

3.14 PUBLIC SAFETY

3.14.1 Introduction

3.14.1.1 Definition of Resource

Public health and safety issues include potential hazards inherent in flight operations, missile firings, operation of Navy vessels, and target operations. This resource also addresses issues of public proximity and access; effects of electromagnetic radiation (EMR) on the public; potential ordnance hazards; and potential fuel hazards. The safety policy of NAWCWPNS Point Mugu is to observe every reasonable precaution in the planning and execution of all operations which occur on the Sea Range to prevent injury to people and damage to property.

3.14.1.2 Regional Setting

The Point Mugu Sea Range is fundamentally a missile range, although other activities occur in addition to that basic mission. The primary priority when planning and conducting missile test and training activities is safety, both for military personnel and for the general public. The majority of tests are conducted in outer parts of the Sea Range, usually away from areas heavily used by commercial and recreational users (refer to Figures 3.0-19 and 3.0-20). NAWCWPNS implements advance NOTAMs and NOTMARs as well as range safety clearance prior to conducting any tests that might be hazardous to non-participants. In more than 50 years of Navy operations on the Sea Range, no safety incidents involving the general public have occurred.

3.14.1.3 Region of Influence

The region of influence (ROI) for public safety includes the Point Mugu Sea Range, NAS Point Mugu, and San Nicolas Island. San Miguel, Santa Rosa, and Santa Cruz islands are not addressed in this section because the alternatives analyzed in this EIS/OEIS (including the No Action Alternative) would not affect public safety at these locations.

3.14.2 Point Mugu Sea Range

3.14.2.1 Range Safety

The Sea Range safety policy, procedures, and guidance are covered in NAWCWPNS Instruction 5100.2 dated 9 July 1993. This document defines range safety requirements, criteria, the safety planning process, and operational procedures. Although the Commander of NAWCWPNS has the ultimate responsibility for range safety, the authority for execution of these safety programs is delegated to the Sea Range Safety Officer in the Range Safety Office. A more detailed description of safety procedures on the Sea Range is presented in [Section 3.0.2.1](#).

3.14.2.2 Public Access and Proximity

Public access and proximity to the Sea Range is a principal safety consideration since most of the Sea Range is in non-Territorial Waters and open to the public. The airspace over the NAS Point Mugu airfield, beach, and to 3 NM (5.6 km) offshore is a Restricted Area, and non-participating aircraft are precluded from entering this area. Another Restricted Area encompasses airspace over San Nicolas



Island to prevent access of unauthorized aircraft. These are the only areas of the Sea Range where NAWCWPNS has the authority to control access of individuals, aircraft, and ships.

NAWCWPNS Point Mugu has an extensive surveillance system to implement real-time safety clearance procedures prior to initiation of an operation on the range. This system includes the use of land-, sea-, and air-based radar in addition to aircraft surveillance of the range which is necessary to ensure that the public remains clear of designated operational areas where they could be subjected to hazardous conditions. The range uses specially modified P-3 aircraft, the NP-3D, that provides extended Sea Range surveillance. A review of past Range Safety Office records show that accidents involving the public on the Sea Range have never occurred.

When the Sea Range is used for military testing and training operations, the Navy notifies commercial, civilian, and other military aviation through a NOTAM which provides appropriate information to the FAA and its ATC agencies to route traffic around these Warning Areas and Restricted Areas when they are active. (Warning Areas are located over non-Territorial Waters of the U.S.; Restricted Areas are located over land or Territorial Waters.) Although a NOTAM does not preclude uncontrolled air traffic from entering a Warning Area even when the area is active, DoD Directive 4540.1, *Use of Airspace by U.S. Military Aircraft and Firings Over the High Seas*, provides guidance for operating within Warning Areas: non-participating aircraft are identified by radar, and contact with these aircraft is made by radio; if aircraft remain in a clearance area, even after being requested to leave, the Sea Range will delay, cancel, or move a test to a clear area.

Similar procedures exist for notification of the commercial shipping and recreational boating communities of potentially hazardous activities on the Sea Range. These notifications are made through NOTMAR and daily VHF-FM Marine Radio (Channel 16) broadcasts. The Sea Range has established procedures to ensure that non-participating surface vessels are not exposed to undue risk. The surveillance aircraft survey designated clearance areas to ensure that surface vessels are not present. Any vessels, if present, are warned that they are in an area of an impending hazardous activity and are requested to leave the area. Contact with vessels is made by marine band FM radio; however, loud speakers can be used if the boat is not radio-equipped. Since most of these areas are in Territorial Waters, the Navy requests that ships leave the clearance areas. If vessels remain in the clearance area, the Sea Range will delay, cancel, or move the test to a clear area. A test will not normally be initiated if a non-participating vessel is present in the clearance area.

3.14.2.3 Safety Procedures

Safety analyses and planning are integral parts of operations prior to the execution of any event on the Sea Range. The safety documentation begins with the preparation of either a Range Safety Approval or a Range Safety Operational Plan (RSOP). These are similar planning documents, except that an RSOP applies to missiles requiring a flight termination system (FTS) controlled by a Missile Flight Safety Officer (MFSO). At a minimum these documents are required to include:

1. the location of the launch site and conditions under which the launch will be made;
2. a description of the missile air safety hazard pattern, ground safety hazard pattern, surface safety hazard pattern, and impact areas;
3. a description of regions to be surveyed and cleared of aircraft and surface vessels;
4. a description of the ground safety hazard pattern which must be cleared of personnel;
5. a list of all essential personnel approved to be in the safety hazard pattern;
6. a list of any waivers of safety criteria, special instructions, or stipulations; and
7. a list of specific requirements or guidelines for range safety briefings for the operation.

In addition, the RSOP requires a description of the operational procedures and equipment by which the MFSO will monitor missile performance and exercise FTS control over the missile.

During the safety planning process, the extent of each safety hazard pattern is established. A safety hazard pattern is the surface area that could be endangered by a missile if it does not follow its prescribed flight path. Safety hazard patterns are highly variable in size and are dependent on the altitude of launch, total missile energy available (time of flight), and turning ability. A clearance area is an area larger than the safety hazard pattern which is kept clear of non-participants for safety purposes. Impact areas are much smaller and fall within the defined safety hazard pattern of a missile. The impact area (or debris pattern) is the predetermined maximum area where a missile or its components could strike the surface. Since most missiles fired on the Sea Range do not carry live warheads, most impact areas are relatively small. Computer models are used to determine the size and location of the impact area into which debris may fall. These predictions are calculated based on altitude, speed, mass of debris pieces, angle of impact, and winds. Impact areas for missiles used on the Sea Range are generally oval in shape and can be up to 10 NM (19 km) long and 7 NM (13 km) wide.

3.14.3 Point Mugu

3.14.3.1 Electromagnetic Radiation

The Navy uses equipment such as communications devices, radar, electronic jammers, and other special testing equipment which produce EMR. EMR is created as a result of the flow of electricity within a system, producing an electromagnetic field. Instruments that produce an electromagnetic field have the potential to produce hazardous levels of EMR. EMR is expressed in milliwatts per square centimeter (mW/cm^2). The safety threshold for EMR depends on the frequency of the source of EMR. The lower the frequency of the EMR source, the lower the acceptable power density threshold before an endangerment to human health occurs. Likewise, the higher the frequency of the EMR source, the higher the acceptable power density threshold before health effects occur. An EMR hazard exists when transmitting equipment generates electromagnetic fields that induce currents or voltages great enough to trigger electro-explosive devices in ordnance, cause harmful effects to people or wildlife, or create sparks which ignite flammable substances in the area. These hazards are reduced or eliminated by establishing minimum distances from EMR sources for people, ordnance, and fuels.

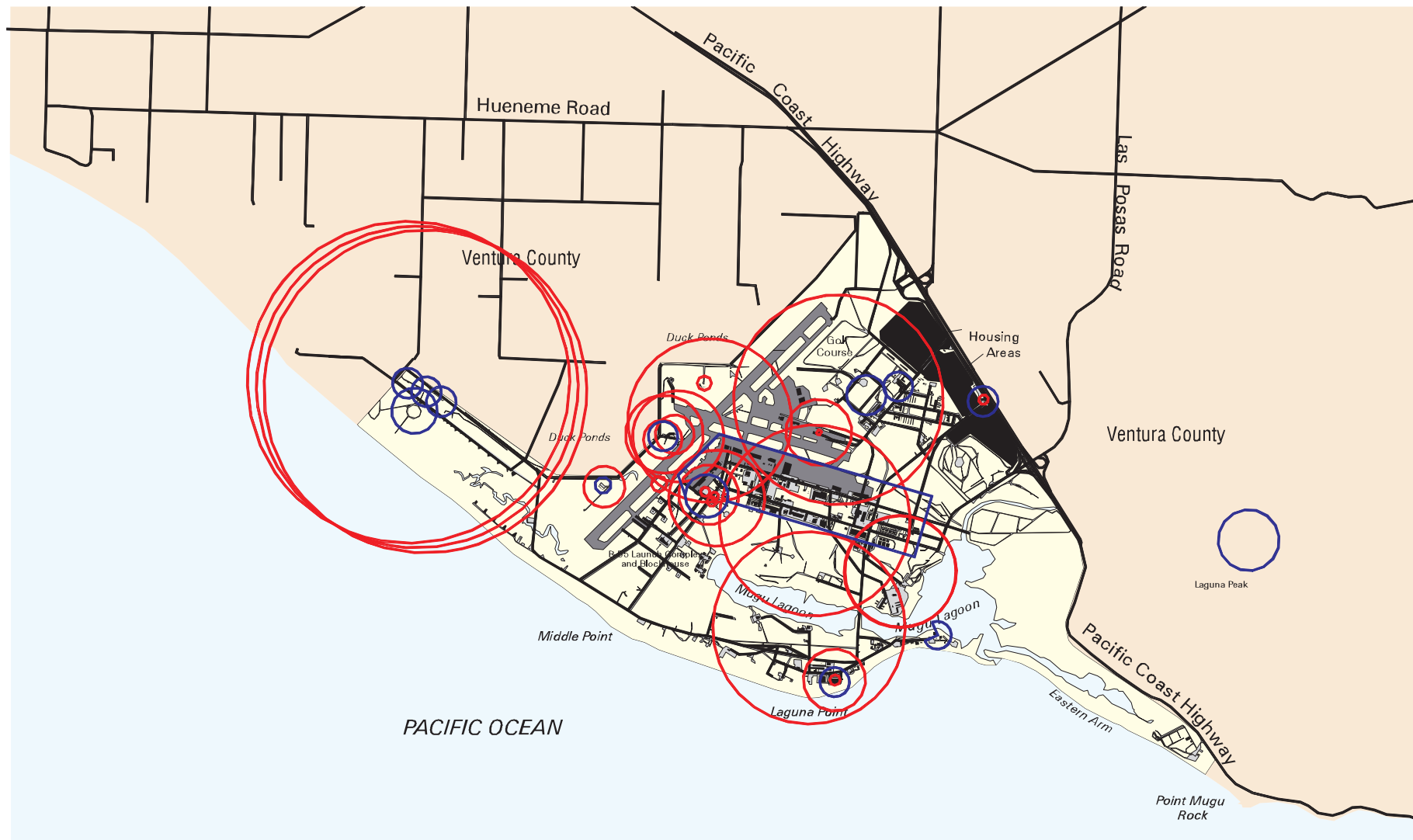
The onbase hazards of electromagnetic radiation to personnel (HERP), ordnance (HERO), and fuel (HERF) have been determined using information supplied by the NAS Point Mugu Weapons Department. [Figure 3.14-1](#) shows HERO and HERP arcs at NAS Point Mugu. HERF constraints are considered to be negligible and are not depicted. Although the HERO arcs are large enough to extend beyond base boundaries, these arcs only affect ordnance on base, and strict EMR control procedures are used when HERO-susceptible ordnance is transported or present in the open.

3.14.3.2 Explosive Safety Quantity Distance Arcs

Explosive Safety Quantity Distance (ESQD) arcs are defined by Naval Sea Systems Command (NAVSEA) Operating Procedure (OP) 5(1) (NAVSEA 1995) and are used to establish the minimum safe distance between ordnance storage facilities (often referred to as magazines) and inhabitable buildings. The type and amount of ordnance material which can be stored in a magazine is determined by the Department of Defense Explosive Safety Board (DDESB). To ensure safety, personnel movements are restricted in areas surrounding a magazine or group of magazines.

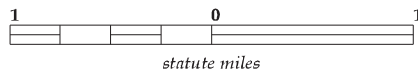
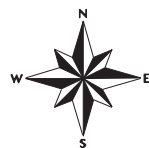


HERO and HERP Arcs at NAS Point Mugu



Legend

- NAS Point Mugu
- Surface Water
- Roads
- Airfield
- Structures
- ⊕ Hazards of Electromagnetic Radiation to Ordnance (HERO) Arcs
- ⊕ Hazards of Electromagnetic Radiation to Personnel (HERP) Arcs



Projection: Universal Transverse Mercator, Zone 11
 North American Datum of 1927
 Scale shown is 1:60,000
 Source: Western Division 1986.

Figure
3.14-1

Figure 3.14-2 shows ESQD arcs at NAS Point Mugu associated with ordnance storage facilities, most of which are in the western portion of the base. A small ordnance magazine complex is located at the south end of South I Avenue. Two other ordnance magazines, Structures 344 and 347, are located on the north side of 11th Street, west of South Mugu Road. Structure 344 is a small arms/pyrotechnic magazine for the NAS Intermediate Maintenance Activity Avionics Armament Division. Structure 347 is a VX-9 ready magazine.

3.14.3.3 Accident Potential Zones

APZs are developed based on a review of historical accident and operations data and the application of military accident potentials guidelines. APZs are not used to predict aircraft accidents, rather they are used to indicate where accidents tend to occur most often. OPNAVINST 11010.36A identifies three types of APZs: the clear zone, APZ-I, and APZ-II. The clear zone, the area with the highest probability for accidents, includes the runway environment and extended areas off each runway end. It lies immediately beyond the end of the runway and outward along the extended runway centerline for a distance of 3,000 feet (914 m). Its fan-shaped pattern ranges from 1,500 feet (457 m) to 2,284 feet (696 m) at its widest point (refer to Figure 3.10-4).

The AICUZ program, which identifies clear zones and APZs, was last updated for NAS Point Mugu in September 1992 (U.S. Navy 1992). APZs have been developed for all runways, except Runway 09. Runway 09 handles about 3 percent of all operations at NAS Point Mugu, and no single flight track has over 5,000 operations per year. The most common use for Runway 09 is for rotary wing pattern flight tracks and the number of these operations is not enough to generate an APZ. No aircraft accidents have occurred on or near Runway 09.

3.14.3.4 Public Access and Proximity

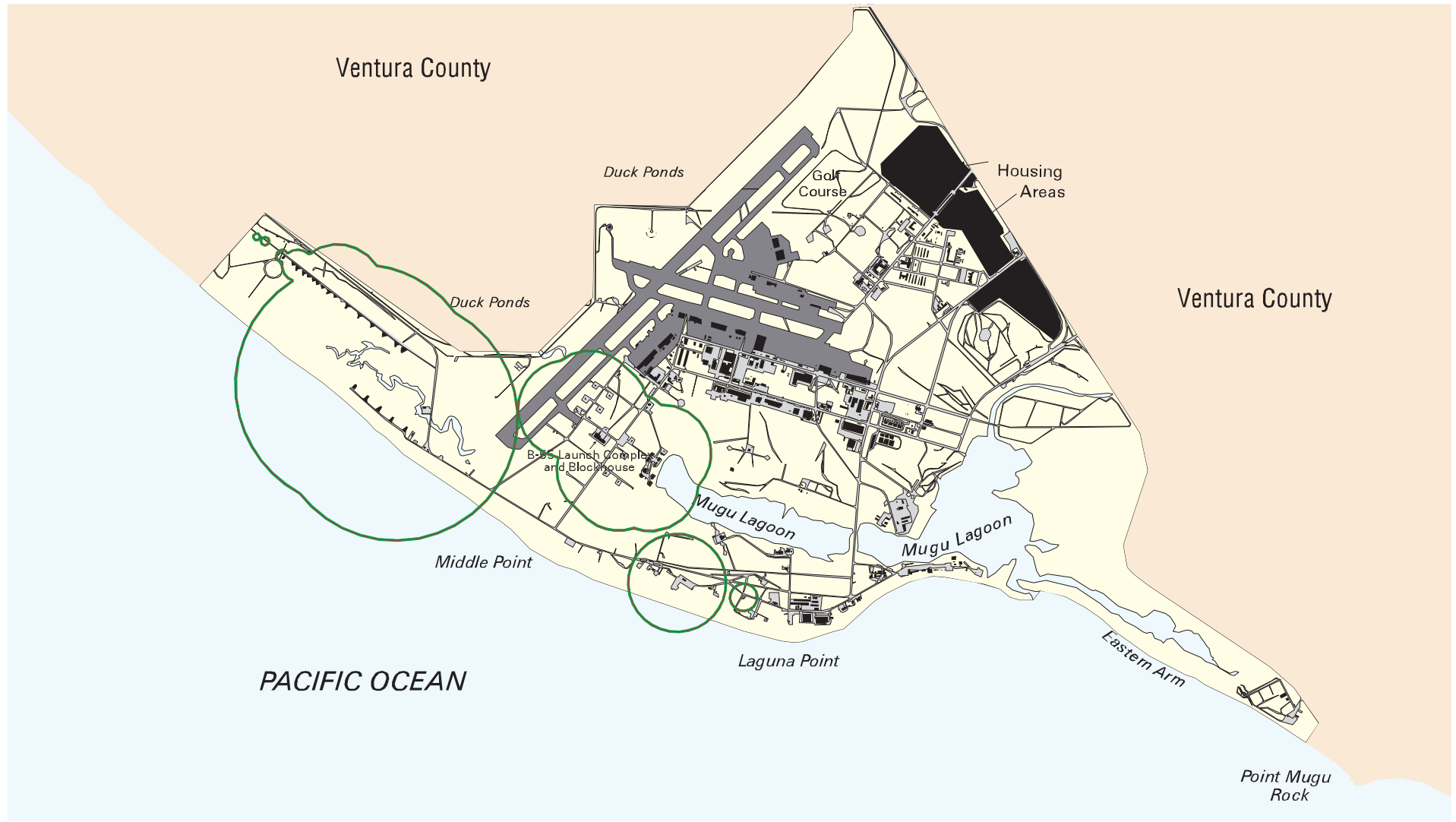
Except for special events, public access to NAS Point Mugu is controlled for security reasons and to safeguard against potential hazards associated with military operations on the base. Potential hazards include EMR, ordnance storage and loading, aircraft operations, and missile and target launches. A security fence surrounds NAS Point Mugu, and all foot and vehicular traffic enter the base through four guarded gates (Gate 5 is operated by special request only). The base is surrounded by an agricultural buffer zone to the northeast and northwest, thus reducing the population density in the areas immediately outside base boundaries. The primary launch location for airborne targets and for surface-to-surface missiles at NAS Point Mugu is at the Building 55 Launch Complex. During launch events, access to the immediate vicinity and offshore areas beneath the launch azimuth is strictly controlled to prevent injury to personnel or damage to property. Figure 3.14-3 shows the safety hazard pattern for target launches from Building 55.

3.14.3.5 Bird-Aircraft Strike Hazard

Bird-aircraft strike hazard (BASH) is defined as the threat of aircraft collision with birds during flight operations. It is a safety concern at all airfields due to the frequency of aircraft operations and the possibility of encountering birds at virtually all altitudes. Most birds fly close to ground level, and more than 95 percent of all reported bird-strikes occur below 3,000 feet (914 m) above ground level (AGL). At most military bases, about half of reported bird-strikes occur in the immediate vicinity of the airfield, and another 25 percent occur during low-altitude local training exercises.

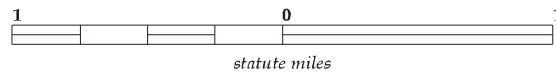


ESQD Arcs at NAS Point Mugu

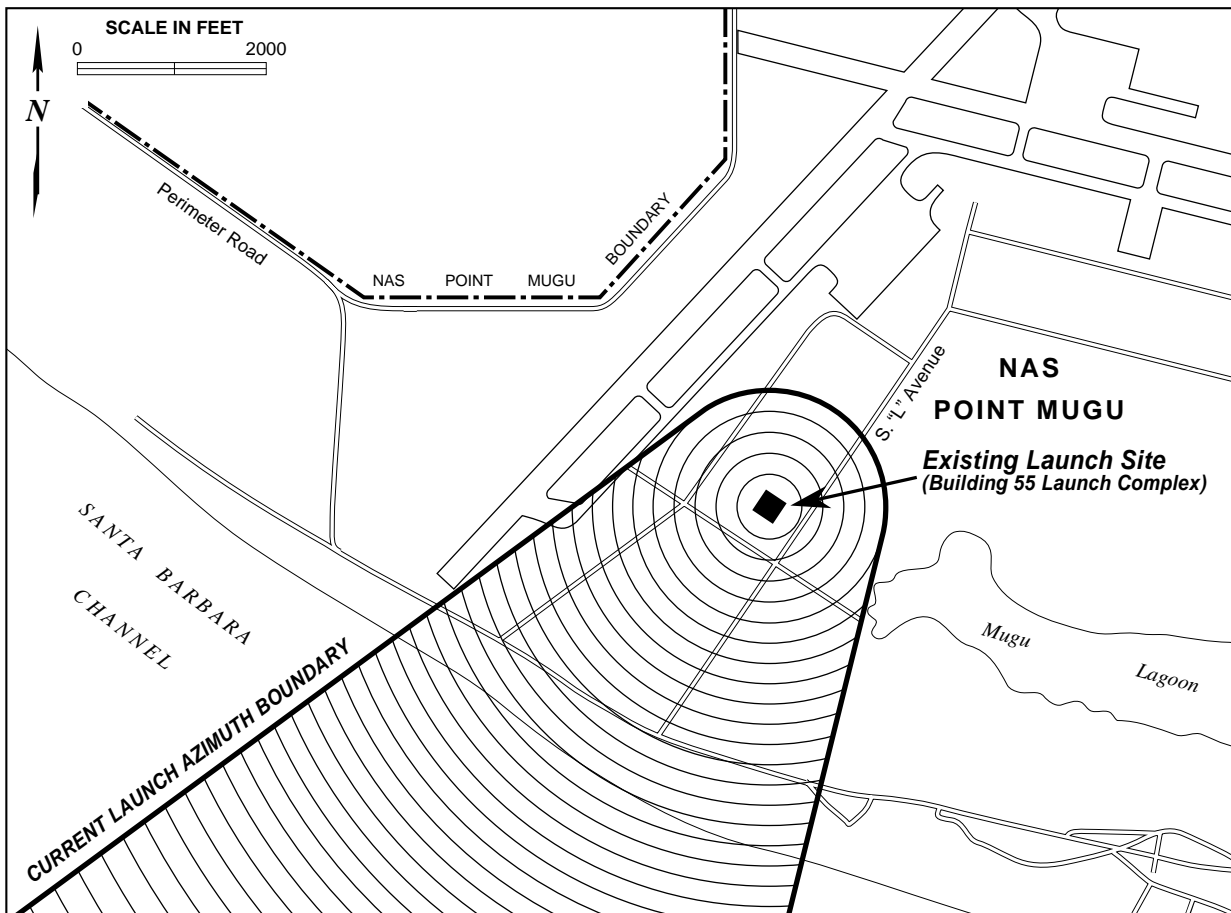


Legend

- NAS Point Mugu
- Structures
- Surface Water
- Explosive Safety Quantity Distance (ESQD) Arcs
- Roads
- Airfield



Projection: Universal Transverse Mercator, Zone 11
 North American Datum of 1927
 Scale shown is 1:45,000
 Source: Western Division 1986.



Source: NAWCWPNS Point Mugu 1996m.

**Figure 3.14-3
Target Launch Warning
Zones at NAS Point Mugu**

Waterfowl present the greatest BASH potential due to their congregational flight patterns and because when migrating they can be encountered at altitudes of up to 20,000 feet (6,096 m) AGL. Raptors also present a substantial hazard due to their size and soaring flight patterns. In general, the threat of bird-aircraft strikes increases during March and April and from August through November due to migratory activity (U.S. Navy 1992).

In terms of airfield operations and related safety procedures, ATC and the Environmental Project Office have primary responsibility for implementation of accident-preventative measures. Among the programs the Navy has developed and implemented is their BASH Plan, most recently updated in April 1990. NAS Point Mugu's BASH Plan has the stated purpose "to reduce the bird-strike hazard to aircraft aboard NAWCWPNS Point Mugu by creating an integrated bird control and bird hazard abatement program..." It is tailored to address seasonal fluctuations in bird concentrations in the vicinity of the airfield complex. Some portions of the plan are implemented on a continuous basis while others are enacted only during periods of heightened bird activity.



A critical function of the NAS Point Mugu BASH Plan is the establishment and maintenance of a Bird Hazard Working Group (BHWG) responsible for collecting, compiling, and reviewing bird-strike data; identifying and recommending hazard-reducing activities; recommending operational changes when appropriate; preparing informational programs for aircrews; and serving as the point of contact regarding off-base BASH issues. The BHWG meets quarterly in conjunction with the Area Aviation Safety Office and submits all recommendations to the Commanding Officer for approval; implementation follows a standard chain of command.

Numerous wetlands and other habitats conducive to bird congregation (e.g., seasonal and migratory birds) and nesting (e.g., resident birds) are located at Point Mugu. The Santa Barbara Channel and Pacific Ocean serve as migratory corridors and foraging areas for several species of waterfowl (e.g., gulls, geese, and pelicans). In addition, two duck hunting clubs are located immediately west of the base and present potential hazards as they contain marshes and ponds designed for the specific purpose of attracting waterfowl to the area.

Historically, bird-strikes have not represented a significant safety hazard for aircraft at the NAS Point Mugu airfield. Bird strike data indicate that anywhere from 10 to 60 birds have been struck within any given year. The majority of reported bird strikes occurred with propeller-driven planes. Given the recent increase in aircraft activity associated with the E-2 aircraft squadron realignment to NAS Point Mugu (Southwest Division 1998), existing bird strike potential could be as much as 30 percent higher than this (or about 10 to 80 incidents per year). However, none of the reported bird-aircraft collisions resulted in major damage to aircraft or injury to personnel.

3.14.3.6 Transportation of Munitions and Dangerous Articles

Transport of non-fused munitions on public roadways is controlled and regulated by the U.S. Department of Transportation. The State of California applies federal guidelines (49 C.F.R.) for regulating transportation of explosives or other dangerous articles within its jurisdiction. Munitions and other dangerous articles may be transported on public highways if proper safety criteria are applied in accordance with federal guidelines.

3.14.4 San Nicolas Island

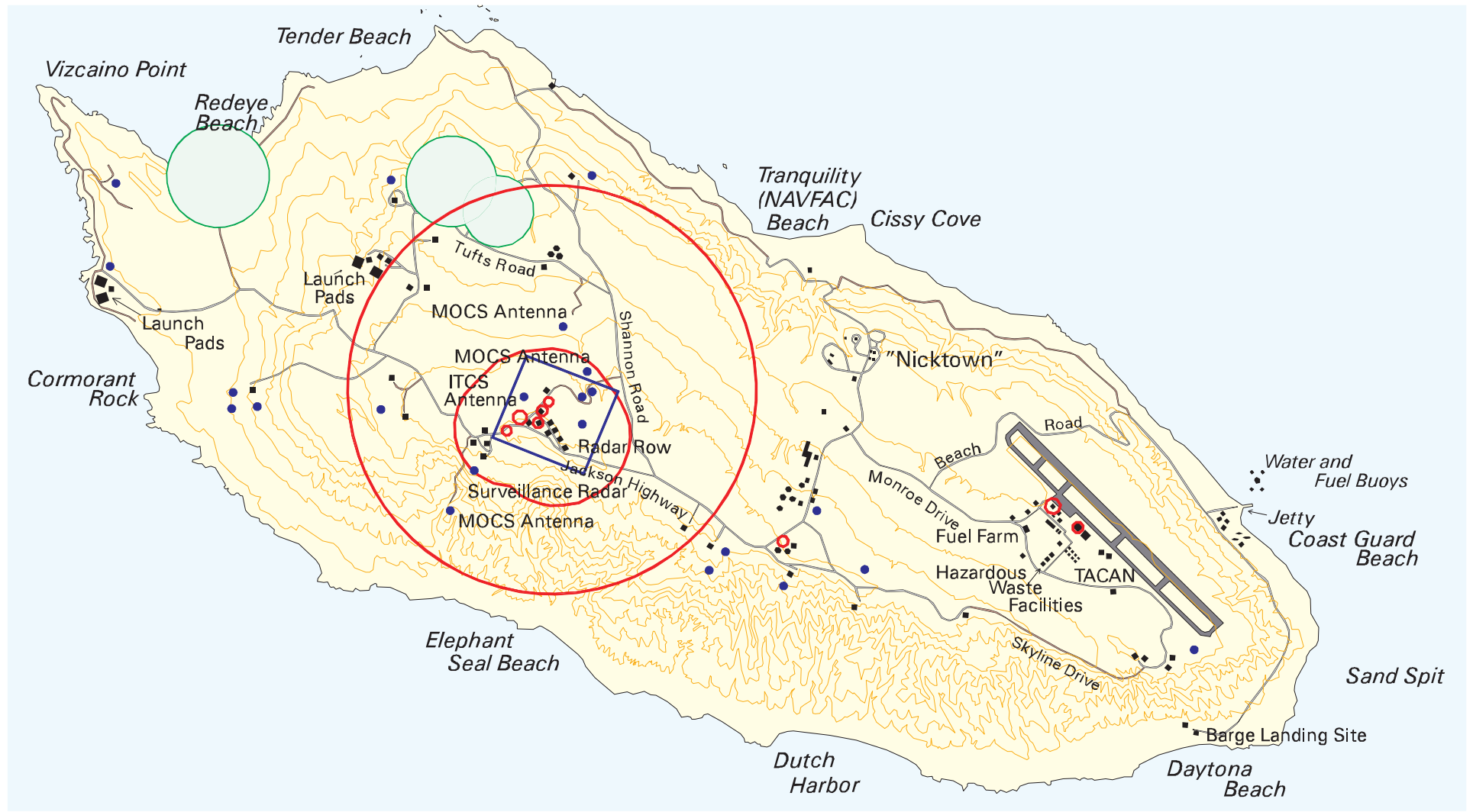
3.14.4.1 Electromagnetic Radiation

The Navy operates a variety of equipment and facilities at San Nicolas Island which generate EMR. These EMR sources include radar, communication facilities, and power utility lines. The potential hazards associated with the operation of this equipment are similar to those discussed for NAS Point Mugu in [Section 3.14.3](#). [Figure 3.14-4](#) shows the HERO and HERP arcs for San Nicolas Island. As with NAS Point Mugu, the HERF danger is negligible and not depicted.

3.14.4.2 Explosive Safety Quantity Distance Arcs

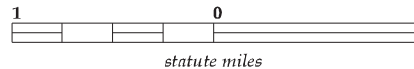
Various munitions and targets are stored and maintained at San Nicolas Island that are susceptible to the effects of EMR. These include missile warheads, rocket motors, high explosives, and other types of ordnance which are used in the testing or training activities occurring on the Sea Range. Munitions arrive on the island either by surface ship or by air transport. ESQD arcs for the safety of personnel and equipment have been established around the munitions storage and assembly areas (see [Figure 3.14-4](#)).

HERO, HERP, and ESQD Arcs at San Nicolas Island



Legend

- Airfield
- Structures
- Instrumentation
- Hazards of Electromagnetic Radiation to Ordnance (HERO) Arcs
- Hazards of Electromagnetic Radiation to Personnel (HERP) Arcs
- Explosive Safety Quantity Distance (ESQD) Arcs



Projection: Universal Transverse Mercator, Zone 11
 North American Datum of 1927
 Scale shown is 1:60,000
 Source: Western Division 1986.

3.14.4.3 Accident Potential Zones

Because of San Nicolas Island’s remote location in relation to civilian communities, the airfield does not require an AICUZ study. Therefore, APZs have not been identified.

3.14.4.4 Public Access and Proximity

San Nicolas Island is owned and operated by the Navy and access is strictly controlled. Access is granted for military-related activities and for pre-approved, non-military users, primarily for scientific purposes. A scheduled contract aircraft shuttle operates between NAS Point Mugu and San Nicolas Island to bring personnel to the island.

Three surface restricted areas are located around San Nicolas Island: Alpha, Bravo, and Charlie (Figure 3.14-5). In addition, NAWCWPNS has established two airspace Restricted Areas over San Nicolas Island that extend 3 NM (5.6 km) around the island. The two areas are divided by an imaginary line from the north side to the south side of the island where the Bravo boundaries intersect the shorelines; they extend from the surface to 100,000 feet (30,500 m). Figure 3.14-5 also shows warning zones associated with missile and target launches from the west end of San Nicolas Island. Naval security personnel secure on-land restricted access zones prior to and during launch activities at the west end of the island to prevent unauthorized personnel and non-participants from entering the area. Roads into Warning Zone 2 are blocked during launches, and personnel in Warning Zone 2 are required to be in protected block houses or shelters during launches. No personnel are allowed in Warning Zone 1 during missile or target launches or during missile impacts at the Standoff Land Attack Missile (SLAM) target. In addition, clearance areas are cleared of all non-participating fishing or recreational boats prior to launch activities (see Section 3.14.2.2).

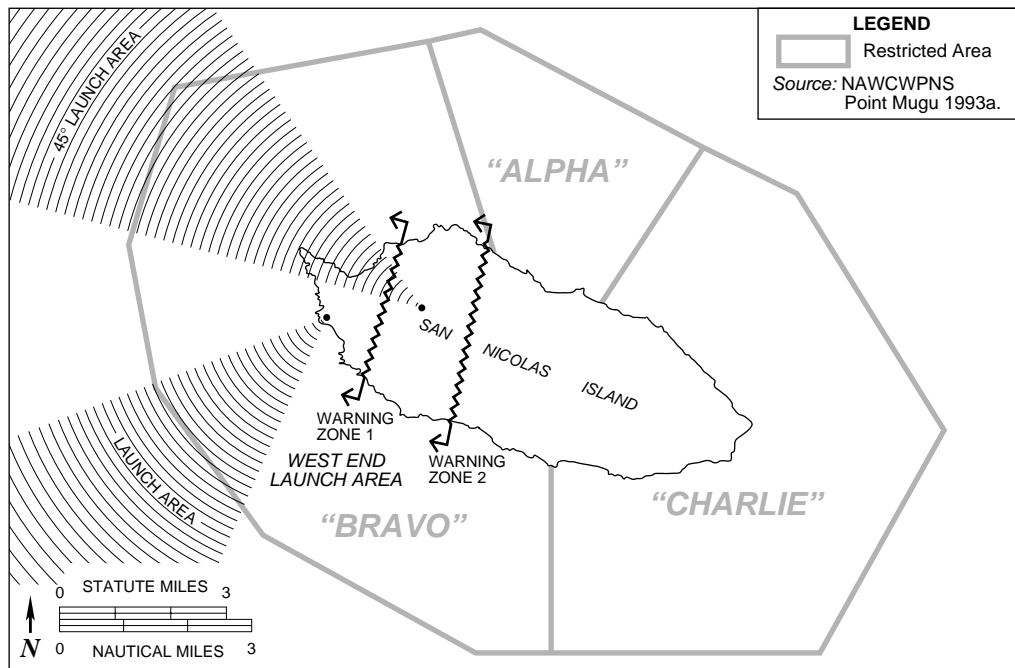


Figure 3.14-5
Warning Zones for Missile and Target Launches at San Nicolas Island