

Draft Compatibility Determinations
Don Edwards San Francisco Bay National Wildlife Refuge
U.S. Fish and Wildlife Service
April 2008

**Public Use Projects Included in Phase 1 of the
South Bay Salt Pond Restoration Project**

Pond A16, Moffett Bay Trail, Pond SF-2

Compatibility Determination 1 for Priority Public Uses:
Wildlife Observation, Photography, Environmental Education and Interpretation

Compatibility Determination 2 for Non Priority Public Uses:
Hiking, Jogging and Bicycling

Uses

Two different categories of uses are considered in this document; refuge priority public uses and non priority public uses. We are evaluating them in the same document because the activities would take place on the same set of facilities and trails.

Compatibility Determination 1: Refuge Priority Public Uses: Environmental Education and Interpretation, Wildlife Observation and Photography. Infrastructure improvements in support of these proposed uses include trail surface upgrades, wildlife viewing platforms, interpretative stations, signage, benches and two chemical toilets.

Compatibility Determination 2: Public Uses that are not Priority Public Uses: Hiking, Jogging and Bicycling

Station Name

Don Edwards San Francisco Bay National Wildlife Refuge, Alameda, Santa Clara and San Mateo Counties, California; see <http://desfbay.fws.gov/>, San Francisco Bay National Wildlife Refuge Complex

Date Established

June 30, 1972

Establishing and Acquisition Authorities

86 Stat. 399, June 30, 1972, as amended by 102 Stat. 2779, October 28, 1988

Purposes for which Established

“...for the preservation and enhancement of highly significant habitat...for the protection of migratory waterfowl and other wildlife, including species known to be threatened with extinction, and provide opportunity for wildlife oriented recreation and nature study...”
86 Stat 399, dated June 30, 1972.

Particular value in carrying out the national migratory bird management program. 16 U.S.C. 667b (An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes)

To conserve (A) fish or wildlife which are listed as endangered species or threatened species or (B) plants ...16 U.S.C. 1534 (Endangered Species Act of 1973)

For the development, advancement, management, conservation, and protection of fish and wildlife resources ...16 U.S.C. 742f(a)(4) ... for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude ...16 U.S.C. 742f (b)(1) (Fish and Wildlife Act of 1956)

National Wildlife Refuge System Mission

The mission of the National Wildlife Refuge System is “to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife and plant resources and their habitats within the United States for the benefit of present and future generations of Americans” (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C. 668dd-668ee]).

Refuge Background and Location

Spanning over 30,000 acres of open bay, salt marsh, mud flat, upland, and vernal pool located throughout the South San Francisco Bay, the Don Edwards San Francisco Bay National Wildlife Refuge (“Refuge”) hosts over 280 species of birds every year. Also a popular recreational destination, the Refuge attracts hundreds of thousands of visitors each year to enjoy its diverse wildlife and habitats on over 30 miles of trails which are open to wildlife observation and photography, environmental education and interpretation, hiking, jogging and bicycling. A few trails are also open for dog walking. The Refuge estimates that of the 1.5 million visitors per year that come to the Refuge, approximately 900,000 visits result in trail use. Many visitors come to the Refuge just to participate in the many environmental education and interpretive programs. The Refuge is and will remain a popular destination for wildlife dependent recreation.

The ponds in the Refuge’s Alviso and Ravenswood Pond Complexes, which are the subject of the South Bay Salt Pond project (“SBSP”), are former commercially operated salt ponds surrounded by upland levees that were operated and maintained by Cargill Salt Division and acquired in fee title by the United States Fish and Wildlife Service (USFWS) from Cargill, Inc. in March 2003. The approximately 9,600 acres of salt ponds are located in Alameda, Santa Clara and San Mateo Counties in the South San Francisco Bay, California. Ponds A1 through A21 are in the Alviso Pond Complex in Mountain View, Sunnyvale, San Jose (Alviso) and Fremont. Ponds R1 through R-5 and Pond SF-2 are in the Ravenswood Pond Complex in Menlo Park.

The Refuge Environmental Education Center is located at the Alviso Pond Complex, with access off Highway 237 and Zanker Road in Alviso and is adjacent to Pond A16. The building contains two classrooms, an auditorium, and an enclosed observation tower. A boardwalk winds through seasonal wetland habitat to provide viewing opportunities. The Center and adjacent New Chicago Marsh, Mallard Slough Trail and Pond A16 have traditionally been used for wildlife observation, photography, environmental education and interpretation, hiking, jogging, and bicycling. These uses are not proposed to change under the SBSP and this Compatibility Determination.

The Refuge Headquarters and Visitor Center are located in Fremont outside of the project area and are not part of this Compatibility Determination. Lands outside the project area are noted for connectivity to existing trails, transit and other related public access and recreation linkages. Interpretive displays exist in the visitor center, along hiking trails, at wildlife observation areas, and at the Dumbarton Fishing Pier.

Docent-led tours are also provided during the ISP period. These tours have been conducted off the Refuge at the Menlo Park Bayshore Park overlooking the Ravenswood Ponds. Because these tours are off the Refuge they are not subject to Compatibility Determinations.

This Compatibility Determination will address proposed Priority Uses that will take place at three key sites within the Refuge as part of the first phase of the SBSP. Hunting and fishing are the other uses considered Priority Uses in the National Wildlife Refuge System. These uses are ongoing on the Refuge and are not proposed to be expanded or reduced by the SBSP and therefore, will not be addressed in this Compatibility Determination.

We propose to provide opportunities for environmental education and interpretation and wildlife observation and photography that are compatible with the Refuge purposes. Detailed descriptions of the habitat restoration flood control and public access and predicted effects are given in the EIS/R and incorporated by reference herein. Environmental education and interpretation and wildlife observation and photography are appropriate uses of the Refuge System as defined by in the National Wildlife Refuge System Improvement Act of 1997 (P.L. 105-57) because they are considered “wildlife-dependent recreational uses”. The Act encourages facilitation of these uses on refuges when they are determined to be compatible with the Mission of the Refuge System and the purpose for which the refuge was established.

We also propose (Compatibility Determination 2) to allow the following non-wildlife dependent public uses on the same facilities that are proposed for Priority Uses described in Compatibility Determination 1: hiking, bicycling and jogging. The National Wildlife Refuge System Improvement Act does not list these three uses as Priority Uses because they are not wildlife dependent. However, the Refuge Manager may open portions of the Refuge to these non Priority Uses if they are appropriate and compatible with the Mission of the Refuge System and the purpose for which the refuge was established. The Refuge Manager has determined that these are appropriate uses and their compatibility is being evaluated in Compatibility Determination 2.

Alviso Pond Complex (Pond A16, Moffett Bay Trail Ponds A2E, AB1, AB2 and A3W)

Existing Uses

The Alviso Slough Trail (which runs along the outer levees of Ponds A9, 10, 11, 12, 13, 14 and 15) forms a segment of the Bay Trail and is open to the public for these same public uses. The Mallard Slough Trail is located along the outer levees of Ponds A16 and A17. It is connected to the Alviso Slough Trail by a crossing of the Union Pacific Railroad near Coyote Creek. The Alviso Slough Trail and the Mallard Slough Trail have been open to public use since the 1970s. It is estimated by the Refuge that Mallard Slough Trail has 46,000 visits per year and the Alviso Slough Trail has 55,000 visits per year. Parts of the Mallard Slough Trail along Mallard Slough have been closed

periodically during the waterfowl hunting season (mid October to late January) and during the nesting season for herons and egrets which traditionally had a large nesting colony in Mallard Slough. This nesting colony has been greatly reduced in size in the past 5 years for unknown reasons.

No portion of Ponds A16 and A17 are open to hunting though waterfowl hunting and fishing is allowed off the Refuge by boat in Mallard Slough and the Bay adjacent to these ponds.

The Eastern Stevens Creek Trail, located along the pond levee between Ponds A2E, AB1 and Stevens Creek, was kept open during the Initial Stewardship Plan (ISP) period. The ISP was the period from the purchase of the SBSP ponds in 2003 and the implementation of Phase 1 of the SBSP. Various changes were made to water management of the ponds during the ISP for the main purpose of lowering the salinity of the ponds in preparation for restoration to be implemented under the SBSP. This trail was also open to public use under Cargill ownership before 2003. The public uses ongoing on this trail are the following: hiking, jogging, bicycling, wildlife observation, photography, environmental education and interpretation. The Refuge estimates the Eastern Stevens Creek Trail has 4,000 visits per year. Waterfowl hunting but no fishing is allowed by the Refuge in Ponds A2W and AB1 adjacent to the Eastern Stevens Creek Trail (as well as other SBSP ponds) and are not proposed to change under the SBSP.

The Bay Trail in and around the Alviso Complex includes the Alviso Slough Trail (as described above), and an off Refuge trail south of Alviso Ponds A1 and A2W on the Shoreline Park at Mountain View. An unimproved, on-street portion of the Trail off the Refuge (no bike lanes or sidewalks) leads from the Alviso Marina and Historic District (adjacent to Alviso Ponds A8 and A12) south toward San Jose and Highway 237. Another unimproved on-street portion of the Bay Trail runs along the north side of Pond A22.

Ravenswood Pond Complex (Pond SF-2)

Existing Uses

The Public Access and Recreation Existing Conditions Report (EDAW, 2005) shows the ownership and recreational facilities at the Ravenswood site. The Ravenswood Pond Complex is owned and managed by the USFWS. All the Ravenswood Ponds were made part of the Refuge as a part of the 2003 Cargill acquisition and Cargill no longer uses them for commercial salt production.

The Refuge's existing 3.2 mile Ravenswood Trail is located along the outside levee of Ponds R1 and R2 and is considered a part of the Bay Trail. It has been open to public use since the 1970s. It is closed to all non-hunting public uses during the waterfowl hunting season but during the non-hunting season has been open to wildlife observation, wildlife photography, environmental education and interpretation, hiking, jogging, and cycling.

In the vicinity of the Ravenswood Complex in San Mateo County but off the Refuge, the Bay Trail follows the Dumbarton Bridge/Highway 84/Bayfront Expressway route (along

Ponds R2, SF2, R3, R4, and S5), and loops through Bayfront Park. These segments are off-street shared use paved or gravel paths and provide access to the Refuge.

Waterfowl hunting is allowed on and near portions of the Ravenswood Pond Complex. Within tidal areas of the Ravenswood Pond Complex (San Francisco Bay and Ravenswood Slough), hunting is permitted from boat up to the mean high water line. In the Ravenswood Pond Complex, Ponds R1 and R2 are open for waterfowl hunting. On these ponds, hunting is allowed from Ravenswood Slough Trail and from non-motorized boats in the ponds. Fishing is not allowed on any ponds in the Ravenswood Pond Complex but is common in the adjacent waters from boats on San Francisco Bay. The existing hunting and fishing program is not proposed to change.

The Bay front levee of Pond SF-2 is considered a public use trail by the Mid-Peninsula Open Space District (District) which owns almost one-half of the length of the trail. Though the trail has been open to public use it does not get much use because it has never been graded for smooth and safe access. The rest of the outer levee is owned by the Refuge and has been closed to public use. The Refuge is in the process of obtaining an easement from the District to allow the proposed public uses to extend along the District's portion of the levee as well as the Refuge's portion.

Pond SF-2 was dried out by Cargill before the 2003 to facilitate a lead removal project by the San Francisco Public Utilities Commission. Lead was removed along the southeastern edge of the pond adjacent to the San Francisco Hetch Hetchy property. Because the pond only received water from rainfall, its use by wildlife has been minimal. A few snowy plovers and avocets have attempted to nest in the pond but they have not been monitored for reproductive success. In its existing condition, the pond has very low bird use compared with what is expected once the first phase of the SBSP project is implemented.

Compatibility Determination 1: Priority Public Uses at Pond A16, Moffett Bay Trail and Pond SF-2

Wildlife Observation, Photography, Environmental Education and Interpretation

Wildlife observation, photography, environmental education and interpretation are considered together in this part of the Compatibility Determination because considered Priority Public Uses in the National Wildlife Refuge System, as defined in the National Wildlife Refuge System Improvement Act of 1997(P.L. 105-57), are wildlife-dependent and non-consumptive. Many elements of these wildlife dependent uses overlap with each other. Thus, it is helpful to consider all of these uses in the same Compatibility Determination. These uses were previously approved and are currently ongoing on one of the subject trails (Mallard Slough Trail at Pond A16 in Alviso) but would be new on other trails (Pond SF-2 and Moffett Bay Trail at Ponds A2W, AB1 and A3W). (Figure #1: Phase 1 Actions, SBSP Restoration Project: Public Use Facilities at Alviso Ponds A16, Moffett Bay Trail at Alviso Ponds A2E, AB2 & A3W and Ravenswood Pond SF-2.)

Description of Use

Proposed Uses in Alviso Pond Complex (Pond A16, Moffett Bay Trail Ponds A2E, AB1, AB2 and A3W)

The proposed recreational features within the Alviso Pond Complex would be managed by USFWS as part of the current public access program at the Refuge. The public access and recreation plan for the Phase 1 actions at the Alviso Pond Complex would occur in two principal location: Ponds A16 and Moffett Bay Trail at Ponds A2E, AB2 and A3W (Figure #1: Phase 1 Actions, SBSP Restoration Project: Public Use Facilities at Alviso Ponds A16, Moffett Bay Trail at Alviso Ponds A2E, AB2 & A3W and Ravenswood Pond SF-2.). A complete description of these features is located in Chapter 2 of the EIS/R. Part 1 of the proposal would allow the continuation of the following Refuge Priority Public Uses: wildlife observation, photography, environmental education and interpretation on Pond A16 and would open the proposed Moffett Bay Trail (at Alviso Ponds A2E, AB2, A3W) to these uses.

Site Specific Recreation Features

Viewing Platform and Interpretive Stations at Pond A16

The proposed viewing platform and interpretive stations at Pond A16 would be accessible from the existing levee along the south edge of Pond A16 and Mallard (Artesian) Slough levee trail network that currently encircles Ponds A16 and A17. These stations would be located at strategic locations along this existing trail network to provide visitors with unique viewing, birding and educational opportunities to learn about the conversion of Pond A16 from use for commercial salt evaporation to an intensively managed pond for wildlife and other adjacent habitats such as New Chicago Marsh and Mallard Slough. (Figure #2: Pond A16 Public Use Facilities) The viewing platform would be installed at the southern edge of Pond A16, close to the existing boardwalk from the Refuge EEC. The platform would be raised above the existing grade of the levee to allow visitors an unobstructed panorama view of this 240-acre pond and surrounding habitats. It would be constructed with ramps and railings as needed. One interpretive station would be incorporated into the design of the viewing platform. The second interpretive station would be located on the eastern edge of Pond A16 in a central location; approximately 1.4 miles from the existing boardwalk would provide a view and interpretation of Pond A16 and Mallard Slough. The interpretive station layout in this location would be adjacent to the existing trail and allow for additional interpretive information to augment what is being planned for the other Pond A16 location (EIS/R, Chapter 2). The Mallard Slough Trail would remain surfaced by Bay mud except for the section between the Environmental Education Center and the Viewing Platform. This section of the trail would be upgraded to meet ADA requirements and would be accessible even during the rainy season. The section of the trail that would remain Bay mud would not be accessible

during the rainy season because the mud cakes on the bottom of shoes and bikes making access difficult.

Moffett Bay Trail (Alviso Ponds A2E, AB2, A3W)

The proposed 2.25-mile Moffett Bay Trail would be an integral spine connection in Association of Bay Area Government's (ABAG) Bay Trail project, a partially constructed 400-mile recreational "ring around the Bay." It would be located on the southern levees of the pond complex, between existing Refuge Eastern Stevens Creek Trail and the existing section of the Bay Trail at the southwestern corner of the Sunnyvale Treatment Ponds. The trail would be adjacent to Moffett Field on the inland side and a large expanse of managed ponds on the Bay side (Figure #3 Moffett Bay Trail). This proposed trail has long been a dream of many members of the community as it connects two existing and popular sections of the Bay Trail in an urban area.

The Moffett Bay Trail would be graveled to facilitate year around use but would not be brought up to ADA standards because this trail is temporary. The trail would have a wide pullout along Pond A3W with benches and interpretive signage. The proposed trail would provide year-round access for wildlife observation, photography and education/interpretive programs (EIS/R, Chapter 2).

In future phases of the SBSP, the existing levee would be upgraded to provide additional flood control and we expect that a new ADA compliant trail would be built on the flood control levee.

Ravenswood (Pond SF2)

Proposed Uses

The public uses of Ponds R1 and R2 are not proposed to change from what had been evaluated and approved by former Refuge Managers and, therefore, are not the subject of this Compatibility Determination.

The public access and recreation plan for the Phase 1 actions at the Ravenswood Pond Complex would occur in two principal locations: Pond SF2 and overlooking Pond R4 on Bayfront Park. Proposed uses on a new trail along Pond SF-2 are wildlife observation and photography, environmental education and interpretation.

The recreational features proposed as a part of the Compatibility Determination would be managed by USFWS. Because the overlook at Menlo Park's Bayfront Park is not on the Refuge, it is not subject to Compatibility Determinations which are required on National Wildlife Refuge lands. The overlook information is provided to allow the public with a complete understanding of the public uses as proposed in the Ravenswood Pond Complex area in Phase 1 of the SBSP.

The Ravenswood Pond Complex is on both sides of the busy western approach to the Dumbarton Bridge and highly visible to users of cars and the Bay Trail along Highway

84. This affords an opportunity to share information about the SBSP Restoration Project and attract a large number of visitors to explore the area. Signage at Pond SF-2 would include the project logo and present key messages about the SBSP Restoration Project as well as direct people to strategic access points.

The public access proposal for this area includes upgrading the existing Mid-Peninsula Open Space District Trail and extending it onto the Refuge owned portion of the Pond SF-2 outside levee. Proposed facilities include the addition of two viewing platforms and interpretive signage along this trail that describe the SBSP restoration process of developing a managed pond as well as the relationship to the Bay and future tidal marsh restoration in this location. (Figure #4: Pond SF-2 Public Use Facilities) The trail is on top of an existing levee. The trail would be rehabilitated to a width of eleven feet and resurfaced to meet ADA standards. The viewing platforms would be raised above the existing grade of the levee trail to allow visitors a panorama view of the Bay and the large expanse of adjacent managed pond. Two chemical toilets with privacy screens would be provided at the entrance to the trail. Overall, the perimeter of Pond SF2 would be cleaned up and native vegetation would be strategically planted to visually enhance the SBSP Restoration Project area and provide transitional plantings between the highway corridor and the adjacent restoration lands (EIS/R, Chapter 2).

Magnitude, Timing and Restrictions

Currently the Ravenswood and Alviso Pond Complexes attract educational groups who are guided in hands-on activities, classroom presentations and other outreach and environmental interpretation events as well as wildlife observation and photography. The Alviso Pond Complex has a higher visitation rate than the Ravenswood Pond Complex. The proposed trail rehabilitation project and viewing platforms with interpretive displays at Pond SF-2 would enhance these activities. The new uses proposed in the Alviso or Ravenswood Pond Complexes include opening of the SF-2 trail which was previously only open along the portion of the Bay front trail owned by the Mid-Peninsula Open Space District and opening the Moffett Bay Trail which had been completely closed to public access except to hunters during the waterfowl hunting season. Due to the high visibility of the enhanced public access features and new trail openings it is likely that overall visitation to these areas for wildlife observation and photography, environmental education and interpretation will increase significantly.

Access to the trails, viewing platforms and interpretive stations would be year round on a daily basis from sunrise to sunset from designated access points. The trails would be subject to seasonal closures if deemed necessary during bird breeding season (April – August) based on species and Applied Study results. Applied Studies, which are a part of the Adaptive Management Program, may result in temporary closures of sections of these trails but the details of these studies are not developed at this time.

Interpretive displays, focusing on Refuge habitats, estuarine restoration, improved management, and fish and wildlife, would support the NWRS mission and Refuge's

purposes by enhancing the wildlife observation experience and promoting low impact use to maintain compatibility of recreational uses with wildlife.

Availability of Resources

New facilities at Pond A16 that need to be constructed and maintained include: One viewing platform, ¼ mile of ADA standards trail, benches, and interpretive signage. Facilities at the Moffett Bay Trail included 2.25 miles of base rock covering the trail, benches and interpretive signage. Facilities at Pond SF-2 include two chemical toilets with privacy screens, two viewing platforms, upgraded trail surface, entrance kiosk, and interpretive signage. Annual maintenance costs of these facilities and additional management and law enforcement patrols need to be financed to allow these new public uses.

	One-Time Cost	Annual Cost
Construction Costs		
Pond A16 public use facilities	\$ 579,375	
Moffett Bay Trail public use facilities	\$ 63,250	
Pond SF-2 public use facilities	\$1,100,000	
Recurring Costs		
Pond A16 public use facilities maintenance		\$2,000
Moffett Bay Trail public use facilities maintenance		\$4,000
Pond SF-2 public use facilities maintenance		\$14,000
Pond A16 public use management and law enforcement		\$ 5,000
Moffett Bay Trail public use management and law enforcement		\$ 20,000
Pond SF-2 public use management and law enforcement		\$ 25,000

Table 1. Summary of one-time and recurring costs resulting from the proposed recreational features and uses associated with environmental education and interpretation, wildlife observation and photography. These are the same features that are proposed to be used for hiking, jogging and bicycling which are evaluated in Part 2 of this Compatibility Determination.

Pond A16 public use facilities: The capital costs (\$579,375) of these new public use facilities are expected to be paid by Refuge partners such as the Bay Trail and the California Coastal Conservancy. The management and law enforcement costs (\$5,000) are expected to be modest for the Pond A16 public use facilities because this area is already open to the public and though the new facilities are expected to attract more visitors to the area, the additional cost to manage and conduct law enforcement is not considered to be as large as opening a new area to public use. The annual additional maintenance costs are estimated to be \$2,000.

Moffett Bay Trail public use facilities: The capital costs (\$63,250) of improving this levee to provide public access are being paid by a Bay Trail grant. This trail is expected to receive similar type of public use but higher numbers as the existing Mallard Slough Trail because 1) it is 2.4 miles long so will be used more for those with enough time and energy to select a long trail, 2) has similar open water pond habitat, 3) connects two popular segments of the Bay Trail but takes at least a one-half mile hike/bicycle to reach, and 4) has few structural improvements. Based on the similarities with the Mallard Slough and expectations that it will receive somewhat more visitors, it is estimated that the annual cost for maintenance will be \$4,000 and the annual cost of management and law enforcement will be \$20,000.

Pond SF-2 public use facilities: The capital costs (\$1,100,000) of these new public use facilities are expected to be paid by Refuge partners including Caltrans. The maintenance cost is estimated to be \$14,000 and management and law enforcement costs (\$25,000) are expected to be more than the other trails because 1) it is accessible to highly used Highway 84, 2) is comparatively short so will attract all types of users, and 3) has large amount of infrastructure compared to the other two proposed trails.

When these former commercial salt ponds were purchased in 2003 from Cargill, Congress increased the annual budget of the Refuge to operate, maintain and manage these ponds. This increased Refuge budget allowed additional maintenance, visitor services and operations staff to be hired to focus on these ponds. These staff members are expected to be sufficient to absorb the additional duties these three public use areas will require. The Refuge Law Enforcement staff is expected to increase by one dual function officer who should be sufficient to allow additional patrol of these areas with little to no impact to the coverage of the rest of the San Francisco Bay National Wildlife Refuge Complex lands. An additional full time officer is planned for the Refuge Complex but is subject to funding challenges at the National Wildlife Refuge System level.

Anticipated Impacts of the Use

The design of the first phase of the SBSP was developed by a team of experts (e.g.; biology, engineering, hydrology and public use) with review and comment by the SBSP Stakeholders and members of the public through a series of public meetings. Using the best available information, the project was designed to achieve the Refuge System's goal of wildlife oriented public recreation with minimal impact on wildlife.

A key to the successful implementation of the SBSP is adaptive management. Scientist advising the SBSP listed a number of key uncertainties that needed research to resolve if we are to be successful in meeting the SBSP goals (Restore and enhance a mix of wetland habitats, provide for flood management, and provide public access and recreation opportunities). One of these key uncertainties is public use impacts on wildlife. Comments received at the project's public meetings and documents (e.g. EIS/R) reflected

the public's desire to have ample public access to these lands but a concern that these public uses not have unacceptable negative impact on wildlife. The adaptive management approach to the implementation of the SBSP is the process that will be followed to assure that the project including public use will not have unacceptable impacts. Studies will be conducted to determine what level of impact the subject public access projects have on wildlife. If these studies indicate that there are ways to adjust the public access to lessen the severity of the impacts, these steps will be implemented. If the impacts are determined to be so severe that they can not be mitigated, the public access will be eliminated. Therefore, though this Compatibility Determination estimates the anticipated impacts of the proposed uses will be minor, the adaptive management studies will provide the decision makers (Refuge Managers in consultation with the SBSP Project Management Team, scientists, and interested members of the public) with accurate information to adjust the approved public access actions based on actual studies of public use impacts on wildlife at these exact sites.

Impacts to Habitat

Wildlife Observation, Photography, Environmental Education and Interpretation

The direct impacts to existing habitat by the proposed public use facilities is the result of 1) upgrading the existing pond levees to allow public use and/or meet ADA standards at Pond A16, SF-2 and the Moffett Bay Trail, 2) adding benches, interpretive signage at all three locations and two chemical toilets with privacy screens at the entrance to the Pond SF-2 trail, and 3) constructing wildlife observation platforms in the ponds at Pond A16 and SF-2. All these facilities are being constructed on existing pond levees with little to no habitat value except the viewing platforms that will be constructed in the ponds themselves connected to the levees by a short boardwalk. The viewing platforms will be built on piles raised over the water to enhance wildlife viewing opportunities. The piles will displace pond water surface and the platforms will create shading where none currently exists.

Trail corridors function as habitat and conduits for movement of plant species, including non-native, invasive plants (Dale and Weaver 1974). Refuge visitors provide a potential mechanism for non-native seed dispersion. Vehicular traffic associated with trail maintenance and Refuge management activities may introduce and spread non-native species onto the Refuge.

These direct impacts are considered minor and will not negatively impact the ability of the Refuge to meet its established purposes, the mission of the National Wildlife Refuge System's mission nor the goals of the SBSP. Stipulations to ensure compatibility are listed on Page 21.

Impacts to Wildlife

Wildlife Observation, Photography, Environmental Education and Interpretation

Immediate responses by wildlife to recreational activity can range from behavioral changes including nest abandonment or change in food habits, physiological changes

such as elevated heart rates due to flight, or even death (Knight and Cole 1991). The long term effects are more difficult to assess but may include altered behavior, vigor, productivity or death of individuals; altered population abundance, distribution, or demographics; and altered community species composition and interactions. According to Knight and Cole (1991), there are three wildlife responses to human disturbance: 1) avoidance; 2) habituation; and 3) attraction.

The magnitude of the avoidance response may depend on a number of factors including the type, distance, movement pattern, speed, and duration of the disturbance, as well as the time of day, time of year, weather; and the animal's access to food and cover, energy demands, and reproductive status (Knight and Cole 1991; Gabrielsen and Smith 1995). Knight and Cole (1991) suggest that sound may elicit a much milder response from wildlife if animals are visually buffered from the disturbance.

Habituation is defined as a form of learning in which individuals stop responding to stimuli that carry no reinforcing consequences for the individuals that are exposed to them (Alcock 1993). A key factor for predicting how wildlife would respond to disturbance is predictability. Often, when a use is predictable -- following a trail or boardwalk or at a viewing deck -- wildlife will accept human presence (Oberbillig 2000). Gabrielsen and Smith (1995) suggest that most animals seem to have a greater defense response to humans moving unpredictably in the terrain than to humans following a distinct path. Wildlife may be attracted to human presence. For example, wildlife may be converted to "beggars" lured by handouts (Knight and Temple 1995), and scavengers are attracted to road kills (Rosen and Lowe 1994).

Results of San Francisco Bay Studies indicate that non-motorized trail use, on raised levees, tangential to tidal mudflat habitat does not have a significant overall effect on the numbers, species richness, or behavior of foraging shorebirds. At the Shoreline site, waterbird abundance and species richness were higher near trail sites than at control sites (Trulio and Sokale 2007). The results of this study are not applicable to other waterbird guilds, especially waterfowl.

It is particularly important to avoid impacts to the threatened snowy plovers which have nested in Pond SF-2 and could be attracted to the habitat being developed in Pond A16 and SF-2. A portion of Pond SF-2 is designed to provide habitat to snowy plovers. The proposed new public facilities are located away from this area to avoid impacts to the species. At Ponds A16 and SF-2, nesting and roosting islands are being created and water levels managed to increase waterbird use of the ponds. The trail at SF-2 is located at least 300 feet from the proposed nesting islands and viewing platforms are located at least 600 feet from the island to reduce the potential to impact snowy plovers (and other wildlife) which might nest on these islands.

The Moffett Bay Trail will not have islands built in the adjacent ponds but this open water habitat already receives heavy waterfowl and fish eating bird use especially in the non-breeding season. As mentioned above, though impacts from the proposed public

uses are not expected to be significant. Scientific studies are planned to develop data on these impacts to allow decision makers information on these impacts and make adjustments or end the proposed uses if unacceptable impacts are documented.

Of the wildlife observation techniques, wildlife photographers tend to have the largest disturbance impacts (Klein 1993, Morton 1995, Dobb 1998). While wildlife observers frequently stop to view species, wildlife photographers are more likely to approach wildlife (Klein 1993). Other impacts include the potential for photographers to remain close to wildlife for extended periods of time, in an attempt to habituate the wildlife subject to their presence and the tendency of causal photographers with low-power lenses to get much closer to their subjects than other activities would require (Dobb 1998). This usually results in increased disturbance to wildlife and habitat, including trampling of plants. Since the wildlife photographers will be restricted to the trails on the tops of the levees as will all trail users, they are not expected to have significantly different impacts to wildlife than other public uses in these proposed projects.

Summary of Effects to Habitat and Wildlife

Increased recreational access resulting from the proposed uses may impact sensitive species and their habitats. However, these effects would be monitored and managed, and implementation of the Adaptive Management Plan would ensure that impacts to sensitive species and their habitats do not reach significant levels. (EIS/R, Section 3.6-193).

Potential Conflicts between User Groups

Shared-use paths attract a variety of user groups who often have conflicting needs. People with disabilities may be particularly affected by trail conflicts if they do not have the ability to quickly detect or react to hazards or sudden changes in the environment. Measures to reduce potential conflicts between user groups would include providing information at the trailhead, Visitor's Center, and in the Refuge's brochures that clearly indicates permitted users and rules of conduct. Providing signs that clearly indicate which users have the right of way would help reduce conflict (Federal Highway Administration 2001).

Potential conflict with other public use such as hunting and wildlife observation will be minimized by using trail head signs and other media to inform the various users about current public uses. Hunting on the ponds adjacent to the proposed Moffett Bay Trail is restricted to existing hunting blinds which have been placed at sufficient distance from the trail to assure safety for trail users.

Determination: Wildlife Observation, Photography, Environmental Education and Interpretation are compatible with the stipulations listed on Page 21.

Stipulations: Stipulations to ensure compatibility are addressed on Page 21.

Justification: Wildlife observation, wildlife photography, environmental education, and interpretation are Priority Public Uses as defined by the National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System

Improvement Act of 1997 (Public Law 105-57), and if compatible, are to receive enhanced consideration over other general public uses. These uses are supportive of the Refuge's purposes and the mission of the National Wildlife Refuge System. One of this Refuge's purposes is to provide opportunities for wildlife-oriented recreation and nature study. Wildlife observation, photography, and interpretation would provide an excellent forum for allowing public access and increasing understanding of Refuge resources. The Refuge is one of the few areas in the urban South San Francisco Bay to be able to offer these uses. In the urban South San Francisco Bay, the Refuge is the only location with former commercial salt ponds that are being managed for wildlife. Therefore, there are no areas off the Refuge that can offer these wildlife oriented activities in this unique habitat.

Potential for wildlife disturbance is minimal. Restricting the disturbance to an established trail with appropriate set-back distances (buffers) would increase predictability of public use patterns on the Refuge, allowing wildlife to habituate to non-threatening activities. Moreover, consolidating compatible recreational activities to designated trails, located at the edge of the Refuge habitat boundary, reduces habitat fragmentation, thereby maintaining a core "sanctuary area" of the Refuge for more sensitive species.

Mandatory Reevaluation Date (provide month and year)

Mandatory 15-Year Reevaluation Date (for priority public uses)

Mandatory 10-Year Reevaluation Date (for non priority public uses)

Compatibility Determination 2: Uses: Non Priority Uses at Pond A16, Moffett Bay Trail and Pond SF-2

Hiking, Jogging and Bicycling

Hiking, jogging and bicycling are considered together in Part 2 of this compatibility determination because they are not considered Priority Public Uses in the National Wildlife Refuge System as defined in the National Wildlife Refuge System Improvement Act of 1997(P.L. 105-57) because they are not wildlife-dependent. This means these uses are not dependent upon wildlife for the participant to engage in the activity as is wildlife observation or hunting. However, if approved, these activities would be conducted on the same public access facilities as the Priority Public Uses evaluated in Part 1 of this Compatibility Determination. Many elements of priority and non priority public uses overlap with each other. In fact, many hikers and bicyclist (and to a lesser extent joggers) are using the trails to access portions of the Refuge to conduct wildlife observation. Thus, it is helpful to consider all of these uses in the same document. These non priority uses were previously approved and ongoing on one of the subject trails (Mallard Slough Trail at Pond A16 in Alviso) but would be new on other trails (Pond SF-2 and Moffett Bay Trail at Ponds A2W, AB1 and A3W).

The Refuge proposes to provide opportunities for hiking, jogging and bicycling that are compatible with the Refuge purposes. Detailed descriptions of the restoration/public use and predicted effects are given in the EIS/R and incorporated by reference herein. Hiking, jogging and bicycling are proposed to occur in three principal locations at Pond A16, and the Moffett Bay Trail at Ponds A2W, AB1 A3W in the Alviso Pond Complex and Pond SF-2 in the Ravenswood Pond Complex.

Currently both the Alviso and Ravenswood Pond Complexes attract hikers, joggers and bicyclist. A more detailed description of the existing uses of the Alviso and Ravenswood Salt Ponds is provided on Page 4 (Alviso) and Page 5 (Ravenswood) of this document. The infrastructure upgrades at the three public use sites (Pond A6, Moffett Bay Trail and Pond SF-2) are the same as was covered in Part I of this Compatibility Determination covering the following Priority Public Uses: Wildlife Observation, Photography, Environmental Education and Interpretation.

Hiking, jogging and bicycling are not considered Priority Public Uses but are allowed to occur on Refuges if they are appropriate and compatible with Refuge purposes and the National Wildlife Refuge System mission. At this Refuge, hiking and bicycling are used to reach designations on Refuge trails for the public to conduct wildlife dependent activities such as wildlife observation, photography and environmental interpretation. Though jogging is not frequently used to reach designations on the Refuge for the wildlife dependent activities, many joggers using the Refuge have advised Refuge managers and staff that they jog on the Refuge because they can get health benefits while they observe and appreciate wildlife and natural landscapes. Therefore, each of these uses frequently facilitate the wildlife-dependent priority public uses that Refuge Managers are encourage, by the Refuge Improvement Act, to provide.

Frequency, Magnitude, and Restrictions of Use

Access to the trails, viewing platforms and interpretive stations would be year round on a daily basis from sunrise to sunset from designated access points. Currently the Ravenswood and Alviso Pond Complexes attract hikers, joggers, and bicyclist who use the trails that are currently open in these Pond Complexes (much less frequently at the Ravenswood Pond Complex than the Alviso Pond Complex). The proposed trail rehabilitation project and viewing platforms with interpretive displays would enhance these activities. The new uses proposed in the Alviso and Ravenswood Pond Complexes include opening of the SF-2 trail (0.7 mile) which was previously only open along the portion of the Bay front trail owned by the Mid-Peninsula Open Space District and opening the Moffett Bay Trail which is completely closed to public access except to hunters during the waterfowl hunting season. Due to the high visibility of the enhanced public access features and new trail openings it is likely that overall visitation to these areas for hiking, jogging and bicycling will increase.

Interpretive displays, focusing on Refuge habitats, estuarine restoration, improved management, and fish and wildlife, would support the mission of the National Wildlife Refuge System and Refuge's purposes by enhancing the wildlife observation experience and promoting low impact use to maintain compatibility of recreational uses with wildlife.

Restrictions on Use

Special events such as competitions would not be allowed on the Refuge-owned portion of the Bay Trail. These events often concentrate large numbers of people thus increasing wildlife disturbance. To ensure safety of user groups sharing the trail, public access would only be allowed during daylight hours. Bikes must be ridden at safe speeds and yield to pedestrians and signs would reflect that requirement.

Availability of Resources

Construction of public use facilities for hiking, jogging, and bicycling are the same as those detailed in Part 1 of this Compatibility Determination which covers Priority Public Uses. They are not in addition to the Part 1 costs. The costs of construction, operation, maintenance of these facilities are also the same. Therefore, please refer to "Availability of Resources" in Part 1 of this CD.

Anticipated Impacts of the Use

As with the implementation of the proposed Priority Public Uses analyzed in Part 1 of this Compatibility Determination, a key to the successful implementation of the SBSP is adaptive management. Scientist advising the SBSP listed a number of key uncertainties that needed research to resolve if we are to be successful in meeting the SBSP goals. One of these key uncertainties is public use impacts on wildlife. Comments received at the SBSP Project's public meetings and compiled in documents (e.g. EIS/R) reflected the

public's desire to have ample public access to these lands but a concern that these public uses not have unacceptable negative impact on wildlife. The adaptive management approach to the implementation of the SBSP is the process that will be followed to assure that the project including public use will not have unacceptable impacts. Studies will be conducted to determine what level of impact the subject public access projects will have on wildlife. If these studies discover that there are ways to adjust the public access to lessen the severity of the impacts these will be implemented. If the impacts are determined to be so severe that they can not be mitigated, the public access will be eliminated. Therefore, though this Compatibility Determination estimates the anticipated impacts of the proposed uses to be minimal, the adaptive management studies will provide the decision makers (Refuge Managers in consultation with the SBSP Project Management Team, scientists, and interested members of the public) with information to adjust the approved public access actions based on actual studies of public use impacts on wildlife at these sites.

Impacts to Habitat

Because the non-Priority Public Uses (hiking, jogging, and bicycling) will use the exact same facilities as the Priority Public Uses (wildlife observation, photography, environmental education and interpretation), the impacts to the habitat by the upgrading of the trails and construction of the other facilities such as wildlife viewing platforms will be the same as listed under Impacts to Habitat under Part 1 on Page 12 of this Compatibility Determination.

Impacts to Wildlife

Results of studies conducted in the San Francisco Bay Area indicate that non-motorized trail use, on raised levees, tangential to tidal mudflat habitat does not have a significant overall effect on the numbers, species richness, or behavior of foraging shorebirds. At the Shoreline site, waterbird abundance and species richness were higher near trail sites than at control sites (Trulio and Sokale 2007). The results of this study are not applicable to other waterbird guilds, especially waterfowl.

Wildlife Response to Jogging & Hiking

Rapid movement by joggers is more disturbing to wildlife than slower moving hikers (Bennett and Zuelke 1999). However, joggers tend to spend less time in a particular area than pedestrians and are less likely to directly approach or otherwise disturb wildlife. The effects of human disturbance can be reduced by restricting human activity to an established trail. Animals show greater flight response to humans moving unpredictably than to humans following a distinct path (Gabrielsen and Smith 1995).

Joggers would be restricted to an established, well-defined path that is sufficiently distant from undisturbed wildlife habitat to prevent significant disturbance. Special events and large group training would not be allowed on the Refuge's portion of the trail.

Wildlife Response to Bicycling

Rapid movement directly toward wildlife frightens them, while movement away from or at an oblique angle to the animal is less disturbing (Knight and Cole 1991). Road noise has been shown to negatively affect birds (Bowles 1995), although the response is often difficult to assess because it may be confounded by responses to visual stimulus. Knight and Cole (1991) suggest that sound may elicit a much milder response from wildlife if animals are visually buffered from the disturbance.

Bicycling is not anticipated to disturb wildlife more than other public access such as hiking because riders do not directly approach wetlands or areas where wildlife congregate, and by restricting the use to the designated trail, the noise source is predictable.

Potential Conflicts Between User Groups

Shared-use paths attract a variety of user groups who often have conflicting needs. People with disabilities may be particularly affected by trail conflicts if they do not have the ability to quickly detect or react to hazards or sudden changes in the environment.

Bicycles using the same trail as pedestrians may present a safety hazard to visitors. If the number of trail users increases as predicted, the potential for accidents or user group conflicts may also increase. However, the proposed trails meet Federal Highway Administration standards for shared use path design (Federal Highway Administration 2001) and should be able to accommodate increased use. Although user groups are not physically separated, the trails provides sufficient tread width, grade (essentially flat), viewing distance, clearance, and a firm and stable surface for safe, shared use by pedestrians and joggers, as well as bicycle riders traveling at a safe speed. The existing trails in the Refuge's Alviso Pond System are similar in width as the proposed trails and have been open to the same public uses for over 30 years with very few accidents reported to the Refuge. Measures to reduce potential conflicts between user groups would include providing information at the trailhead, Visitor's Center, and in the Refuge's brochure that clearly indicates permitted users and rules of conduct. Providing signs that clearly indicate which users have the right of way would help mitigate conflict (Federal Highway Administration 2001). Trail etiquette signing would clearly state that bicycles should give an audible warning before passing other trail users.

Potential conflict with other public use such as hunting, interpretation etc. will be minimized by using trail head signs and other media to inform the various users about current public uses.

Determination: Hiking, Jogging, and Bicycling are compatible as long as the stipulations listed on Page 21 are implemented.

Stipulations: Stipulations to ensure compatibility are listed on Page 21.

Justification:

None of the above uses are Priority Public Uses of the Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57). However, the refuge manager believes by allowing these uses, more people will be exposed to the importance of habitat and wildlife to people, as well as the benefits the National Wildlife Refuge System has to wildlife in their communities. Further, hiking, jogging, bicycling are traditional uses of the Refuge to facilitate Priority Public Uses. Because hiking, bicycling and jogging allow access to the Refuge to allow the public to participate in Priority Public Uses such as wildlife observation and photography; these uses are supportive of the Refuge's purposes and the mission of the National Wildlife Refuge System. They all provide alternatives to motor vehicle transportation for enjoying the refuge and are often necessary to allow the public to get away from the urban landscape that dominates the San Francisco Bay area.

The Refuge is one of the few areas in the urban South San Francisco Bay to be able to offer these uses. In the urban South San Francisco Bay, the Refuge is the only location with former commercial salt ponds that are being managed for wildlife. Therefore, there are no areas off the Refuge that can offer these activities in this unique habitat. In addition, the Service evaluated the return on the investment to the local economies from having a Refuge located in the community. The Report Banking on Nature, September 2007, found that the Don Edwards San Francisco Bay National Wildlife Refuge returned \$43.55 to the local communities for every \$1.00 of federal appropriations. Not only does public access benefit the communities' appreciation of the Refuge System and nature in general, it has a positive economic benefit for the local community.

The approval of non Priority Public Uses provides the Refuge an opportunity to reach out to non-traditional Refuge user groups; to encourage bicyclists, and joggers to observe wildlife and to learn about the National Wildlife Refuge System.

The stipulations outlined above should minimize potential impacts relative to wildlife/human interactions. In particular, the adaptive management studies will determine the exact nature of the public use impacts on the Refuge's wildlife and allow Refuge managers to adjust public use to further minimize wildlife impacts or discontinue those activities that are unacceptable. The proposed activities will not materially interfere or detract from the fulfillment of the NWRS Mission or the purposes of the Refuge.

Mandatory Reevaluation Date (provide month and year)

_____ Mandatory 15-Year Reevaluation Date (for priority public uses)

_____ X _____ Mandatory 10-Year Reevaluation Date (for non priority public uses)

Public Review and Comment for both Priority and Non Priority Uses

The Refuge's Compatibility Determination process has been described to the public in 2004 at a SBSP Stakeholders meeting open to all members of the public. The process was again described at the Geographic focused SBSP meetings held in Menlo Park (covering Pond SF-2 public use proposals) and Alviso (covering Pond A16 and the Moffett Bay Trail) in 2008. Members of the public were advised that the draft CDs would be available on the SBSP and Refuge's websites and they were encouraged to submit comments.

The notice announcing these draft Compatibility Determinations is posted at the Refuge Headquarters Visitor Center in Fremont and Refuge Environmental Education Center in Alviso and the CDs are available on the Refuge web site: <https://desfbay.fws.gov/> and SBSP website: southbayrestoration.org and in hard copy at the Refuge Headquarters and that the Refuge Environmental Education Center. All subscribers to the SBSP website will be notified by email that the CDs are posted and available for review and comment.

A copy of the draft Compatibility Determinations can be requested from the refuge by calling 510/792-0222. The public will have 30 calendar days after these notices are published to provide comments, via email or regular mail.

Send email comments to: sfbaynwrc@fws.gov

Send regular mail comments to: Refuge Manager, 9500 Thornton Ave., Newark, CA 94560

Stipulations Necessary to Assure Compatibility for both Priority and Non Priority Uses

- Construction would occur during specific periods of the year to avoid disturbance or impacts to bird during breeding season
- Feeding of wildlife will not be allowed.
- Public use will be confined to trail surfaces and the public will not be allowed to enter adjacent habitat
- Trails will be at least 300 feet from nesting islands that have the potential to be used by snowy plovers and at least 600 feet from viewing platforms where the public is expected to spend more time.
- Adaptive management studies will be conducted following the SBSP Adaptive Management Plan (SBSP EIS/R). In these studies, public use areas will be monitored at various times of the year through scientifically based studies to determine impacts to wildlife and habitat from these public uses. If necessary, public use will be adjusted to minimize disturbance to wildlife or public access will be eliminated if the impacts are found to be unacceptable.

- We will include information at trailheads in the Refuge Visitor Center about permitted uses, rules of conduct and the effects of human impacts on habitat and wildlife resources in refuge publications and flyers, on kiosks and in interpretive programs.
- Periodic law enforcement will ensure compliance with regulations and area closures, and will discourage vandalism and off trail activity.
- Several stipulations would minimize the potential for impacts from non-native species invasion. Public uses would be restricted to level surfaces, which would tend to prevent the transportation of non-native seed from the levees and boardwalks onto the Refuge by wind, water, or gravity. Second, non-invasive plants that germinate on the levee top and sides would be treated with herbicide. Third, monitoring and surveillance of invasive species would increase, reducing the potential for new invasive species to become established on the trail and spread into the Refuge.
- Existing hunting blinds in Ponds A3W, AB2 and A2E will be moved if they are too close to the proposed Moffett Bay Trail to provide for safety during the waterfowl hunting season.
- Potential conflict with other public use such as hunting, interpretation etc. will be minimized by using trail head signs and other media to inform the various users about current public uses.
- At Alviso pond A16 and Ravenswood pond SF-2, constructing raised platforms to view wildlife will allow for a superior wildlife viewing experience at a minimal disturbance level to wildlife and habitat.
- Trails will be located on existing pond levees. The levees and the borrow ditches adjacent to the levees separate the viewer from wildlife in the ponds. The public is unlikely to cross the deep open water to gain a closer view of wildlife.
- Trails would be subject to seasonal closures if deemed necessary during bird breeding season (April – August) based on the species needs and the results of adaptive management studies.

NEPA Compliance for Refuge Use Decision (check one below)

Conducted with Comprehensive Conservation Plan

Categorical Exclusion without Environmental Action Statement

Categorical Exclusion and Environmental Action Statement

Environmental Assessment and Finding of No Significant Impact

Environmental Impact Statement and Record of Decision

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Refuge Determination/Concurrence/Approval

Prepared by: _____ Date _____

Project Leader: _____ Date _____

Concurrence: _____ Date _____

Approval: _____ Date: _____