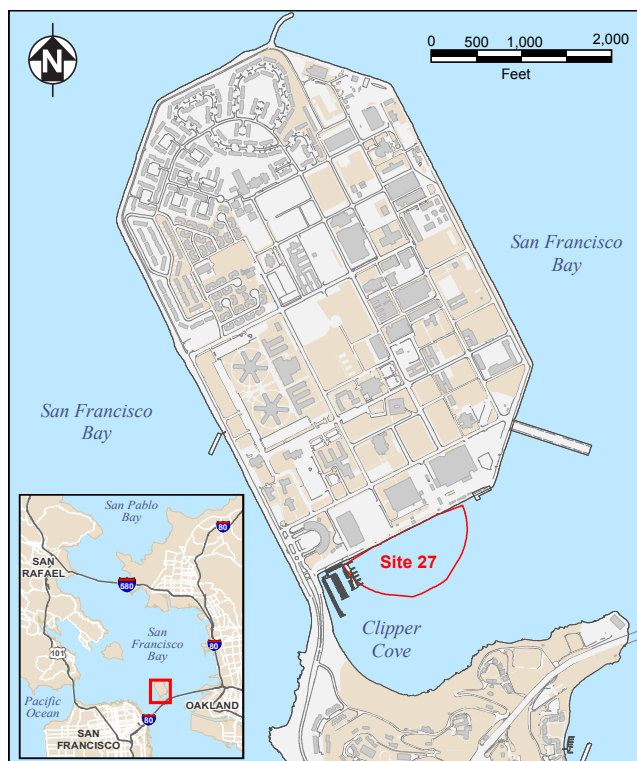


Figure 1. Location of Former Naval Station Treasure Island and Site 27

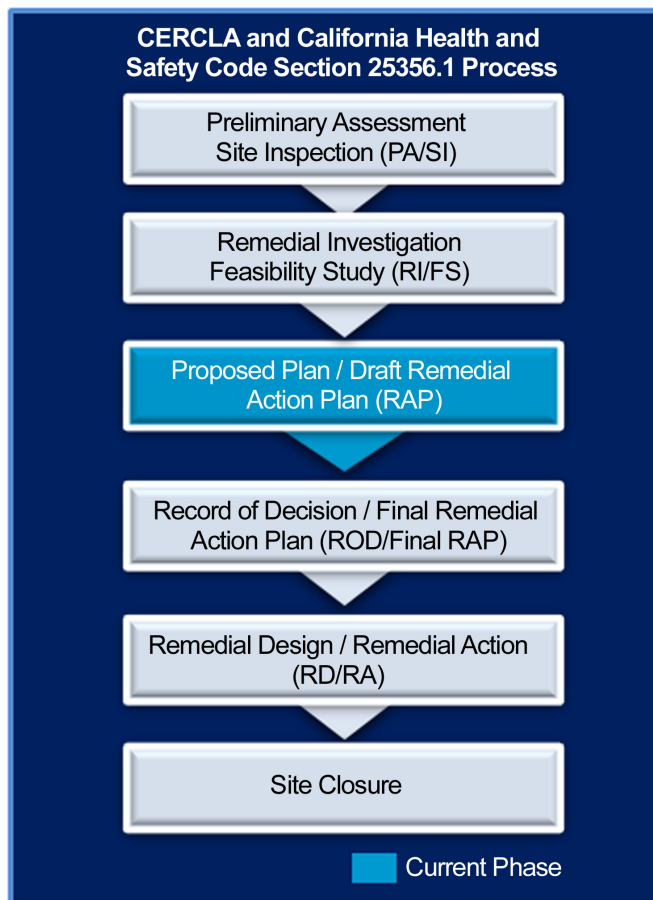


Figure 2. The CERCLA and California Health and Safety Code Section 25356.1 Process

2.0 SITE BACKGROUND

Former NAVSTA TI lies in San Francisco Bay (Figure 1) and consists of two contiguous islands: Treasure Island (TI) and Yerba Buena Island (YBI). TI was constructed on the shoals of YBI with San Francisco Bay fill between 1936 and 1937 for use as an airport for the City of San Francisco. It was also the site of the 1939 Golden Gate International Exposition. Navy operations at the island began in 1941, primarily for training, administration, housing, and other support services to the U.S. Pacific Fleet. In 1993, the Defense Base Closure and Realignment Commission recommended closure of NAVSTA TI; the facility was subsequently closed on September 30, 1997.

Clipper Cove is located directly between TI and YBI (Figure 1). A portion of Clipper Cove was used as a naval skeet range until 1989. As clay targets (skeet) were launched from the shoreline, naval personnel fired lead shot over the water, which resulted in a fan-shaped shot fall zone. The original boundary of Site 27 was established based on the onshore location of one skeet range. The boundary of Site 27 was revised in August 2004 to include a second adjacent skeet range, the onshore area of Site 27, and the full shot fall zone. The extent of lead shot contamination was determined to be no more than 750 feet from the firing point.

The onshore area of Site 27 was investigated further after the area had been included in the site boundary; however, no unacceptable risk to human health or the environment was found. In 2010, the Navy redefined the boundary for Site 27 under CERCLA because no further action is necessary for the onshore portion. The redefinition of the Site 27 CERCLA boundary excluded the onshore portion of the site (less than 1 acre landward of the mean high water line), so that Site 27 currently consists of approximately 19 offshore acres (Figure 1). The new site boundary will be used for this Proposed Plan/Draft RAP and all future site documentation. As a result, the former onshore portion of Site 27 is not discussed further in this document.

Currently, a small portion of the southwestern section of Site 27 is part of the marina (Figure 1).

The remainder of Site 27 consists of sediment and open water. According to the Treasure Island and Yerba Buena Island Design for Development, Site 27 will be used as a marina in the future.

PREVIOUS INVESTIGATIONS

In 1993, the Water Board issued Order No. 93-130, requiring the Navy to investigate and manage contamination attributable to the skeet range in the Clipper Cove area of NAVSTA TI. The order set forth specific compliance requirements and tasks. The Navy subsequently conducted sampling investigations at Site 27 to comply with the substantive requirements of the order. The following sections describe the investigations previously performed at Site 27.

The Phase I and Phase II investigations were not limited to Site 27 and also included Site 13. Site 13 consists of stormwater outfall areas surrounding former NAVSTA TI within Navy property. Even though sediment samples were collected and analyzed from both sites, only samples from Site 27 were evaluated to help characterize chemicals thought to be associated with the former skeet range. These chemicals included lead shot, lead, and *polycyclic aromatic hydrocarbons (PAH)* (a component of the skeet target), which were targeted as potential *chemicals of concern (COC)* at Site 27.

PREVIOUS INVESTIGATIONS AT SITE 27

- Phase I Remedial Investigation Offshore Sampling (1993)
- Site 27 Clipper Cove Skeet Range Offshore Investigation (1996)
- Phase II Remedial Investigation for Offshore Sediments (1997)
- Lead Shot Investigation in the Nearshore Area of Site 27 (conducted during Feasibility Study) (2008)
- Feasibility Study (2001–2010)

PHASE I REMEDIAL INVESTIGATION OFFSHORE SAMPLING

Offshore data were first collected during the 1993 Phase I RI sampling at NAVSTA TI. Sediment and storm-water samples were collected within Clipper Cove and were analyzed for metals, pesticides, polychlorinated biphenyls (PCB), and PAHs. None of the samples collected within the Site 27 boundary contained concentrations of lead or PAHs above the *screening values*.

1996 SITE 27 CLIPPER COVE SKEET RANGE OFFSHORE INVESTIGATION

As a direct result of Water Board Order No. 93-130, sediment and bay water samples were collected and analyzed to define the vertical and horizontal extent of lead, lead shot, and PAHs in offshore sediments and overlying surface water that may have resulted from the skeet range operations.

Lead (excluding lead shot pellets) was detected in all sediment samples collected from Site 27; however, lead concentrations were similar to those detected in other offshore areas of NAVSTA TI outside of Clipper Cove. PAHs were not detected in the sediment at Site 27 at concentrations that exceeded screening values.

Sediment samples were collected at depths of up to 5 feet below the sediment surface. The number of lead shot pellets was counted in every sample location in 1-foot segments. Lead shot was detected in all but one location.

Water samples were collected and analyzed for total lead and PAHs, but neither was detected.

PHASE II REMEDIAL INVESTIGATION FOR OFFSHORE SEDIMENTS

Sediment sampling conducted during the 1997 Phase II RI focused on further characterizing Clipper Cove both within and outside the boundary of Site 27, and tracking contaminants from onshore sources to offshore sediments through storm-water outfalls.

Sampling revealed that lead concentrations in sediment were below the screening value at all

Phase II sampling locations, except for three samples where lead was detected at concentrations just slightly above the screening value. One of these samples was collected between 6 and 8 feet below the sediment surface within Site 27; the two other samples were located outside of Site 27. Concentrations of PAHs did not exceed the screening value at any location.

FIELD INVESTIGATION OF LEAD SHOT IN THE NEARSHORE AREA

A *bathymetric survey* conducted in 2005 indicated that the nearshore area of Clipper Cove (within 150 feet of the shoreline) was a dynamic area where sediment both accretes and erodes, resulting in limited sediment accumulation. The remainder of Clipper Cove is known as a “depositional environment,” where sediment accumulates at a rate of about 1 to 2 inches each year and lead shot is expected to be buried under more than 2 feet of clean sediment, where it is out of the reach of diving ducks. Based on the results of the 2005 survey, the Navy investigated the nearshore area in 2008 to characterize lead shot in the top 2 feet of sediment and evaluate whether there was a potential risk to diving ducks. Samples were collected to a depth of 2 feet below the sediment surface from 30 locations in the nearshore area. The sediment samples were analyzed for lead shot, which was detected within the top 2 feet of the sediment within 75 feet of the shoreline, where waterfowl foraging for food or grit could ingest the shot. No lead shot was found in the samples collected in the top 2 feet of sediment from 75 feet to 150 feet from the shoreline. The concentrations of total lead, not including the lead shot, in sediment were consistent with levels elsewhere in the area and were similar to other locations around Treasure Island. The investigation concluded that lead shot was a COC at Site 27, but that total lead was not a COC at the site.

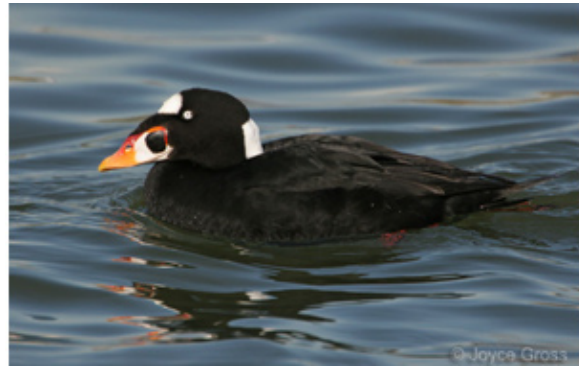
As part of this investigation, *benthic organisms* were recovered from surface samples, indicating that there is a source of food for diving ducks in the nearshore area, and diving ducks were observed at Site 27 during the field investigation.

3.0 SUMMARY OF SITE RISKS

“Risk” is the likelihood or probability that a hazardous chemical, when released into the environment, will cause adverse effects to exposed humans or other organisms. An *ecological risk assessment (ERA)* was conducted to assess the risk as part of the Phase II RI for offshore sediments. The ERA was revised based on the results of the 2008 lead shot investigation in the nearshore area. No human health risk assessment was conducted because there is no pathway for exposure to lead shot in sediment for humans.

EXPOSURE ROUTES AND RECEPTORS OF CONCERN

Incidental ingestion of lead shot by diving ducks was identified as the primary receptor pathway. Diving ducks such as the surf scoter (*Melanitta perspicillata*) can penetrate the sediment surface from depths ranging from the length of their head (5 to 6.5 inches) to the length of their entire body (17 to 21 inches) while they forage for food in water as deep as 40 feet. Sediment deposition in the offshore area has effectively covered the lead shot, eliminating the ingestion exposure pathway to diving ducks over most of the site. However, the 2008 nearshore investigation found lead shot buried under as little as 1 foot of sediment within 75 feet of the shoreline, which is within the reach of diving ducks. Therefore, there is a current potential risk to diving ducks from lead shot in the nearshore area of Site 27. A conceptual



Surf scoter. Photo courtesy of Joyce Gross.

site model depicting the exposure pathway for diving ducks is presented on Figure 3.

The risk to aquatic receptors from PAHs was evaluated based on a separate study conducted to assess the concentration and composition of PAHs in clay targets used in skeet shooting. The study found that trap and skeet targets are composed partly of PAH-containing petroleum pitch, which is relatively insoluble in water and has low toxicity to aquatic organisms. The study concluded that it was unlikely that PAHs would leach from the clay targets, and therefore the targets were not likely to be toxic to aquatic organisms.

When compared to screening values, concentrations of lead in sediment in a small number of locations within Site 27 fell between the level at which adverse effects to aquatic organisms rarely occur, and the level at which adverse effects frequently occur.

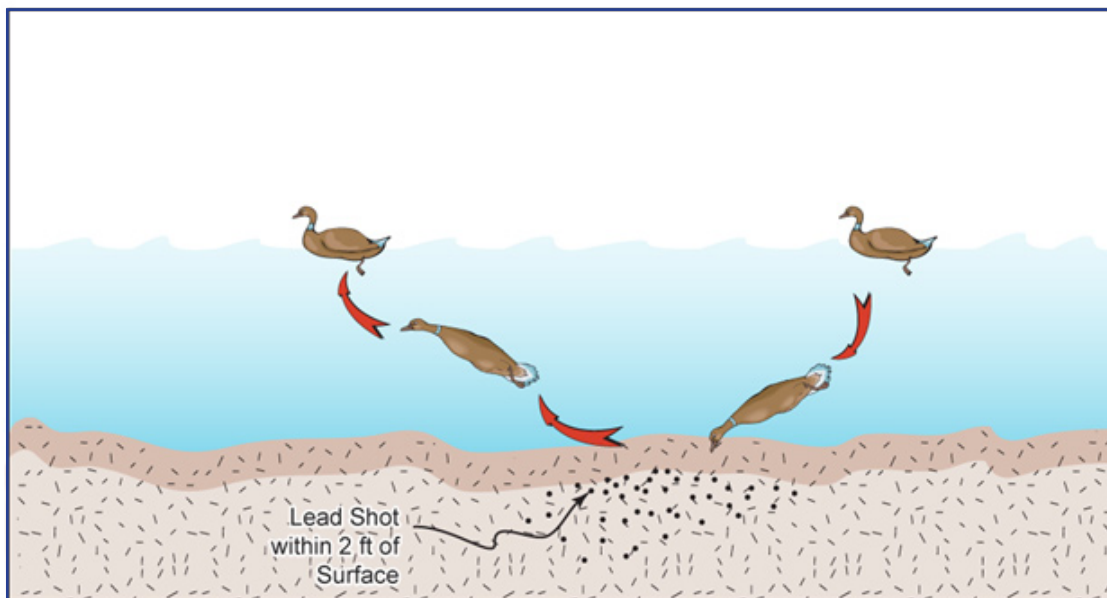


Figure 3. Conceptual Site Model for the Nearshore Area

Concentrations of lead at Site 27 were consistent with other offshore samples collected at Treasure Island and in San Francisco Bay. Therefore, lead in sediment is not considered a chemical of concern; the only contaminant of concern for Site 27 is lead shot.

RISK EVALUATION CONCLUSIONS

The Phase II RI for offshore sediments concluded that chemicals in sediment at Site 27 posed no current unacceptable risk to human health or the environment. However, lead shot beneath 2 feet of sediment was recognized to pose a potential future risk to ecological receptors if exposed. This conclusion was revised in the FS after the 2008 lead shot investigation in the nearshore area was conducted. The investigation showed that there is current potential risk to diving ducks near the shoreline where sediment does not accumulate as steadily as in areas farther from the shoreline and lead shot remains closer to the sediment surface. This Proposed Plan/Draft RAP addresses the potential for current risk to diving ducks in the nearshore area, as well as future risk to diving ducks in the rest of the site if lead shot in the sediment were exposed by dredging or other activities that disturb sediment.

FEASIBILITY STUDY

Based on the Phase II RI for offshore sediments and the lead shot investigation in the nearshore area, the Navy proceeded with an FS to address potential risks to diving ducks associated with lead shot in sediment. The FS identified *remedial action objectives (RAOs)* and remedial alternatives for contaminated sediment at Site 27. The remedial alternatives identified in the FS were evaluated against seven of the nine criteria required by CERCLA and as specified in the NCP. The last two criteria will be addressed through the public comment and regulatory agency review periods. Figure 4 describes the nine remedial alternative evaluation criteria.

4.0 REMEDIAL ACTION OBJECTIVES

RAOs are medium-specific (such as soil and groundwater) goals for protecting human health and the environment that provide the foundation used to develop remedial alternatives. No human health risks were identified for Site 27; therefore, the RAOs are based solely on exposure to lead shot by diving ducks

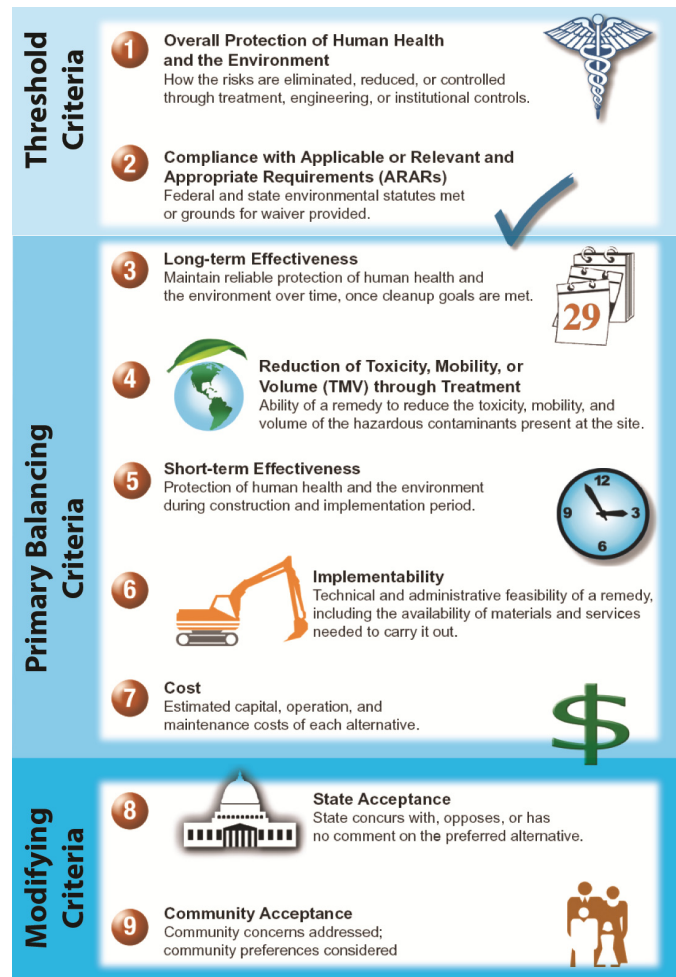


Figure 4. Criteria for Comparison of Remedial Alternatives

under both current and future use scenarios. Under the current use scenario, there is a complete exposure pathway near the shore. Under a future use scenario in which the cove is dredged to expand the marina, there could be a complete exposure pathway to diving ducks in the rest of the site. The RAOs for Site 27 are:

- Prevent or minimize ingestion of lead shot by diving ducks within 75 feet of the shoreline, where there is a complete exposure pathway under current conditions.
- Prevent or minimize ingestion of lead shot by diving ducks site-wide, where there is a potentially complete exposure pathway for diving ducks under future conditions where lead shot is currently buried below at least 2 feet of sediment.

RAOs can be achieved either by reducing concentrations of COCs or by eliminating the exposure pathways.

5.0 SUMMARY OF REMEDIAL ALTERNATIVES

This section summarizes the remedial alternatives developed in the Final Feasibility Study, Site 27 Clipper Cove Skeet Range. The Navy evaluated several remedial technologies, including capping, solidification/stabilization, physical separation, biological treatment, chemical treatment, thermal desorption, and soil washing. After screening the alternatives, the Navy further developed and considered three remedial alternatives in the FS:

- Alternative 1: No action
- Alternative 2: Focused dredging and backfill (Figure 5), off-site disposal of sediment, institutional controls, and sediment monitoring
- Alternative 3: Site-wide dredging (Figure 5) and off-site disposal of sediment

Alternatives 2 and 3 are split into “a” and “b” alternatives because of two possible disposal options. Under Alternatives 2a and 3a, dredged sediments would be disposed of at a landfill after on site dewatering that could take up to 1 year for Alternative 2a and 6 years for Alternative 3a. Under Alternatives 2b and 3b, dredged sediment would be transported by barge to an upland beneficial reuse site where sediment is being collected to create a restored wetland (the lead-shot contaminated sediment would be covered by clean sediment so that it would not pose a risk to diving ducks); land-based dewatering would not be required. Each of the alternatives and their associated costs are described in Table 1.

6.0 EVALUATION OF REMEDIAL ALTERNATIVES

The remedial action alternatives considered represent a range of distinct environmental restoration strategies that fulfill the RAOs associated with lead shot contamination in sediment at Site 27. The alternatives were evaluated against the nine EPA criteria listed in Figure 4.

These criteria are used to evaluate the cleanup alternatives proposed for this site. The first seven criteria are discussed in the following comparison of

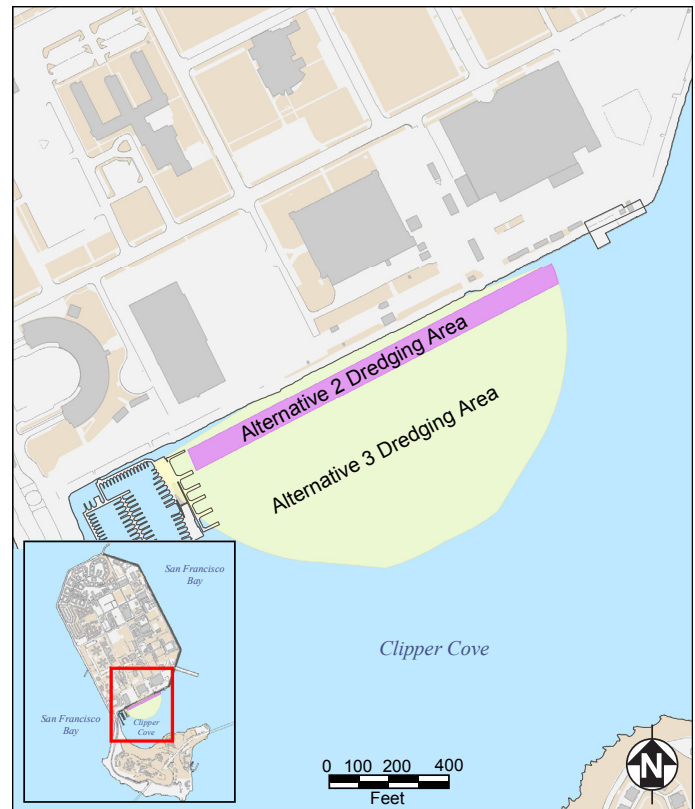


Figure 5. Comparison of Alternative 2 and Alternative 3 Proposed Dredging and Backfill Areas

alternatives. The last two criteria will be addressed through the public comment and regulatory agency review periods. The Navy will then make the final decision on the remedy for Site 27 after public input has been received and evaluated.

Of the seven evaluation criteria, two are threshold and five are primary balancing criteria. To be eligible for selection, an alternative must meet the two threshold criteria: (1) overall protection of human health and the environment, and (2) compliance with *applicable or relevant and appropriate requirements (ARARs)*. Alternative 1 (no action) was evaluated in the FS, as required by the NCP, to provide a comparative baseline to evaluate the other alternatives; however, Alternative 1 would not be protective of the environment or comply with ARARs under current land-use scenarios. As a result, this alternative would not meet the threshold criteria and therefore is not eligible for selection.

TABLE 1. SUMMARY OF REMEDIAL ALTERNATIVES FOR SEDIMENT AT SITE 27

REMEDIAL ALTERNATIVE	COMPONENTS OF REMEDIAL ALTERNATIVE	COST	ESTIMATED TIME TO COMPLETE
1: No Action	Under Alternative 1, no remedial action or monitoring would be conducted. By law, the no-action alternative must be evaluated to establish a baseline for comparison with other alternatives that involve cleanup actions. Under this alternative, no response actions would be conducted at Site 27; therefore, there would be no associated costs. No attempt would be made to monitor or control exposure to lead shot in sediment.	\$0	Not Applicable
2a: Focused Dredging and Backfill, Landfill Disposal of Sediment, Institutional Controls, and Sediment Monitoring,	Under Alternative 2, contaminated sediments would be removed where there is a current complete exposure pathway to diving ducks, followed by backfill of the area to prevent exposure (Figure 5). Alternative 2a sediment removal would be followed by sediment dewatering and off-site disposal at a landfill, whereas Alternative 2b sediment removal would be followed by transport by barge to an upland beneficial reuse site. Implementation of ICs would reduce the likelihood of activities that may cause sediment disturbance and resuspension of buried lead shot at the site. Post-remedy sediment monitoring consisting of bathymetric surveys would be conducted 1 year after the remedy is complete and every 5 years after to confirm consistent sediment profile against erosion. Alternative 2 would remove the current complete exposure pathway and ensure the pathway remained incomplete throughout the site.	\$2.9 Million	1 Year
2b: Focused Dredging and Backfill, Beneficial Reuse of Sediment, Institutional Controls, and Sediment Monitoring		\$2.2 Million	2 Months
3a: Site-wide Dredging and Landfill Disposal of Sediment	Under Alternative 3, contaminated sediments would be completely removed from the site by full-scale dredging (Figure 5). Alternative 3a sediment removal would be followed by sediment dewatering and off-site disposal at a landfill, whereas sediment removal under Alternative 3b would be followed by transport by barge to an upland beneficial reuse site. Alternative 3 would allow for unrestricted use of the site.	\$21.0 Million	6 Years
3b: Site-wide Dredging and Beneficial Reuse of Sediment		\$23.9 Million	6 Months

A ranking analysis of the remedial alternatives was also conducted to provide a comparison of the alternatives against the first seven NCP criteria. To conduct the ranking analysis, a score from 1 to 5 was

assigned to each alternative for each specific NCP evaluation criterion, with a score of 5 being best and 1 being least satisfactory. The results of this ranking analysis are summarized in Table 2.

TABLE 2: COMPARATIVE RANKING OF ALTERNATIVES

CRITERION TYPE	CRITERION	ALTERNATIVE 2: FOCUSED DREDGING AND BACKFILL, OFF-SITE DISPOSAL OF SEDIMENT, INSTITUTIONAL CONTROLS, AND SEDIMENT MONITORING		ALTERNATIVE 3: SITE-WIDE DREDGING AND OFF-SITE DISPOSAL OF SEDIMENT	
		2A: LANDFILL DISPOSAL OF SEDIMENT	2B: SEDIMENT BENEFICIAL REUSE	3A: LANDFILL DISPOSAL OF SEDIMENT	3B: SEDIMENT BENEFICIAL REUSE
Threshold	Overall Protection of Human Health and Environment	5	5	5	5
	Compliance with ARARs	5	5	5	5
Primary Balancing	Long-Term Effectiveness/ Permanence	4	4	5	5
	Reduction of Toxicity, Mobility, or Volume through Treatment	0	0	0	0
	Short-Term Effectiveness	2.5	3	1	2
	Implementability	2.5	3	1	2
	Cost	3	3	1	1
Score		22	23	18	20
Rank		2 nd	1 st	4 th	3 rd

Note: Each individual rating was on a scale from 1 to 5, with 5 being the highest rating. Individual ratings for each criterion were then summed up to yield a total score or relative ranking. Since there were seven criteria, the maximum total score is 35.

The following is a comparative analysis of the remedial alternatives:

THRESHOLD CRITERIA

1. OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

Alternatives 2 and 3 would protect the environment because both would eliminate the exposure pathway to diving ducks, whereas Alternative 1 would not. Alternatives 2 and 3 were ranked equally based on this criterion.

2. COMPLIANCE WITH ARARs

ARARs are federal and state laws and regulations that are identified for each remedial alternative. No chemical-, action-, or location-specific ARARs would

apply to Alternative 1. Alternatives 2 and 3 are expected to meet all chemical-, location-, and action-specific ARARs.

Because Alternative 1 fails to meet the two threshold criteria, it is not evaluated under the primary balancing criteria in this Proposed Plan/Draft RAP.

PRIMARY BALANCING CRITERIA

3. LONG-TERM EFFECTIVENESS AND PERMANENCE

Long-term effectiveness is considered high for Alternative 2, as the exposure pathway would be eliminated through focused dredging, backfilling, and IC implementation. Long-term effectiveness is considered very high for Alternative 3, as the exposure pathway would be eliminated through dredging to completely remove all contaminated sediments

within the site boundary. Figure 5 presents a visual comparison of the proposed excavation and backfill areas for Alternatives 2 and 3.

4. REDUCTION OF TOXICITY, MOBILITY, OR VOLUME THROUGH TREATMENT

Implementation of Alternative 2 or 3 would not reduce the toxicity, mobility, or volume of hazardous substances through treatment; therefore, neither alternative is considered effective under this criterion.

5. SHORT-TERM EFFECTIVENESS

During construction, implementation of Alternatives 2 and 3 could affect the public, environment, and workers because of potential resuspension of lead shot, traffic, and noise. Effects would be minimized through implementation of construction quality control (QC) monitoring and environmentally sensitive construction practices, other monitoring protocols, and health and safety plans. Short-term effectiveness for Alternative 2a would be considered low to moderate and for Alternative 2b moderate because of the limited dredging area and shorter performance period than Alternative 3. Short-term effectiveness for Alternative 3a would be considered very low and for Alternative 3b low given the large area to be dredged and the amount of sediment to be removed, as well as the longer performance period than Alternative 2.

6. IMPLEMENTABILITY

Alternative 2 would be moderately difficult to implement, requiring construction, monitoring, and ICs. Alternative 3 would be the least easily implementable given the large quantity of sediment that would require removal. Alternatives 2a and 3a are less easily implementable than Alternatives 2b and 3b because dewatering is required. Therefore, implementability is considered low to moderate for Alternative 2a and moderate for Alternative 2b. Similarly, implementability is considered very low for Alternative 3a and low for Alternative 3b.

7. COST

The cost for Alternative 2 is moderate. The estimated cost for Alternative 2a is \$2.9 million, while the cost for Alternative 2b is \$2.2 million.

The cost for Alternative 3 is very high. The estimated cost for Alternative 3a is \$21.0 million, while the cost for Alternative 3b is \$23.9 million.

7.0 THE PREFERRED REMEDIAL ALTERNATIVE

The preferred remedial alternative is Alternative 2b, focused dredging and backfill, off-site disposal of sediment at a beneficial reuse site, ICs, and sediment monitoring. Alternative 2b would be implemented by removing sediment located within 75 feet from the shoreline to a depth of at least 2.5 feet. Therefore, a complete exposure pathway to diving ducks would be eliminated since (1) all sediment that contains lead shot within the top 2.5 feet would be removed; and (2) lead shot in the remaining offshore area of Site 27 is buried under at least 2 feet of sediment, which is not accessible to diving ducks.

After dredging, the area would be backfilled with a mixture of a sandy base layer and an exposed rock armor layer. The vertical extent of dredging and the backfill design would be established during remedial design and would take into account relevant hydrodynamic conditions and consider current and historical uses of the marina, including maintenance dredging. Dredged sediment would be transported by barge to an upland beneficial reuse site, and dewatering would not be required.

After dredging and backfilling, site-wide ICs would be implemented to restrict disturbance of the remaining sediment, which would prevent or minimize resuspension of lead shot from deeper sediments in the undredged portion of the site. ICs could include restrictions on vessel speed, controls on dredging within the boundary of Site 27, and long-term monitoring of the backfill. Five-year reviews and reporting would be conducted to ensure the continued effectiveness of the ICs. A remedial action work plan (RAWP) would be developed to specify the roles and responsibilities for implementing, monitoring, and enforcing the ICs.

When Site 27 is transferred, the deed would contain both a deed notice to notify future landowners of the existence of lead shot in the sediment and a restriction requiring (1) that the appropriate regulatory agencies be contacted and notified of the existence of the lead

shot in sediment within the boundary of Site 27 before any sediment dredging or fill, and (2) that as part of any sediment dredging or fill, the property would comply with the pertinent parts of Section 404 of the Clean Water Act.

Sediment monitoring would consist of baseline monitoring before dredging, construction quality control monitoring during dredging, and post-remedy monitoring. A post-remedy bathymetric survey would be followed by monitoring 1 year after the remedy has been implemented and every 5 years after the remedy has been implemented. Detailed post-remedy survey and monitoring plans would be developed and presented in the RAWP.

Alternative 2b was selected because it:

- (1) Provides overall protection of the environment by removing the current complete exposure pathway for diving ducks and ensures the pathway will remain incomplete throughout the site.
- (2) Is the most effective in the short term and would have the least effect on the community, remedial workers, and the environment because of the limited dredging area and the relatively shorter performance period.
- (3) Would be implemented in the shortest period of time. Periodic costs will include long-term monitoring to ensure RAOs are consistently achieved.
- (4) Meets federal and state ARARs.
- (5) Is the most cost effective to implement.

The preferred remedial alternative is protective of human health and the environment and eliminates, reduces, or controls exposures to human and environmental receptors through all potential exposure pathways currently and in the future.

MULTI-AGENCY PARTICIPATION

The *Base Realignment and Closure (BRAC)* Cleanup Team (BCT) for NAVSTA TI includes remedial project managers (RPM) from the Navy, DTSC, Water Board, and EPA. The primary goals of the RPMs are to protect human health and the environment, coordinate environmental investigations, and expedite

the environmental restoration of former NAVSTA TI. The RPMs have coordinated on all major documents and investigations associated with Site 27, including the RI and FS reports. Based on these reviews and discussions of key documents, the regulatory agencies support the Navy's preferred remedial alternative. The preferred remedial alternative may be modified in response to public comments or new information.

REGULATORY SUMMARY

CALIFORNIA HEALTH AND SAFETY CODE (HSC)

This document is intended to meet the requirements of California HSC Section 25356.1 for hazardous substance release sites, as required by DTSC. The HSC requires preparation of a RAP for sites that are not listed on the *National Priorities List (NPL)*, such as NAVSTA TI. Therefore, this document also serves as a draft RAP to fulfill the public notice and comment requirements of the HSC. The final RAP will be incorporated in the ROD for this site.

CALIFORNIA ENVIRONMENTAL QUALITY ACT

DTSC has prepared an initial study to evaluate potential impact of the proposed project on the environment. The findings of the initial study indicate that the project would not have a significant effect on public health or the environment. Therefore, DTSC has prepared a proposed negative declaration for the Site 27 cleanup. Both the initial study and proposed negative declaration are available for review and comment during the public comment period.

NONBINDING ALLOCATION OF RESPONSIBILITY

HSC Section 25356.1(e) requires DTSC to prepare a preliminary nonbinding allocation of responsibility among all identifiable potentially responsible parties. HSC Section 25356.3(a) allows potentially responsible parties with an aggregate allocation in excess of 50 percent to convene an arbitration proceeding by submitting to binding arbitration before an arbitration panel. Based on available information regarding the former NAVSTA TI, DTSC concludes that the Navy is a responsible party with aggregate alleged liability in excess of 50 percent of the costs of removal and remedial action pursuant to HSC Section 25356.3. The Navy may convene arbitration if it so chooses.

8.0 COMMUNITY PARTICIPATION

The Navy, DTSC, Water Board, and EPA encourage the public to gain a more thorough understanding of Site 27 and the CERCLA activities that have been conducted at former NAVSTA TI by visiting the information repository, reviewing the administrative record file, attending public meetings, and signing up for the mailing list to receive regular project information. The information repository was established to provide public access to technical reports and other IR Program information that supports the remedial action alternative decision. The administrative record contains the reports and historical documents used to select remedial alternatives. Restoration Advisory Board Meetings are also held on the third Tuesday of every other month and are open to the public.

Consideration of public input is an important part of the remedy selection process. The Navy, DTSC, Water Board, and EPA encourage all community members, business owners, and other interested

stakeholders to provide input on the proposed remedy. The dates of the public comment period and the date, location, and time of the public meeting are provided on pages 1 and 12 of this Proposed Plan/Draft RAP.

THE NEXT STEP

The Navy and DTSC will consider all public comments received during the public comment period, or in person at the public meeting, before they make a final decision for Site 27. The final decision will be documented in the ROD/Final RAP, which will include the responses to all comments received on this Proposed Plan/Draft RAP. Input will be collected after the alternatives are presented to the public, and a final decision will be made after regulatory agency and community input on the Proposed Plan/Draft RAP has been reviewed. The Navy will then issue a ROD/Final RAP, and DTSC will approve the RAP to select the final remedy. A public notice will be placed in the *San Francisco Chronicle* announcing when the Site 27 ROD/Final RAP will become available to the public in the information repositories listed on page 13.

OPPORTUNITIES FOR INVOLVEMENT

Public Meeting, June 14, 2011

Location: Casa de la Vista, Building 271, Treasure Island

You are invited to the public meeting to discuss and comment on the Proposed Plan/Draft RAP for Site 27. The Navy and DTSC will conduct a formal Proposed Plan/Draft RAP presentation at 6:30 p.m., which will be followed by an open house until 8:30 p.m. Highlights of the Proposed Plan/Draft RAP will be presented at different information displays during the open house. You will have the opportunity to visit these displays at your own pace, discuss, and ask questions about the Proposed Plan/Draft RAP one-on-one with representatives of the Navy and DTSC. You will also have the opportunity to formally comment on the Navy's preferred remedial alternative for Site 27 as presented in this Proposed Plan/Draft RAP during both the presentation and open house.

Public Comment Period June 2 through July 2, 2011

We encourage you to comment on this Proposed Plan/Draft RAP during the public comment period. You may provide comments on the Proposed Plan/Draft RAP orally at the public meeting or submit your comments in writing at or after the public meeting. You may mail or email written comments on this Proposed Plan/Draft RAP to the Navy contact person provided on page 13, postmarked no later than July 2, 2011.

INFORMATION REPOSITORIES

Two information repositories and the administrative record file provide public access to technical reports and other IR Program information that support this Proposed Plan/Draft RAP.

San Francisco Public Library
Government Publications Section
100 Larkin Street
San Francisco, California 94102
(415) 557-4400

Navy BRAC Caretaker Support Office
1 Avenue of the Palms, Suite 161
Treasure Island
San Francisco, California 94130
(415) 743-4729

Administrative Record File
ATTN: Diane Silva, Command Records Manager
NAVFAC Southwest
1220 Pacific Highway
Code EV33, NSDB Building 3519
San Diego, California 92132
(619) 556-1280
diane.silva@navy.mil

Administrative hours are 8 a.m. to 5 p.m. Monday through Friday. Documents may not be removed from the facility; however, they may be photocopied. Please contact Ms. Silva to make an appointment.

Site 27 documents are available in the information repositories and in the administrative record locations listed above. Other information such as meeting minutes and fact sheets related to Site 27 can be found on the Navy's website at: www.bracpmo.navy.mil. Select "Prior BRAC," then "Former Naval Station Treasure Island."

PROJECT CONTACTS

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9.0 GLOSSARY OF TERMS

Applicable or Relevant and Appropriate Requirements (ARARs): Federal, state, and local regulations and standards determined to be legally applicable or relevant and appropriate to remedial actions at a CERCLA site.

Base Realignment and Closure (BRAC): Program established by Congress under which Department of Defense installations undergo closure, environmental cleanup, and property transfer to other federal agencies or communities for reuse.

Bathymetric survey: A survey that measures the depth of the water and studies the shape of the seabed.

Benthic organisms: Animals that live on or near the bottom of a stream, lake, or ocean. Benthic populations often indicate sediment quality.

Chemical of Concern (COC): A chemical that has been identified as having the potential to pose a significant threat to human health or the environment.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): A federal law designed to identify and cleanup sites contaminated with hazardous substances that may endanger public health or the environment.

Department of Toxic Substances Control (DTSC): A part of the California Environmental Protection Agency and California's lead environmental regulatory agency. Its mission is to protect public health and the environment from toxic substances.

Ecological Risk Assessment (ERA): An analysis of the potential ecological effects caused by exposure to hazardous substances at a site.

Feasibility Study (FS): A study to identify, screen, and compare remedial alternatives for a site.

Installation Restoration (IR): The IR Program is the Department of Defense's comprehensive program to investigate and clean up environmental contamination at military facilities in full compliance with CERCLA.

Institutional Controls (IC): ICs are legal and administrative mechanisms used to implement land use and access restrictions that limit exposure of landowners or users of the property to hazardous substances and to maintain the integrity of the remedial action to ensure that remediation goals are achieved. Monitoring and inspections are conducted to ensure that the land use restrictions are being followed.

Lead shot: A collective term for small pellets of lead used as ammunition at the skeet and trap range. Waterfowl such as ducks can ingest spent pellets and be poisoned.

National Oil and Hazardous Substances Pollution Contingency Plan (NCP): The regulatory basis for government responses to oil and hazardous substances spills, releases, and sites where these materials have been released.

National Priorities List (NPL): The federal list of Superfund sites nationwide. NPL sites are considered high priority for cleanup under the federal Superfund program. NAVSTA TI is not on the NPL.

Polycyclic Aromatic Hydrocarbon (PAH): Compounds typically associated with the incomplete combustion of fossil fuels that are found in the petroleum pitch used to make targets used at the skeet and trap range. These compounds are stable and resist common degradation processes in the environment.

Preferred remedial alternative: The remedial alternative selected by the Navy, in conjunction with the regulatory agencies, that best satisfies the RAOs based on the evaluation of remedial alternatives presented in the FS.

Proposed Plan/Draft Remedial Action Plan (RAP): A document that reviews the remedial alternatives presented in the FS, summarizes the recommended remedial action, explains the reasons for recommending the action, and solicits comments from the community. The RAP is required under California Health and Safety Code Section (HSC) Section 25356.1 for sites that are not listed on the NPL, such as Treasure Island. A Draft RAP is the California HSC equivalent of the Proposed Plan.

Remedial Action Objectives (RAOs): Statements containing specific cleanup goals for protecting human health and the environment, specifically one or more receptors from one or more chemicals in a specific medium (such as soil, sediment, groundwater, or air) at a site. RAOs are developed by evaluating ARARs and the results of remedial investigations, including human health and ecological risk assessments.

Record of Decision (ROD)/Final RAP: A decision document that identifies the remedial alternatives chosen for implementation at a CERCLA site; the ROD/Final RAP is based on information from the RI report and FS and on public comments and community concerns. A Final RAP is the California HSC equivalent of the ROD.

Remedial Investigation (RI): The first of two major studies that must be completed before a decision can be made about how to clean up a site. (The FS is the second study.) The RI is designed to evaluate the nature and extent of contamination and to estimate human health and ecological risks posed by chemicals of potential concern at a site.

Regional Water Quality Control Board (Water Board): The California water quality authority, which is part of the California Environmental Protection Agency. Its mission is to preserve, enhance, and restore California's water resources.

Screening values: These values were used as guidelines in interpreting and assessing the potential effects of concentrations of lead and PAHs detected in sediment at Site 27 on the environment. They include sediment concentrations of lead and PAHs that are associated with adverse effects on sediment-dwelling organisms (the effects-range low [ER-L] and effects-range median [ER-M]), as well as ambient concentrations of lead (43.2 milligrams per kilogram sediment [mg/kg]) and PAHs (3.39 mg/kg) in San Francisco Bay. The screening values are described in greater detail in the feasibility study.

Superfund Amendments and Reauthorization Act (SARA): SARA amended CERCLA on October 17, 1986, making several important changes and additions to the program, including new enforcement authorities and settlement tools.

U.S. Environmental Protection Agency (EPA): The federal regulatory agency responsible for administration and enforcement of CERCLA (and other federal environmental regulations).

Attn. James Sullivan
BRAC Program Management Office West
1455 Frazee Road, Suite 900
San Diego, CA 92108-43101



**Proposed Plan/Draft Remedial Action Plan for
Installation Restoration Site 27
Clipper Cove Skeet Range
Former Naval Station Treasure Island
San Francisco, California**



**FORMER NAVAL STATION TREASURE ISLAND
Installation Restoration Site 27 Clipper Cove Skeet Range**

PUBLIC MEETING

June 14, 2011

6:30 – 8:30 PM

Casa de la Vista, Building 271

Treasure Island

San Francisco, CA

PROPOSED PLAN/DRAFT RAP COMMENT SHEET

The public comment period for the Proposed Plan/Draft RAP for Installation Restoration Site 27, Clipper Cove Skeet Range, at Former Naval Station Treasure Island, San Francisco, California, is from **June 2 through July 2, 2011**. You may provide verbal comments at the public meeting listed above, where all comments will be recorded by a court reporter. Alternatively, you may provide written comments in the space provided below or on your own stationery. All written comments must be postmarked no later than **July 2, 2011**. After you complete your comments and your contact information, please mail this form to the address provided on the reverse side. You may also submit this form to a Navy representative at the public meeting. Comments are also being accepted by e-mail; please address e-mail messages to james.b.sullivan2@navy.mil. Comments are also being accepted by fax: (619) 532-0983.

Name: _____

Representing (optional): _____

Address (optional): _____

Phone number (optional): _____

Please check the appropriate box if you would like to be added to or removed from the Navy's Environmental Mailing List for Treasure Island: Add me Remove me

Comments:

*affix
postage*

James Sullivan
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Fold here and seal
