EXPLOSIVES SAFETY SUBMISSION
REMEDIAL INVESTIGATION
TRANSFER PARCEL XVI
PAINT WASTE AREA VICINITY

Former Mare Island Naval Shipyard,
Vallejo, California

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Base Realignment and Closure
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ABBREVIATIONS AND ACRONYMS

DDESB	Department of Defense Explosives Safety Board
DGM	digital geophysical mapping
EZ	exclusion zone
GPS	Global Positioning System
HFD	hazard fragment distance
MEC	munitions and explosives of concern
MFD	maximum fragment distance
MGFD	munition with the greatest fragmentation distance
mm	millimeter
MPPEH	material potentially presenting an explosive hazard
MRS	munitions response site
NOSSA	Naval Ordnance Safety and Security Activity
PWA	Paint Waste Area
QC	quality control
RI	remedial investigation
SU	survey unit
SUXOS	Senior Unexploded Ordnance Supervisor
TCRA	time-critical removal action
UXO	unexploded ordnance
UXOQCS	Unexploded Ordnance Quality Control Specialist
UXOSO	Unexploded Ordnance Safety Officer

1 BACKGROUND

1.1 PROJECT MANAGER

The Navy Remedial Project Manager for the project is:

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1.2 MUNITIONS RESPONSE SITE IDENTIFIER AND DESCRIPTION

Designation for the Munitions Response Site (MRS) is the Paint Waste Area (PWA) Vicinity located on the former Mare Island Naval Shipyard in Vallejo, California (Figures 1 and 2). The 6.2-acre PWA Vicinity surrounds the time-critical removal action (TCRA) area that was the subject of an earlier removal described in the After Action Report (Weston Solutions Inc., 2011). Although the PWA Vicinity surrounds the PWA TCRA excavation area, based on the results of the TCRA action the PWA Vicinity is being treated as a separate site.

While the former Mare Island Naval Shipyard is a closed naval installation with portions currently being transferred under the Base Realignment and Closure Act, the MRS remains under Navy ownership.

1.3 REGIONAL MAP(S)

See Figure 1.

1.4 SCOPE OF MUNITIONS RESPONSE

The scope of this munitions response is a Remedial Investigation (RI) of the PWA Vicinity. The objective of the RI is to collect sufficient data to characterize the nature and extent of munitions and explosives of concern (MEC) items, radiological items, and chemical contamination at the PWA Vicinity. The data will be used to perform human-health risk,

ecological risk, and MEC hazard assessments, and will serve as a basis to determine if further action is required.

Munitions response activities will include:

- Radiological surveys
- Digital geophysical mapping (DGM) surveys
- Excavation of all identified radiological and geophysical anomalies to identify distribution of MEC, material potentially presenting an explosive hazard (MPPEH), and/or low-level radiological items that might be present
- Soil sampling to evaluate the nature and extent of chemical contamination
- Excavation of approximately 2,500 linear feet of trench to a depth of four feet, involving an estimated 1,200 cubic yards of soil with incremental radiological and magnetometer surveys within the trenches to identify and remove any radiological, MEC, and MPPEH items that might be encountered below the ground surface

Since low-level radiological items, MEC/MPPEH items, and chemical contaminants were encountered in the PWA TCRA excavation area (Figure 2), the concern is that similar contaminants may exist at the PWA Vicinity. The results of the RI will determine whether further action is required at the PWA Vicinity, or if the property can be transferred with no further action required.

1.5 HISTORY OF MUNITIONS AND EXPLOSIVES OF CONCERN USE

Although there is no documented history of MEC use at the MRS, MEC items recovered during the 2007-2010 TCRA indicate that the area may have been used as a disposal site for munitions items as well as unwanted radiological items and other general debris in the late 1940s to early 1960s. MEC contamination has also been encountered at dredge outfall locations on Mare Island because munitions were discarded overboard from ships into the waters of Mare Island Strait and were later picked up with the bottom sediments during dredge operations to maintain the shipping channel.

The presence of MEC recovered from the MRS in 2010 likely resulted from the intentional or unintentional disposal of MEC items along with radiological items and other inert scrap materials. The mechanism of deposition of the items remains unclear, even after the completion of the TCRA at the adjacent PWA. The random nature of the discarded materials and the dispersed spatial locations of recovered items do not fit the usual profile for a dredge outfall site. The site may have been an uncontrolled dump site, although no designation can be found on historical maps. Because MEC and MPPEH items were not encountered deeper than three feet at the PWA, any additional MEC items are expected to be near the surface.

1.6 PREVIOUS STUDIES OF EXTENT OF MEC OR MPPEH CONTAMINATION

The unexploded ordnance (UXO) Site Investigation (Supervisor of Shipbuilding, Conversion and Repair, Portsmouth, Virginia, Environmental Detachment, Vallejo, California, 1997) included some exploratory geophysical surveys utilizing handheld instruments in the general area of the MRS even though there was no prior known history of MEC-related uses or contamination. In 2010, a 20-millimeter (mm) projectile was encountered and removed during installation of a silt fence just outside the northern boundary of the PWA TCRA excavated area (Figure C-1), inside the step-out area described by the Explosive Safety Submission Amendment 1 Correction 1 submission approved by Naval Ordnance Safety and Security Activity (NOSSA) Letter Serial N537/1851 of 30 October 2009. Radiological and DGM surveys were completed in 2010 as part of the PWA TCRA within areas designated as survey unit (SU) 9 and SU-10 which have now been included in the PWA Vicinity MRS (Figure C-1). Investigation of those identified DGM anomalies will be performed as part of the PWA Vicinity RI.

1.7 JUSTIFICATION FOR NDA/NFA DECISION

Not applicable (remedial investigation action).

2 PROJECT DATES

2.1 PROJECT DATES

Field work associated with the project is scheduled for late summer/fall of 2011. The treatment of recovered MEC is also estimated to be completed within the same timeframe.

3 TYPES OF MEC AND MPPEH

3.1 TYPES AND QUANTITIES OF MEC AND MPPEH

The 17 MEC items listed in Table 3-1 were recovered during the 2007-2010 PWA TCRA excavation area as described in the After Action Report (Weston Solutions Inc., 2011). Radiological and DGM surveys of SU-9 and SU-10 within the current MRS were completed as part of the 2007-2010 PWA TCRA. The surveys were performed because several radiological items and a 20-mm projectile were recovered when a silt fence was being installed to support removal activities within the area excavated during the 2007-2010 PWA TCRA. The PWA Vicinity MRS may contain similar radiological, MEC, and MPPEH items as those already recovered from the PWA site. MEC items may include those encountered on Mare Island at nearby former dredge spoils ponds: 20-mm Oerlikon and 40-mm Bofors anti-aircraft ammunition. Much less common are several 3-inch/50 cal Mk 27 rounds also recovered from outfall locations on Mare Island.

Table 3-1
Summary of Recovered Munitions and Explosives of Concern Items
(2007-2010 PWA TCRA Excavation Area)

Item	Quantity Munitions and Explosives of Concern	Recovery Depth
Mk 13 Mod 0 smoke & illumination signal	4	Surface
20-mm projectile	3	Surface & 0-3 feet
20-mm cartridge case	3	Surface & 0-3 feet
Bag gun primer	6	0-3 feet
1.1-inch fuzed projectile	1	1-2 feet

3.2 MUNITION WITH THE GREATEST FRAGMENTATION DISTANCE

Based on the maximum fragment distance - horizontal of the items listed in Table 3-1, the 1.1-inch Mk 1 was selected as the munition with the greatest fragmentation distance (MGFD), with the 40-mm Mk II and the 3-inch/50 cal Mk 27 as contingency MGFDs.

Table 3-2
Primary and Contingency MGFDs for the PWA Vicinity

MGFD Type	Munitions Item	MFD Horizontal (feet)
Primary	1.1-inch Mk 1	1,022[a]
Contingency	40–mm Mk II AA	1,095[b]
Contingency	3-in/50 cal Mk 27	2,251[a,c]

Notes:

a Maximum fragment distance (MFD) horizontal is the greater distance calculated using the TP-16 Primary Fragment Range Generic Equations Calculator (Version 1.0 dated 4/1/09) for "robust" items (item data from OP 1664).

b From Department of Defense Explosive Safety Board (DDESB) TP-16 Fragmentation Data Review Form (1/31/11).

c Note that if this contingency MGFD is implemented, the MFD for MEC Treatment operations would be reduced by sand cover to bring within the established 1,250 feet range exclusion zone (EZ) after consultation with NOSSA to obtain item-specific TP-16 Buried Explosion Module data.

3.3 MAXIMUM CREDIBLE EVENT

Not applicable.

3.4 EXPLOSIVE SOIL AND CONTAMINATED BUILDINGS

There is no explosive soil or contaminated buildings located within the MRS.

4 MEC AND MPPEH MIGRATION

4.1 MEC AND MPPEH MIGRATION

MEC migration due to naturally occurring phenomena (flooding, erosion, drought, etc.) is not a realistic concern since the area is flat and thickly vegetated. Frost heave is not an issue since the temperature rarely goes below freezing and never for extended periods.

5 DETECTION TECHNIQUES

5.1 DETECTION EQUIPMENT, METHOD, AND STANDARDS

Handheld AN-19/2 metal detectors (or equivalent) and Schonstedt magnetometers (or equivalent) will be used to locate anomalies during the investigation trenching phase of the

project. The handheld instruments will also be used to confirm the relocation of identified DGM anomalies prior to excavation.

A Geonics EM61-MK2 inductive time-domain electromagnetic instrument will be used to complete the initial site DGM survey for the remainder of the MRS (SU-11 through SU-21, Figure C-2). The EM61-MK2 system was selected since non-ferrous MEC items may be encountered at the PWA Vicinity, based on material recovered during the 2007-2010 PWA TCRA.

All geophysical survey instruments will be used in accordance with the Hazards of Electromagnetic Radiation to Ordnance restrictions specified by the Naval Surface Warfare Center at Dahlgren Virginia (NOSSA, 2005).

5.2 NAVIGATIONAL EQUIPMENT, METHOD, AND STANDARDS

A Trimble Real-Time Kinematic Global Positioning System (GPS) receiver will be used to document anomaly locations using handheld instruments, and used with the EM61-MK2 system to determine and record anomaly position information with an expected accuracy of 0.1 feet.

5.3 EQUIPMENT CHECK OUT

Satisfactory operation of the AN-19/2 (or equivalent) and Schonstedt (or equivalent) handheld instruments will be verified daily using an established onsite test target.

A Geophysical Prove-Out Plan, utilizing the existing Geophysical Prove-Out site located in the South Shore Area, will verify the effectiveness of all detection equipment, operators, and data processing techniques utilizing a test grid established in similar soil conditions for the EM61-MK2 system. Targets in the test grid include those typically found at Mare Island sites, including fuzes and 20-mm, 40-mm, and 3-inch anti-aircraft projectiles. The Geophysical Prove-Out evaluation will demonstrate the capability of the equipment to locate items at the nominal detection limit of 11 times the item diameter in similar soil conditions.

Performance of the EM61-MK2 system will also be checked at the beginning and end of each workday following the established quality control (QC) criteria (i.e., equipment warm-up, sensor nulling, static, static spike, cable shake, etc.). Additional function checks may be performed

throughout the day, as the operator deems necessary. The data from each sensor test will be compared with data collected from previous days. If there is a significant change in results, the instrument will be rechecked. If the difference in the data cannot be accounted for, the instrument will be taken out of service until repaired.

Navigation accuracy of the Real-Time Kinematic GPS system will be verified each day at a known control point to ensure an accuracy of less than 0.1 feet offset.

5.4 DATA COLLECTION AND STORAGE

The approximate locations of MEC and MPPEH items identified by handheld survey instruments during investigation trenching will be documented using a Trimble GPS receiver capable of sub-meter accuracy. The EM61-MK2 survey team will provide raw instrument data, digital records, and field notes to the Site Geophysicist within 24 hours after collection in an ASCII-delimited (XYZ) file format suitable for data analysis. All data related to the DGM survey will be managed using specialized techniques that include the use of Oasis Geosoft™ software. Descriptive attribute information about the field surveys, targets, and dig lists will be stored and maintained in a centralized, project master database in a Microsoft® Excel format. This database will contain all QC statistics and processing parameters collected, performed, and calculated on the DGM data. All spatial data will be managed using a Geographic Information System, and will be stored in ESRI compatible Geographic Information System file formats, primarily ArcInfo coverage's and ArcView shape files. All data will be provided electronically to the Navy and will be backed up on the contractor's internal network and project workstation.

6 RESPONSE ACTIONS

6.1 RESPONSE TECHNIQUE

Two separate activities are planned to assist in the characterization of the site:

- A surface high-density radiological survey using radiation detectors and a DGM survey utilizing an Geonics EM61-MK2 Towed-Array system, and the investigation of all selected radiological and DGM anomalies

- The excavation of a series of parallel investigation trenches in 1-foot depth increments, generally at a 3-foot width and 4-foot total depth, with instrument-aided inspection of the excavated soil to remove and document locations of all recovered radiological and MEC items

6.1.1 Initial Radiological and DGM Survey and Anomaly Removal

The site will be cleared of any vegetation that may interfere with the location and investigation of radiological and geophysical anomalies, or with the investigation trenching process. Vegetation will be cut under the oversight of a qualified biologist and a UXO Technician employing anomaly avoidance techniques.

The entire surface of the PWA Vicinity site will be subjected to a high-density radiological scan survey, and a DGM survey utilizing a Geonics EM61-MK2 Towed-Array system to identify any radiation hot spots or metallic items that may be present. All identified radiological anomalies will be investigated and removed, after being relocated using a Trimble Real-Time Kinematic GPS receiver and handheld detection instruments. Depending on the quantity of identified geophysical anomalies, all or a selected portion of the DGM anomalies will be investigated.

Anomalies will be exposed using hand tools; however, surrounding soil may be removed using an excavator or backhoe to provide access. DGM anomalies will be investigated to a minimum radius of two feet and a minimum depth of four feet. Metallic debris may be left in place only if it cannot feasibly be removed and only after a determination that it does not represent a potential MEC item. Recovered material will be categorized immediately after removal and handled accordingly (Sections 6.3 and 6.4).

6.1.2 Investigation Trenching

Investigation trenches will be excavated within the PWA Vicinity site to assist in determining if additional remedial action is appropriate due to the presence of radiological or MEC/MPPEH items at depth (Figure C-1). Soil along the trenches will be excavated in 1-foot layers utilizing mechanized equipment (backhoe/excavator). Excavation of the soil in layers will continue to a nominal depth of four feet. Excavated soil will be placed into thin (nominally 6-inch) layers

adjacent to the trench and 100 percent surveyed for radiological and MEC items using a handheld radiation and metal detector. All detected anomalies within the excavated soil will be investigated and removed. Excavated soil from the completed trenches will be stockpiled and sampled for chemical contaminants. Soil meeting the established criteria will be used to backfill the trench excavations; all other excavated soil will be stockpiled onsite pending transportation for disposal at an appropriate offsite disposal facility.

All screened or broadcast soils that have been checked and cleared by UXO Technicians will be randomly checked by the Unexploded Ordnance Quality Control Specialist (UXOQCS) prior to being released for off-site disposal. The Senior Unexploded Ordnance Supervisor (SUXOS) and UXOQCS will record in their respective logbooks the release of all cleared soil, by load or lot. When stockpiled on site, cleared-for-release soils will be clearly marked as such and will be controlled to prevent co-mingling with excavated soil that has not been cleared by UXO Technicians.

The SUXOS and the Unexploded Ordnance Safety Officer (UXOSO) will determine whether encountered MEC or MPPEH items are unsafe to move, or safe to move to the designated storage facility. The decision that an item is safe to move will be documented in writing prior to movement. Items that are determined to be fuzed and show evidence of having been subjected to the actions required for arming (e.g., rifling marks on a fuzed projectile) may constitute a hazard and will be considered unsafe to move. Pyrotechnic items that could pose a spontaneous combustion hazard in storage may also be categorized as unsafe to move. Items determined unsafe to move will be managed as described in Section 8.1.

Equipment operators (essential personnel) performing tasks within the established EZ will be protected by 3-inch cast Plexiglas fragment shielding and a K24 blast overpressure distance. DDESB-approved overpressure-mitigating engineering controls (standard hearing protection devices) may be used to provide an equivalent level of protection (2.3 pounds per square inch) to allow a reduction in the K24 distance to K18. The 3-inch cast Plexiglas material was determined to be adequate protection for the site MGFD and contingency MGFDs by the U.S Army Corps of Engineers, Huntsville, Alabama (Michelle Crull). Email correspondence supporting this

determination for a previous Mare Island MEC removal project (Marine Corps Firing Range) is included in Appendix D.

The following mechanized processing operations to be employed during the project are classified as "low-input" operations by Section C12.5.8.3.5 of Department of Defense 6055.09-STD Change 1 dated 24 March 2009 (Department of Defense, 2009):

- Loading and movement of excavated soil using front-end loaders and/or trucks
- Using mechanized equipment such as an excavator bucket to spread excavated soil

The mechanized excavation of soil using an excavator/backhoe is also considered to be a low-input operation for this project, based on the following:

- The anticipated MEC items are smaller 20-mm and 1.1-inch anti-aircraft ammunition (based on the items recovered at other dredge outfall areas) that would likely not be contacted by the excavator bucket.
- All MEC items recovered on Mare Island have been classified as discarded military munitions, due to their unfired condition and badly deteriorated fuzes that would prevent them from functioning as designed.
- Soil will be excavated in 1-foot lifts, using a horizontal dragging motion of the excavator bucket toward the operator. This would result in any potential detonation being shielded by approximately 1-foot of soil and the excavator bucket; fragment shielding would provide protection for the operator.
- The soft clay nature of the soil will cushion mechanical impact forces on any MEC items that might be present and minimize the likelihood of an unintentional detonation.

Since the planned soil excavation and processing operations are classified as low-input mechanized operations, the protections provided for accidental (unintentional) detonations are therefore considered to be appropriate.

6.2 EXCLUSION ZONES

Exclusion zones for munitions that may be encountered in the PWA Vicinity are provided in Table 6-1. Operations controlling the exclusion zone distance are provided in Table 6-2. Potential explosion sites encumbering the PWA Vicinity MRS are provided in Table 6-3.

Table 6-1
Exclusion Zones for the PWA Vicinity

MGFDs		Exclusion Zones (feet)				
Description	NEW (pounds)	Fragmentation Effects		Blast Overpressure Effects		
		HFD (feet)	MFD (feet)	K328	K40	K24
1.1-inch Mk 1	0.037[a]	104[b]	1,022[b]	109[c]	13[c]	8[c]
				960[f]	117[f]	71[f]
40–mm Mk 2	0.187[d]	131[d]	1,095[d]	188[c]	23[c]	14[c]
			683[g]	960[f]	117[f]	71[f]
3-inch/50 cal Mk 27	0.74[a]	297[b]	2,251[b,e]	297[c]	36[c]	22[c]
				960[f]	117[f]	71[f]

Notes:

a Net Explosive Weight (NEW) from OP 1664.

b Maximum Fragment Distance (MFD) and Hazard Fragment Distance (HFD) is the greater distance calculated using the TP-16 Primary Fragment Range Generic Equations Calculator (Version 1.0 dated 4/1/09) for "robust" items.

c Reflects detonation of a single MGFD (without donor charge).

d NEW, HFD, and MFD from the DDESB TP-16 Fragmentation Data Review Form (1/31/11).

e Note that if this contingency MGFD is implemented, the MFD for MEC Treatment operations would be reduced by sand cover to bring within the established 1,250 feet range EZ after consultation with NOSSA to obtain item-specific TP-16 Buried Explosion Module data.

f Reflects thermal treatment (detonation) of multiple items and associated donor charges within range limit of 25 pounds NEW.

g Reflects use of one pound donor charge and one foot of dry sand cover during thermal treatment (detonation); from TP-16 Buried Explosion Module (Version 6.2 dated 11/3/09); MFD would be 1,095 feet without cover (DDESB TP-16 Fragmentation Data Review Form dated 1/31/11).

Table 6-2
Controlling Exclusion Zones for the PWA Vicinity

Operation	Sited As	Exposed Site	Basis[a]	ESQD (feet)
Manual Operations[a]	Unintentional Detonation	UXO Teams	K40 of the MGFD	Primary - 13[b]
				Contingency 1 - 23
				Contingency 2 -36
	Unintentional Detonation	Public & Non-Essential Personnel	HFD of the MGFD	Primary - 104[b]
				Contingency 1 - 131
				Contingency 2 -297
"Low Input" Processing Operations[c]	Unintentional Detonation	Essential Personnel	K24 of the MGFD[d]	Primary - 8[b,d]
				Contingency 1 - 14
				Contingency 2 -22
	Unintentional Detonation	Public & Non-Essential Personnel	HFD of the MGFD	Primary - 104[b]
				Contingency 1 - 131
				Contingency 2 -297
MEC Treatment (up to 25 pounds NEW)	Intentional Detonation	Public & All Personnel	MFD of the MGFD	Primary - 960[b]
				Contingency 1 – 960[b]
				Contingency 2 -960[b]
Magazine (up to 1,000 pounds NEW)	Aboveground Magazine	Non-essential personnel in structures	IBD	Primary - 1,250
				Contingency 1 – 1,250
				Contingency 2 – 1,250
		Non-essential personnel in the open	PTR	Primary - 750
				Contingency 1 - 750
				Contingency 2 - 750

Notes:

a Manual operations include detector-aided visual surface clearance and retrieving anomalies by hand digging.

b Values obtained from Table 6-1.

c "Low input" processing operations include the excavation of soil using an excavator/backhoe (Section 6.1), spreading out soil to facilitate the screening of soil using handheld instruments to remove radiological, MEC, and MPPEH items.

d Requires shields or barricades designed to defeat hazardous fragments from the MGFD. The K18 distance of 6 feet may be used if essential personnel are provided hearing protection providing greater than 9 decibels attenuation.

Table 6-3
Potential Explosion Sites Encumbering the PWA Vicinity MRS

Potential Explosion Sites Building / Area	Potential Explosion Sites Type / Operation	Closest distance to Munitions Response Site (feet)	Investigation Limit/K18[a] from Potential Explosion Sites (feet)	Potential Explosion Sites Explosive Limits by Class/Division (pounds)					
				1.1	1.2.1 (MCE)	1.2.2	1.2.3 (MCE)	1.3	1.4
N/A	N/A	0	0	0	0	0	0	0	0

Notes:
a Investigation Limit/K18 = Unbarricaded intraline (IL) distance.

Access to EZs will be limited to personnel essential to the operation being conducted. However, under specific conditions and on a case-by-case basis, authorized visitors may be granted access to the EZ when operations are being conducted.

Access to an EZ while munitions response operations are occurring is limited to essential personnel and authorized visitors. The UXOSO is responsible for conducting an operational risk management assessment in accordance with OPNAVINST 3500.39C prior to initiating response actions involving MEC. The UXOSO will determine the maximum number of persons (essential personnel and authorized visitors) that can be in the EZ at one time. If the UXOSO determines that access to the EZ is safe for visitors, he will determine the ratio of UXO-qualified escorts to visitors based on this site-specific operational risk analysis. Every effort will be made to accommodate the needs of authorized visitors. Visitor access to the site will require the concurrence of the responsible project manager, and will be based upon the operational risk analysis of the scheduled MEC operations and availability of escorts, as well as a demonstrated visitor need and subsequent completion of visitor safety briefings.

At a minimum, visitors must submit their request to the responsible project manager and UXOSO prior to the proposed date of the site visit. The request for authorization will include: (1) names of the individual requesting access, the identification of emergency contacts for these individuals, purpose of visit; (2) task(s) to be performed; and (3) rationale to support EZ access. Prior to entry, all authorized visitors will receive a site-specific safety briefing describing the specific hazards and safety procedures to be followed within the EZ for operations underway that work day. Each authorized visitor must acknowledge receipt of this briefing in writing.

Authorized visitors to the EZ must be escorted at all times by a UXO-qualified person assigned to the project. Any authorized visitor who violates the established safety procedures will be immediately escorted out of the EZ and/or site for their own protection and to protect essential personnel working at the site.

6.3 MEC AND MPPEH HAZARD CLASSIFICATION, STORAGE, AND TRANSPORTATION

All recovered MEC and MPPEH items will be managed as Class/Division 1.1 and Storage Compatibility Group "L". MEC and material documented as hazardous that are determined by the SUXOS and UXOSO to be safe to move will be transported on dredge pond levee roads to Building A180 where they will be stored pending thermal treatment at Disposal Range # 2. Site approvals for the Building A180 and disposal range are included in Appendices E and F, respectively.

6.4 MEC AND MPPEH DISPOSITION PROCESSES

6.4.1 Munitions and Explosives of Concern Disposition

Recovered MEC will be thermally treated (detonated) at Disposal Range # 2, shown on Figure C-3. The range was site-approved for the disposal of recovered MEC in 1994 (Naval Ordnance Center, 1994), with an established 1,250-foot EZ that is controlled by the Navy and is restricted by fencing and gates. The Naval Ordnance Center letter is included in Appendix E. Since an established demolition area exists, no in-grid consolidated shots will be required. Treatment of MEC items with MFDs that exceed the established range EZ of 1,250 feet will utilize sand cover, as discussed in Section 6 of DDESB Technical Paper 16 (DDESB, 2009), to reduce the size of the required EZ to bring it within range limits.

6.4.2 Material Potentially Presenting an Explosive Hazard Disposition

MPPEH will be managed in accordance with OP 5, paragraph 13-15. MPPEH that has been assessed and determined to be material documented as safe will be segregated and placed into a locked container for storage, under the control of the SUXOS, pending transfer to a qualified munitions scrap recycling contractor for demilitarization and disposal. Material documented as

safe transfer certification documents will be signed by two qualified contractor UXO Technicians specifically authorized in writing by the Navy. Material documented as hazardous will be thermally treated as described in Section 6.4.1.

6.5 EXPLOSIVE SOIL

Not applicable (there are no known explosive soil present in the MRS).

6.6 CONTAMINATED BUILDINGS

Not applicable (there are no contaminated buildings located in the MRS).

6.7 OPERATIONAL RISK MANAGEMENT

Table 6-4 presents a hazard analysis matrix describing each of the potentially hazardous tasks to be performed, with the corresponding hazard mitigation measures to be implemented.

Table 6-4
Hazard Analysis Matrix for the PWA Vicinity

Process Step	Hazard	Triggering Event	Initial Risk Index	Hazard Mitigation	Final Risk Index
1	Radiological/ DGM surveys	MEC reacts to impact or movement during Radiological/DGM surveys	C/II/3	Initial surface survey to remove any exposed MEC	D/II/4
2	Manual anomaly investigation	MEC reacts to impact or movement during excavation of anomalies	C/II/3	Initial mechanized excavation beside anomaly; final excavation using hand tools	D/IV/5
3	Mechanized trenching	MEC reacts to impact or movement during mechanized soil excavation	C/II/3	Preliminary survey of trench prior to excavation of each soil lift to remove any larger discrete items using hand tools	C/III/4
4	MEC treatment by open detonation	MEC or donor charges react to impact, heat, friction, or electro-static discharge	C/II/3	All demo personnel trained; 1,250 EZ established, demo personnel wearing cotton clothing; demo ops suspended during potential electrical storms	D/II/4

6.8 CONTINGENCIES

Based on previous work in the PWA, no contingency actions are anticipated.

7 QUALITY CONTROL/QUALITY ASSURANCE

7.1 QUALITY CONTROL IMPLEMENTATION

QC requirements applicable to the trench excavation and associated instrument screening of excavated soil relate primarily to the effectiveness of the screening process in locating and removing MEC. Metallic "seed" items representative of the anticipated MEC items (20-mm, 1.1-inch, and 40-mm projectiles) will be placed into soil prior to excavation to demonstrate the effectiveness of the screening process in detecting all MEC items. QC inspections of a portion of soil that has been screened will also assist in validating the screening process. Identification of MEC or seed items in screened soil will result in correction of the root cause and rescreening of the soil.

Proper control of recovered MPPEH and non-munitions scrap will be maintained through use of DD 1348 (Transfer-of-Custody) forms signed by two authorized contractor UXO Technicians. The primary concern is to prevent the inadvertent release of MEC or MPPEH to an unauthorized recipient.

7.2 QUALITY ASSURANCE IMPLEMENTATION

The Navy will contract an independent third party to implement a quality assessment program consistent with the QC actions completed at the PWA site. The Navy's quality assessment program will include oversight of field operations, review of the contractor's QC program including field equipment checks and blind seeding program audits of QC and project records, audits for work plan and Explosion Safety Submission implementation, and oversight of MEC handling procedures and records.

8 TECHNICAL SUPPORT

8.1 EXPLOSIVE ORDNANCE DISPOSAL

In the event that a munitions item is encountered that cannot safely be handled, explosive ordnance disposal assistance from the 60th Civil Engineer Squadron based at nearby Travis Air Force Base will be requested. Donor explosives are not stored onsite and are not available on short notice to support a blow-in-place operation.

8.2 UNEXPLODED ORDNANCE CONTRACTOR

The qualifications of all UXO Technicians performing MEC-related functions will meet or exceed the requirements of DDESB TP18 for their respective positions. All employees working at the PWA Vicinity will have completed the 40-hour hazardous waste operations and emergency response training mandated by the Occupational Safety and Health Administration, including annual refresher training. Those holding the SUXOS position will also have received hazardous waste operations and emergency response supervisory training, and may not also serve as the UXOQCS or UXOSO. Persons holding the UXOQCS and UXOSO positions will also have received specialized QC and safety training. Documentation showing that employees have been trained, found qualified, and are certified to perform their assigned tasks will be available for review.

8.3 PHYSICAL SECURITY

The MRS is located in a wetland area within Navy-owned property not readily accessible to the public. The site is secured by a combination of natural barriers (wetlands) and gates will be provided on the only access roads to the site as shown on Figure C-2. Access to the MRS excavation site will be strictly controlled during operation.

Donor explosives will not be stored onsite; explosives for treatment operations will be delivered daily by a local supplier. The MEC storage facility is an existing site-approved magazine structure located in a restricted area and protected by three separate layers of fencing/gates. The MEC treatment facility is also located in a remote area of Mare Island surrounded by

wetlands and former dredge spoils ponds adjacent to Carquinez Strait and San Pablo Bay. The MEC storage and treatment facilities are shown on Figure C-3.

9 ENVIRONMENTAL, ECOLOGICAL, CULTURAL, AND/OR OTHER CONSIDERATIONS

9.1 REGULATORY STATUTE, PHASE, AND OVERSIGHT

Investigation of the PWA Vicinity is being performed as part of a RI, under the Comprehensive Environmental and Response, Compensation, and Liability Act process. The California Environmental Protection Agency Department of Toxic Substances Control is the lead regulatory agency for the investigation.

9.2 ENVIRONMENTAL, ECOLOGICAL, CULTURAL, AND/OR OTHER CONSIDERATIONS

The MRS consists of both upland areas and non-tidal wetlands presumed to be suitable habitat for the endangered salt marsh harvest mouse. A biological opinion obtained through a formal Endangered Species Act consultation with the U.S. Fish and Wildlife Service was used to address planned PWA site activities, and existing mitigation measures will be utilized for the PWA Vicinity to avoid impacts to the salt marsh harvest mouse.

In addition to MEC hazards, the site is known to contain low-level radiological items. The trench excavation process will proceed in 1-foot intervals with individual scan surveys using radiation detectors before each lift to locate and remove radiological items prior to spreading of the excavated soil to facilitate the location and removal of MEC.

9.3 NON-EXPLOSIVE SOIL

Based on the very few small, discrete, and largely intact MEC items recovered at the adjacent PWA site, soils contaminated with explosives at concentrations that do not present an explosive hazard are not expected to be encountered at the MRS. However, sampling of soil for munitions constituents will also be conducted as part of the RI.

10 RESIDUAL RISK MANAGEMENT

10.1 LAND USE CONTROLS

Not applicable (remedial investigation action).

10.2 LONG-TERM MANAGEMENT

Not applicable (remedial investigation action).

11 SAFETY EDUCATION PROGRAM

11.1 SAFETY EDUCATION PROGRAM

The site is currently restricted and is under the control of the Navy. Dependent on results of the RI, a safety education program may not be warranted. However, if determined appropriate based on the RI, a safety education program will be implemented to ensure that all persons who may enter the site in the future are aware of the potential hazards associated with possible remaining munitions. The education program would place emphasis on potential future passive use by visitors. Informational signage to educate the public on potential munitions hazards, and to instruct them on the steps to follow should they encounter a suspected munitions item, would also be provided as part of the land use controls for the site.

12 STAKEHOLDER INVOLVEMENT

12.1 STAKEHOLDER INVOLVEMENT

Not applicable (remedial investigation action).

13 REFERENCES

Department of Defense (DOD). 2009. *DOD 6055.09-STD, DOD Ammunition and Explosives Safety Standards.* Change 1. March 24.

Department of Defense Explosives Safety Board. 2009. *Technical Paper 16, Methodologies for Calculating Primary Fragment Characteristics, (TP 16).* Revision 3, April 1.

Naval Ordnance Center. 1994. "Site Approval for Ordnance Disposal Range # 2 at Mare Island Naval Shipyard, Vallejo, California." Commander, Naval Ordnance Center Letter Serial N71/5857. November 4.

Naval Ordnance Safety and Security Activity (NOSSA). 2005. "Hazards of Electromagnetic Radiation to Ordnance, Certification for Use of Various Portable Survey Systems at Mare Island Naval Shipyard, Vallejo, California." NOSSA Letter Serial N482/1243 of August 23.

Supervisor of Shipbuilding, Conversion, & Repair Portsmouth Virginia, Environmental Detachment, Vallejo. 1997. *Unexploded Ordnance Site Investigation of Mare Island Naval Shipyard, Vallejo, California, Final Summary Report.*

Weston Solutions, Inc. 2011. *Munitions and Explosives of Concern Time-Critical Removal Action After Action Report Transfer Parcel XVI Paint Waste Area, Former Mare Island Naval Shipyard, Vallejo, California*. January.

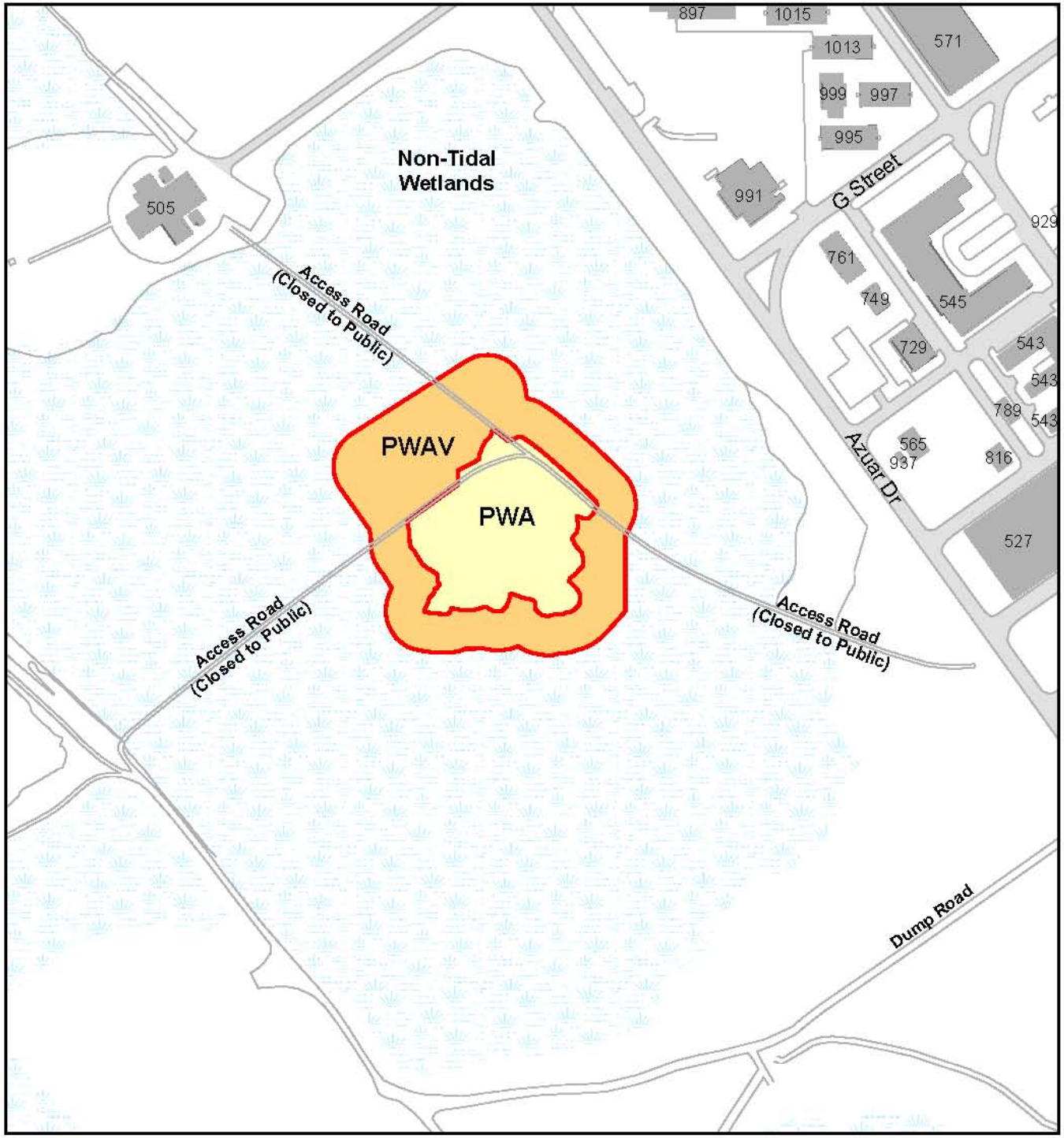
FIGURES

BRAC Program Management Office West
San Diego, California

FIGURE 1
MARE ISLAND LOCATION MAP

Explosives Safety Submission Transfer Parcel XVI
Paint Waste Area Vicinity
Mare Island, Vallejo, California

WESTON SOLUTIONS



2007-2010 TCRA Paint Waste Area SU-1 through SU-8

Paint Waste Area Vicinity (PWAV)

Non-Tidal Wetlands

N

0 100 200 400 600 800 Feet

BRAC Program Management Office West
San Diego, California

FIGURE 2
SITE VICINITY MAP

Explosives Safety Submission Transfer Parcel XVI,
Paint Waste Area Vicinity
Former Mare Island Naval Shipyard, Vallejo, California

WESTON SOLUTIONS

APPENDIX A
SIGNATURE PAGE

Signature Page

NAVFAC Project		Base Realignment and Closure Program Management Office West Project	
Project name:		Project name: ***Remedial Investigation Transfer Parcel XVI Paint Waste Area Vicinity, Former Mare Island Naval Shipyard, Vallejo, California***	
Explosives Safety Officer or UXO Contractor Safety Officer		**Explosives Safety Officer or UXO Contractor Safety Officer**	
Signature		Signature Larry Maggini	April 4, 2011
Printed name	Date	Printed name	Date
Public Works Office Planning Department		**Program Management Office Planning Department**	
Signature		Signature Patricia McFadden	4/11/11
Printed name	Date	Printed name	Date
Remedial Project Manager		**Remedial Project Manager**	
Signature		Signature Janet Lear	4/13/11
Printed name	Date	Printed name	Date

APPENDIX B
FRAGMENTATION DATA SOURCES

1.1-INCH PROJECTILES

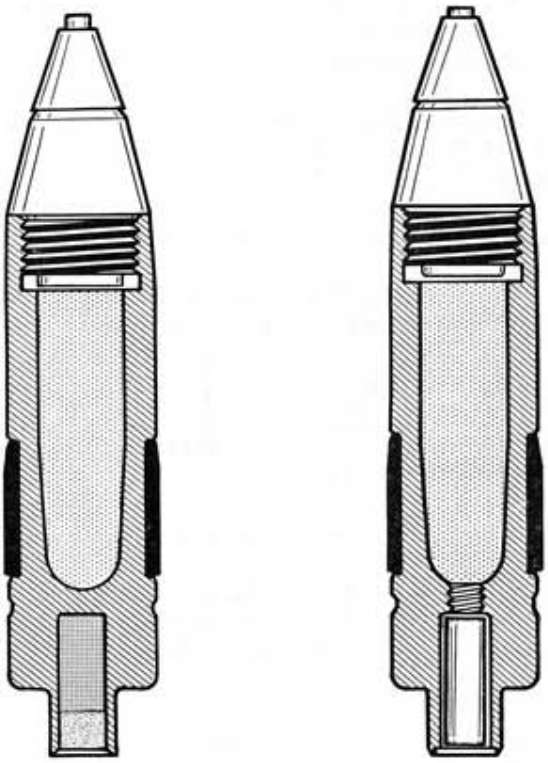


Figure 77. 1.1-inch Projectiles Mk 1 (right) and Mk 2 (left)

1.1-inch A.A. (a) Mk 1 Mods 0—28, (b) Mk S.D.1

Over-all length, inches
- With nose fuze.....5.8
- Without nose fuze.....4.1

Diameter of base, inches.....1.085
Distance base to band, inch.....0.87
Width of band, inch.....1.0
Diameter at bourrelet, inches.....1.095
Filling.....Explosive D
Weight of filling, pound.....(a) 0.037
(b) 0.034
Weight of loaded projectile, pound.....0.917
Charge/weight ratio 4.0%
Cartridge Case.....Mk 1
Primer.....Mk 19 and Mods 1, 2, and 3
Tracer.....Divided into two increments and pressed into the recess by hydraulic pressure, the tracer is ignited by the propellant charge from the cartridge case.

Fuzes
- Nose.....Modified Mk 12 Mods 2 and 3 (P.D.F.)
  Mk 34 and all Mods (P.D.F.)

The 1.1-inch A.A. gun is not being further developed in the Navy.

The 1.1-inch Mk 1 is not self-destroying; the 1.1-inch Mk S.D. 1 is self-destroying. This is the primary difference between the two projectiles.

The Mk S.D. 1 consists of a Mk 1 projectile body modified for self-destruction by drilling through the wall between the tracer and H.E. cavities.

The Mk 1 projectile may also be issued B.L. & T. for target practice or de-icing.

The 28 Mods are to distinguish among contractors.

1.1-inch A.A. Mk 2 Mods 0 and 1

Over-all length, inches
- With nose fuze.....5.7
- Without nose fuze.....4.1

Diameter of base, inches.....1.085
Distance base to band, inch.....0.87
Width of band, inch.....1.0
Diameter at bourrelet, inches.....1.095
Filling.....Explosive D
Weight of filling, pound.....0.034
Weight of loaded projectile, pound....0.917
Charge/weight ratio 3.7%
Cartridge Case.....Mk 1
Primer.....Mk 19 and Mods 1, 2, and 3

The shape of the 3-inch A.A. Projectile Mk 26 is, for all general purposes, the same as that shown for the Mk 23.

3-inch A.A. Mk 27 Mods 1, 2, and 3

Guns used in.....3"/50
Over-all length, inches
With nose fuze.....12.13
Without nose fuze.....8.11
Diameter of base, inches.....2.98
Distance base to band, inches.....1.35
Width of band, inches.....1.00
Diameter at bourrelet, inches.....2.98
Filling .....Cast TNT
Weight of filling, pounds.....0.74
Weight of loaded projectile, pounds....13.00
Charge/weight ratio 5.67%
Cartridge case .....Mk 7 all Mods, Mk 9 Mod 0
Primer .....Mk 14, Mk 14 Mod 1
Tracer .....Mk 4
Fuzes
Nose Mk 22 and Mods 1 through 5 (M.T.F.)
Mk 30, Mods 1, 2, 3 (P.D.F.)
Mk 51 all Mods (M.T.F.)
Auxiliary Detonating Fuze
Mk 17 and Mods
Mk 46
Mk 54 Mod 0

This projectile becomes 3-inch H.C. when the Fuze Mk 30 is substituted for the Mk 22.

The Auxiliary Detonating Fuze Mk 54 is replacing the Mk 17 and the Mk 46 in all assemblies.

This projectile's shape is almost exactly similar to that of the Mk 23.

3-inch A.A. Mk 31 Mod 1

Guns used in.....3"/50
Over-all length, inches
With nose fuze.....12.22
Without nose fuze.....8.50
Diameter of base, inches.....2.98
Distance base to band, inches.....1.35
Width of band, inches.....1.0
Diameter at bourrelet, inches.....2.985
Filling .....Cast TNT, Comp. A
Weight of filling, pounds.....0.54
Weight of loaded projectile, pounds....12.90
Charge/weight ratio 4.1%
Cartride Case .....Mk 7, Mk 9
Primer .....Mk 14, Mk 14 Mod 1
Fuzes
Nose Mk 45 Mod 12 (V.T.F.)
Mk 58 and all Mods (V.T.F.)
Auxiliary Detonating Fuze
Mk 44 Mods 0 and 1

This projectile is specially cavitized to receive V.T. fuzes and their auxiliary detonating fuzes. No other fuzes may be assembled. Since V.T. fuzing is employed, no tracer is assembled; instead, the base is solid, and a special sheet-steel base cover plate is welded on, 0.031 inch thick and 2.50 inches in diameter.

This projectile replaces the original Mk 31 Mod 0, which has been recalled from service use. The Mod 0 was cavitized to receive the V.T. Fuse Mk 45 Mod 11, which differed from the Mod 12 by having a longer stem and has been declared unserviceable.

The V.T. Fuze Mk 58 is currently replacing the Mk 45 Mod 12 in all assemblies.

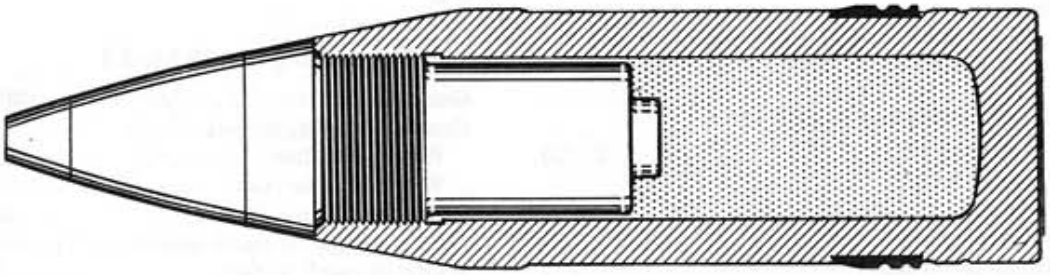


Figure 22. 3–inch A.A. Mk 31 Mod 1

Fragmentation Data Review Form

Database Revision Date 1/31/2011

Category:	Surface-Launched HE Rounds	DODIC:	B562
Munition:	40 mm Mk II AA		
Case Material:	Steel, Mild	Date Record Created:	9/21/2004
		Record Created By:	MC
Fragmentation Method:	Naturally Fragmenting	Last Date Record Updated:	1/11/2010
Secondary Database Category:	Projectile	Individual Last Updated Record:	SDH
Munition Case Classification:	Robust	Date Record Retired:	

Munition Information and Fragmentation Characteristics

Explosive Type:	TNT
Explosive Weight (lb):	0.187
Diameter (in):	1.5750
Cylindrical Case Weight (lb):	0.98000
Maximum Fragment Weight (Intentional) (lb):	0.0331
Design Fragment Weight (95%) (Unintentional) (lb):	0.0137
Critical Fragment Velocity (fps):	3607

Theoretical Calculated Fragment Distances

HFD [Hazardous Fragment Distance: distance to no more than 1 hazardous fragment per 600 square feet] (ft):	132
MFD-H [Maximum Fragment Distance, Horizontal] (ft):	1095
MFD-V [Maximum Fragment Distance, Vertical] (ft):	847

Minimum Thickness to Prevent Perforation

	Intentional	Unintentional
4000 psi Concrete (Prevent Spall):	3.61	2.10
Mild Steel:	0.70	0.40
Hard Steel:	0.57	0.33
Aluminum:	1.44	0.86
LEXAN:	4.77	3.39
Plexi-glass:	3.23	2.06
Bullet Resist Glass:	2.65	1.62

Overpressure Distances

TNT Equivalent (Pressure):	1
TNT Equivalent Weight - Pressure (lbs):	0.187
Unbarricaded Intraline Distance (3.5 psi), K18 Distance:	10
Public Traffic Route Distance (2.3 psi); K24 Distance:	14
Inhabited Building Distance (1.2 psi), K40 Distance:	23
Intentional MSD (0.0655 psi), K328 Distance:	188

Water Containment System and Minimum Separation Distance:

TNT Equivalent (Impulse):	1
TNT Equivalent Weight - Impulse (lbs):	0.187
Kinetic Energy 106 (lb-ft²/s²):	0.2151
Water Containment System:	5 gal carboys/ inflatable pool
Minimum Separation Distance (ft):	200/200

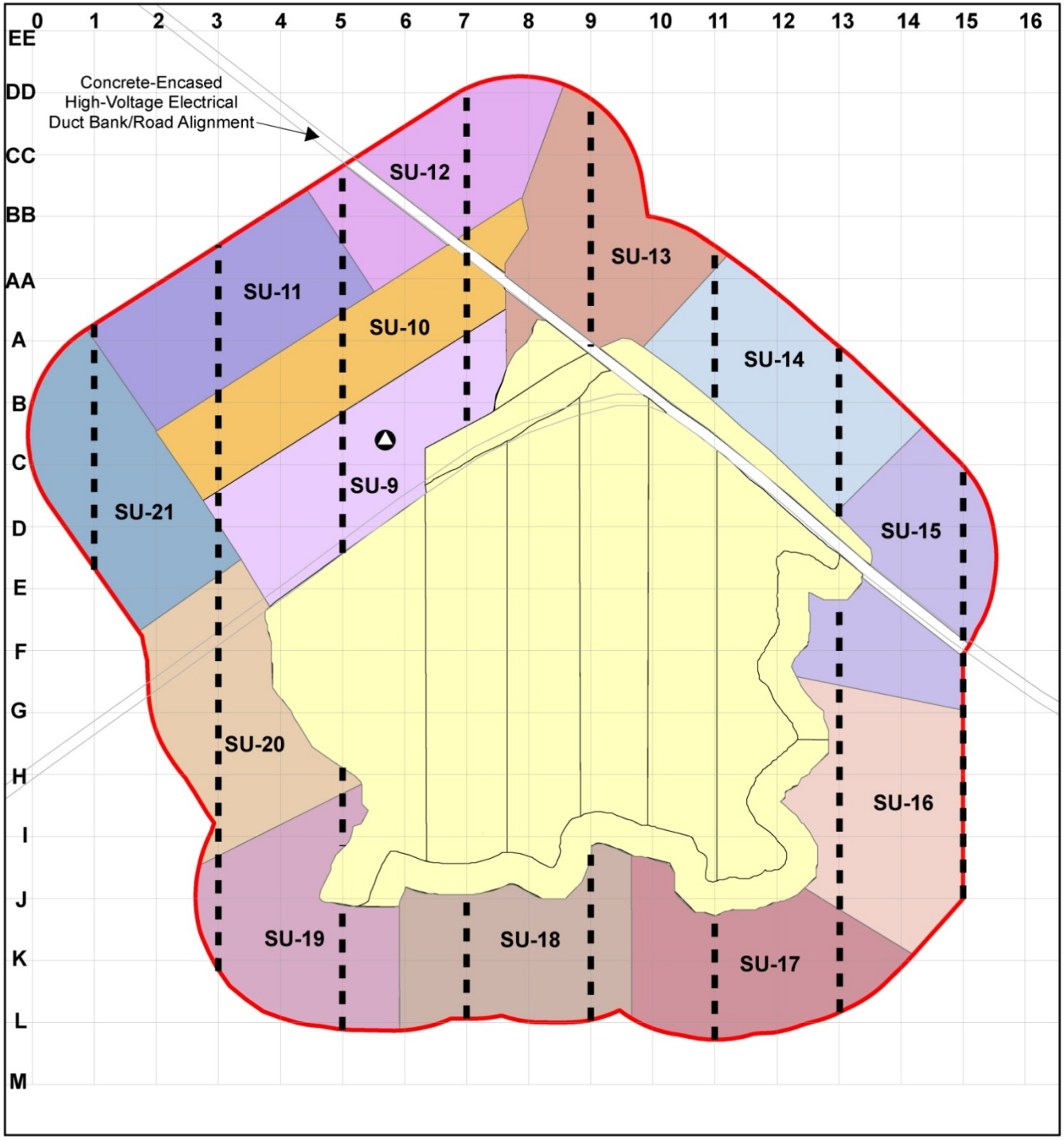
Required Sandbag Thickness

TNT Equivalent (Impulse):	1
TNT Equivalent Weight - Impulse (lbs):	0.187
Kinetic Energy 10^6 (lb-ft²/s²):	0.2151
Required Wall & Roof Sandbag Thickness (in)	12
Expected Maximum Sandbag Throw Distance (ft):	25
Minimum Separation Distance (ft):	200

Item Notes

Distribution authorized to the Department of Defense and U.S. DoD contractors only for Administrative-Operational Use (17 October 2002). Other requests shall be referred to the Chairman, Department of Defense Explosives Safety Board, Room 856C, Hoffman Building I, 2461 Eisenhower Avenue, Alexandria, VA 22331-0600.

APPENDIX C
EXPLOSIVES SAFETY QUANTITY-DISTANCE MAPS



LEGEND

- 2007-2010 Paint Waste Area TCRA Excavation Area
- Paint Waste Area Vicinity (PWAV) Boundary
- Survey Unit Boundary
- Remedial Investigation Trench
- 20-mm projectile

N

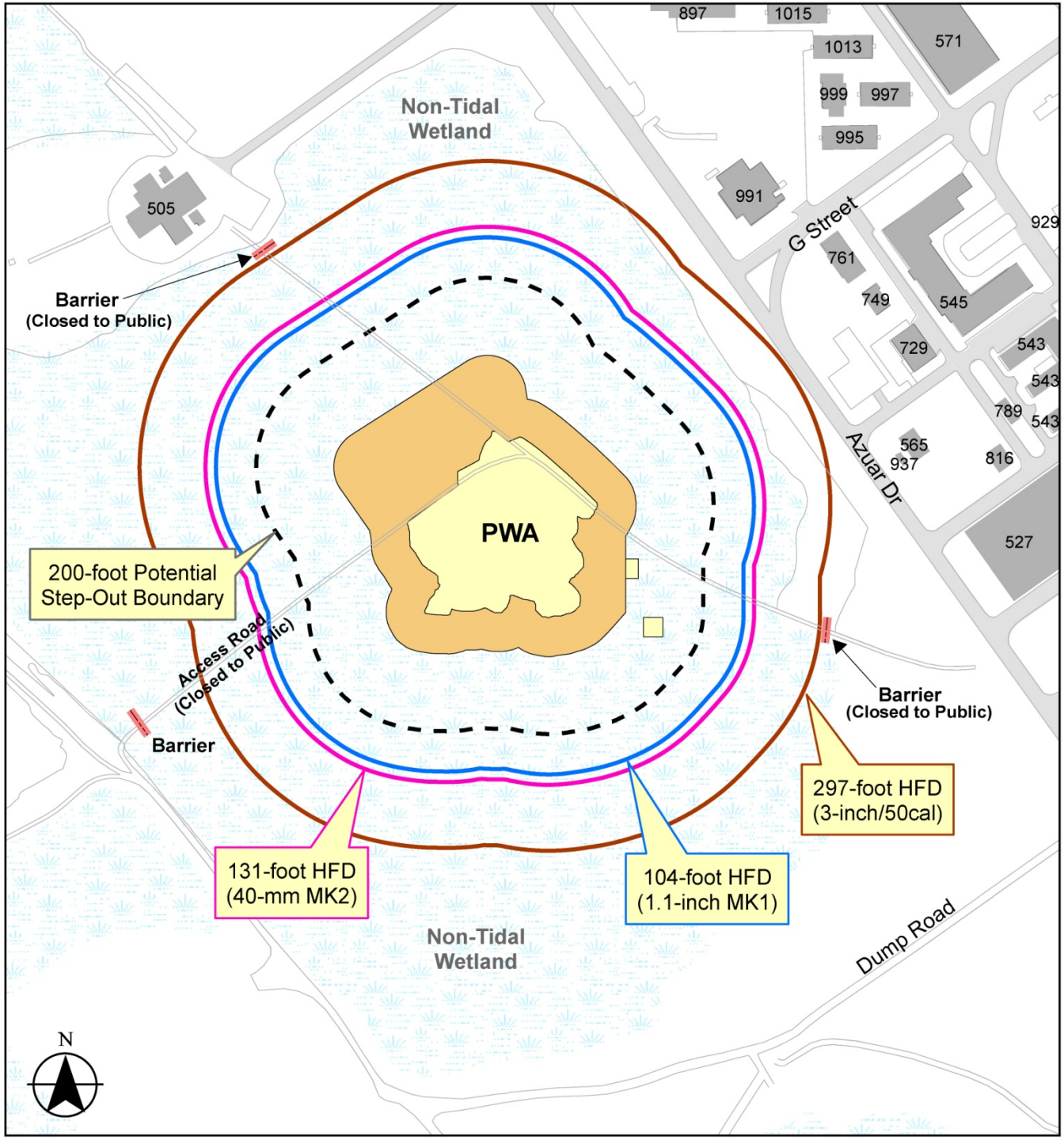
0 25 50 100 150 200 Feet

BRAC Program Management Office West
San Diego, California

FIGURE C-1
MUNITIONS RESPONSE SITE
LOCATION MAP

Explosives Safety Submission Transfer Parcel XVI,
Paint Waste Area Vicinity
Mare Island, Vallejo, California

WESTON SOLUTIONS



2009 Paint Waste Area Excavation, SU-1 through SU-8

Paint Waste Area Vicinity (PWAV), SU-9 through SU-21

Potential PWA Vicinity Step-Out Boundary

Munitions and Explosives of Concern Exclusion Zone - 104 Feet (1.1-inch MK1)

MEC Exclusion Zone - 131 Feet (40-mm MK2)

MEC Exclusion Zone - 297 Feet (3-inch/50cal)

Non-Tidal Wetland

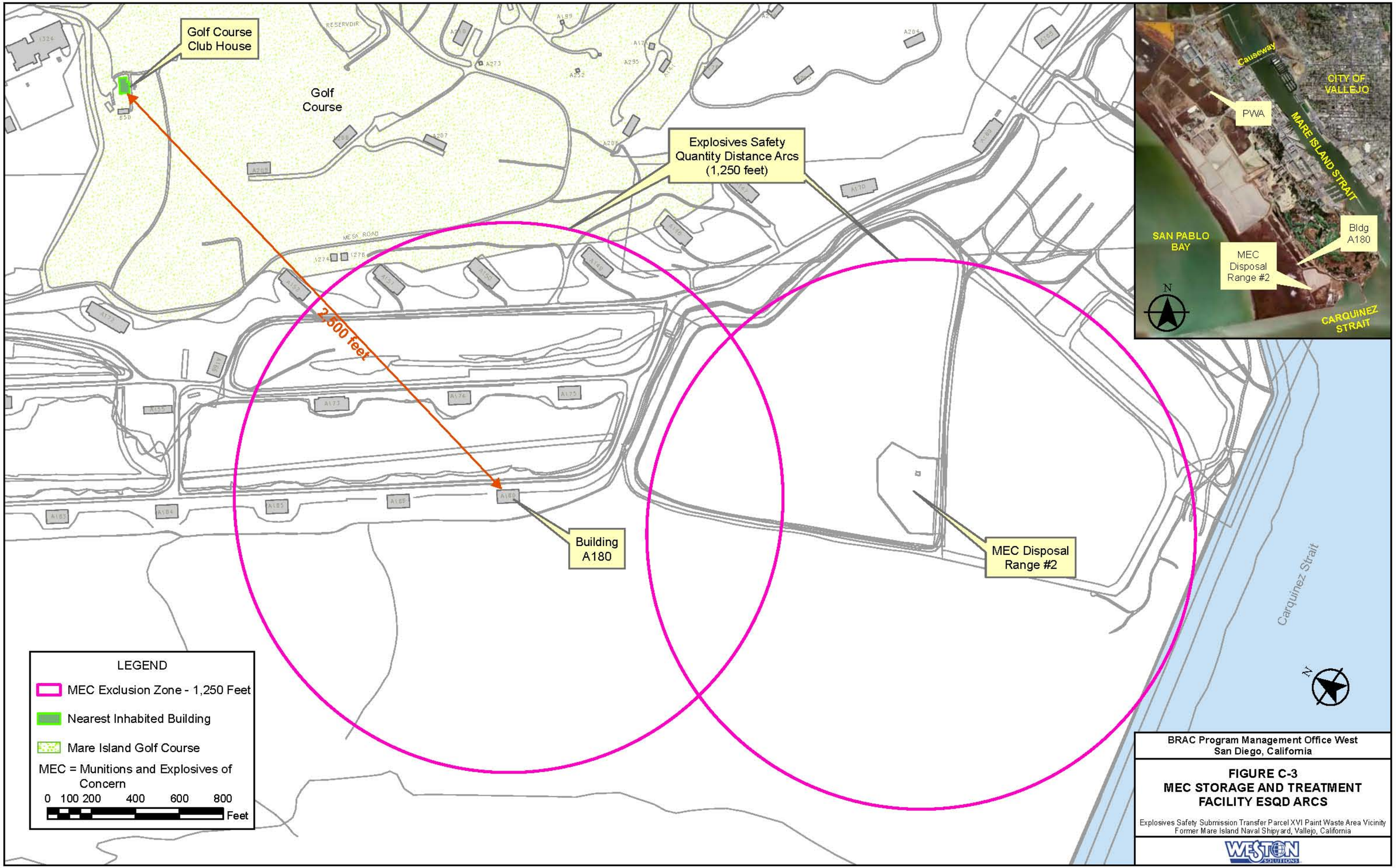
0 100 200 400 600 800 Feet

BRAC Program Management Office West
San Diego, California

FIGURE C-2
MUNITIONS RESPONSE SITE EXCLUSION ZONE

Explosives Safety Submission Transfer Parcel XVI,
Paint Waste Area Vicinity,
Mare Island, Vallejo, California

WESTON SOLUTIONS



BRAC Program Management Office West
San Diego, California

FIGURE C-3
MEC STORAGE AND TREATMENT FACILITY ESQD ARCS

Explosives Safety Submission Transfer Parcel XVI Paint Waste Area Vicinity
Former Mare Island Naval Shipyard, Vallejo, California

WESTON SOLUTIONS

APPENDIX D
CORRESPONDENCE SUPPORTING ADEQUACY OF FRAGMENT PROTECTION SHIELDING

Maggini, Larry

From: Crull, Michelle M HNC [Michelle.M.Crull@hnd01.usace.army.mil]
Sent: Thursday, January 13, 2005 8:38 AM
To: Maggini, Larry; Crull, Michelle M HNC
Cc: murraydl@ih.navy.mil; Gemar, Dwight
Subject: RE: Blast Shielding Confirmation

Larry,
Yes, the numbers below are correct. These are based on the THOR equations and analysis in accordance with DDESB TP 16. Plexiglas always results in a lower required thickness than LEXAN. Don't ask me to explain that because I can't but the THOR equations are based on tests done on all of these various materials.
Michelle

From: Maggini, Larry [mailto:L.Maggini@WestonSolutions.com]
Sent: Monday, January 10, 2005 2:56 PM
To: Crull, Michelle M
Cc: murraydl@ih.navy.mil; Dwight Gemar (Gemar, Dwight)
Subject: Blast Shielding Confirmation

Michelle,

Doug Murray at NOSSA suggested that I contact you. Weston has been contracted by the Navy to complete a Mare Island MEC removal project previously awarded to TetraTech FW (Marine Corps Firing Range and 4S Dredge Outfall). The approved ESS for the project contained details of required equipment shielding materials and thicknesses (table below) that were provided by Huntsville. The MPM is a 3 inch-50 cal anti-aircraft round (0.74 lbs Comp A/TNT filler). I'd like confirmation that the table is correct (the Plexiglas and Lexan thickness don't look right in our experience). Thank you.

Construction Material	Required Thickness	Comments
Plexiglas (cast)	2.96"	Most recommended. May be layered. Available COTS.
Lexan®	4.45"	Single Pane
Bullet-resistant Glass	2.46"	Least recommended

Larry Maggini

Weston Solutions, Inc.
Unexploded Ordnance Program
Mare Island Site Office, 750 Dump Road
P.O. Box 2135
Vallejo, CA 94592-0135
(707) 562-3310
Fax (707) 562-3266
L.Maggini@WestonSolutions.com

APPENDIX E
SITE APPROVAL FOR BUILDING A180

DEPARTMENT OF THE NAVY
NAVAL ORDNANCE CENTER
FARRAGUT HALL BLDG D-323
23 STRAUSS AVENUE
INDIAN HEAD MD 20640-5555

8020
OPR N711
Ser N71/5590
29 Jan 97

FIRST ENDORSEMENT on SUPSHIP Portsmouth ltr 8020 Ser 120/272 of 18 Dec 96

From: Commander, Naval Ordnance Center
To: Supervisor of Shipbuilding, Conversion, and Repair, USN, Portsmouth, Director, SSPORTS Environmental Detachment, Vallejo, CA

Subj: SITE APPROVAL CHANGE REQUEST FOR MAGAZINE A-180, MARE ISLAND, VALLEJO, CALIFORNIA

1. Forwarded for continuing action.

2. This project, to reduce the explosives limit of torpedo Magazine A-180 to allow storage of C/D 1.1 explosives in support of removal of buried ordnance, has been reviewed with respect to and meets the explosives safety criteria of reference (a).

3. The new limit for Magazine A-180 is 1,000 pounds net explosives weight (NEW) C/D 1.1 material for dud-fired/unserviceable ammunition.

Richard T. Adams
RICHARD T. ADAMS
By direction

Copy to:
NAVORDCEN ESSOPAC (Code 004)
ENGFLDACT West (Code 20)

APPENDIX F
SITE APPROVAL FOR DISPOSAL RANGE # 2

REQUEST FOR PROJECT SITE APPROVAL/EXPLOSIVES SAFETY CERTIFICATION NAVFAC 11010/31 (REV. 4-87)

PART I

INSTRUCTIONS ON REVERSE AND NAVFACINST 11010.44E

SECTION A

1. To: COMMANDER, WESTERN DIVISION, NAVAL FACILITIES ENGINEERING COMMAND

2. From: COMMANDER, MARE ISLAND NAVAL SHIPYARD

3. Program Year:	4. Cost ($000):	5. Type Funding:	6. Activity UIC:	7. Date:
95	N/A	N/A	N00221	9-13-94

8. Category Code and Project Title: ORDNANCE DISPOSAL RANGE 148-20

9. Project Number: N/A

10. Type of Project:
- ☐ New Construction
- ☐ Change Use
- ☐ Addition to Existing Facility
- ☐ Major Modification to Existing Facility
- ☐ Relocation of Structure
- ☐ Maintenance and/or Repairs
- ☐ Repair By Replacement
- ☒ Other

11. Type of Request:
- ☐ Site Approval
- ☒ Explosives Safety Certification
- ☐ Resubmittal

12. Project Description:
Convert existing approved demolition training range No. 2 (Ordnance demolition) to an ordnance disposal range with a maximum NEW of 25 pounds. Existing ESQD Arc will not change.

13. 6 Sets of Project Maps Attached

14. 5 Sets Part II Division(s) A Attached

SECTION B

1. Name/Code/Phone No. of Reviewer: June Packineau, Code 09FNP, DSN 494-3767

2. Date Received: 27 SEP 94

3. Evaluation:

4. EFD Action: (check appropriate box(es))
- ☐ Site Approved
- ☐ Site Disapproved
- ☐ Returned
- ☐ Additional Data
- ☐ Requires NAVFACHQ Approval
- ☒ Explosives Safety
- ☐ Airfield Safety
- ☐ Electromagnetic Radiation Safety

5. Date Approval/Forwarding: 9.30.94

6. Signature of Approving/Forwarding Official:

SECTION C

1. Name and Code of Reviewer:

2. Date Received:

3. Safety Review Requested: (check appropriate box(es))
☐ NAVSEA ☐ CNO ☐ DDESB ☐ SPAWAR ☐ NAVAIR ☐ OTHER

4. Date:

5. Date of Safety Certification: NAVSEA ____ CNO ____ DDESB ____ SPAWAR ____ NAVAIR ____ OTHER ____

SECTION D

1. Approvals:
- ☐ Site Approved
- ☐ Site Disapproved
- ☐ Deferred/Returned
- ☐ Explosives Safety Certification Approved
- ☐ Explosives Safety Certification DISAPPROVED
- ☐ Interim Construction Waiver Approved

2. Certification Identification:

3. Remarks:

4. Other Approvals Required:
- ☐ Airfield Safety Waiver Required
- ☐ Final Explosives Safety Review Required

5. Approving Official:

6. Date:

ENCL (1)

DEPARTMENT OF THE NAVY
ENGINEERING FIELD ACTIVITY, WEST
NAVAL FACILITIES ENGINEERING COMMAND
900 COMMODORE DRIVE
SAN BRUNO, CALIFORNIA 94066-2402

IN REPLY REFER TO:

11010
Ser 09F1JP/P1-212
OCT - 5 1994

From: Commanding Officer, Engineering Field Activity, West
To: Commander, Department of Defense Explosive Safety Board
Via: Commander, Naval Ordnance Center (N711)

Subj: SITE APPROVAL REQUEST TO INCREASE NET EXPLOSIVE WEIGHT FOR EXISTING ORDNANCE DISPOSAL RANGE NO. 2, NAVAL SHIPYARD, MARE ISLAND

Ref: (a) OPNAVINST 8020.8J
(b) NAVFACINST 11010.44E
(c) NAVSEA OP-5, Vol. 1 (Fifth Rev)

Encl: (1) NAVFAC Form 11010/31 (w/Part II, Div.A)
(2) Site Data Sketch dtd 27 Sep 94
(3) Station Map

1. In compliance with references (a), (b) and (c), enclosures (1) and (2) are forwarded to obtain site plan approval and final explosive safety review. Enclosure (3) is provided as additional information.

2. Site approval is requested to increase the Net Explosive Weight (NEW) of Disposal Range No. 2 from 5 pounds of Class 1.1 to 25 pounds of Class 1.1, 1.2 (except (18) frag material), 1.3, and 1.4 material. This is not a change in function nor does it increase or change the existing Explosive Safety Quantity Distance (ESQD) arc already approved for this range. The range will be used for the treatment, by open burning/open detonation, of recovered unexploded ordnance materials. The range is a Class D detonation site.

3. The existing site is compatible with related, planned, and existing facilities and land use. There is no cost associated with this project.

5. By copy of this letter, Naval Sea Support Center, Pacific is requested to comment directly to Naval Ordnance Command.

K. Y. PARSONS
By direction

Copy to:
NAVSEACENPAC (w/encls)
NAVSHIPYD Mare Island (Code 106.4) (w/encls (1) and (2))

C-861

DEPARTMENT OF THE NAVY
NAVAL ORDNANCE CENTER
FARRAGUT HALL BLDG D-323
23 STRAUSS AVENUE
INDIAN HEAD MD 20640-5555

8020
OPR N711
Ser N71/5857
4 Nov 94

FIRST ENDORSEMENT on EFA West ltr 11010 Ser 09F1JP/P1-212 of 5 Oct 94

From: Commander, Naval Ordnance Center
To: Commanding Officer, Engineering Field Activity West, Naval Facilities Engineering Command

Subj: SITE APPROVAL REQUEST TO INCREASE NET EXPLOSIVE WEIGHT FOR EXISTING ORDNANCE DISPOSAL RANGE NO. 2, NAVAL SHIPYARD, MARE ISLAND

1. Readdressed and returned for continuing action.

2. This project has been reviewed with respect to and meets the explosives safety criteria of reference (c). Accordingly, the project is granted both explosives safety site and final safety approvals. The following stipulations must be satisfied:

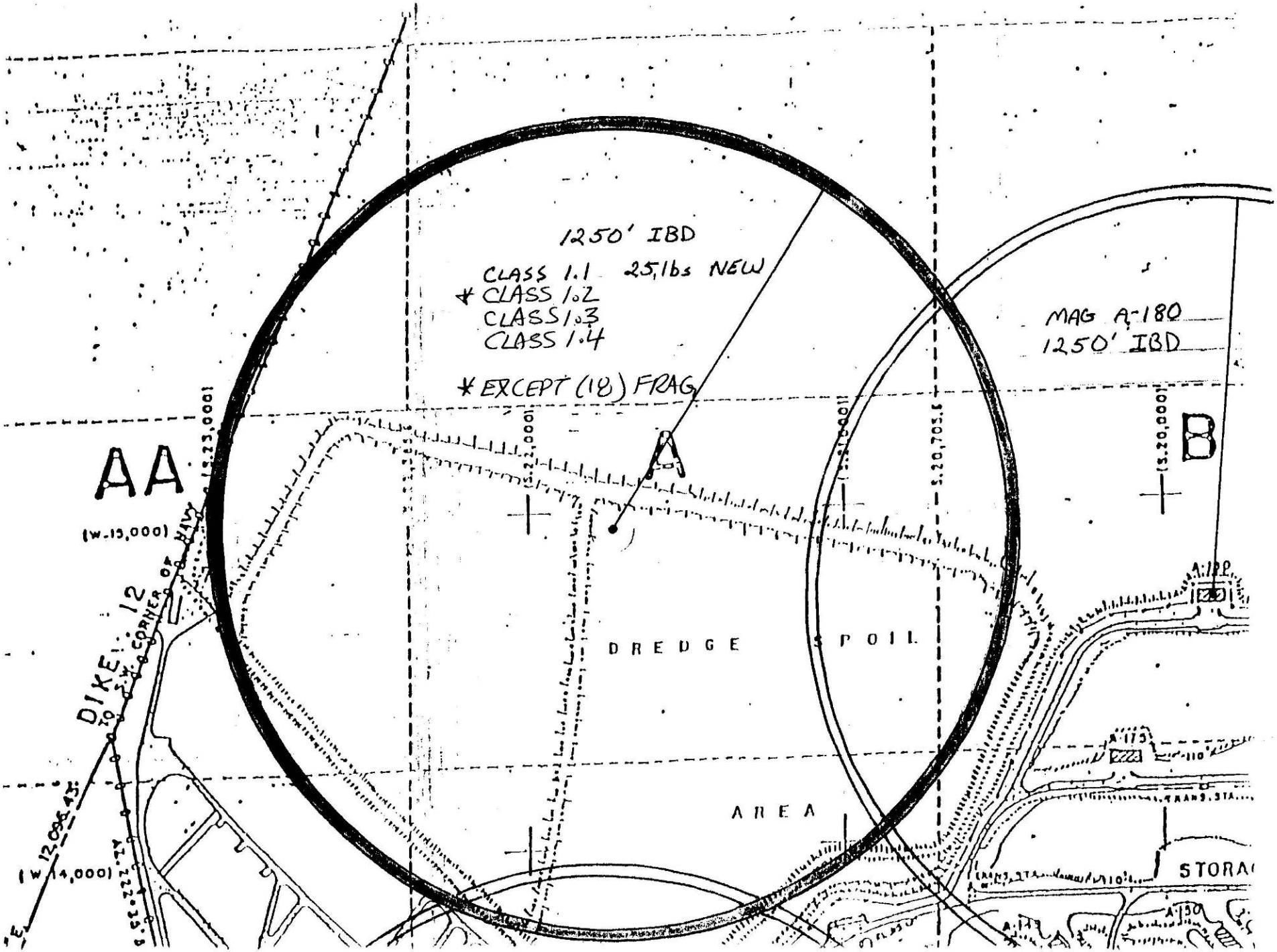
a. The revised explosive limit for Ordnance Disposal Range No. 2 is 25 pounds net explosive weight (NEW) of all classes/divisions (C/D) of explosives except C/D 1.2 (18), which may not be disposed of on the range.

b. All other provisions of existing approvals for this range remain in effect.

EDWARD W. KRATOVIL
By direction

Copy to:
NAVSEACENPAC (Code 950)
NAVSHIPYD Mare Island (Code 106.4)

C-861


1250' IBD
CLASS 1.1 25 lbs NEW
* CLASS 1.2
CLASS 1.3
CLASS 1.4
* EXCEPT (18) FRAG
MAG A-180
1250' IBD
AA
A
B
(S.23,000)
(S.22,000)
(S.20,705.6)
(S.20,000)
(W-15,000)
(W-14,000)
DIKE 12
TO S.W. CORNER OF NAVY
DREDGE SPOIL
AREA
STORA