Updated Biological Resource Study & Supplemental Wetland Delineation
Samoa Town Master Plan
Humboldt County, California

Prepared for the Samoa Pacific Group
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Summary

The Samoa Pacific Group, LLC continues to pursue acquisition of appropriate Coastal Development Permit approvals, in furtherance of the proposed merger, subsequent subdivision, and phased development of the Samoa Town Master Plan (STMP) project area on the North Spit of Humboldt Bay in Humboldt County, California. As part of this process, the Humboldt County Planning and Building Department is currently preparing a Supplement to the Master Environmental Impact Report (SMEIR) to evaluate potential environmental impacts resulting from substantial changes to the proposed implementation of the Samoa Town Master Plan and/or to environmental changes that may have occurred since certification of the Final Master EIR by the Humboldt County Board of Supervisors in 2009.

As part of this additional analysis, J.B. Lovelace & Associates was engaged by the project applicant in 2018 to conduct an updated biological resource study and supplemental wetland delineation in order to provide current information regarding existing biological resources occurring within the STMP study area to better inform this process. Fieldwork and data collection associated with these tasks were performed during April, June, July, and November of 2018, and salient observations resulting from this fieldwork are briefly summarized below.

Two State and Federally Endangered plants (Menzies' wallflower, *Erysimum menziesii* and beach layia, *Layia carnosa*) and one additional special status plant (dark-eyed gilia, *Gilia millefoliata*) were found to occur in intact foredune and degraded dune habitats on both sides of New Navy Base Road, and west of Vance Avenue and adjacent abandoned industrial log storage areas. One previously documented (Mad River Biologists 2004) occurrence of dark-eyed gilia and two other special status plant species (pink sand-verbena, *Abronia umbellata* ssp. *breviflora* and American glehnia, *Glehnia littoralis* ssp. *leiocarpa*) in the northern portion of the study area (on both sides of New Navy Base Road) were not relocated during 2018 and are presumed to be extirpated from these specific locations.

Significant observations of special status wildlife species were also documented during this process and although each observation occurred outside of the immediate study area, they are included herein for consideration due to their proximity. These consisted of: repeated observations of Peregrine Falcon (*Falco peregrinus anatum*) hunting, roosting on industrial structures to the southeast (~1,500 feet) of the study area, and engaging in conspecific aggressive interactions during the breeding season; a single Northern Red-legged Frog (*Rana aurora*) loafing near a concrete drainage feature within 150 feet of the eastern edge of the study area; and five active Osprey nests just beyond the eastern and southeastern edge of the study area. One of the latter is ~100 feet

from the southeastern study area boundary. Potentially important natural (e.g., cavities in mature conifer trees, etc.) and anthropogenic (e.g., abandoned buildings, etc.) wildlife habitat features were also observed throughout the study area.

Results from the supplemental wetland delineation and delineation of non-wetland Environmentally Sensitive Habitat Areas (ESHA) confirm the persistence of previously delineated wetland and non-wetland ESHA, document changes in the boundaries of said habitats where they occurred, and present evidence for recently identified ESHA not previously delineated.

Changes to previously identified ESHA boundaries were primarily attributable to vegetative development and plant community successional dynamics that have occurred during the 14-year interim since the originally delineation effort (Mad River Biologists 2004) was undertaken. These changes are manifest in the progressive growth and development of the woody vegetation associated with wetland and non-wetland (i.e., Northern Coastal Scrub) ESHA. Where both phenomena have occurred (in both wetland and non-wetland ESHA), the expansion of the vegetation has resulted in an expanded ESHA boundary. For the most part, these changes have been subtle and those of note are discussed herein. Elsewhere, the potential for additional expansion is limited, given the extensive physical constraints in the surrounding landscape inherited from the industrial legacy of the location.

Additional new wetland features identified in 2018 include herbaceous and woody dune hollow Coastal Act wetlands (ESHA) occurring in the degraded foredune area between New Navy Base Road and either Vance Avenue or the adjacent (non-ESHA) abandoned industrial area near the Samoa Resource Recovery Center facility. Two additional “man-induced” Coastal Act wetland features were also identified, which do not warrant ESHA designation based on rationale that includes their anthropogenic origin as well as their isolation from the surrounding ecological context and corresponding lack of significant ecological benefit provided.

Finally, fifty invasive plant species were encountered within the study area, seven more than reported previously (Morrissette 2013). Many of these are well established and are spreading throughout the study area and into the surrounding landscape. One particular species, gorse (*Ulex europeaus*) is of particular concern given its propensity for dispersal and difficulty in eradication. This species was located just north of the Samoa Resource Recovery Center, in the abandoned industrial area (log deck). Additional invasive plant species documented as part of this effort are depicted in figures provided herein.

1.0 Introduction

The Samoa Pacific Group, LLC (project applicant) continues to pursue acquisition of appropriate Coastal Development Permit approvals, in furtherance of the proposed merger, subsequent subdivision, and phased development of the Samoa Town Master Plan (STMP) project area ("study area") on the North Spit of Humboldt Bay in Humboldt County, California (Figure 1). As part of this extensive process, various studies have been performed to provide relevant information necessary for the evaluation of potential project-related effects to the biological resources associated with the study area. Some of these studies contributed to the development of the *Samoa Town Master Plan Final Master Environmental Impact Report* (MEIR) [Humboldt County Community Development Services 2009], which was certified by the Humboldt County Board of Supervisors in 2009. Since that time, the need has been recognized for additional analysis of potential environmental impacts resulting from substantial changes to the proposed implementation of the Samoa Town Master Plan and/or to environmental changes that may have occurred since the previous studies were conducted. Towards that end, the Humboldt County Planning and Building Department is currently in the process of preparing a Supplement to the Master Environmental Impact Report (SMEIR), with assistance from Planwest Partners, Inc.

As part of this additional analysis J.B. Lovelace & Associates was engaged by the project applicant in 2018 to conduct an updated biological resource study and supplemental wetland delineation to provide current information regarding existing biological resources occurring within the STMP study area. Our effort builds on pertinent previous studies and addresses any substantial changes to the relevant biological resources and/or their associated conservation status that may have occurred in the interim. Fieldwork and data collection were performed during April, June, July, and November of 2018, with additional boundary refinements performed during April of 2019. This report documents those efforts and provides our findings for consideration in this process.

1.1 Previous Studies & Relevant Project Background

Initial studies of the biological resources associated with the study area were undertaken to assist with the development of the *Samoa Town Master Plan Final Master Environmental Impact Report* [Humboldt County Community Development Services 2009] (MEIR), which was ultimately certified by the Humboldt County Board of Supervisors in 2009. These initial studies included: *Samoa Town Master Plan Biological Resource Study* and *Botanical Survey for Samoa Town Master Plan Coastal Access and Visitor Use Area* (Mad River Biologists 2004, 2009; respectively.

Subsequently, in 2011 the Humboldt County Board of Supervisors conditionally approved the Samoa Town Master Plan Land Use Plan (SMTP-LUP) Overlay Designation, pending adoption of the California Coastal Commission's (CCC) modifications to the proposed Local Coastal Plan amendment (*LCP Amendment HUM-MAJ-01-08*) to the Humboldt Area Plan (HBAP). Whereupon such

Figure 1. Samoa Town Master Plan Study Area Vicinity.

conformance was effectively demonstrated, *LCP Amendment HUM-MAJ-01-08* was formally approved by the Humboldt County Board of Supervisors and effectively certified by the Coastal Commission on July 17, 2012 and August 10, 2012, respectively.

One such condition for approval of the STMP-LUP and *LCP Amendment HUM-MAJ-01-08* required the completion of an updated survey of the special status botanical resources, the development of an invasive vegetation management plan, and an analysis of the historic landscape context associated with the study area. These tasks were conducted in 2013, and are documented in *Addendum: Samoa Town Master Plan Biological Resource Study, Botanical Survey and Invasive Plant Management Plan* (Morrissette 2013). That report also describes changes to the original (Mad River Biologists 2004) Environmentally Sensitive Habitat Area (ESHA) designations of various locations within the study area following recommendations made by California Coastal Commission Ecologist, John Dixon (2011), following his review of Mad River Biologists' initial study (Mad River Biologists 2004) and site visit.

More recently, in 2015, J.B. Lovelace & Associates performed a "reduced buffer analysis" related to a small isolated dune hollow wetland ESHA within the study area, which extends into the existing right of way of Vance Avenue (J.B. Lovelace & Associates 2015). Following this work, the Coastal Commission further amended the HBAP in 2016 (*Commission LCP Amendment LCP-01-HUM-15-0004-1*) to include additional STMP-specific policies and standards beyond those originally certified in 2012. As progress towards proposed implementation of the SMTP continues, this updated biological resource study and supplemental wetland delineation will serve to provide a current assessment of these resources for review and evaluation at this stage in the process.

2.0 Existing Conditions & Historical Context

The Samoa Town Master Plan study area lies within the California Coastal Zone as defined in the California Coastal Act (1976) and includes the historic Town of Samoa in an unincorporated portion of the Samoa Peninsula, on the North Spit of Humboldt Bay in Humboldt County, California (Figure 1). For the purposes of the current analysis, the extent of our study area is generally consistent with that of the most recent previous biological study (Morrissette 2013), but also includes two potential "Visitor Use Area" options on the west side of New Navy Base Road, which were both addressed in the original biological resource study (Mad River Biologists 2004): one in the northern portion of the study area near the Samoa Booster Station (also the focus of Mad River Biologists' 2009 effort), and the other near the southern boundary of the study area in the vicinity of LP Drive. The small (~2 acre) parcel (Assessor Parcel Number [APN] 401-031-072) south of LP Drive and east of New Navy Base Road was also addressed in the current analysis due to its proximity to the southern Visitor Use Area option and its contiguity with the greater area under consideration.

The current study area addressed in 2018 consists of the following parcels: 401-031-069, 401-031-072, and [the majority of] 401-031-070 (Humboldt County 2018). Excluded from this 2018 analysis are two areas that were addressed in the original biological study (Mad River Biologists 2004), but are not subject to analysis in 2018 based on their exclusion from the current project proposal

(Wheeler pers. com. *in* O'Hern pers com.). These excluded areas consist of: the Northwest Pacific Railroad right-of-way (APN 401-031-039) and that portion of APN 401-031-070 east of said right-of-way, with the exception of the area that includes the Samoa Cookhouse. Similarly excluded, is the recently created parcel (APN 401-031-067), which now hosts the Samoa Resource Recovery Center facility.

2.1 Historical Context

A thorough presentation of the historical context of the STMP study area can be found in *Addendum: Samoa Town Master Plan Biological Resource Study, Botanical Survey and Invasive Plant Management Plan* (Morrissette 2013), however, a general description of the progression of influential anthropogenic events that have significantly contributed to the presently-existing habitat and landscape conditions follows.

In the late 1800s, relevant portions of the Samoa Peninsula underwent dramatic conversion from a native coastal landscape to developed industrial, and to a lesser extent, residential areas. Much of the pre-existing native coastal dune, coastal scrub, and coastal wetland habitat associated with the STMP study area was converted to facilitate the creation and operation of a lumber mill, including construction of the mill itself, log decks, industrial processing and storage areas, roads, railroads, trestles, docks, and the actual Town of Samoa to provide housing for lumber mill employees and their families. Operation of the lumber mill (and subsequent plywood and pulp mills) continued under varying ownership until wood products processing eventually ceased circa 1980.

This process of landscape conversion included the draining and filling of dune hollow wetlands, as well as the grading and stabilization of native dune habitats with imported fill material, construction of artificial berms and retaining walls, and often with transplantation of invasive vegetation such as European beachgrass (*Ammophila arenaria*) and iceplant (*Carpobrotus* spp.). In addition to direct habitat conversion, hydrologic alteration, substrate stabilization, and the establishment and development of exotic vegetation associated with such development, also influenced pre-existing hydrogeomorphological processes in adjacent landscapes, thereby initiating a cascading trajectory of indirect alteration to native habitats as well.

Additional development occurring in the mid-late 1900s, included construction and upgrades to transportation corridors and access roads (e.g., New Navy Base Road, LP Drive, etc.), and the installation of above- and below-ground utilities, some of which continue to be periodically maintained (e.g., Humboldt Bay Municipal Water District's [HBMWD] industrial water pipeline on the east side of New Navy Base Road, etc.).

2.2 Current Environmental Conditions and Land Use Context

Detailed descriptions of the plant communities, species associations, and habitat conditions occurring within the STMP study area have been provided in Mad

River Biologists' *Samoa Town Master Plan Biological Resource Study* (2004), and those characterizations continue to be generally applicable within the timeframe of our 2018 updated study. In an effort to avoid the unnecessary redundancy of an exhaustive reiteration of these site conditions, we refer the reader to the aforementioned source. However, where evidence of substantial habitat degradation, vegetation community succession, and/or otherwise divergent characteristics was observed during our 2018 fieldwork, such instances are addressed in Section 4 (Results), below. We do, however, provide here a general description of the STMP study area and the most recent zoning and land use designations where relevant in the context of evaluating impacts to biological resources.

Current environmental conditions within the study area continue to bear evidence of the historic legacy presented above. The northeastern portion of the study area, south of New Navy Base Road, consists of existing residential development and associated facilities (i.e., the historic Town of Samoa) as well as both degraded and intact Northern Foredune, Northern Coastal Scrub, and Coastal Coniferous Forest habitats. Development associated with the Town of Samoa, consist of buildings, roads, and streets; and the associated vegetation is largely comprised of introduced and alien species, typical of urban landscapes in the region (i.e., the so-called "urban landscape" [Mad River Biologists 2004; Morrissette 2013; Dixon 2011]). Current zoning and land use designations for these developed areas include "Residential," "Public Recreation," "Commercial Recreation," "Commercial General" and a small portion of "Natural Resource"-designated land associated with a forested ravine between Vance and Bay View Avenues (Humboldt County 2018). The aforementioned remnant native coastal habitats, largely situated between the described urban areas and New Navy Base Road, are currently designated as "Natural Resource" areas (Humboldt County 2018) and were almost entirely delineated as Coastal Act wetland and non-wetland Environmentally Sensitive Habitat Areas (ESHA) by the previous investigator (Morrissette 2013.

The southwest portion of the study area, east of New Navy Base Road, is predominantly comprised of abandoned industrial areas, consisting of log processing and storage areas ("log decks") and the Vance Avenue right-of-way. These areas were designated as "Developed Dune Non-ESHA" or "Degraded Dune Non-ESHA" by the previous investigator (Morrissette 2013) following review and comment by Coastal Commission staff (Dixon 2011). With the exception of two remnant woody dune hollow wetland ESHA described below, the Vance Avenue right-of-way is otherwise bounded by Developed Dune Non-ESHA, Degraded Dune Non-ESHA, or urban landscape Non-ESHA areas in this portion of the study area.

The abandoned log decks are almost entirely underlain by pavement and/or imported gravel fill with some residual traces of wood slash and associated organic debris. Following closure of the mills and subsequent abandonment,

these areas have become extensively colonized by ruderal vegetation, much of which is comprised of invasive plant species. Current zoning and land use designations for these areas include “Residential,” Public Facilities,” and “Industrial Business Park” (Humboldt County 2018). The exception to this includes specific areas designated as “Natural Resource” (Humboldt County 2018), which include additional delineated Coastal Act Wetland and non-wetland ESHA (Morrissette 2013).

The largest of these Natural Resource areas is an extensive, linear, degraded Northern Foredune and dune hollow wetland complex on the east side of, and parallel to, New Navy Base Road, and extends between New Navy Base Road and the log decks. The northern portion of this complex is contiguous with the aforementioned delineated degraded Northern Foredune ESHA (Morrissette 2013) north of the residential area accessed by Sunset Avenue and Samoa Court.

In the relevant previously mentioned analyses (Mad River Biologists 2004; Morrissette 2013), consideration of this large complex ceased at the intersection of New Navy Base Road and LP Drive at its southern extent, despite the brief continuation of ownership, and similar habitat characteristics and constraints, on the south side of LP Drive. As mentioned, this small (~2 acre) component (APN 401-031-072) of the larger linear feature was considered in this 2018 study; this small parcel currently retains its historic zoning and land use designation of “General Industrial” (Humboldt County 2018).

In aggregate, this larger system includes both degraded Northern Foredune; remnant Northern Foredune; Northern Coastal Scrub; and dune hollow wetland ESHA (Morrissette 2013). Of additional ecological significance, the portion of this complex addressed in prior analyses (Mad River Biologists 2004; Morrissette 2013) was also found to support occurrences of the State and Federally Endangered plant, beach layia (*Layia carnosa*), and the California special status plant species, dark-eyed gilia (*Gilia millefoliata*).

From this linear Natural Resource-designated area, a central lobe-shaped extension protrudes to the south-southeast, into the surrounding abandoned log deck complex. This protruding lobe includes a transitional slope between upper and lower portions of the log deck, which supports a (previously delineated [Mad River Biologists, 2004; Morrissette 2013]) non-wetland Northern Coastal Scrub ESHA, and along the toe of this slope lies a contiguous (delineated [Mad River Biologists 2004; Morrissette 2013]) Coastal Act dune hollow wetland whose hydrologic regime is, at least in part, artificially influenced by the effluent outfall of an existing, historic wastewater treatment system (Morrissette 2013; Dixon 2011).

This Coastal Act dune hollow wetland/Northern Coastal Scrub ESHA complex extends to the northwest, along the western edge of the log deck where it

gradually transitions into degraded Northern Foredune ESHA. At the region of this transition, the previous investigators (Mad River Biologists 2004) also identified two small disjunct aquatic features, which were classified as "man-induced" Coastal Act wetland habitats on the basis that both occurred on the western edge of the log deck and are underlain by a superficial layer of sandy silt on top of compacted (foreign) gravel fill material. Furthermore, such "man-induced" wetlands were not considered by Mad River Biologists (2004) to be ESHA due to their, "low functional value and relative isolation." These specific (non-ESHA) "man-induced" Coastal Act wetlands were not discussed in the Coastal Commission's review (Dixon 2011) of the original biological resource study (Mad River Biologist 2004), and Morrissette (2013) maintained their "man-induced" (non-ESHA) classification.

Two additional narrow, linear areas also designated as Natural Resource (Humboldt County 2018) extend inland from the large, linear complex along the east side of New Navy Base Road, though neither was previously delineated as ESHA. Both consist of sloped geomorphic transitions: one extending to the northeast, separates upper and lower portions of the log deck (designated as "Developed Dune Non-ESHA" [Morrissette 2013]); and the other extends to the south-southeast, and forms the seaward slope between the lower log deck and the existing residential area accessed by Sunset Avenue (designated as "Degraded Dune Non-ESHA [Morrissette 2013]).

Along the southeastern edge of the study area, within the surrounding log deck complex and on the west side of Vance Avenue, three separate and discrete aquatic features exist. Two of these were delineated as Coastal Act (scrub-shrub) dune hollow wetland ESHA (Mad River Biologists 2004; Morrissette 2013) and are designated as Natural Resource areas. The third is the settling pond associated with the existing wastewater treatment facility, which was classified (Mad River Biologist 2004; Morrissette 2013) as a "man-induced" (non-ESHA) Coastal Act wetland. The zoning and land use designation associated with this settling pond appears to be "Public Facility," though its southern end extends into the adjacent Natural Resource area associated with the nearby Coastal Act dune hollow wetland ESHA to the south (Humboldt County 2018).

The remaining portions of the study area addressed in 2018 include the two Visitor Use Areas under consideration on the west side of New Navy Base Road. These areas also have the Natural Resource designation (Humboldt County 2018) and primarily consist of a mosaic of upland degraded and intact native Northern Foredune habitats. Throughout this foredune complex to the west of New Navy Base Road (including in each of the two Visitor Use Areas) seven distinct categories of non-wetland ESHA were recognized (and delineated) during the aforementioned previous investigations (Mad River Biologists (2004, 2009; Morrissette 2013). These consisted of:

- Beach Strand ESHA
- Northern Foredune ESHA
- Open Sand ESHA
- Degraded Dunes ESHA
- Iceplant ESHA
- Yellow Bush Lupine ESHA
- European Beachgrass ESHA

Both of the Visitor Use Area options are bounded by "Beach Strand" ESHA and the Pacific Ocean (a marine intertidal "water of the U.S.," not addressed in Mad River Biologists 2004, 2009; Morrissette 2013) to the west, and in the northeastern portion of the study area near the Samoa Booster Station, by a discrete palustrine emergent Coastal Act dune hollow wetland ESHA, and a complex of non-wetland Northern Coastal Scrub and Coastal Coniferous Forest ESHA (Mad River Biologists 2004, 2009 ; Morrissette 2013), which are contiguous with adjacent similar habitats extending beyond the focus area of the current effort.

The foredune complex in the vicinity of the Samoa Booster Station in the northeastern region of the study area was also found to support occurrences of the State and Federally Endangered plant, beach layia (*Layia carnosa*) (Mad River Biologists 2004, 2009; Morrissette 2013), as well as the California special status plant species: pink sand-verbena (*Abronia umbellata* var. *breviflora*) (Mad River Biologists 2004), dark-eyed gilia (*Gilia millefoliata*) (Mad River Biologists 2004, 2009; Morrissette 2013), and American glehnia (*Glehnia littoralis* ssp. *leiocarpa*) (Mad River Biologists 2004).

3.0 Methods

Recent efforts conducted in 2018 consisted of three primary tasks in order to assist with the development of the Supplement to the Master EIR and to address the "Protection, Preservation, and Enhancement of Wetlands and Non-Wetland Environmentally Sensitive Habitat Areas (ESHA)" policies and associated requirements set forth in the certified STMP-LUP and *LCP Amendment LCP-01-HUM-15-0004-1*. These tasks include performance of the following:

1. An updated delineation of wetland and non-wetland environmentally sensitive habitat areas (ESHA);
2. An updated botanical survey for special status botanical species, sensitive natural communities, and invasive vegetation; and
3. An updated assessment of the potential for occurrence of special status wildlife species within the study area.

All fieldwork was performed by J.B. Lovelace & Associates' Principal Environmental Scientist, J. Brett Lovelace. Natural resource-related geographic field data were collected using a Trimble® Juno® global positioning system

(GPS) device with ArcPad® software (ESRI 2010). All such data were subsequently uploaded and orthorectified using ArcMap® (ESRI 2015) geographic information system (GIS) desktop software and the most recent available satellite imagery (National Agriculture Imagery Program [NAIP] 2016; Google Earth 2018) to create appropriate maps depicting features of interest.

Using pre-existing STMP natural resource information and GIS data collected by previous investigators (Mad River Biologists 2004, 2009; Morrissette 2013) as a basis, the entire study area was assessed in our 2018 effort and historic natural resource information was refined and/or augmented to reflect current conditions observed during the period between April-November of 2018, with additional boundary refinements performed during April of 2019.

Classification of Natural Communities & Taxa

In an effort to maintain consistency with previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013) and minimize confusion resulting from variation between historic and contemporary vegetation classification systems, we continue to use the vegetation classification system originally proposed by Holland (1986), which was used by Mad River Biologists (2004) in their original characterizations and was maintained by Morrissette (2013). In some instances, more modern vegetation classification (Sawyer et al. 2009) assignments (i.e., vegetation "Alliances" and/or "Associations") may be applied, where compelling observations made in 2018 warrant increased resolution.

Botanical taxonomic nomenclature for vascular plants presented in this effort is consistent with *The Jepson Manual: Vascular Plants of California, Second Edition* (Baldwin et al. 2012), or the *Jepson eFlora* (Jepson Flora Project 2018) where updated taxonomical assignments may have occurred. The latter source was also used to classify encountered plant species as either native or alien. Therein, "native" plants are defined as "occurring naturally in an area, as neither a direct nor indirect consequence of human activity;" whereas "alien" species are "not native; introduced purposely or accidentally into an area."

Alien species may be further classified as "invasive" where they have been demonstrated to threaten "wildlands" by displacing and/or hybridizing with native species and/or are likely to "alter biological communities, or alter ecosystem processes" (California Invasive Plant Council [Cal-IPC] 2018). Except as noted otherwise, we designate plant species encountered in the current effort as "invasive" if they are assigned a "high" invasive rating by the California Invasive Plant Council (Cal-IPC 2018), listed as "noxious weeds" by the California Department of Food & Agriculture (CDFA 2018), listed as "federal noxious weeds" (USDA 2018), considered invasive in the Humboldt County Weed Management Area (WMA) (2010), or otherwise warrant concern based on known or perceived potential to alter native biological communities or associated ecosystem processes.

Although not listed as invasive by Cal-IPC (2018), we also include the native plant species, yellow bush lupine (*Lupinus arboreus*) in our treatment of invasive vegetation, as it is considered to be invasive in the north coast region due to its potential to alter dune ecosystem processes by stabilizing dune mat habitats and outcompeting existing native vegetation typical of such locations.

Taxonomic treatment of other biota is consistent with *Macrolichens of the Pacific Northwest, Second Edition* (McCune & Geiser 2009) for lichens; the Fifty-ninth Supplement of the American Ornithological Society's *Check-list of North American Birds* (Chesser et al. 2018) for avian species; *Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico, with Comments Regarding Confidence in our Understanding, Eighth Addition* (Moriarty 2017) for amphibian and reptile species; *Mammals of the Pacific States California, Oregon, and Washington* (Ingles 1965) for mammals; and nomenclature used by the Xerces Society for Invertebrate Conservation (Xerces Society 2018) for invertebrate species. Specific methodologies germane to each aforementioned task are described in greater detail below.

3.1 Wetland & Non-Wetland Environmentally Sensitive Habitat Areas

Specific methods used to identify and delineate wetland Environmentally Sensitive Habitat Areas (ESHA) are detailed in Section 3.1.1, below. A description of our general approach to evaluation of both wetland and non-wetland ESHA within the study area follows.

All ESHA previously identified within the study area (Mad River Biologists 2004, 2009; 2013) were revisited during our 2018 fieldwork and their boundaries were mapped and refined where significant changes have occurred. Remaining portions of the study area were also assessed in 2018 to identify and describe any additional areas that also warranted designation as ESHA.

The previous investigators (Mad River Biologists 2004, 2009; 2013) referenced Section 30107.5 of the California Coastal Act (1976) as the basis for their ESHA determinations, which defines ESHA as:

> "[A]ny area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments."

Mad River Biologists (2004) further stated that their ESHA determinations were based on:

> "several factors, including: type of substrate (native substrate vs. fill material), species composition (ratio of native to exotic species), relative quality of habitat for native species and functional value, proximity to other sensitive habitats and/or existing development and historical land use practices."

Methods utilized to identify and designate ESHA in this 2018 update were consistent with their described approach, yet also observed Protection, Preservation, and Enhancement of Wetlands and Non-Wetland Environmentally Sensitive Habitat Areas (ESHA) Policies ("Wetlands/ESHA Policies") 1 and 11 of the certified STMP-LUP and *LCP Amendment LCP-01-HUM-15-0004-1*, which expands upon the California Coastal Act ESHA definition slightly to include plants, animal life, or their habitats that are considered "locally rare."

Included in our updated analysis of ESHA within the study area is the consideration of California "sensitive natural communities," which are also a component of biological resources subject to environmental review required by the California Environmental Quality Act (CEQA) and its equivalent processes. California sensitive natural communities are those described vegetation communities (i.e., vegetation Alliances and/or Associations [Sawyer et al. 2009]), for which the California Department of Fish & Wildlife's Vegetation Classification and Mapping Program (VegCAMP) and the California Native Plant Society (CNPS) have assigned a State rarity rank of 1-3 (CDFW 2018b; see also Appendix B), using NatureServe's "Heritage Methodology" (NatureServe 2018). This is the same system used to assign global and state rarity ranks to individual species, and allows for a more empirical method of providing a reliable, consistent, and transparent evaluation of the level of risk of extinction of a given taxon or ecosystem.

Some of the ESHA previously delineated within the study area (Mad River Biologists 2004, 2009; Morrissette 2013) incorporate one or more of the currently recognized vegetation Alliances that have been assigned a rarity rank of 3 or less, and are, therefore, considered California sensitive natural communities" where these occur.

As mentioned previously, we continue to use plant community categories previously assigned within the STMP study area in order to minimize confusion associated with translation between vegetation community nomenclature and classification systems, unless utilization of a more recently described vegetation Alliance and/or Association more accurately characterizes an observed unit of vegetation for which consideration of California-sensitive-natural-community-protection is warranted.

Delineation of Wetland and Non-Wetland ESHA Boundaries

Delineation of wetland and non-wetland ESHA boundaries adhered to STMP-LUP and *LCP Amendment LCP-01-HUM-15-0004-1* Wetlands/ESHA Policy 4, which states:

> "All wetlands and non-wetland ESHAs identified outside of the areas designated Natural Resources identified in the certified STMP-LUP map (except for environmentally sensitive raptor nesting habitat areas) shall require a 100-foot setback/buffer, unless it can be demonstrated that a reduced buffer is sufficient to prevent disruption of the habitat,"

and provides specific direction (Condition 8) with respect to the measurement of such buffers:

> "Required buffer areas shall be measured from the following points, and shall include historic locations of the subject habitat/species that are pertinent to the habitats associated with the STMP-LUP area, as applicable:
>
> - The perimeter of the sand dune/permanently established terrestrial vegetation interface for dune-related ESHA.
>
> - The upland edge of a wetland.
>
> - The outer edge of the canopy of coastal scrub or forests plus such additional area as may be necessary to account for underground root zone areas.
>
> - The outer edge of the plants that comprise the rare plant community for rare plant community ESHA, including any areas of rare annual plants that have been identified in previous surveys and the likely area containing the dormant seed banks of rare plant species.
>
> - The outer edge of any habitat associated with use by mobile or difficult to survey sensitive species (such as ground nesting habitat or rare insects, seasonal upland refuges of certain amphibians, etc.) based on the best available data."

In instances where woody vegetation associated with ESHA has become established subsequent to anthropogenic habitat modification (i.e., historic fill and pavement associated with development of log decks, access roads, and industrial processing and storage areas) and the canopy of such vegetation extends over pavement and/or other compacted foreign fill material (e.g., gravel, construction aggregate, rubble, etc.), ESHA boundaries were established either at the distal-most edge of respective supportive native substrata or the distal side of the rooted vegetative stems, whichever allowed for greater protection of subject vegetative root zone area.

3.1.1 Supplemental Wetland Delineation

A routine (supplemental) wetland delineation was conducted within the study area between November 18-21, 2018 to identify potential State- and Federal-jurisdictional wetlands. Methodologies used in the performance of this fieldwork were consistent with those described in the *U.S. Army Corps of Engineer's Wetland Delineation Manual* (USACE 1987); the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Valleys, Mountains, and Coastal Regions (Version 2.0)* (USACE 2010); *Procedural Guidance for the Review of Wetland Projects in California's Coastal Zone* (CCC 1994); as well as

with directives provided in the certified STMP-LUP and *LCP Amendment LCP-01-HUM-15-0004-1* "Wetlands/ESHA Policies."

Performance of this supplemental wetland delineation relied upon the definition of wetlands provided in Section 30102 of the California Coastal Act (i.e., "Coastal Act wetlands"):

> "[L]ands within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens;"

and which are further characterized in California Code of Regulations Title 14, Section 13577 (14 CCR Section 13577) as follows:

> "Wetland shall be defined as land where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include those types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent and drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentrations of salts or other substances in the substrate. Such wetlands can be recognized by the presence of surface water or saturated substrate at some time during each year and their location within, or adjacent to, vegetated wetlands or deep-water habitats."

Such Coastal Act wetlands require evidence of only a singe wetland parameter (i.e., wetland hydrology, a preponderance of hydrophytic vegetation, or hydric soils) be present for wetland determination. In contrast, the U.S. Army Corps of Engineers (USACE) applies a more conservative threshold, requiring that all three such parameters be present for an area to be determined to be a Federal-jurisdictional wetland. While the focus of our 2018 supplemental wetland delineation was on Coastal Act wetlands, any such habitat features identified through this effort may also fall under the jurisdiction of the U.S. Army Corps of Engineers, subject to Section 404 of the Federal Clean Water Act.

Where Coastal Act wetlands were identified during our 2018 fieldwork, the wetland/upland boundary was delineated as stipulated in the certified STMP-LUP and *LCP Amendment LCP-01-HUM-15-0004-1* Wetlands/ESHA Policy 10, which states that the upland limit of a wetland shall be defined as:

> (A) the boundary between land with predominantly hydrophytic cover and land with predominantly mesophytic or xerophytic cover;
>
> (B) the boundary between soil that is predominantly hydric and soil that is predominantly nonhydric; or

(C) in the case of wetlands without vegetation or soils, the boundary between land that is flooded or saturated at some time during years of normal precipitation, and land that is not.

As described previously, where the canopy of hydrophytic woody vegetation (i.e.; willow, *Salix* spp. and California wax myrtle, *Morella californica*) extends over pavement and/or other compacted foreign fill material (e.g., gravel, construction aggregate, rubble, etc.), ESHA boundaries were established either at the distal-most edge of respective, supportive native substrata or the distal side of the rooted vegetative stems, whichever allowed for greater protection of subject vegetative root zone area. Specific field methods employed during this fieldwork are described below.

Twelve transects, each consisting of two or more sampling points, were established in such a way as to locate the boundary between wetland and upland habitats at previously identified (Mad River Biologists 2004) and/or suspected wetland features throughout the study area. These transects were oriented parallel to perceived hydrological gradients associated with each wetland feature, and which intersected distinct (peripheral) vegetation communities and/or distinct topographical transitions. At each sampling point, soil, hydrology, and vegetation characteristics were documented and evaluated to determine if "wetland indicators" (i.e., characteristics diagnostic of wetland habitats) were present or absent, and such data were used to make a preliminary determination (i.e., "wetland" or "upland"), pending final approval and verification by the California Coastal Commission and/or the U.S. Army Corps of Engineers. The results of observations made at wetland sampling points were then used, in conjunction with observations of associated hydrophytic vegetation and soil profile inspections (using a one-inch diameter soil probe), to delineate and map all coastal wetland habitats occurring within the SMTP study area.

The vegetation sampling plot size for each sampling point extended radially from the center of each sampling plot as follows: 5 feet (~1.5 m) for the herbaceous stratum, and 30 feet (~9.1 m) for vine, shrub, and/or tree strata, wherever present. Vegetation occurring within each plot was identified to the species-level, and the abundance (i.e., estimated absolute percent cover) of dominant species in each vegetative stratum was used to assess the extent of wetland vegetation at each sampling point based on published "wetland vegetation indicator status ratings" (Lichvar et al. 2016) for each species. These indicator status-ratings are defined in Table 1 (below).

At the center of each sampling point, soil pits were dug to a depth of at least 18 inches (~45 cm) to assess the soil profile for hydric soils and/or indicators of wetland hydrology. Moist soil coloration was compared with *Munsell Soil Color* chips (Gretag-Macbeth 2009) and documented, along with other soil attributes such as strata thickness, soil texture, soil moisture, and the presence/absence of redoximorphic features and/or organic material. Surface and subsurface

Table 1. Wetland Vegetation Indicator Status Ratings.[1]

Rating Code	Rating	Description
OBL	Obligate Wetland Plants	Almost always occur in wetlands. With few exceptions, these plants are found in standing water or seasonally saturated soils near the surface.
FACW	Facultative Wetland Plants	Usually occur in wetlands, but may occur in non-wetlands. These plants predominately occur with hydric soils, often in geomorphic settings where water saturates the soil or floods the soil surface at least seasonally.
FAC	Facultative Plants	Occur in wetlands and non-wetlands. These plants can grow in hydric, mesic, or xeric habitats. The occurrence of these plants in different habitats represents responses to a variety of environmental variables other than just hydrology, such as shade tolerance, soil pH, and elevation, and they have a wide tolerance of soil moisture conditions.
FACU	Facultative Upland Plants	Usually occur in non-wetlands, but may occur in wetlands. These plants predominately occur on drier or more mesic sites in geomorphic settings where water rarely saturates the soil or floods the soil surface seasonally.
UPL	Upland Plants	Almost never occur in wetlands. These plants occupy mesic to xeric non-wetlands habitats. They almost never occur in standing water or saturated soils.
NL	Not Listed	Not included in the National List. Generally considered to occur predominantly in uplands, though numerous exceptions exist.

[1] Adapted from *National Wetland Plant List Indicator Rating Definitions* (Lichvar et al. 2012).

indicators of wetland hydrology (e.g., inundation, algal mats, water marks, drift/sediment deposits, oxidized rhizospheres, etc.) were also documented where present.

3.2 Special Status Botanical & Wildlife Resource Analysis

3.2.1 Preliminary Research

We evaluated the potential for special status botanical and wildlife species to occur within the study area using a combination of natural resource database information, the review of aerial photography, and site reconnaissance. “Special status species” are defined by the California Department of Fish & Wildlife (2018) as those “species, subspecies, or Evolutionarily Significant Units (ESU) where at least one of the following conditions applies:

- Officially listed or proposed for listing under the State and/or Federal Endangered Species Acts;
- Taxa considered by the Department to be a Species of Special Concern (SSC); - Taxa which meet the criteria for listing, even if not currently included on any list, as described in Section 15380 of the California Environmental Quality Act Guidelines (more information on CEQA is available at: http://resources.ca.gov/ceqa/guidelines);

- Taxa that are biologically rare, very restricted in distribution, or declining throughout their range but not currently threatened with extirpation;
- Population(s) in California that may be peripheral to the major portion of a taxon's range but are threatened with extirpation in California;
- Taxa closely associated with a habitat that is declining in California at a significant rate (e.g. wetlands, riparian, vernal pools, old growth forests, desert aquatic systems, native grasslands, valley shrubland habitats, etc.);
- Taxa designated as a special status, sensitive, or declining species by other state or federal agencies, or a non-governmental organization (NGO) and determined by the CNDDB [California Natural Diversity Database] to be rare, restricted, declining, or threatened across their range in California."

Preliminary investigations included queries of species and habitat occurrence records for the "Eureka" and 8 surrounding U.S. Geological Survey (USGS) quadrangles in the following databases: the U.S. Fish & Wildlife Service's (USFWS) *Information for Planning and Consultation* (USFWS 2018a); California Department of Fish & Wildlife's *Natural Diversity Database* (CNDDB 2018); the CalFlora database (CalFlora 2018); and the California Native Plant Society's *Online Inventory of Rare, Threatened, and Endangered Plants of California* (CNPS 2018a); among others. The potential for "California sensitive natural communities" to occur within the study area was also addressed as part of this process.

Based on the results of this preliminary research, a comprehensive list of special status species and communities that could potentially occur within the study area was developed. This list is provided in Appendix B as a summary table, which includes relevant information about each species used to evaluate their relative potential for occurrence within the study area. That comprehensive list was then used to develop appropriate strategies for carrying out subsequent botanical surveys and wildlife habitat assessment fieldwork. Evaluation of each species' "potential for occurrence" within the study area was made using the criteria described in Table 2 (below).

3.2.2 Special Status Botanical Surveys

Floristically-appropriate, field surveys of the study area were conducted April 18-27, June 4, and July 16-31; 2018 and were consistent with methodologies detailed in the U.S. Fish & Wildlife Service's *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants* (2000); the California Department of Fish and Wildlife's *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities* (CDFW 2018a); and CNPS' Revised *CNPS Botanical Survey Guidelines* (CNPS 2001). The timing of these field surveys was confirmed to be seasonally appropriate to identify all special status species addressed in this study based on the results of our preliminary species research, in combination with *in situ* phenological observations of the flora both within the study area, and at nearby reference locations. All occurrences of special status

Table 2. Criteria for Evaluation of "Potential for Occurrence."

Present. The species is known to occur within the immediate study area, based on historical occurrence records and/or recent survey data.

High Potential. The species has a high probability of occurring within the study area. Habitat components meeting the species requirements are present within the study area and most of the habitat at or adjacent to the site is highly suitable.

Moderate Potential. The species has a moderate probability of being found within the study area. Habitat components meeting the species requirements are present; however, some of the habitat at or adjacent to the site is unsuitable.

Low Potential. The species has a low probability of being found in the study area. Some habitat components meeting the species requirements are present; however, the majority of habitat at and adjacent to the site is unsuitable.

No Potential. Habitat on and adjacent to the site is clearly unsuitable for the species.

botanical resources identified during previous investigations of the study area (Mad River Biologists 2004, 2009; Morrissette 2013) were revisited during the 2018 effort, to assess their current status. All botanical species observed during our 2018 fieldwork were documented and a list of these species is provided in Appendix C.

3.2.3 Invasive Plant Species Documentation

Throughout the performance of all fieldwork associated with this updated biological resource study between April-November of 2018, additional focus was also dedicated to document encountered occurrences of invasive vegetation within the study area.

3.2.4 Special Status Wildlife Habitat Assessment

Although no species-specific wildlife surveys were conducted as part of this effort, the entire study area was assessed throughout the 2018 fieldwork, with respect to its potential to provide suitable habitat for native wildlife, including special status wildlife species identified as a result of our preliminary research. Our initial approach applied determinations made during previous such assessments specific to the STMP study area (Mad River Biologists 2004) as a basis. This information was then refined and/or augmented as appropriate to address any additional relevant species whose subsequent change in conservation status warranted inclusion in this update. This updated list was then further evaluated in the context of any observed changes to associated habitat characteristics (e.g., vegetation community succession, establishment/development of invasive vegetation, habitat alteration or degradation, etc.), changes in the extent of the study area, or changes in available information about considered species, which may or may not have occurred during the interim.

Given that the greater goal of the current effort is to address potential environmental impacts resulting from changes in the proposed implementation of the Samoa Town Master Plan and/or to changes in the relevant environmental context that may have occurred since the previous studies were conducted, we maintain the aforementioned approach of avoiding unnecessarily redundant exhaustive reiterations of site conditions and habitat suitability assessments where they are determined to continue to be applicable based on conclusions made during our 2018 field investigations. In instances where changes have occurred with respect to the conservation status of potentially affected taxa or our understanding of the biology and threats posed to such species, or where evidence of substantial changes in habitat quality (i.e., "suitability") were observed during our 2018 fieldwork, such instances are described in Section 4 (Results), below. Where no significant changes have occurred in the interim, and the original assessments described in the original biological resource study (Mad River Biologists 2004) remain appropriately applicable, we indicate that such is the case and refer the reader to that original source.

4.0 Results

4.1 Wetland & Non-Wetland Environmentally Sensitive Habitat Areas

4.1.1 Supplemental Wetland Delineation Results

Results of our supplemental wetland delineation (Tables 3 & 4; Appendix F, Figure 2): confirm the persistence of previously delineated wetland habitats, document changes in the boundaries of said wetland habitats where they occurred, and present evidence for recently identified wetland habitats not previously delineated. These results are subject to review by the California Coastal Commission and the U.S. Army Corps of Engineers for the purposes of making final jurisdictional determinations in instances where preliminary wetland determinations have not yet been evaluated by respective regulatory agencies, and/or where the results of our supplemental wetland delineation indicate substantial changes in the areal extent of previously delineated wetland boundaries.

Below, we summarize our findings, and follow with additional descriptions of recently observed wetland characteristics, organized by relevant wetland system classification categories, as described in *Classification of Wetlands and Deepwater Habitats of the United States, Second Edition* (FGDC 2013). Completed field Wetland Determination Data Forms are included in Appendix E.

Confirmed Persistence of Previously Identified Wetland ESHAs

Results from the supplemental wetland delineation conducted in 2018 (Appendix F, Figures 1 & 2) confirm the persistence of those Coastal Act (woody and herbaceous) hollow wetland ESHAs in the study area that were previously identified in 2004 (Mad River Biologists 2004) and reviewed by Coastal Commission staff in 2011 (Dixon 2011), though some changes in the associated

wetland plant communities (and, therefore, their corresponding wetland/upland boundaries) have since occurred. Changes are primarily attributable to progressive vegetative development and subtle community successional shifts, which effectively translate into an expanding canopy of the woody vegetation component where it occurs. In light of the aforementioned methods of wetland boundary determination (Section 3.1), this expanding canopy corresponds to an expanded area of delineated wetland ESHA (Table 3, below). For the most part, such changes as have occurred in the 14-year interim are minor and the potential for continued expansion into portions of the study area not already designated as Natural Resource is limited due to the degree to which these ESHA are constrained by the surrounding developed landscape (e.g., pavement, compacted fill, rubble, etc.).

Similar developmental phenomena were observed with respect to the pair of small "man-induced" non-ESHA Coastal Act wetland features established on the west edge of the northern log deck (Appendix F, Figure 2). Here, the canopy of the two coastal willow (*Salix hookeriana*)-dominated occurrences have since coalesced and were mapped as a single unit in 2018. With the exception of anthropogenic alteration of the vegetation (i.e., clearing around the perimeter) associated with the other previously delineated "man-induced" non-ESHA Coastal Act wetland that is the wastewater treatment pond (Appendix F, Figure 2), this feature was not observed to have changed.

Additional Wetland Habitats Identified

Eight new wetland features were also identified within the study area in 2018. Four of these are palustrine emergent and scrub-shrub dune hollow wetlands that occur within the degraded foredune complex between New Navy Base Road and either the adjacent developed dune area north of the Samoa Resource Recovery Center (n = 2) or between New Navy Base Road and Vance Avenue, on both north and south sides of LP Drive (n = 2). These four wetland features consist of three herbaceous dune swale wetlands and one dune hollow wetland complex with both herbaceous and woody vegetation components. Given the surrounding non-wetland Degraded Dune ESHA context, delineation of these wetland habitats has resulted in negligible effective change to the ESHA boundary in these areas, with the exception of the area not previously addressed on the south side of LP Drive (Appendix F, Figures 1 & 2).

Another small palustrine emergent dune hollow wetland was identified within the previously delineated Coastal Coniferous Forest ESHA in the northern portion of the study area, just south of New Navy Base Road (Appendix F, Figures 1 & 2). Given their close proximity and similar elevation, this small wetland is presumed to be an herbaceous species (e.g.; slough sedge, *Carex obnupta*; etc.)-dominated feature that is supported by the same hydrological source as the nearby palustrine scrub-shrub woody dune hollow wetland ESHA originally identified in 2004 (Mad River Biologists 2004).

Table 3. Quantitative Summary of Wetland Habitat within the STMP Study Area. (Data reflect discrete wetland polygons mapped in the field, which may or may not represent fractional portions of a given wetland feature.)

Wetland Type	NWI Code*	Acres
Marine Intertidal Wetlands & Waters of the U.S. - ESHA		
	M2US2N	2.960
	M2US2N	2.717
	Total	5.677
Palustrine Dune Hollow Wetlands - ESHA		
	Herbaceous Dune Hollow Wetlands	
	PEM1E	0.848
	PEM1E	0.700
	PEM1E	0.480
	PEM1E	0.223
	PEM1E	0.152
	PEM1E	0.045
	PEM1E	0.041
	PEM1E	0.030
	PEM1E	0.008
	PEM1E	0.008
	Total	2.531
	Woody Dune Hollow Wetlands	
	PSS1E	2.476
	PSS1E	0.702
	PSS1E	0.554
	PSS1E	0.530
	PSS1E	0.407
	PSS1E	0.264
	PSS1E	0.253
	PSS1E	0.230
	PSS1E	0.128
	PSS1E	0.069
	PSS1E	0.046
	PSS1E	0.025
	PSS1E	0.004
	Total	5.687
"Man-Induced" Wetlands - Non-ESHA		
	PEM1Er	0.048
	PSS1Er	0.224
	PSS1Er	0.109
	(Wastewater Treatment Pond) PEM1Ek	0.156
	Total	0.536
	Total Wetland Area	**14.432**

*National Wetland Inventory (NWI) Codes are consistent with classifications described in (FGDC 2013).

Two new "man-induced" (non-ESHA) wetlands were identified in 2018. The first is a developing stand of coastal willow (*Salix hookeriana*), which has become established at the slope toe of a transition between upper and lower log decks within the Developed Dune (Non-ESHA) area, north of the Samoa Resource Recovery Center. Although this occurrence is adjacent to the eastern extent of a previously-identified (Mad River Biologists 2004) palustrine scrub-shrub woody

dune hollow wetland ESHA, the recently identified willow thicket has become established on a thin veneer of sandy substrate on top of compacted gravel fill material and appears to be hydrologically subsidized not by the underlying water table that supports the former wetland feature, but rather by runoff from the adjacent, elevated industrial surface to the south, whose percolation is retarded by the compacted substrate of the historic log deck. On this basis, this willow thicket is not considered to be ESHA, but rather, a "man-induced" Coastal Act wetland.

The other recently identified "man-induced" (non-ESHA) wetland (~0.05 acre) is located on the north side of, and immediately adjacent to, North Bay View Avenue, between the Samoa Cookhouse and the existing residences accessed by Fenwick Avenue. This location is at the base of a north-south-oriented ravine, which spans between Vance Avenue and North Bay View Avenue, and is surrounded by slopes to the west, north, and east (Appendix F, Figure 2). No "channel" is present in this ravine, nor was any other evidence of surface flow evident. However, no culvert or other means of conveying runoff exists at this location and the compacted and paved North Bay View Avenue presents an effective obstacle to surface (and subsurface) flow.

Anthropogenic use of this area as a "pullout" has contributed to the creation of a concave surface on the north ("upstream") side of the road surface. This scenario results in prolonged periods of inundation during the winter and early spring months (pers. obs.) and the species composition of this sparsely vegetated area consists predominantly of hydrophytes such as pennyroyal, *Mentha pulegium* (OBL); low manna grass, *Glyceria declinata* (FACW), nutsedge, *Cyperus eragrostis* (FACW); loosestrife, *Lythrum hyssopifolia* (OBL); etc. In light of the artificial circumstances and apparent lack of significant ecological benefit provided by this roadside feature, this area is not considered to be ESHA, but rather, a "man-induced" (palustrine emergent) Coastal Act wetland.

Finally, the wave slope and splash zone of the Pacific Ocean, contiguous with the previously delineated Beach Strand ESHA along the western edge of the study area west of New Navy Base Road, which was not referenced in the previous investigation (Mad River Biologists 2004), was delineated as a marine intertidal (unconsolidated shore [sand]) wetland.

Wetland Habitat Characterizations

Wetland habitats delineated within the study area in 2018 are characterized below, and are addressed within the context of their respective wetland classification category, consistent with *Classification of wetlands and deepwater habitats of the United States, Second Edition* (FGDC 2013). These include the marine wetlands and Waters of the U.S. associated with the Pacific Ocean, and the palustrine emergent and scrub-shrub dune hollow wetlands associated with the (intact and degraded) foredune swale system. "Man-induced" wetlands are also discussed. A summary of sampling results from our supplemental wetland delineation is provided in Table 4 (below).

Table 4. Summary of Wetland Sampling Point Results.

Sample Point ID	Wetland Vegetation	Hydric Soils	Wetland Hydrology	Preliminary Determination
1A				Upland
1B	X	X	X	Wetland
2A	X	X	X	Wetland
2B				Upland
3A	X	X	X	Wetland
3B				Upland
4A	X	X	X	Wetland
4B				Upland
4C	X	X	X	Wetland
5A				Upland
5B	X	X	X	Wetland
5C				Upland
6A	X		X	"Man-Induced" Wetland
6B				Upland
7A	X	X	X	Wetland
7B				Upland
8A	X	X	X	Wetland
8B				Upland
8C	X	X	X	Wetland
9A	X	X	X	Wetland
9B				Upland
10A	X	X	X	Wetland
10B				Upland
11A				Upland
11B	X	X	X	Wetland
12A	X		X	"Man-Induced" Wetland
12B				Upland

Marine System

Samoa Beach (M2US2N)

The unvegetated wave slope and splash zone of Samoa Beach, west of the Beach Strand ESHA (and extreme high water mark), is appropriately classified as: Marine, Regularly Flooded, Intertidal, Unconsolidated Shore (M2US2N). This category of wetland habitat is characterized as having sandy or predominantly sandy substrates that are regularly flooded by tidal water (i.e., at least once, daily), with increased levels of salinity (> 30 ppt).

Palustrine System

The seasonally flooded herbaceous and woody dune hollow wetlands that occur within the study area are classified as palustrine emergent and palustrine scrub-shrub wetlands, respectively. The palustrine system includes both non-tidal (freshwater) wetlands and tidal wetlands with low ocean-derived salinity levels (<0.5 ppt). Palustrine wetlands are typically vegetated, though in instances where they lack vegetation, they are generally both small (< ~20 acres) and shallow (< 6.6 feet). The latter two criteria help to distinguish palustrine wetlands from larger and deeper freshwater wetlands and Waters of the U.S. that are classified

as part of the lacustrine system. Hydrology associated with "seasonally–flooded" wetlands is characterized (FGDC 2013) as follows:

> "Surface water is present for extended periods especially early in the growing season, but is absent by the end of the growing season in most years. The water table after flooding ceases is variable, extending from saturated to the surface to a water table well below the ground surface."

Herbaceous Dune Hollow Wetlands
Seasonally Flooded Palustrine Emergent Wetlands (PEM1E)
Palustrine "emergent" wetlands are characterized as having > 30% aerial cover of (typically perennial) persistent, erect, rooted, herbaceous wetland vegetation (FGDC 2013). Typical plant species observed in herbaceous dune hollow wetlands within the study area during our 2018 fieldwork included: Brewer's rush, *Juncus breweri* (FACW); sand-dune sedge, *Carex pansa* (FAC); slough sedge, *Carex obnupta* (OBL); Watson's willow herb, *Epilobium ciliatum* ssp. *watsonii* (FACW); silverweed, *Potentilla anserina* ssp. *pacifica* (OBL); American brooklime, *Veronica americana* (OBL); leathery grape-fern, *Sceptridium multifidum* (FAC); and California blackberry, *Rubus ursinus* (FACU).

Sampling within these areas revealed soils composed of sand, loamy sands, and/or sandy loams. Soil color (moist) was either 2.5Y or 10YR, with chroma values ranging between 1-2. Redoximorphic features (i.e., coated sand grains and diffuse mottling) of significant contrast and abundance, and/or the accumulation, or translocation of organic matter within the soil profile were also consistently observed. Indicators of hydric soils were primarily "Sandy Redox," though "Sandy Mucky Mineral" and "Stripped Matrix" soils (USDA-NRCS 2010) were also encountered in these herbaceous dune hollow wetlands. Consistent indicators of wetland hydrology in these wetlands included: oxidized rhizospheres along living roots, concave geomorphic position, and satisfaction of the "FAC-neutral test" (USACE 1987, 2010).

Woody Dune Hollow Wetlands (ESHA)
Seasonally Flooded Palustrine Scrub-Shrub Wetlands (PSS1E)
Palustrine scrub-shrub wetlands have similar thresholds to palustrine emergent wetlands, but are, instead, dominated by woody vegetation < 20 feet tall. Plant species composition in delineated dune hollow wetlands within the study area included broad-leaved deciduous and evergreen species such as coastal willow, *Salix hookeriana* (FACW); California wax myrtle, *Morella californica* (FACW); twinberry, *Lonicera involucrata* ssp. *ledebourii* (FAC); and where these habitats transition into adjacent Coastal Coniferous Forest ESHA; Sitka spruce, *Picea sitchensis* (FAC) and beach pine, *Pinus contorta* ssp. *contorta* (FAC). In the latter cases, these habitats are approaching the maximum height threshold for the scrub-shrub designation. The understory in these wetlands is often a dense thickets of woody stems of the aforementioned species, though slough sedge, *Carex obnupta* (OBL); silverweed, *Potentilla anserina* ssp. *pacifica* (OBL); and California blackberry, *Rubus ursinus* (FAC) also occur in these environments.

Sampling within these areas revealed soil conditions similar to those observed in herbaceous woody dune hollow wetlands, though shallow surface accumulations of leaf material in varying stages of decomposition were often present. Soils were composed of sand, loamy sands, and/or sandy loams. Soil color (moist) was either 2.5Y or 10YR, with chroma values ranging from 1-2. Redoximorphic features (i.e., coated sand grains and diffuse mottling) of significant contrast and abundance, and/or the accumulation, or translocation of organic matter within the soil profile were also consistently observed. Indicators of hydric soils were primarily "Sandy Redox," though "Sandy Mucky Mineral" soils (USDA-NRCS 2010) were also encountered in these woody dune hollow wetlands. Consistent indicators of wetland hydrology in woody dune hollow wetlands also consisted of: oxidized rhizospheres along living roots, concave geomorphic position, and satisfaction of the "FAC-neutral test" (USACE 1987, 2010).

"Man-Induced" Wetlands (Non-ESHA)

Some of the aquatic features identified during the previous wetland delineation (Mad River Biologists 2004) and reviewed by Coastal Commission staff (Dixon 2011) were determined to be "man-induced" (non-ESHA) Coastal Act wetlands on the basis that, while these features may exhibit some wetland characteristics (e.g., a preponderance of hydrophytic vegetation, prolonged inundation, etc.), they are anthropogenic in origin and "artificial," and as a result of their impaired (or lack of) connectivity to the surrounding hydrological and ecological context, said features lack the capacity for typical beneficial ecological functions associated with naturally-occurring wetland habitats. The U.S. Army Corps of Engineers (1987) define "man-induced" wetlands as areas that have:

> "developed at least some characteristics of naturally occurring wetlands due to either intentional or incidental human activities."

It is important to note that this same source also states that some such "man-induced" wetlands may fall under USACE jurisdiction under Section 404 of the Clean Water Act.

"Man-induced" (non-ESHA) Coastal Act wetlands previously identified within the study area include the wastewater treatment pond, which was constructed for the purpose of holding wastewater for primary treatment. The remaining three "man-induced "Coastal Act wetlands described earlier in this section occur as the result of the establishment of hydrophytic vegetation within recently accumulated superficial sediment layers on top of an introduced restrictive layer of foreign construction aggregate fill, rubble, and/or pavement, which impairs drainage and percolation.

Recent Regional Drought Conditions

Finally, field observations of standing water, a superficial water table, and/or surficial saturation were almost lacking during our November 2018 fieldwork (although some of these conditions were incidentally observed during botanical surveys conducted in April of the same year). Saturated soils were only

encountered in two soil excavations, at 25 and 26 inches below grade during our autumn fieldwork. In both instances these sampling areas were associated with scrub-shrub dune hollow wetlands. The definition of the qualifier, “seasonally flooded,” restated above provides for a water table “well below the ground surface” at the end of the growing season, which coincides with the period in which our 2018 fieldwork was conducted (November).

In addition to normal seasonal fluctuation of the water table, it is also likely that regional drought conditions further explain the depths at which soil saturation was observed during our wetland-specific fieldwork. The National Oceanic and Atmospheric Administration’s (NOAA) National Integrated Drought Information System (NIDIS) program reports that the vicinity of the study area (Eureka, California) was assigned a “Moderate” (D1) Drought Intensity Category (NOAA 2018) designation at the time during which the supplemental wetland delineation fieldwork was performed. Relevant regional precipitation data (Table 5) for the 109-day period preceding our supplemental wetland delineation fieldwork further substantiate these climatic conditions, indicating that accumulated precipitation during that period was ~14% of “normal.”

4.1.2 Non-Wetland Environmentally Sensitive Habitat Areas

Observations from our 2018 fieldwork also confirmed the continued presence of non-wetland Environmentally Sensitive Habitat Areas (ESHA) delineated by previous investigators (Mad River Biologists 2004, 2009; Morrissette 2013). What

Table 5. Summary of Recent & “Normal” Precipitation Values for the Samoa/Humboldt Bay Region Prior to Relevant Fieldwork and Data Collection Periods in 2018. Incidental hydrological observations were documented during mid-spring botanical surveys on April 18, 2018 and supplemental wetland delineation fieldwork commenced on November 18, 2018.

	2018			
Period	**Observed[1] (Inches)**	**"Normal"[2] (Inches)**	**Difference (Inches)**	**Percent of "Normal"**
January	7.39	5.97	+1.42	124%
February	2.14	5.51	-3.37	39%
March	8.80	5.54	+3.26	159%
(1-17) April	3.75	1.65	-2.10	227%
Total	**22.08**	**18.67**	**+3.41**	**118%**
August	0.04	0.38	-0.34	11%
September	0.19	0.86	-0.67	22%
October	0.83	2.36	-1.53	35%
(1-17) November	0	3.85	-3.85	0%
Total	**1.06**	**7.45**	**-6.39**	**14%**

[1] California Department of Water Resources & U.S. Geological Survey (2018). Observations for Eureka (Woodley Island), CA

[2] U.S. Department of Agriculture, Natural Resource Conservation Service’s (2018) “WETS” Data for Eureka (Woodley Island), CA

changes have occurred in the vegetation throughout the study area since the previous studies were conducted are symptomatic of vegetation dynamics associated with typical community successional processes such as continued growth and development of vegetative canopies, and shifts in the plant species composition due to continued establishment and development of invasive plant species (e.g.; iceplant, *Carpobrotus* spp.; etc.).

Northern Coastal Scrub ESHA

As was described previously in this document (with respect to woody dune hollow wetlands) the growth and structural development of woody vegetation comprising Northern Coastal Scrub ESHA also continues, resulting in minor changes to the extent of this habitat within the study area. Therein, this vegetation community is generally distributed along the (successional) leading edges of Coastal Coniferous Forest ESHA and along transitional geomorphic positions draining exposed seaward slopes (often into dune hollow wetland ESHA). One of the most well represented species in this vegetation type is California wax myrtle (*Morella californica*), and its dominance (> 50%, relative cover) in the shrub stratum throughout much of this habitat is diagnostic of membership in the "*Morella californica* Shrubland Alliance" ("wax myrtle scrub") (CNPS 2018b). Consistent with the described species assemblage of this Alliance, the following plants were also observed in association with California wax myrtle at this location: Sitka spruce (*Picea sitchensis*), beach pine (*Pinus contorta* ssp. *contorta*), coyote brush (*Baccharis pilularis* ssp. *consanguinea*), silk tassel (*Garrya elliptica*), California blackberry (*Rubus ursinus*), etc. Although at the time of this writing, treatment of the *Morella californica* Shrubland Alliance is undergoing minor revisions (Keeler-Wolf pers. com.), it maintains a Rarity Rank of G3/S3 (CNDDB 2018; Keeler-Wolf pers. com.) and is considered by the California Department of Fish & Wildlife to be a "sensitive natural community" (CDFW 2018b; Keeler-Wolf pers. com.).

Additional, disjunct and discrete patches of California wax myrtle have also become established since previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013) of the study area within that portion of European Beachgrass (*Ammophila arenaria*)-Dominated (Non-ESHA) degraded dune habitat, which occurs along the seaward slope between the existing residences accessed by Sunset Avenue and the log deck below (Appendix F, Figure 1). The County's current zoning and land use designation for the area in question is "Natural Resource" (Humboldt County 2018), despite not being designated as ESHA during prior analyses of the study area.

Although the *Morella californica* Shrubland Alliance is considered an ESHA at the aggregate level of an intact vegetation community, individual plants currently have no explicit protective conservation status. Given the recently established and disjunct distribution of individual plants in this specific portion of the study area previously determined (Dixon 2011) to be "non-ESHA" on the basis of its isolated position, "bounded by residential and other buildings, roadways, and urban vegetation and other development," these discrete patches of California

wax myrtle were not designated as ESHA in our recent effort. The vegetation under consideration here is, however, identified in Appendix F (Figure 1) as "potential ESHA" for purposes of identification and evaluation.

Coastal Coniferous Forest ESHA

No significant change in the extent, structure, or species composition of the habitat designated as Coastal Coniferous Forest ESHA was observed during 2018. Although some progressive ecological changes may be taking place, such changes may be occurring at a temporal scale, such that they were not obvious during our fieldwork.

Coastal Dune ESHA

Previous investigators (Mad River Biologists 2004, 2009; Morrissette 2013) identified 7 types of non-wetland ESHA associated with the coastal dune habitats within the STMP study area (Table 6). Although mapped as distinct units, these categories are, conceptually, not always mutually exclusive (i.e., "Degraded Dune ESHA" and "European Beachgrass ESHA". In the current 2018 effort, we recognize 4 distinct categories of non-wetland ESHA within the STMP study area associated with coastal dune habitats, with one of these (i.e., Degraded Dune ESHA) having four variations: Iceplant ESHA, Yellow Bush Lupine ESHA, European Beachgrass ESHA, and Mixed Species ESHA (Table 6).

Table 6. Comparative Summary of Recognized ESHA and Non-ESHA Habitats within the STMP Study Area.

Mad River Biologists (2004, 2009); Morrissette (2013)	The Current Effort (2018)
ESHA	
Wetland ESHA	
Marine Wetlands & Waters of the U.S.	
	Marine Intertidal Unconsolidated Shore
Dune Hollow Wetlands	
Herbaceous (Palustrine Emergent Wetlands)	Herbaceous (Palustrine Emergent Wetlands)
Woody (Palustrine Scrub-Shrub Wetlands)	Woody (Palustrine Scrub-Shrub Wetlands)
Non-Wetland ESHA	
Coastal Coniferous Forest ESHA	Coastal Coniferous Forest ESHA
Northern Coastal Scrub ESHA	Northern Coastal Scrub ESHA
	Coastal Dune ESHA
Beach Strand ESHA	Beach Strand ESHA
Northern Foredune ESHA	Northern Foredune ESHA
Open Sand ESHA	Open Sand ESHA
	Degraded Dunes ESHA
Iceplant ESHA	Iceplant ESHA
Yellow Bush Lupine ESHA	Yellow Bush Lupine ESHA
European Beachgrass ESHA	European Beachgrass ESHA
Degraded Dunes ESHA	Mixed Species ESHA
NON-ESHA	
"Man-Induced" Wetlands	"Man-Induced" Wetlands
Urban Landscape	Urban Landscape
Developed Dunes	Developed Dunes
Degraded Dunes	Degraded Dunes

Effectively, the substantive difference in this modified approach is inconsequential (i.e., the same environmentally sensitive habitats occur), though the resulting ESHA classifications yield increased resolution over previously recognized categories (e.g., degraded dunes dominated by European beachgrass [European Beachgrass-Dominated Degraded Dune ESHA] are readily distinguishable from degraded dunes dominated by iceplant [Iceplant-Dominated Degraded Dune ESHA], or an inconsistent assemblage of alien grasses [Mixed Species Degraded Dune ESHA], etc.). Any of these aforementioned (non-wetland) coastal dune ESHA types can, and in some instances do, support State and Federally Endangered and/or special status plants such as Menzies' wallflower (*Erysimum menziesii*), beach layia (*Layia carnosa*), dark-eyed gilia (*Gilia millefoliata*), etc.

West of New Navy Base Road

West of New Navy Base Road, in the vicinity of both Visitor Use Area options, the mosaic of Northern Foredune and Degraded Dune ESHA remains, though vegetation community dynamics (e.g. establishment and development of invasive species, etc.) and abiotic dune processes transpiring since the most recent mapping of these areas have resulted in changes to the "internal" boundaries of the various types of ESHA within the encompassing aggregated coastal dune ESHA "perimeter" (Appendix F, Figure 1). Those ESHA that were observed west of New Navy Base Road in 2018 consist of:

- Beach Strand ESHA
- Northern Foredune ESHA
- Open Sand ESHA
- Degraded Dunes ESHA:
    - -- Iceplant ESHA
    - -- Yellow Bush Lupine ESHA
    - -- European Beachgrass ESHA
    - -- Mixed Species ESHA

So named, and having been described previously in Mad River Biologists (2004), etc. (with the exception of the "Mixed Species-Dominated Degraded Dune ESHA), these designations are presumed to be self-explanatory. However, it is worth noting that "Beach Strand" is the equivalent of "Northern Foredune grassland," which was the single of four California sensitive natural communities resulting from our initial database investigations (CNDDB 2018, etc.) found to occur within the study area in 2018. The salient component of this ESHA is American dune grass (*Leymus mollis*), which, if "characteristically present in the herbaceous layer," (Pickart & Barbour 2007 *in* CNPS 2018b) constitutes membership in the "*Leymus mollis* Herbaceous Alliance" ("Sea Lyme Grass Patches"), a California "sensitive natural community" according to the California Department of Fish & Wildlife (CDFW 2018b). American dune grass is present within the indicated extent of "Beach Strand ESHA," though its occurrence is discontinuous and patchy. Similarly protected vegetation Alliances were also

found within portions of previously described “Northern Foredune ESHA,” such as the “A*bronia latifolia – Ambrosia chamissonis* Alliance” (“Dune Mat”), etc.

East of New Navy Base Road
(Non-wetland) coastal dune ESHA occurring on the east side of New Navy Base Road consist primarily of European Beachgrass-Dominated ESHA and Mixed Species-Dominated ESHA, though scattered remnant vestiges of Northern Foredune ESHA do still occur adjacent to New Navy Base Road. Given the physical constraints (e.g., New Navy Base Road, log decks, existing residential development, etc.) imposed upon this area, little to no change in the extent of these ESHA was observed in 2018. The same was also true for the discrete Degraded Dune ESHA occurring within the complex of Coastal Coniferous Forest ESHA/Northern Coastal Scrub ESHA/Urban Landscape (non-ESHA) in the northeastern portion of the study area. Elsewhere, our 2018 fieldwork confirmed that the rest of the study area remains designated as previously described by Morrissette (2013): a combination of (non-ESHA Urban Landscape, Developed Dune, and isolated Degraded Dune areas.

4.2 Botanical & Wildlife Resource Analysis Survey Results

Based on the results of our preliminary research (Section 3.2.1), 106 special status species and 4 sensitive natural communities were considered as having some potential to occur within the vicinity of the study area, an increase of 28 species and 4 communities from the original analysis (Mad River Biologists 2004) (Table 7). A table describing all species and communities considered in the present analysis, which includes an updated evaluation of their potential to occur within the study area, is provided in Appendix B.

All recent detections of special status species made during our 2018 fieldwork are addressed in respective sections of the Results, which follow. Also included are discussions of “negative detections,” where previously reported species occurrences (Mad River Biologists 2004, 2009; Morrissette 2013) were not relocated in 2018. Species account narratives for all special status species that are known to occur within the study area (this document; Mad River Biologists 2004, 2009; Morrissette 2013), or that were determined in the current effort to have a high potential to occur within the study area (with an emphasis on

Table 7. Comparative Quantitative Summary of Biological Taxa & Natural Communities Addressed.

Taxonomic Category	Mad River Biologists (2004)	Current Effort (2018)	Difference
Botanical	39	46	+7
Invertebrate	0	5	+5
Fish	3	8	+5
Amphibian	3	4	+1
Reptile	1	1	0
Avian	28	32	+4
Mammalian	4	10	+6
Natural Communities	0	4	+4
Total	**78**	**110**	**+32**

protected life history stages/requirements for wildlife species), are provided in Appendix A. Although detailed species narratives are not provided for other species determined to have a moderate-low potential to occur within the study area, all species with any potential were considered in the current effort.

4.2.1 Botanical Survey Results

The results of our 2018 botanical surveys to locate special status botanical species, California Sensitive Natural Communities and other (non-wetland) ESHA, and invasive plant species within the study area are provided below. A list of all plant species encountered during our 2018 fieldwork can be found in Appendix C.

Special Status Botanical Species

Three special status botanical species were encountered during our 2018 botanical surveys. These consisted of two State and Federally Endangered plants: Menzies' wallflower (*Erysimum menziesii*) and beach layia (*Layia carnosa*), as well as dark-eyed gilia (*Gilia millefoliata*), which has a CNPS "Rare Plant Rank" of 1B.2 [CNPS 2018a]) (Table 8; Appendix F, Figure 3).

Though known to occur elsewhere on the Samoa Peninsula (USFWS 2008; CNDDB 2018; pers. obs.) and reported from very near the study area in 2000 (Morrissette & LeValley *in* Mad River Biologists 2004), State and Federally Endangered Menzies' wallflower (*Erysimum menziesii*) was not previously reported to occur within the study area in any of the previous STMP-specific studies (Mad River Biologists 2004, 2009; Morrissette 2013). In 2018, multiple occurrences were encountered in native dune mat and degraded Northern Foredune habitats at both northern and southern extremities of the study area.

Table 8. Summary of 2018 Special Status Botanical Species Occurrences.

Species	Status	Location
Menzies' wallflower (*Erysimum menziesii*)	Endangered[a,b]	Foredune habitats north of New Navy Base Road, north of the Samoa Booster Station; and both sides of New Navy Base Road near LP Drive
Beach layia (*Layia carnosa*),	Endangered[a,b]	Foredune habitats northwest of New Navy Base Road, in remnant native dune mat habitat on the east side of New Navy Base Road, and foredune habitats on the west side of New Navy Base Road near LP Drive
Dark-eyed gilia (*Gilia millefoliata*)	1B.2[c]	Foredune habitats northwest of New Navy Base Road, in degraded dune habitats and the HBMWD right-of-way on the east side of New Navy Base Road, and both sides of New Navy Base Road near LP Drive

[a]Federal Endangered Species Act (1974)
[b]California Endangered Species Act (1973)
[c]California Native Plant Society's "Rare Plant Rank" (CNPS 2018a)

All individuals at the northern end of the study area occupied dune ridges or slopes near the study area boundary. Similar geomorphic locations were observed for occurrences at the southern extremity of the study area as well. Here, all but a single vegetative individual occurred on the east side of New Navy Base Road and south of LP Drive, in the vicinity of the electrical utility structure. The single other individual was encountered on a foredune ridge opposite, and south of, LP Drive on the west side of New Navy Base Road. Representatives spanning the spectrum of phenological stages (i.e., vegetative, flowering, and fruiting) were observed and invasive vegetation (e.g.,iceplant [*Carpobrotus* spp.], etc.) threatens the majority of encountered individuals.

Historically-documented (Mad River Biologists 2004, 2009; Morrissette 2013) occurrences of the State and Federally Endangered beach layia (*Layia carnosa*) and dark-eyed gilia (*Gilia millefoliata*) (CNPS Rare Plant Rank = 1B.2 [CNPS 2018a]) were relocated on both sides of New Navy Base Road in 2018 (Appendix F, Figure 3). Though the current extent of these occurrences varies slightly from previously reported distributions, inter-annual variation (such as was observed) is expected given the annual life history strategy of both species. That said, the availability of native dune mat and transitional zones along vegetation-exposed sand interfaces is a requisite for these species to persist in coastal dune environments and (at least in part) drives their distribution from year to year.

Both species were found to occur in the native dune mat and degraded foredune habitats on the west side of New Navy Base Road in 2018, in the vicinity of both the northern and southern Visitor Use Area options. While both species had been documented near the Samoa Booster Station in each of the previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013), neither had been reported from the southern Visitor Use Area option near LP Drive during the single prior investigation of that specific location (Mad River Biologists 2004).

Both species were also observed in the extensive linear degraded dune complex on the east side of New Navy Base Road as well, primarily in areas with exposed sand. However, dark-eyed gilia was also observed growing in small (~1-2 feet, radius) openings within the surrounding context of European beachgrass (*Ammophila arenaria*) within this region of the study area in multiple instances. A more extensive, linear occurrence of dark-eyed gilia also continues to persist in the exposed sand within the periodically disturbed HBMWD utility easement and contiguous remnant patches of native dune mat (Northern Foredune ESHA) as well. On the east side of New Navy Base Road, beach layia was restricted to a single discrete (~0.3 acre) patch of remnant native dune mat habitat, to the northwest of the Samoa Resource Recovery Center. All three phenological stages (i.e., vegetative, flowering, and fruiting) of both species were encountered during our 2018 surveys.

Of note is the apparent extirpation of three special status botanical species occurrences previously documented within the study area. The first is a small

occurrence of dark-eyed gilia reported by Mad River Biologists (2004) and Morrissette (2013) in the Degraded Dune ESHA in the northern portion of the study area, between the existing residences accessed by Sunset Avenue and Samoa Court, and New Navy Base Road. This location is highly disturbed due to paintball-related recreation activities and this species was not relocated at this location in 2018, despite repeated surveys of the location.

Finally, the remaining two consist of occurrences of pink sand-verbena (*Abronia umbellata* var. *breviflora*) and American glehnia (*Glehnia littoralis* ssp. *leiocarpa*) in the foredune complex near the Samoa Booster Station, north of New Navy Base Road. Both were reported from this location by Mad River Biologists (2004), but neither species was reported as still extant in 2009 (Mad River Biologists) – the absence of American glehnia was discussed, though pink sand-verbena was not mentioned therein. No subsequent information about these occurrences at this location is available, as the specific location was not analyzed during the most recent previous study (Morrissette 2013). Neither species was encountered during our 2018 fieldwork despite repeated surveys of the vicinity, and they are presumed to be extirpated at that location.

Invasive Vegetation

Fifty different invasive plant species were encountered throughout the STMP study area in 2018, 7 more than were reported by Morrissette (2013). Of these, eight are categorized by the California Invasive Plant Council (Cal-IPC 2018) as being highly invasive (Table 9), 2 more than were described previously (Morrissette 2013). These include European beachgrass (*Ammophila arenaria*), iceplant (*Carpobrotus* spp.), jubata grass (*Cortaderia jubata*), Scotch broom (*Cytisus scoparius*), French broom (*Genista monspessulana*), Himalayan blackberry (*Rubus armeniacus*), English ivy (*Hedera helix*), and gorse (*Ulex europaeus*). The latter species occurs (two patches) on the log deck (non-ESHA developed dune) area north of the Samoa Resource Recovery Center and was not previously noted as occurring within the study area (Mad River Biologists 2004, 2009; Morrissette 2013). This species is of particular concern given its potential for spread and difficulty in eradication. Though not listed by Cal-IPC, yellow bush lupine (*Lupinus arboreus*) is also included here, as is the "moderately" invasive, periwinkle (*Vinca major).*

Figure 5 (Appendix F) depicts the observed distribution of invasive vegetation throughout the study area. Some of these invasive species have already been described as degrading components of the various types of coastal dune ESHA on both sides of New Navy Base Road. Others such as Scotch broom (*Cytisus scoparius*), French broom (*Genista monspessulana*), etc. are invading Degraded Dune, Northern Coastal Scrub and Coastal Coniferous Forest ESHA, along foot trails, southeast of New Navy Base Road.

The abandoned industrial log deck area, which occupies much of the study area, is of interest in this regard as many of the invasive species encountered during 2018 occur here and their populations appear to be expanding. This area

Table 9. Invasive Plant Species Occurring in the STMP Study Area (2018).

Species	Common Name	Habit	Cal-IPC Rating
Ammophila arenaria	European beachgrass	Herb	High
Carpobrotus spp.	iceplant	Herb	High
Cortaderia jubata	jubata grass	Herb	High
Cytisus scoparius	Scotch broom	Shrub	High
Genista monspessulana	French broom	Shrub	High
Lupinus arboreus	yellow bush lupine	Shrub	N/A
Rubus armeniacus	Himalayan blackberry	Shrub	High
Ulex europaeus	gorse	Shrub	High
Hedera helix	English ivy	Woody Vine	High
Acacia dealbata	silver wattle	Tree	Moderate
Cotoneaster pannosus	silverleaf cotoneaster	Shrub	Moderate
Arctotheca calendula	capeweed	Herb	Moderate
Brassica nigra	black mustard	Herb	Moderate
Bromus diandrus	ripgut brome	Herb	Moderate
Cynosurus echinatus	bristly dogtail grass	Herb	Moderate
Dipsacus fullonum	wild teasel	Herb	Moderate
Festuca myuros	rat-tail fescue	Herb	Moderate
Festuca perennis	Italian ryegrass	Herb	Moderate
Foeniculum vulgare	fennel	Herb	Moderate
Hirschfeldia incana	short-pod mustard	Herb	Moderate
Holcus lanatus	common velvet grass	Herb	Moderate
Hypochaeris radicata	rough cat's-ear	Herb	Moderate
Leucanthemum vulgare	ox-eye daisy	Herb	Moderate
Lythrum hyssopifolia	hyssop loosestrife	Herb	Moderate
Mentha pulegium	pennyroyal	Herb	Moderate
Rumex acetosella	sheep sorrel	Herb	Moderate
Vinca major	periwinkle	Herb	Moderate
Acacia melanoxylon	blackwood acacia	Tree	Limited
Eucalyptus globulus	bluegum	Tree	Limited
Ilex aquifolium	English holly	Tree	Limited
Agrostis stolonifera	creeping bent	Herb	Limited
Anthoxanthum odoratum	sweet vernal grass	Herb	Limited
Briza maxima	rattlesnake grass	Herb	Limited
Bromus hordeaceus	soft chess	Herb	Limited
Cakile maritima	European searocket	Herb	Limited
Cotula coronopifolia	brass-buttons	Herb	Limited
Crocosmia x *crocosmiiflora*	montbretia	Herb	Limited
Dactylis glomerata	orchard grass	Herb	Limited
Euphorbia terracina	Geraldton carnation weed	Herb	Limited
Geranium dissectum	cutleaf geranium	Herb	Limited
Helminthotheca echioides	bristly ox-tongue	Herb	Limited
Hypochaeris glabra	smooth cat's-ear	Herb	Limited
Medicago polymorpha	California burclover	Herb	Limited
Plantago lanceolata	English plantain	Herb	Limited
Polypogon monspeliensis	rabbitfoot grass	Herb	Limited
Ranunculus repens	creeping buttercup	Herb	Limited
Raphanus sativus	wild radish	Herb	Limited
Rumex crispus	curly dock	Herb	Limited
Silybum marianum	milk thistle	Herb	Limited

represents a significant propagule source and threat to native landscapes both within, and immediately adjacent to, the study area, in addition to locations where the associated substrate may be received during transport and disposal should grading and excavation (associated with development) eventually occur in these areas.

Some of these issues are addressed in *Addendum Samoa Town Master Plan Biological Resource Study Botanical Survey and Invasive Plant Management Plan* (Morrissette 2013), and strategies described in that document should incorporate additional measures to address recently documented invasive plants, which may not have been addressed specifically, therein, upon implementation of the invasive plant management plan.

4.2.2 Wildlife Resource Analysis Results

Observations made during our 2018 fieldwork confirm the sustained relevance, and current applicability, of the wildlife habitat assessments made by the previous investigators in their original biological resource study (Mad River Biologists 2004). None of the observed changes in the distribution, structural development, and/or species composition of the vegetation addressed earlier in Sections 4.1.1 and 4.1.2 (or associated abiotic habitat elements) are considered to have been sufficient to result in corresponding changes to the potential habitat-wildlife species associations described in the original biological study (Mad River Biologists 2004). Nevertheless, the following differences between efforts warrant mention.

Consideration of Additional Species Not Previously Addressed

Four additional species resulting from our preliminary research (Section 3.2.1), which were not included in Mad River Biologists' (2004) assessment were determined to have either moderate or high potential for occurrence within the study area. Two additional bat species, Hoary Bat (*Lasiurus cinereus*) and Long-eared Myotis (*Myotis evotis*), were determined to have moderate potential to occur based on the availability of potentially suitable breeding and roosting habitat within the study area, in the form of old and/or abandoned buildings and tree cavities. The probability of under-detection of these nocturnal and relatively cryptic species was also a factor in our determinations.

One such potentially suitable habitat element includes a mature Sitka spruce (*Picea sitchensis*) tree situated just outside the northern portion of the study area, on the east side of a utility easement within the Coastal Coniferous Forest ESHA in the northern portion of the study area (labeled "wildlife habitat tree" in Appendix F, Figure 4. Although this tree appeared to be in good health, it has substantial trunk cavities. Such habitat elements are uncommon in the surrounding landscape and may provide suitable habitat for a variety of avian, mammalian, amphibian, and other wildlife species. Other similar cavities and refugia may also occur throughout the forested habitat in the vicinity.

The other two additional species considered in our 2018 analysis are two species of bumblebee: Western Bumblebee (*Bombus occidentalis*) and Obscure Bumblebee (*Bombus caliginosus*). We considered these insects to have a moderate and high potential (respectively) to occur within the study area based on a combination of documented historical occurrence at similar nearby coastal locations ("Samoa Peninsula," Lanphere Dunes Unit of the Humboldt Bay National Wildlife Refuge, Clam Beach County Park, etc. [CNDDB 2018]), abundant suitable forage (plant) species present within the study area, and the high probability of under-detection of these species. Obscure Bumblebee is thought to have greater potential due to the coincidence of its reported distribution with the location of the study area.

Changes in "Potential for Occurrence" Determinations

In addition to the inclusion of the four additional species not addressed previously, our determinations for "potential for occurrence" for six wildlife species diverged in 2018 from those made in the original biological study (Mad River Biologists 2004). These changes consisted of "upgrades" for three species and "downgrades" for three different species. Pallid Bat (*Antrozous pallidus*) and Townsend's Western Big-eared Bat (*Corynorhinus townsendii townsendii*) were upgraded from having a low potential to having a moderate potential to occur within the study area on the same basis as was described for the two former bat species. White-tailed Kite (*Elanus leucurus*) is also thought to have a moderate potential to occur within the study area (previously determined to have a "low potential" [Mad River Biologists 2004]). Some of the degraded dune habitats provide potential hunting areas for this species, and potentially suitable breeding habitat exists in the coastal coniferous-forested portions of the study area.

Changes in the extent of the 2018 study area, which excluded that portion of the 2004 study area (Mad River Biologists 2004) extending from the Northwest Pacific Railroad right-of-way, east towards the edge of Humboldt Bay, resulted in the downgrading of three bird species from high potential to moderate potential, given the relative separation between the 2018 study area and the edge of Humboldt Bay. These bird species are Elegant Tern (*Thalasseus elegans*), Brown Pelican (*Pelecanus occidentalis californicus*), and Double-crested Cormorant (*Phalacrocorax auritus*). While these species probably forage in both the Pacific Ocean and Humboldt Bay (and likely fly over, and or near the 2018 study area) the most likely potentially suitable habitat for these species occurs along the edge of Humboldt Bay (≥ 750 feet from the eastern edge of the 2018 study area).

Special Status Wildlife Species Detections and Notable Observations

Eight special status wildlife species were detected during our 2018 fieldwork (Table 10; Appendix F, Figure 4). Though the detections depicted in the respective figure occurred outside of the extent of the current study area, the significance of depicted observations and their close proximity warranted documentation and consideration. Further elaboration regarding the details and significance of these detections is provided in Appendix A (*Species Accounts for*

Table 10. Summary of 2018 Special Status Wildlife Species Detections.

Species	Observations
Amphibians	
Northern Red-legged Frog (*Rana aurora*)	Loafing in concrete drainage feature immediately outside eastern boundary of the study area
Birds	
Great Egret (*Ardea alba*)	Foraging in dune hollow wetland complex, east of New Navy Base Road; overflights
Great Blue Heron (*Ardea herodias*)	Overflights
Aleutian Cackling Goose (*Branta hutchinsii leucopareia*)	Overflights
Northern Harrier (*Circus hudsonius*)	Hunting over native and degraded coastal dune habitats
Peregrine Falcon (*Falco peregrinus anatum*)	Hunting, repeated roosting on nearby industrial facilities (outside of the study area), conspecific aggressive interaction during breeding season
Osprey (*Pandeon haliaetus*)	5 active nests on utility poles outside of, but nearby (≥100'), the study area; copulation observed at nest (4/26/18); nest provisioning
Black-capped Chickadee (*Poecile atricapillus*)	Foraging in coastal coniferous forest

Special Status Species Known to Occur within the 2018 STMP Study Area, Determined to Have a High Potential for Occurrence, or Which Otherwise Warrant Consideration). All wildlife species detected throughout the 2018 fieldwork, either by direct (i.e., visual and/or aural) or indirect (e.g., tracks, feces, feathers, skeletal remains, etc.) means were documented, and a list of these species is provided in Appendix D.

Migratory Bird Habitat

Finally, Humboldt Bay is considered to be an internationally significant area for migratory birds by the National Audubon Society (Audubon 2018), American Bird Conservancy (ABC 2018), and the Western Hemisphere Shorebird Reserve Network (WHSRN 2018). Migratory birds use the diverse and productive habitats within and around Humboldt Bay year round, as they migrate between their breeding and wintering grounds. Many of the habitat types occurring within the STMP study area provide suitable wintering and breeding habitat for migratory bird species protected under State law (CDFW 2018e). Native habitats within the study area, which provide suitable breeding habitat for migratory bird species primarily consist of woody dune hollow wetlands, Northern Coastal Scrub, and Coastal Coniferous Forest; though planted trees and shrubs, and other anthropogenic features such as buildings, utility poles, and similar structures may also provide suitable breeding habitat for migratory birds as well.

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Appendices

Appendix A. Species Accounts for Special Status Species Known to Occur within the 2018 STMP Study Area, Determined to Have a High Potential for Occurrence, or Which Otherwise Warrant Consideration.

Botanical Species

Six special-status botanical species presently occur or have a high potential to occur within the study area. These include pink sand-verbena (*Abronia umbellata* ssp. *breviflora*), Menzies' wallflower (*Erysimum menziesii*), dark-eyed gilia (*Gilia millefoliata*), American glehnia (*Glehnia littoralis* ssp. *leiocarpa*), short-leaved evax (*Hesperevax sparsiflora* var. *brevifolia*), and beach layia (*Layia carnosa*). These species are discussed in greater detail below:

Pink sand-verbena (*Abronia umbellata* ssp. *breviflora*) has been assigned the Rare Plant Rank of 1B.1 by the California Native Plant Society (CNPS 2018a), which translates to being rare or endangered in California and elsewhere, and "seriously threatened" in California (~80% of occurrences vulnerable to immediate threats). Threats to this species include stabilization of the sand dunes by European beachgrass (*Ammophila arenaria*) and other non-native species, loss of habitat to development, and vehicle disturbance.

Pink sand-verbena is a short-lived perennial herb in the four-o'clock family (Nyctaginaceae) that blooms July through October (CNPS 2018a). It is morphologically similar to a closely related species, yellow sand-verbena (*Abronia latifolia*), which is abundant on the North Spit. Unlike pink sand-verbena, yellow sand-verbena is a long-lived perennial that forms an extensive taproot system. The preferred habitat for pink sand-verbena is native dune mat and Beach Strand, but it also occurs on beaches, low sandy hummocks, open sandy bay edges, and river mouths. It is restricted to coastal sandy habitats and is limited to fine sand or silty sand beaches with little organic soil. Associated species include yellow sand-verbena (*Abronia latifolia*), beach pea (*Lathyrus littoralis*), dunegrass (*Leymus mollis*), European beachgrass (*Ammophila arenaria*), sea rocket (*Cakile maritima*) and beach bursage (*Ambrosia chamissonis*) (Vrilakas 1988).

Pink sand-verbena was reported from the foredunes north of New Navy Base Road in 2000 (Morrissette & LeValley 2000 *in* Mad River Biologists 2004) and in 2003-4 (Mad River Biologists 2004), but was not mentioned in Mad River Biologists' report from the same area in 2009. No subsequent information about this occurrence at this location is available (this specific location was not analyzed during the most recent previous study [Morrissette 2013]). This species was not encountered during our 2018 fieldwork despite repeated surveys of the vicinity, and the occurrence is presumed to be extirpated at that location. Despite that potential, highly suitable habitat for this plant exists in foredune and interdune areas.

Menzies' wallflower (*Erysimum menziesii*) is listed as endangered under both the California State and Federal Endangered Species Acts. This species is also assigned a Rare Plant Rank of 1B by CNPS (2018a), which indicates that it is an endemic to California, endangered throughout its range, and its occurrences are limited to a few highly restricted populations. Invasive, non-native plants such as European beachgrass (*Ammophila arenaria*), iceplant (*Carpobrotus* spp.), yellow bush lupine (*Lupinus*

arboreus), and jubata grass (*Cortaderia jubata*) are the primary threats to this species in Humboldt County (USFWS 2008), in addition to habitat loss and disturbance associated with development and associated recreation.

Menzies' wallflower is a member of the mustard family (Brassicaceae). It is a monocarpic perennial, forming a basal rosette of leaves that may persist for several years before flowering. Blooming periods are typically March through September (CNPS 2018a). Once the plant blooming, fruiting and seed dispersal it senesces and dies. This type of delayed reproduction may allow the plant to exploit favorable growing periods (Pickart and Sawyer 1998). Menzies' wallflower is found primarily in dune mat and open sand areas, though it also occasionally occurs in lupine scrub and herbaceous dune hollows. Within the dune mat habitat, which is characterized by low-growing native herbaceous and perennial shrubs, the plants are generally clustered in patches of a few to hundreds of individuals. Locally, dominant associate species include coast buckwheat (*Eriogonum latifolium*), dune goldenrod (*Solidago spathulata*), seashore bluegrass (*Poa douglasii*), beach pea (*Lathyrus littoralis*), beach sagewort (*Artemisia pycnocephala*) and yellow sand-verbena (*Abronia latifolia*) (Duebendorfer 1992; USFWS 2008).

In 2000, several individuals were observed east of New Navy Base Road in two small areas of remnant dune mat in the vicinity of the HBMWD water pipeline right-of-way (Morrissette and LeValley 2000 *in* Mad River Biologists 2004); however, these individuals were not relocated during the 2003/2004 survey effort, and are thought to be extirpated (Mad River Biologists 2004).

In 2018, nineteen occurrences were encountered in native dune mat and degraded Northern Foredune habitats at both northern (n =7) and southern (n = 12) extremities of the study area. All individuals at the northern end of the study area occupied dune ridges or slopes near the study area boundary. Similar geomorphic locations were observed for occurrences at the southern extremity of the study area as well. Here, all but a single vegetative individual occurred on the east side of New Navy Base Road and south of LP Drive, in the vicinity of the electrical utility structure. The single other individual was encountered on a foredune ridge opposite, and south of, LP Drive on the west side of New Navy Base Road. Representatives spanning the spectrum of phenological stages (i.e., vegetative, flowering, and fruiting) were observed and invasive vegetation (e.g., iceplant [*Carpobrotus* spp.], etc.) threatens the majority of encountered individuals. Given the previously undocumented "appearance" of this species in the northern portion of the study area, these occurrences may showcase the ability of this plant to remain in the seed bank and re-colonize habitat patches, as long as habitat conditions remain suitable. Towards this end, dune restoration efforts at a nearby Manila Community Services District property are thought to be contributing to an increase in that local population (USFWS 2008).

Dark-eyed gilia (*Gilia millefoliata*) has been assigned the Rare Plant Rank of 1B.2 by CNPS (rare and endangered in CA and elsewhere, and is under a moderately high level of threat to current populations) (CNPS 2018a). This species occurs from southern Oregon to Marin County in California. Threats to this species include stabilization of the coastal dunes by European beachgrass (*Ammophila arenaria*) and other non-native species, loss of habitat to development and grazing, and vehicle and foot traffic.

Dark-eyed gilia is a member of the phlox family (Polemoniaceae). It is an annual herb that typically blooms between April and July (CNPS 2018a). It is a small (less than 30 cm tall), densely glandular plant with a “skunk-like odor” (Hickman 1993), forms a basal rosette of 1-2 pinnately-lobed leaves, and produces clusters of two to six small flowers in the axils of bracts. It is described as occurring in coastal habitats between 0 and 32 feet in elevation (CNDDB 2018). Native associates include dune mat species such as yellow sand-verbena (*Abronia latifolia*), beach pea (*Lathyrus littoralis*), beach layia (*Layia carnosa*), dune knotweed (*Polygonum paronychia*) and seashore bluegrass (*Poa douglasii*).

Dark-eyed gilia occurs both in the intact dune mat communities and similar degraded dune habitats with exposed sand or limited establishment of non-native grasses, as well as in the small areas of exposed sand interspersed with *Ammophila*-dominated portions of the study area.

Dark-eyed gilia was found to occur in the native dune mat and degraded foredune habitats on the west side of New Navy Base Road in 2018, in the vicinity of both the northern and southern Visitor Use Area options. While both species had been documented near the Samoa Booster Station in each of the previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013), neither had been reported from the southern Visitor Use Area option near LP Drive during the single prior investigation of that specific location (Mad River Biologists 2004).

This species was also observed in the extensive linear degraded dune complex on the east side of New Navy Base Road as well, primarily in areas with exposed sand. However, it was also observed growing in small (~1-2 feet, radius) openings within the surrounding context of European beachgrass (*Ammophila arenaria*) within this region of the study area in multiple instances. A more extensive, linear occurrence also continues to persist in the exposed sand within the periodically disturbed HBMWD utility easement and contiguous remnant patches of native dune mat as well.

The small occurrence of dark-eyed gilia reported by Mad River Biologists (2004) and Morrissette (2013) in the degraded dune habitat in the northern portion of the study area, between the existing residences accessed by Sunset Avenue and Samoa Court, and New Navy Base Road was not relocated at this location in 2018, despite repeated surveys of the location and is believed to be extirpated here. This location is highly disturbed due to paintball-related recreation activities.

American glehnia (*Glehnia littoralis* ssp. *leiocarpa*) has been assigned the Rare Plant Rank of 4.2 by CNPS (CNPS 2018a), which designates this species as having a limited distribution and moderate threats to current populations. This species is known to occur from Mendocino County, California, north into Oregon and Washington in coastal dune habitats. Like many of the other sensitive dune plants, threats to this species include stabilization of the sand dunes by European beachgrass (*Ammophila arenaria*) and other non-native species, loss of habitat to development, grazing, and vehicle and foot traffic.

American glehnia is a perennial herb of the carrot family (Apiaceae). It is a low growing, prostrate plant with fleshy, divided (1-2- ternate or ternate-pinnate) leaves. It blooms between May and August (CNPS 2018a), producing a stout, compound umbel of small white flowers.

American glehnia was documented in 2003 (Mad River Biologists 2004) in the vicinity of the Samoa Booster Station in a relatively open sandy area, associated with yellow sand-verbena (*Abronia latifolia*), European beachgrass (*Ammophila arenaria*), and sea rocket (*Cakile maritima*). This plant was not relocated in 2009 (Mad River Biologists 2009), nor was it encountered during our 2018 botanical surveys, and this occurrence is presumed to be extirpated from the 2018 study area.

Beach layia (*Layia carnosa*) is listed as endangered under both the California State and Federal Endangered Species Acts. This species is also assigned a Rare Plant Rank of 1B.1 by CNPS (2018a), which indicates that it is rare or endangered in California and elsewhere, and "seriously threatened" in California (~80% of occurrences vulnerable to immediate threats). Its habitat is restricted to coastal dune systems in Humboldt, Marin, Monterey, and Santa Barbara Counties (Pickart and Sawyer 1998). The largest known remaining population of beach layia occurs on the North Spit of Humboldt Bay (CNDDB 2018) where its distribution is widespread but patchy. Threats to beach layia include loss of habitat due to coastal development, trampling by vehicles and pedestrians, and encroachment by invasive plants such as European beachgrass (*Ammophila arenaria*), iceplant (*Carpobrotus* spp.), yellow bush lupine (*Lupinus arboreus*), jubata grass (*Cortaderia jubata*), and alien grasses.

Beach layia is a small (2-18 cm) annual herb of the sunflower family (Asteraceae) that germinates in mid-winter and typically blooms between May through June (CNPS 2018a). Flowering heads are inconspicuous with white ray flowers and yellow disk flowers. The foliage is somewhat fleshy and the plants range in form from unbranched to diffusely branched. This species requires areas with open sand to colonize and its distribution is limited where the thick vegetative cover of nonnative plants have become established in the associated foredune system. Typical dune mat associates include coast buckwheat (*Eriogonum latifolium*), coast goldenrod (*Lathyrus littoralis*), coastal sagewort (*Artemesia pycnocephala*), and yellow sand-verbena (*Abronia latifolia*) (Duebendorfer 1992). Due to the annual life history pattern and ability to persist in the seed bank for long periods, beach layia is able to readily colonize areas of suitable habitat and the distribution of occurrences can vary from year to year.

On the Samoa Peninsula, beach layia inhabits dune mat and foredune areas but also occurs in lower densities along margins of lupine scrub, herbaceous hollows, and open areas with moving sand. It has also been reported occurring on disturbed and gravelly soils along roadsides, vehicle trails and footpaths (Duebendorfer 1992). This species was documented in the foredune habitat in the vicinity of the Samoa Booster Station on the west side of New Navy Base Road by previous investigators (Mad River Biologists 2004, 2009), as well as in a remnant native dune mat area within the surrounding degraded dune habitat on the east side of New Navy Base Road (Mad River Biologists 2004; Morrissette 2013).

These occurrences were relocated during our 2018 botanical surveys, and a previously unreported occurrence was also discovered in the foredune habitat, west of New Navy Base Road in the southern portion of the study area, opposite LP Drive. All three phenological stages (i.e., vegetative, flowering, and fruiting) of both species were encountered during our 2018 surveys.

Short-leaved evax (*Hesperevax sparsiflora* var. *brevifolia*) has been assigned a Rare Plant Rank of 1B.2 by CNPS, which indicates that it is rare and endangered in California and elsewhere, and has a moderately-high level of threat to current populations (CNPS 2018a). Its habitat is restricted to coastal bluff scrub, coastal dune and coastal prairie habitats from San Mateo County, California into coastal areas of southern Oregon. This species is currently threatened by development, competition with non-native plants (particularly *Ammophila arenaria, Carpobrotus* spp. and *Lupinus arboreus*), foot traffic and recreational activities in near-coastal areas. It is also potentially threatened by trail construction in certain areas.

Short-leaved evax is a small annual herb of the sunflower (Asteraceae) family and blooms between March and July (CNPS 2018a). The inflorescences form inconspicuous green to white discoid heads of multiple florets, often hidden by the round, wooly leaves. Individuals are 3-9 cm tall and are often overlooked.

Short-leaved evax was not found during previous investigations of the study area (Mad River Biologists 2004, 2009; Morrissette 2013), nor was it encountered during our 2018 botanical surveys. However, this species does have a high potential to occur within the study area, given the availability of suitable habitat and the proximity (~4 miles) of nearby populations at the Samoa Dunes Endangered Plant Protection Area. Suitable habitat includes intact and degraded foredune habitats.

Wildlife Species

Thirteen wildlife species presently occur or have a "high" potential to occur within the study area. These include one insect, one amphibian, and eleven bird species. Additionally, four bat species are also included here to provide additional information and context given the combined "moderate" potential to occur within the study area, and their particular susceptibility to human-related disturbance associated with deconstruction of historic and/or vacant structures. These species are addressed in detail below:

Obscure Bumblebee (*Bombus caliginosus*) is part of a suite of recently listed (IUCN, 2014) invertebrate species focusing on pollinators, particularly bumble bees (genus *Bombus*). Obscure bumble bee was originally proposed to be listed as endangered (EN) by the International Union for Conservation of Nature (IUCN) due to analyses that suggested very high levels of population decline range-wide, including range size reductions, persistence reductions and relative abundance declines. Due to questions about sampling effort in the analyses, and questions about the historic range of this species, compounded by the difficulty to discern this species from a more common relative (*Bombus vosensenskii*), it has been formally listed as vulnerable (VU). Obscure bumble bee is also state listed in California as S1S2, either critically or otherwise imperiled due to restricted range and vulnerability to extirpation. This species occurs in coastal areas from Santa Barbara County, California to southern British Colombia.

Obscure bumble bee inhabits coastal areas, mainly open grassy coastal prairies and Coast Range meadows (IUCN; Hatfield et al 2014). This species forages on, and thus is important in the pollination of, 30+ plant genera, including *Ceanothus, Cirsium, Clarkia, Keckiella, Lathyrus, Lotus, Lupinus, Rubus, Trifolium* and *Vaccinium*. Threats to this species include climate change (complex drivers, including but not limited to phenological mismatches between pollinators and plants), extensive urban/suburban development driving habitat loss, pesticide use, pathogens from managed pollinators and competition with non-native bees (McFredrick and LeBuhn 2006).

No species-specific surveys were conducted within the study area for obscure bumble bee. This species was not observed in the study area in 2018. No recent (within the past 10 years) collections of this species have been made in Humboldt County. However, this may be explained by the difficulty of identifying this species and the relatively recently understood conservation importance. Due to the geographic overlap between the range of obscure bumble bee and the study area, the diverse plant assemblage and habitat types, as well as uncertainty about this species' detectability, obscure bumble bee has a high potential to occur in the study area.

Northern Red-legged Frog (*Rana aurora*) is State-listed by the California Department of Fish and Wildlife (CDFW) as a Species of Special Concern and federally listed by the US Forest Service as sensitive. Northern red-legged frog ranges from northern Mendocino County through the coastal areas of Oregon, Washington, and British Colombia. In California, northern red-legged frog and populations intermediate between Northern and California red-legged frogs extend from Marin County north to the Oregon state line with an elevational range from near sea level to 300 m. Threats to this species include urban encroachment, construction of reservoirs and water diversions, land conversions, industrial and non-industrial forest practices, introduction of exotic predators and competitors, livestock grazing, habitat fragmentation and disease by pathogens and fungi.

Northern red-legged frog is a medium-sized frog (4-8 cm SV length), with prominent dorsolateral folds along the sides of its brown, grey or olive with black flecks and spotted, often thin-waisted body. The species gets its name from the reddish underside color of the lower belly and hind legs. Breeding and egg-laying occurs in vegetated shallows with little water flow in permanent wetlands and temporary pools where water lasts long enough for tadpoles to metamorphose. Breeding takes place from October to March, depending on location and site characteristics. Northern red-legged frog inhabits a variety of habitats including humid forests, woodlands, grasslands and stream sides, tending to be in proximity to dense riparian cover. This species is generally found near permanent water, but can be found far from water in mesic woods and meadows during the non-breeding season.

An adult northern red-legged frog was incidentally observed in a concrete-lined drainage ditch outside of, but immediately adjacent to (< 175 feet), the study area in the industrial areas east of the Northwest Pacific Railroad right-of-way in 2018. The seasonal freshwater emergent, scrub-shrub, and dune hollow wetlands throughout the study area offer excellent habitat for this species. Vegetated drainage ditches, impoundments, and similar features within the study area may also provide suitable habitat for Northern Red-legged Frog.

Cooper's Hawk (*Accipiter cooperi*) is State listed as a Watch List (WL) species by the CDFW at nesting sites. Worldwide, Cooper's Hawk breeds in portions of Canada, and south into Mexico and the southeastern United States and winters in portions of the mid and western United States and portions of Canada south into Middle America. In California, Cooper's Hawk occurs in open or marginal woodlands and brushlands, nesting primarily in deciduous trees of riparian habitat in foothills and valleys (Fix and Bezener 2000). Threats to Cooper's Hawk include habitat destruction, predominately occurring in lowland riparian areas, and disturbance at nest sites.

Cooper's Hawk was detected flying over the study area in 2018 and regularly uses woodland habitats in and around the study area as wintering habitat and during migration. They have bred on Woodley Island in Humboldt Bay, approximately 1 mile southeast of the study area. The Coastal Coniferous Forest on the north end of the study area could provide suitable nesting habitat for this species.

Great Egret (*Ardea alba*) nesting colonies are protected by CDFW in California. A common resident and breeder in California, Great Egret occurs in open or semi-open fish-bearing habitats and favors expansive shallows, marshes, vegetated lakeshores, bays, sloughs, marshlands, and coastal rivers inland, roosting in undisturbed trees and nesting in dense stands of trees or snags (Fix and Bezener 2000, Harris 1996). Great Egret will also forage in grazed pastureland (Harris 1996). Current threats to this species include loss of wetland habitats, extermination as pests on fish farms, and raiding of nests for eggs.

Great Egret commonly occurs at the study area, frequenting Humboldt Bay and breeding on Indian Island to the southeast of the study area. No nesting colonies are known from the study area, although there is some potential for nesting in the wooded areas bordering a few small wetlands in the study area. This species was observed flying over the study area in 2018.

Great Blue Heron (*Ardea herodias*) nesting colonies are protected by CDFW in California where this species is a common resident and breeder. Great Blue Heron commonly occurs in a variety of coastal and upland/wetland edge habitats such as rivers, lake shores, ponds, lowland marshes, bottomland pastures (including grazed pastureland), coastal bays, lagoons, intertidal rocks, and beaches (Fix and Bezener 2000; Harris 1996). Threats to this species include loss of wetlands as well as development and human disturbance.

Great Blue Heron occurs at the study area, frequenting Humboldt Bay and breeding on Indian Island to the southeast of the study area. It is a common local resident and breeder. No nesting colonies are known from the study area, although there is some potential for nesting in the wooded areas bordering a few small wetlands in the study area. This species was observed flying over the study area in 2018.

Northern Harrier (*Circus cyaneus*) is a CDFW Species of Special Concern. In North America, this species is found from North Alaska east across Canada to the Atlantic Coast and south into Mexico, breeding from the northernmost portion of its range through the central United States and wintering in the Southern United States. Year-round residents also occur throughout portions of North America. In California, Northern Harrier is distributed throughout the state primarily in open habitats, nesting in coastal fresh and saltwater marshes and foraging in grasslands, meadows, and marshes (Fix and Bezener 2000, Harris 1996). Current threats to this species are habitat destruction resulting from the agricultural and urban development.

Locally, Northern Harrier is a common migrant and winter resident, found in coastal marshes and grasslands near Humboldt Bay in the vicinity of the study area. This species was observed hunting in the degraded dune/dune hollow wetland complex within the study area in 2018, east of New Navy Base Road. Although nesting could occur adjacent to herbaceous dune hollow wetlands within the study area, it is unlikely given the surrounding context of human disturbance.

Snowy Egret (*Egretta thula*) nesting colonies are protected by CDFW in California. In California, Snowy Egret is a year round resident, migrant, and summer breeder occurring

in areas of shallow, standing, or slow moving water such as marshes, lakes, floodplains, stream sides, and tidal wetlands as well as at reservoirs or along river corridors during migration (Fix and Bezener 2000). Locally, they also use open mudflats and tidal sloughs, and rocky or sandy ocean coast (CNDDB 2018). Unlike other related species, Snowy Egret does not forage in grazed pastureland, preferring water-associated foraging habitat (Harris 1996). Current threats to Snowy Egret include destruction of wetland habitats and human disturbance during breeding.

Snowy Egret is locally common near the study area, frequently foraging in Humboldt Bay. This species is also known to have bred on Indian Island within the bay in some years (Harris 1996). No nesting colonies are known from the study area, although some suitable nesting habitat exists in the wooded areas bordering a few small wetlands in the study area.

Merlin (*Falco columbarius*) is State listed as a Watch List (WL) species by CDFW at wintering sites. Worldwide, Merlin has a circumpolar breeding range occurring in northern temperate and sub and low Arctic regions and is migratory throughout most of its range, wintering in a variety of open and forested habitat types in northern and southern temperate zones of Eurasia and the Americas. Merlin does not breed in California but is transient throughout much of the state, wintering along the coast and in the central valley in open country with scattered lookout posts such as estuaries, seacoasts, open woodlands, savannah, windbreaks and hedgerows, pastures and the edges of grasslands and agricultural fields (Fix and Bezener 2000; Harris 1996). Current threats to Merlin primarily include persistent pesticide use on wintering areas in Central and South America, as well as take for falconry.

Merlin is present each fall in open lowlands along the coast such as those present in the study area. Suitable forested wintering habitat and prey species (shorebirds) exist in the study area.

American Peregrine Falcon (*Falco peregrinus anatum*) was removed from the Federal Endangered Species List on 25 August, 1999 and is currently listed as a USFWS Species of Concern, a CDFW Species of Special Concern, and is a California Fully Protected species at nest sites. In California, its range extends throughout most of the state with the exception of the deserts during migration and winter. Typical breeding habitat for this species consists of ledges of large cliff faces or other similar structures in a variety of habitats including wetlands, woodlands, urban and agricultural areas and coastal habitats. In the north coast region, Peregrine Falcon has also been observed breeding in cavities associated with mature coast redwood (*Sequoia sempervirens*) tress. While this species has recovered throughout California, the potential threat of habitat destruction and human disturbance at nest sites are still significant concerns.

This species forages in the vicinity of Humboldt Bay and on the North Spit, and additional suitable coastal lowland habitats supporting shorebird and other waterbird prey are present within the study area. Nesting has been suspected in the vicinity of the Samoa Bridge, but as of yet has not been confirmed.

Multiple observations of this species were made in the study area during 2018. Observed behavior included hunting, conspecific aggressive interactions in late April 2018 (during the breeding season), and repeated roosting on a nearby smoke stack and associated industrial buildings (~1,600 feet to the south of the study area's southern boundary). Although no definitive nesting was confirmed during the current effort (despite a dedicated effort on the morning of April 26, 2018), the latter behavioral types could indicate that a nest site or territory exists nearby.

Black-crowned Night Heron (*Nycticorax nycticorax*) nesting colonies are protected by CDFW in California. Globally, Black-crowned Night Heron is widely distributed throughout North and South America, Eurasia, and Africa. In California, this species is a common year-round resident and less common breeder, occurring in fresh and salt water marshes, pond margins, mudflats, sloughs, cropland, and slow-moving stream shorelines. Nesting occurs in dense stands of trees and brush, primarily in secluded areas (Fix and Bezener 2000; Harris 1996). Current threats to Black-crowned Night Heron include loss of wetland habitat and human disturbance at nesting sites.

Black-crowned Night Heron is a common local resident and breeder in Humboldt County and is known to occur within and around the study area. This species was reportedly roosting in woody dune hollow wetland habitat at the "Dog Ranch" property immediately adjacent to the northern boundary of the study area in 2003 (Mad River Biologists 2004). No roosts are known from the study area, although some nesting habitat (riparian and coastal willow thickets) is present.

Osprey (*Pandion haliaetus*) is State listed as a Watch List (WL) species by the CDFW at nesting sites. This species has a worldwide distribution, occurring on every continent with the exception of Antarctica. In California, Osprey is a common summer resident and breeder, and is less common in winter. This species forages over bodies of water, preying solely on fish. Breeding primarily in scattered locations throughout northern California from the Cascade Ranges south to Lake Tahoe, and along the coast south to Marin County, Osprey nests and roosts on exposed treetops, towers, pilings, or similar structures near lakes, reservoirs, rivers, estuaries, and the open sea coast (Fix and Bezener 2000; Harris 1996). Historically, Osprey was negatively impacted by eggshell thinning caused by persistent pesticides such as DDT up until its ban in the 1970's. Current threats to the species primarily include degradation of aquatic environments such as rivers and lakes, and loss of nesting structures such as trees to timber harvest and other activities.

Osprey is commonly observed in the study area and breeds within close proximity. Five active osprey nests were detected on utility transmission line poles along the nearby edge of Humboldt Bay in 2018, including one that is located within ~100 feet of the southern edge of the study area. Copulation was observed at one such nest on April 26, 2018 and nest provisioning was regularly witnessed. Numerous other known nest sites occur within the surrounding vicinity and this species hunts nearby, in the ocean and in Humboldt Bay. Abundant suitable (natural and anthropogenic) nesting habitat occurs within the study area and surrounding environment.

Black-capped Chickadee (*Parus atricapillus*) is State listed as a Watch List (WL) species by CDFW. Black-capped Chickadee is distributed from Alaska, east across Canada to Newfoundland and south to northern California, northern New Mexico, Missouri, and northern New Jersey. This species winters south to Maryland and Texas. In California, Black-capped Chickadee occurs in mixed hardwood and softwood forests, natural and suburban woodlands, scattered trees, shrubs, thickets, old fields, clear cuts, forest edges, and dense undergrowth, as well as suburban areas such as parks and gardens. The primary current threat to Black-capped Chickadee is degradation and destruction of riparian habitat.

Black-capped Chickadee was observed foraging within the study area in 2018 in the Coastal Coniferous Forested habitat, willow thickets, and urban landscape areas throughout the site. There is ample suitable nesting habitat and potential for breeding within the study area.

Yellow Warbler (*Setophaga petechia*) is a CDFW Species of Special Concern. In California, Yellow Warbler nests primarily in alder-cottonwood-willow-dominated riparian forest stands and occupies habitats along the coastal strip during migration (Harris 1996). Current threats to Yellow Warbler in California include degradation and loss of alder-cottonwood-willow and riparian habitats as well as nest parasitism by Brown-headed Cowbird (*Molothrus ater*).

Although not detected in 2018, Yellow Warbler was reported within the study area in the willow dominated dune hollows and related habitats during prior studies and during migration. Willow-dominated woody dune hollows and similarly vegetated areas within the study area does provide suitable nesting habitat.

Pallid Bat (*Antrozous pallidus*) is listed as a CDFW Species of Special Concern (SSC), a sensitive species by the US Forest Service, a high priority species by the Western Bat Working Group (WBWG), and is listed as Least Concern (LC) by the IUCN. Worldwide, pallid bat occurs in portions of the western contiguous United States, through south-central British Columbia. In California, pallid bat occupies a variety of low elevation habitats including grasslands, shrublands, woodlands, and coniferous forests (Philpott 1997). This species is most common in open, dry habitats that contain rocky areas for roosting. Diurnal roosts are commonly found in rock crevices and tree hollows and have been documented in large conifer snags, inside basal hollows of coast redwood (*Sequoia sempervirens*) and giant sequoia (*Sequoiadendron giganteum*), and in bole cavities in oaks (*Quercus* spp.) (Sherwin 1998 *in* Mad River Biologists 2004). Cavities in broken branches of black oak (*Quercus kelloggii*) seem to be an important habitat component and there is a strong association with black oak for roosting (Pierson 1996 *in* Mad River Biologists 2004). Pallid bat also occurs in anthropogenic habitats such as abandoned buildings and other such structures. Current threats to this species are habitat loss, pesticide use, and roost-site disturbance.

Pallid bat is not known to occur within the study area. However, species-specific surveys for this species have not been conducted and potential diurnal roosting habitat for this species does exist in the form of abandoned structures and a mature Sitka spruce (*Picea sitchensis*) tree with a large cavity at the north end of the study area.

Townsend's Western Big-eared Bat (*Corynorhinus townsendii townsendii*) is listed as a CDFW Species of Special Concern (SSC), a sensitive species by the US Forest Service, a high priority species by the Western Bat Working Group (WBWG), and listed as Least Concern (LC) by the IUCN. Townsend's western big-eared bat occurs throughout the western United States. In California, Townsend's western big-eared bat primarily occurs rural areas, in a variety of habitat types. This species is reported to be particularly sensitive to disturbance from human activity. Diurnal roosts for this species occur within caves, abandoned mines, and buildings. Rock crevices and large snags may also provide habitat for roosting (Howell et al. 1996, Sherwin 1998). Nocturnal roosts may occur in more open settings, including under bridges, etc. (Philpott 1997). Current threats to Townsend's Western big-eared bat include habitat loss, pesticide use, fungal pathogens such as *Pseudogymnoascus structans*, which causes "white nose syndrome," and human disturbance to breeding sites and nocturnal roosts.

Townsend's big-eared bat has not been detected within the study area. However, species-specific surveys for this species have not been conducted. Several known roosting sites for this species do occur in Humboldt County, but none from the vicinity of the study area. All such occurrences were reportedly in anthropogenic structures. The distribution of this species in Humboldt County is poorly known due to lack of survey effort. This species could potential occupy abandoned buildings or the aforementioned large Sitka spruce (*Picea sitchensis*) tree at the north end of the study area.

Hoary Bat (*Lasiurus cinereus*) is currently listed by the Western Bat Working Group as a medium priority species, and Least Concern (LC) by IUCN. Worldwide, this species is the most widespread of all North American bats, present in the contiguous United States, as well as in Eastern Canada, central Mexico and central South America. Hoary bat is highly associated with forested habitats in the American west, where they often roost on the edge of a clearing in the foliage of deciduous and coniferous trees. This species has also been reported to roost in caves, beneath rock ledges, and in tree cavities excavated by woodpeckers (WBWG 2018). Hoary bat primarily feeds on moths and other invertebrates. The primary threats to this species include loss of roosting habitat due to timber harvest, increased corvid population in urban/suburban locations, and pesticide use.

Hoary bat has not been observed within the study area, though no species-specific surveys for this species have been conducted. No nearby historical records of this species occur on CNDDB. The Coastal Coniferous Forest at the north end of the study area could provide suitable habitat for this species

Long-eared Myotis (*Myotis evotis*) is currently listed by the Western Bat Working Group as a medium priority species, and Least Concern (LC) by IUCN. Worldwide, this species ranges across western North America from southwestern Canada to Baja California and eastward in the United States to the western Great Plains. Long-eared Myotis primarily feeds on moth and small beetle prey from foliage, tree trunks, rocks, and from the ground. This species tends to be associated with coniferous forests, but can also occur in semiarid shrublands, chaparral, and agricultural areas. These bats roost under tree bark, in hollow trees, cavities and snags, caves, mines, cliff crevices, sinkholes, rocky outcrops on the ground, and sometimes in buildings and under bridges (WBWG 2018).

The primary threats to this species include habitat loss and roost disturbance resulting from forest-management practices, road construction, and blasting of cliff faces or rock outcrops, though pesticide use also adversely affects some part of its prey base.

Long-eared Myotis has not been observed within the study area, though no species-specific surveys for this species have been conducted. No nearby historical records of this species occur on CNDDB. Abandoned buildings and the Coastal Coniferous Forest at the north end of the study area may provide suitable habitat for this species.

Appendix B. Special Status Species Addressed for the Samoa Town Master Plan Updated Biological Resource Study (2018).

This list was compiled from queries of species and habitat occurrence records for the Eureka, Tyee City, Arcata North, Arcata South, Cannibal Island, Fields Landing, McWhinney Creek, Ferndale, and Crannell 7.5 minute U.S. Geological Survey (USGS) quadrangles in the following databases: the U.S. Fish & Wildlife Service's (USFWS) *Information for Planning and Consultation* (USFWS 2018); California Department of Fish & Wildlife's *Natural Diversity Database* (CNDDB 2018); the CalFlora database (CalFlora 2018); and the California Native Plant Society's *Online Inventory of Rare, Threatened, and Endangered Plants of California* (CNPS 2018).

Botanical Species	Status*	Habitat Characteristics (CNDDB, CNPS 2018a)[1,2]	Potential for Occurrence Within Study area
Abronia umbellata var. *breviflora* "pink sand-verbena"	1B.1 S1 G4G5T2	Coastal dunes and coastal strand north from Marin, County, California into Oregon and Washington. Foredune and interdune with sparse cover. Often very close to ocean, 0-75m elevation. State listed as endangered in Oregon.	**Present.** Pink sand-verbena was reported from foredune habitats in the study area west of New Navy Base Road during one of the previous STMP-specific investigations (Mad River Biologists 2004) but was not encountered during the 2018 botanical surveys. Numerous small occurrences existed nearby on North Spit in 2016 (CNDDB 2018).
Anomobryum julaceum "slender silver-moss"	4.2 S2 G5?	California and Oregon, scattered localities. Nearest confirmed record near Ferndale, CA. Broad-leaved upland forest, lower montane coniferous forest, North Coast coniferous forest. Damp rock and soil on outcrops, usually on road cuts; 100-1000m.	**Moderate Potential.** No species-specific surveys were performed in 2018 for this moss. Potentially suitable habitat includes the beach pine/Sitka spruce forest at the north end of the study area.
Astragalus pycnostachyus var. *pycnostachyus* "coastal marsh milk-vetch"	1B.2 S2 G2T2	California endemic known from four counties. Inhabiting coastal dune, marsh and swamp, as well as coastal scrub. Mesic sites in dunes or along streams or coastal salt marshes. 0-155m elevation.	**Low Potential.** *Astragalus pycnostachyus* var. *pycnostachyus* was not reported in the study area during previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013) and was not encountered during the 2018 botanical surveys. The single historic record in vicinity of the study area is from the 1925 Cooper collection (CNDDB 2018). Dune hollow wetlands and coastal scrub in the study area may provide suitable habitat.

[1] California Department of Fish and Wildlife Natural Diversity Data Base (CNDDB) 2018.
[2] California Native Plant Society, Rare Plant Program 2018. Inventory of Rare and Endangered Plants in California (online edition, v8-03 0.39).

Botanical Species	Status*	Habitat Characteristics (CNDDB, CNPS 2018a)[1,2]	Potential for Occurrence Within Study area
Bryoria spiralifera "twisted horsehair lichen"	1B.1 S1S2 G3	Inhabits immediate North Coast coniferous and coastal dune forests, usually on conifers. 0-30m. Found from OR south.	**Moderate-High Potential.** No species-specific surveys were performed in 2018 for this lichen. Potentially suitable habitat includes the beach pine/Sitka spruce forest at the north end of the study area. Historical records from 1974 exist for the species' occurrence very near the study area vicinity, between Samoa and Manila (CNDDB 2018). A more recent occurrence is from 2001 at the Lanphere Dunes (CNDDB 2018). Suitable habitat includes the coastal coniferous forest at the north end of the study area.
Cardamine angulata "seaside bittercress"	2B.2 S3 G4G5	Wet areas and streambanks from 5-515m elevation in North Coast coniferous forest and lower montane coniferous forest.	**Low Potential.** This species was not encountered in the study area during 2018 botanical surveys, nor was it reported during previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013). The beach pine/Sitka spruce forest in the northern portion of the study area provides limited suitable habitat for *Cardamine angulata*.
Carex arcta "northern clustered sedge"	2B.2 S1 G5	Bogs and fens, mesic sites in North Coast coniferous forest; 60-1405m.	**Low Potential.** This species was not encountered in the study area during 2018 botanical surveys, nor was it reported during previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013). Forested wetland habitats in the northern portion of the study area may provide suitable habitat for *Carex arcta*. No occurrence records are known for the North Spit.
Carex leptalea "bristle-stalked sedge"	2B.2 S1 G5	Bogs and fens, meadows and seeps, marshes and swamps. Mostly known from bogs and wet meadows, 3-1395m in elevation.	**Low Potential.** This species was not encountered in the study area during 2018 botanical surveys, nor was it reported during previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013). Coastal dune hollow wetland habitats may provide suitable habitat for *Carex leptalea* within the study area. No occurrence records are known for the North Spit.
Carex lyngbyei "Lyngbye's sedge"	2B.2 S3 G5	Marshes and swamps (brackish or freshwater); 0-200m elevation.	**Low-Moderate Potential.** This species was not encountered in the study area during 2018 botanical surveys, nor was it reported during previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013). Ephemeral wetlands in coastal dune habitats may provide suitable habitat for *Carex lyngbyei* within the study area and **h**istorical records from nearby localities do exist for this species (CNDDB 2018).

Botanical Species	Status*	Habitat Characteristics (CNDDB, CNPS 2018a)[1,2]	Potential for Occurrence Within Study area
Carex praticola "northern meadow sedge"	2B.2 S2 G5	Moist to wet meadows and seeps; 15-3200m elevation.	**Low Potential.** This species was not encountered in the study area during 2018 botanical surveys, nor was it reported during previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013). Coastal dune hollow wetland habitats may provide suitable habitat for *Carex praticola* within the study area, though no occurrence records exist for the North Spit.
Carex viridula ssp. *viridula* "green yellow sedge"	2B.3 S2 G5T5	Marshes and swamps (freshwater) and North Coast coniferous forests (mesic). 0-1705m elevation.	**Low Potential.** This species was not encountered in the study area during 2018 botanical surveys, nor was it reported during previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013). No occurrence records exist for the North Spit. Coastal dune hollow wetland habitats may provide suitable habitat for *Carex viridula* ssp. *viridula* within the study area.
Castilleja ambigua ssp. *humboldtiensis* "Humboldt Bay owl's-clover"	1B.2 S2 G4T2	Known only from Humboldt, Mendocino and Marin Counties. Found in coastal salt marsh habitat, in association with *Spartina, Distichlis, Salicornia, Jaumea*. 0-20m.	**No-Low Potential.** This species was not encountered in the study area during 2018 botanical surveys, nor was it reported during previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013). In this region, *Castilleja ambigua* ssp. *humboldtiensis* is restricted to tidal salt marshes in Humboldt Bay. Reported occurrences for the North Spit are from tidally-influenced estuarine habitats (CNDDB 2018), which are not present in the study area.
Castilleja affinis ssp. *litoralis* "Oregon coast paintbrush"	2B.2 S3 G3	Northern California coast and Oregon coast. Sandy sites in coastal bluff scrub, coastal dunes, coastal scrub habitat, 5-255m.	**Low Potential.** This species was not encountered in the study area during 2018 botanical surveys, nor was it reported during previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013). No occurrence records exist for the North Spit. Suitable habitat within the study area includes undeveloped dune and coastal scrub habitats.
Castilleja mendocinensis "Mendocino coast paintbrush"	1B.2 S2 G2	Coastal bluff scrub, closed-cone coniferous forests, coastal dunes, coastal prairie, coastal scrub. Often on sea bluffs or cliffs in coastal bluff scrub or prairie; 3-70m.	**Low Potential.** This species was not encountered in the study area during 2018 botanical surveys, nor was it reported during previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013). The single historical occurrence record for Humboldt County is from 1986 at a site in Trinidad (CNDDB 2018). Undeveloped dunes and coastal scrub vegetation may provide limited suitable habitat for *Castilleja mendocinensis* within the study area.

Botanical Species	Status*	Habitat Characteristics (CNDDB, CNPS 2018a)[1,2]	Potential for Occurrence Within Study area
Chloropyron maritimum ssp. *palustre* "Point Reyes bird's-beak"	1B.2 S2 G4?T2	Found in coastal salt marsh habitat, in association with *Spartina, Distichlis, Salicornia, Jaumea*, etc.; 0-115m.	**No-Low Potential.** This species was not encountered in the study area during 2018 botanical surveys, nor was it reported during previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013). In this region, *Chloropyron maritimum* ssp. *palustre* is restricted to tidal salt marshes in Humboldt Bay. Reported occurrences (CNDDB 2018) for the North Spit are from tidally-influenced estuarine habitats, which are not present in the study area.
Collinsia corymbosa "round-headed Chinese-houses"	1B.2 S1 G1	California endemic, known from coastal dune habitats, mainly in Mendocino County, 0-20m elevation.	**Moderate Potential.** This species was not encountered in the study area during 2018 botanical surveys, nor was it reported during previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013). Although the single record for Humboldt County (CNDDB 2018) is unconfirmed, native and degraded dune mat habitats do provide suitable habitat for *Collinsia corymbosa* within the study area.
Empetrum nigrum "black crowberry"	2B.2 S1? G5	Coastal bluff scrub, coastal prairie; 10-200m.	**Low Potential**. This species was not encountered in the study area during 2018 botanical surveys, nor was it reported during previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013). The single record for Humboldt County is from a sandstone bluff at Elk Head, north of Trinidad, CA (CNDDB 2018). Undeveloped dunes may provide marginally suitable habitat for *Empetrum nigrum* within the study area.
Erysimum menziesii "Menzies' wallflower"	FE CE 1B.1 S1 G1	Localized to coastal dunes and strand habitats, 1-25m.	**Present.** This species was not observed during previous STMP investigations (Mad River Biologists 2004, 2009; Morrissette 2013), but was found during 2018 botanical surveys in the extreme north and south portions of the study area. Five occurrences were in the foredune complex north of the Samoa booster station and 12 occurrences were at the south end of the study area on both sides of New Navy Base Road: one in the foredune complex on the west side, and 11 on the east side. These occurrences were located in remnant native dune mat habitat, which is becoming increasingly colonized by invasive vegetation. There are additional occurrences on the North Spit from 2010 (CNDDB 2018).

Botanical Species	Status*	Habitat Characteristics (CNDDB, CNPS 2018a)[1,2]	Potential for Occurrence Within Study area
Erythronium revolutum "coast fawn lily"	2B.2 S3 G4G5	Bogs and fens; mesic sites and streambanks within broadleaved upland forest and north coast coniferous forest, 60-1405m. This northern-Pacific coast species is state listed as sensitive in WA and is on the Oregon state watch list.	**Low Potential.** This species was not encountered in the study area during 2018 botanical surveys, nor was it reported during previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013). The beach pine/Sitka spruce forest in the northern portion of the study area may provide some degree of habitat suitability for this species, though it is noted that immediate coastal location of the study area is below the reported elevational range for *Erythronium revolutum*.
Fissidens pauperculus "minute pocket-moss"	USFS-S 1B.2 S2 G3?	North coast coniferous and redwood forests, growing on damp soil in coast areas. Also in dry streambeds and on streambanks, 10-1024m.	**Moderate Potential.** No species-specific surveys were performed in 2018 for this moss, and no records exist for its occurrence in or near the study area. Potentially suitable habitat includes the beach pine/Sitka spruce forest at the north end of the study area.
Gilia capitata ssp. *pacifica* "Pacific gilia"	1B.2 S2 G5T3	Coastal bluff scrub, chaparral coastal prairie, valley and foothill grasslands; 5-1345m.	**Low Potential.** This species was not encountered in the study area during 2018 botanical surveys, nor was it reported during previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013). No occurrence records are known for the North Spit. Undeveloped dune habitat could serve as suitable habitat within the study area.
Gilia millefoliata "dark-eyed gilia"	1B.2 S2 G2	Coastal California and Oregon, state listed as endangered in OR. Coastal dunes; 1-60m.	**Present.** Dark-eyed gilia was encountered during the 2018 botanical surveys in regions of the study area similar to those reported during previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013), with the exception of the discrete occurrence situated between Samoa Court and New Navy Base Road near the northern boundary of the study area. This species was not observed at this location during 2018 and is presumed to have been extirpated. Elsewhere in the study area in 2018, dark-eyed gilia occurs on both east and west sides of New Navy Base Road, in both native dune mat and degraded dune habitats. Observed occurrences included isolated individuals in small (<1 m diameter) areas of exposed sand within *Ammophila arenaria*-dominated habitat.

Botanical Species	Status*	Habitat Characteristics (CNDDB, CNPS 2018a)[1,2]	Potential for Occurrence Within Study area
Glehnia littoralis ssp. *leiocarpa* "American glehnia"	4.2 S3 G5T4	Coastal dunes; 0-20m.	**Present.** American glehnia was reported from the dune mat habitat near the Samoa booster station west of New Navy Base Road in June 2003 (Mad River Biologists 2004) but was not encountered during the 2018 botanical surveys. This species is known to occur in coastal dunes elsewhere on the North Spit (CCH 2018)[3]. Suitable habitat does occur within the study area, in the form of coastal dunes.
Hesperevax sparsiflora var. *brevifolia* "short-leaved evax"	1B.2 S2 G4T3	Coastal bluff scrub, coastal dunes, sandy bluffs and flats; 0-640m.	**High Potential.** This species was not encountered in the study area during 2018 botanical surveys, nor was it reported during previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013). This species is known to occur on the North Spit, just south of the study area at the Samoa Dunes Endangered Plant Protection Area (Goff pers. comm.) and between New Navy Base Road and Humboldt Bay (CalFlora 2018)[4]. Suitable habitat for this species does exist within the coastal dunes of the study area.
Lasthenia californica spp. *macrantha* "perennial goldfields"	1B.2 S2 G3T2	Coastal bluff scrub, coastal dunes, coastal scrub; 5-185m. Found only slightly beyond California borders.	**Low Potential.** This species was not encountered in the study area during 2018 botanical surveys, nor was it reported during previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013). There is only one historical record for this species somewhat near the study area, just south of Eureka (CCH; record by M.L. Hutchinson 1913). Suitable habitat for this species does exist within the coastal dunes and northern coastal scrub of the study area.
Lathyrus japonicus "seaside pea"	2B.1 S2 G5	Coastal dunes, often tolerant of interspersed invasive species; 3-65m.	**Moderate Potential**. This species was not encountered in the study area during 2018 botanical surveys, nor was it reported during previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013). Undeveloped dunes offer suitable habitat within the study area and historical occurrences from 1915 are known from the North Spit (CNDDB 2018).

[3] Consortium of California Herbaria (CCH 2018, record by J. Wheeler 2015)
[4] Calflora.org is a database of information and occurrence records for wild California plants.

Botanical Species	Status*	Habitat Characteristics (CNDDB, CNPS 2018a)[1,2]	Potential for Occurrence Within Study area
Lathyrus palustris "marsh pea"	2B.2 S2 G5	Moist coastal areas. Bogs and fens, mesic sites in lower montane coniferous forest, marshes and swamps, North Coast coniferous forest, coastal prairie, and coastal scrub; 2-140m.	**Moderate Potential.** This species was not encountered in the study area during 2018 botanical surveys, nor was it reported during previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013). Suitable habitat does occur in the coastal scrub within the study area and historical records of marsh pea exist for the immediate vicinity of the town of Samoa (CCH; record by J.P. Tracy 1907).
Layia carnosa "beach layia"	FE SE 1B.1 S2 G2	Coastal dunes and coastal scrub. On sparsely vegetated, semi-stabilized dunes, usually behind foredunes; 0-30m.	**Present.** Beach layia was encountered during 2018 botanical surveys in regions of the study area similar to those reported during previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013). These consist of foredune and backdune habitats on the west and east sides of New Navy Base Road. This species readily colonizes patches of open sand, native dune mat, and coastal scrub habitat, which are available in the study area. Extensive encroachment by invasive vegetation limits the availability of such habitats for establishment by *Layia carnosa*.
Lilium occidentale "western lily"	FE SE 1B.1 S1 G1	Known only from Humboldt and Del Norte Counties, CA and OR. Coastal scrub, freshwater marsh, bogs and fens, coastal bluff scrub, coastal prairie, North Coast coniferous forest. On well-drained, old beach washes overlain with wind-blown alluvium and original topsoil; usually near margins of Sitka spruce; 3-110m.	**Low Potential.** This species was not encountered in the study area during 2018 botanical surveys, nor was it reported during previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013). Suitable coastal scrub-shrub and forested dune habitat occurs in the northern portion of the study area. Due to the life history of this species (perennial bulbiferous herb) it has extremely low dispersal/colonization rates.
Lycopodiella inundata "inundated bog club-moss"	2B.2 S1? G5	In California, known only from Humboldt and Nevada Counties. Bogs and fens, lower montane coniferous forest (mesic), marshes and swamps. Peat bogs, muddy depressions and pond margins, 5-915m elevation.	**Low Potential.** This species was not encountered in the study area during 2018 botanical surveys, nor was it reported during previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013). No occurrence records exist for the North Spit. Marginal suitable forest habitat exists within the north end of the study area.
Lycopodium clavatum "running-pine"	4.1 S3 G5	North Coast coniferous forest, lower montane coniferous forest, marshes and swamps. Forest understory, edges, openings, roadsides; mesic sites with partial shade and light. 45-1225m elevation.	**Low Potential.** This species was not encountered in the study area during 2018 botanical surveys, nor was it reported during previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013). No occurrence records exist for the North Spit, although suitable habitat may exist in the coniferous forest edge and understory, and roadsides in the study area. Usually does not occur in immediate coastal zone.

Botanical Species	Status*	Habitat Characteristics (CNDDB, CNPS 2018a)[1,2]	Potential for Occurrence Within Study area
Mitellastra caulescens "leafy-stemmed miterwort"	4.2 S4 G5	Broadleaved upland forests, lower montane coniferous forests, meadows and seeps, North Coast coniferous forests. Mesic sites; 5-1700m.	**Low Potential.** This species was not encountered in the study area during 2018 botanical surveys, nor was it reported during previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013). No occurrence records exist for the North Spit, although suitable habitat may be present in the coastal coniferous forest at the northern end of the study area.
Monotropa uniflora "ghost-pipe"	2B.2 S2 G5	Broadleaved upland forest, North Coast coniferous forest; often under redwoods or western hemlock; 15-855m.	**Low Potential.** This species was not encountered in the study area during 2018 botanical surveys, nor was it reported during previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013). Marginal suitable coniferous forest habitat exists in the study area.
Montia howellii "Howell's montia"	2B.2 S2 G3G4	Rediscovered in California in 1999. Candidate for State Endangered List in OR. Meadows and seeps, North Coast coniferous forests, vernal pools. Vernally mesic sites; often on compacted soil. 10-1215m elevation.	**Low Potential.** This species was not encountered in the study area during 2018 botanical surveys, nor was it reported during previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013). Marginal suitable coniferous habitat exists in the northern portion of the study area.
Oenothera wolfii "Wolf's evening-primrose"	1B.1 S1 G2	Coastal bluff scrub, coastal dunes, coastal prairie, lower montane coniferous forests. Sandy substrates, usually mesic sites; 0-125m.	**Moderate Potential.** This species was not encountered in the study area during 2018 botanical surveys, nor was it reported during previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013). One historical record exists nearby the study area, along the North Spit (CCH; record by Helmkamp et al. 2001). Suitable coastal dune and forest habitat occurs within the study area.
Packera bolanderi var. *bolanderi* "seacoast ragwort"	2B.2 S2S3 G4T4	Coastal scrub, North Coast coniferous forest. Sometimes along roadsides. 30-915m.	**Low Potential.** This species was not encountered in the study area during 2018 botanical surveys. No verified CNDDB records exist from coastal areas. Suitable habitat may occur minimally within the coastal scrub and forest communities at the north end of the study area.
Piperia candida "white-flowered rein orchid"	1B.2 S3 G3	North Coast coniferous forest, lower montane coniferous forest, broadleaved upland forest. Sometimes on serpentine. Forest duff, mossy banks, rock outcrops and muskeg. 20-1615m.	**Low Potential.** This species was not encountered in the study area during 2018 botanical surveys. No records of this species exist for North Spit. Suitable coniferous forest habitat does exist within the northern portion of the study area.

Botanical Species	Status*	Habitat Characteristics (CNDDB, CNPS 2018a)[1,2]	Potential for Occurrence Within Study area
Polemonium carneum "Oregon polemonium"	2B.2 S2 G3G4	Coastal prairie, coastal scrub, lower montane coniferous forest. 0-1830m.	**Low Potential.** This species was not encountered in the study area during 2018 botanical surveys. Only two unconfirmed historical records of this species occur for Humboldt County from 1950 (CCH; records by J.P. Tracy; CNDDB 2018). Suitable habitat occurs within the study area in the form of coastal scrub.
Puccinellia pumila "dwarf alkali grass"	2B.2 SH G4	Mineral spring meadows and coastal salt marshes; 1-10m.	**No-Low Potential.** This species was not encountered in the study area during 2018 botanical surveys, nor was it reported during previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013). There is one record for Humboldt County, from a collection (CCH; record by J.P. Tracy 1938). Suitable habitat does not occur within the study area, and there are no known occurrence records for this species in adjacent coastal salt marsh habitats.
Romanzoffia tracyi "Tracy's romanzoffia"	2B.3 S2 G4	Coastal bluff scrub, coastal scrub and rocky sites; 15-30m.	**Low Potential.** This species was not encountered in the study area during 2018 botanical surveys, nor was it reported during previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013). No occurrence records exist on the North Spit. Suitable coastal scrub habitat occurs to a very limited extent within the study area.
Sidalcea malachroides "maple-leaved checkerbloom"	4.2 S3 G3	Broadleaved upland forest, coastal prairie, coastal scrub, and North Coast coniferous forest. Woodlands and clearings near coast; often in disturbed areas; 4-765m.	**Low Potential.** This species was not encountered in the study area during 2018 botanical surveys, nor was it reported during previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013). No occurrence records exist on the North Spit. Some suitable forest habitat and coastal scrub occurs within the study area.
Sidalcea malviflora ssp. *patula* "Siskiyou checkerbloom"	1B.2 S2 G5T2	Coastal prairie, coastal bluff, scrub, North Coast coniferous forest. Open coastal forest, roadcuts. 15-1255m.	**Low Potential.** This species was not encountered in the study area during 2018 botanical surveys, nor was it reported during previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013). No occurrence records exist on North Spit. Suitable forest and coastal scrub habitat within the study area is limited.

Botanical Species	Status*	Habitat Characteristics (CNDDB, CNPS 2018a)[1,2]	Potential for Occurrence Within Study area
Sidalcea oregana ssp. *eximia* "coast checkerbloom"	1B.2 S1 G5T1	Known from approximately 10 occurrences in NW CA. Meadows and seeps, North Coast coniferous forest, and lower montane coniferous forest. Usually near meadows in gravelly soil. 5-1805m.	**Low Potential.** This species was not encountered in the study area during 2018 botanical surveys, nor was it reported during previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013). No occurrence records exist on the North Spit. Suitable coniferous forest habitat within the study area is limited.
Spergularia canadensis var. *occidentalis* "western sand-spurrey"	2B.1 S1 G5T4	Coastal salt marsh; 0-3 m.	**No-Low Potential.** This species was not encountered in the study area during 2018 botanical surveys, nor was it reported during previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013). No occurrence records exist on the North Spit. Suitable habitat does not occur within the study area.
Trichodon cylindricus "cylindrical trichodon"	2B.2 S2 G4	Broadleaved upland forest, upper montane coniferous forest. Moss growing in openings on sandy or clay soils on roadsides, stream banks, trails or in fields. 50-1500m.	**No Potential.** This species was not encountered in the study area during 2018 botanical surveys, nor was it reported during previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013). No occurrence records exist on the North Spit. Suitable habitat does not occur within the study area.
Usnea longissima "Methuselah's beard lichen"	4.2 S4 G4	North coast coniferous forest and broadleaved upland forest. Grows in the "redwood zone" on a variety of trees, including big leaf maple, oaks, ash, Douglas-fir, and bay; 45-1465m elevation range in California.	**Low Potential.** This species was not encountered in the study area during 2018 botanical surveys, nor was it reported during previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013). No occurrence records exist on the North Spit. Marginal suitable coniferous forest habitat occurs within the study area.
Viola palustris "alpine marsh violet"	2B.2 S1S2 G5	Swampy, shrubby places in coastal scrub or coastal bogs; 0-15m.	**Low Potential.** This species was not encountered in the study area during 2018 botanical surveys, nor was it reported during previous investigations (Mad River Biologists 2004, 2009; Morrissette 2013). One historical occurrence exists for the North Spit from 1923 (CNDDB 2018). Suitable habitat occurs within the study area in the form of coastal scrub.

Insect Species	Status*	Habitat Characteristics	Potential for Occurrence at Study area
Bombus caliginosus "obscure bumble bee"	VU S1S2 G4?	Coastal areas from Santa Barbara county, CA north to WA. Food plant genera include *Baccharis*, *Cirsium*, *Lupinus*, *Lotus*, *Grindelia* and *Phacelia*.	**High Potential.** This species was not detected in the study area in 2018, though species-specific surveys were not conducted. Historical records exist nearby in Arcata from 1982, at the Lanphere Dunes from 1978, and at Clam Beach from 1971 (CNDDB 2018). However, insect species are often overlooked and obscure bumble bee may be more common than sources suggest. Several suitable forage plant genera occur within the study area.
Bombus occidentalis "western bumble bee"	S1 G2G3	Once common and widespread, this species has declined precipitously (~40%) from central CA to southern B.C., possibly due to disease. Listed imperiled by the Xerces Society. Generalist foragers, often in open grassy areas, urban/parklands, chaparral/shrub lands and mountain meadows.	**Moderate Potential.** This species was not detected in the study area in 2018, though species-specific surveys were not conducted. Historical records exist across the Samoa peninsula from 1993, at Mad River County Park from 1982, and the Lanphere Dunes from 1980 (CNDDB 2018). However, insect species are often overlooked and western bumble bee may be more common than sources suggest. Due to the heterogeneity of habitats at the site and subsequently diverse flowering plant assemblage, suitable forage species and habitat for this species does exist in the study area.
Cicindela hirticollis gravida "sandy beach tiger beetle"	S2 G5T2	Inhabits areas adjacent to non-brackish water along coast of California from San Francisco Bay to northern Mexico. Coastal dunes. Clean, dry, light-colored sand in upper zone.	**Low Potential.** This species was not detected in the study area in 2018, though species-specific surveys were not conducted. This species has been extirpated from Humboldt County, however, suitable coastal dune habitat is present within the study area.

Mollusk Species	Status*	Habitat Characteristics	Potential for Occurrence at Study area
Anodonta californiensis "California floater"	S2? G3Q	Generally in shallow water, freshwater lakes and slow-moving streams and rivers. Taxonomy under review.	**No-Low Potential.** Suitable habitat does not occur within the study area.
Margaritifera falcata "western pearlshell"	S1S2 G4G5	Aquatic species, prefers lower velocity waters.	**No Potential.** Suitable habitat does not occur within the study area.

Fish Species	Status*	Habitat Characteristics (CNDDB 2018)[5]	Potential for Occurrence at Study area
Acipenser medirostris "green sturgeon"	FT SSC NT S1S2 G3	Most marine species of sturgeon. Spawns in Klamath and Trinity Rivers.	**No Potential.** Suitable habitat does not occur within the study area.
Entosphenus tridendatus "Pacific lamprey"	SSC S4 G4	Found in Pacific Coast streams north of San Luis Obispo county, CA. Size of runs is declining.	**No Potential.** Suitable habitat does not occur within the study area.
Eucyclogobius newberryi "tidewater goby"	FE SSC VU S3 G3	Brackish water habitats along the California coast from Agua Hedionda Lagoon, San Diego County, to the mouth of the Smith River. Found in shallow lagoons and lower stream reaches, including nearby tributaries to Humboldt Bay.	**No Potential.** Suitable habitat does not occur within the study area.
Oncorhynchus clarki clarki "coast cutthroat trout"	SSC S3 G4T4	Small, low gradient coastal streams and estuaries from the Eel River in California to the Oregon border.	**No Potential.** Suitable habitat does not occur within the study area.
Oncorhynchus kisutch Pop. 2 "coho salmon" – southern Oregon / northern California ESU	FT ST S2? G4T2Q	In California, major occurrences are located in the Klamath, Trinity, Mad, and Noyo Rivers and are widely distributed in coastal streams. Those between the Oregon border and Punta Gorda (Humboldt County, CA) are state and federally threatened.	**No Potential.** Suitable habitat does not occur within the study area.
Oncorhynchus mykiss irideus Pop.16 "steelhead" – northern California DPS	ST S2S3 G5T2T3Q	Coastal basins from Redwood Creek south to Gualala River, inclusive. Does not include summer-run steelhead.	**No Potential.** Suitable habitat does not occur within the study area.
Spirinchus thaleichthys "longfin smelt"	FC ST S1 G5	Euryhaline, nektonic and anadromous, found in open waters of estuaries, mostly in middle or bottom of water column. Can be found in completely freshwater to almost pure seawater environments.	**No Potential.** Suitable habitat does not occur within the study area.

[5] California Department of Fish and Wildlife Natural Diversity Data Base (CNDDB) 2018

Fish Species	Status*	Habitat Characteristics (CNDDB 2018)[5]	Potential for Occurrence at Study area
Thaleichthys pacificus "eulachon"	FT S3 G5	Found in Klamath River, Mad River, Redwood Creek and in small numbers in Smith River and Humboldt Bay tributaries. Spawn in lower reaches of coastal rivers with moderate water velocity.	**No Potential.** Suitable habitat does not occur within the study area.

Amphibian Species	Status*	Habitat Characteristics	Potential for Occurrence at Study area
Ascaphus truei "Pacific tailed frog"	SSC LC S3S4 G4	Restricted to perennial montane streams. Montane hardwood-conifer, redwood, Douglas-fir, ponderosa pine habitats. Tadpoles require water temperatures below 15ºC.	**No Potential.** This species was not encountered in the study area in 2018. Suitable habitat does not occur within the study area.
Rana aurora "northern red-legged frog"	SSC LC S3 G4	Found in humid forests, woodland, grasslands, and streamsides in northwest California, generally near dense riparian cover. Usually near permanent water, but can be found far from water in damp woods and meadows during non-breeding season.	**Present.** An adult northern red-legged frog was incidentally detected in a concrete-lined drainage ditch outside of, but immediately adjacent to, the study area in an industrial area east of the Northwest Pacific Railroad right-of-way in 2018. Seasonal and permanent fresh emergent and scrub-shrub dune hollow wetlands throughout the study area offer suitable breeding habitat for this species.
Rana boylii "foothill yellow-legged frog"	SCT SSC NT S3 G3	Partly-shaded, shallow streams and riffles or broad, exposed river bars with a rocky substrate. Also known to occur in freshwater wetlands and in a variety of habitats. Typically not found on the immediate coast.	**No-Low Potential.** This species was not encountered in the study area in 2018. Sufficient levels of insolation at this immediate coastal location and suitable breeding substrate are not present within the study area.
Rhyacotriton variegatus "southern torrent salamander"	SSC LC S2S3 G3G4	Cold, well-shaded, permanent streams and seepages, or within splash zone or on moss-covered rock within trickling water. Coastal redwood, Douglas-fir, mixed conifer, montane hardwood-conifer habitats.	**No-Low Potential.** This species was not encountered in the study area in 2018. Coniferous forest habitat within the study area does not provide suitable habitat for this species.

Reptile Species	Status*	Habitat Characteristics	Potential for Occurrence at Study area
Emys marmorata "western pond turtle"	SSC VU S3 G3G4	Ponds, marshes, rivers, streams and irrigation ditches with aquatic vegetation. They need basking sites and suitable upland habitat (sandy banks or grassy open fields) for egg-laying.	**No-Low Potential.** This species was not encountered in the study area in 2018. Although this species has been reported from the North Spit in at least one instance, such occurrences are believed to have been the result of anthropogenic translocation from inland locations (Ashton pers. comm.). Suitable habitat does occur within the study area, but insolation levels at this immediate coastal location are believed to be marginal for this species at best.

Avian Species	Status*	Habitat Characteristics	Potential for Occurrence at Study area
Accipiter cooperi [6] "Cooper's Hawk" (nesting)	WL LC S4 G5	Occurs in open or marginal woodlands, preferring to nest in deciduous trees and live oaks. Commonly utilizes urban areas and has successfully nested in ornamental tree varieties. Locally, nesting may occur in suitable localities such as: Lanphere dunes, Mad River County Park (Harris 1996), isolated woodlands near Manila, and the coniferous forests from Lanphere dunes to Samoa.	**Present.** This species was detected flying over the study area in 2018. Although not observed breeding in the study area in 2018, migrating and wintering birds use woodland habitats in and around the Samoa town site (eBird 2018) and breeding has been reported just a mile west on Woodley Island in the Humboldt Bay (Harris 1996). Mixed coniferous forest on the north end of the study area could provide suitable nesting habitat for this species.
Accipiter striatus "Sharp-shinned Hawk" (nesting)	WL LC S4 G5	Occupies dense to semi-open montane coniferous, deciduous or mixed forests, preferring riparian habitats and nesting within 275 feet of water. Birds in migration and in winter will use woody hollows and coniferous forest.	**Low Potential.** While nesting sharp-shinned hawks are uncommon in the Humboldt Bay region, individuals have been detected near the study area during the breeding season in 2016 (eBird 2018). Coniferous forest within the study area could provide suitable habitat for wintering or migrant birds.
Ardea alba "Great Egret" (nesting colony)	LC S4 G5	Occurs in coastal lowland pastures, sloughs and marshlands as well as along coastal rivers inland (Harris 1996). Nests colonially in large trees near water.	**Present.** This species is a common local resident and breeder, and was detected flying over the study area in 2018. A major breeding site is located on Indian Island within Humboldt Bay, east of the study area (Harris 1996). There is some potential for nesting in the wooded areas bordering a few small wetlands in the study area.

[6] Note: Parenthetical references below species names indicate an annual phase or associated habitat of each species that applies to the associated protective status; other phases or habitats do not apply.

Avian Species	Status*	Habitat Characteristics	Potential for Occurrence at Study area
Ardea herodias "Great Blue Heron" (nesting colony)	LC S4 G5	Occurs widely in lakes, ponds, rivers and marshes (Fix and Bezner 2000), Rookery sites reside in close proximity to estuarine areas, usually in tall trees but also on cliffsides and sequestered spots of marshes.	**Present.** A common local resident and breeder, great blue herons occur in Humboldt Bay where a major breeding site is located on Indian Island within the bay east of the study area (Harris 1996; eBird 2018). There is some potential for nesting in the wooded areas bordering a few small wetlands in the study area.
Asio flammeus "Short-eared Owl" (nesting)	LC SSC S3 G5	Occupies open habitats such as overgrown grasslands and scrub, prairies, meadows, dunes, irrigated lands, ungrazed pastures, and both fresh and saltwater marshes.	**Low Potential.** Short-eared owls are migrant and winter visitors in northwestern California. They are known to occur in the Mad River Wildlife Area ~10 miles north of the study area (Harris 1996), at the Ma'l'el Dunes just north of Manila, at the Samoa Dunes Recreation Area along North Spit, and elsewhere around Humboldt Bays (eBird 2018). Little, if any, suitable nesting habitat for this species is present within the study area.
Brachyramphus marmoratus "Marbled Murrelet" (nesting)	FT SE EN S1 G3G4	This seabird forages in pelagic and near shore waters in protected bays. Nests in old-growth coniferous forests within 50 miles of the coast (and steep cliff environments in the northern portion of its range, where suitable forest habitat is lacking). This species is rarely known to nest in mature hardwood species (*Acer macrophyllum*, etc.) within surrounding conifer-dominated habitats (pers. obs.).	**No-Low Potential.** This species has been detected offshore of the North Spit as recently as 2017 (eBird 2018). Suitable nesting habitat, however, does not occur within the study area.
Cerorhinca monocerata "Rhinoceros Auklet" (nesting colony)	WL LC S3 G5	Nests in burrows on offshore rocks and islands and, locally, in caves on mainland cliffs.	**No-Low Potential.** There are no records of this species in or near the study area. Suitable nesting habitat does not occur within the study area.
Chaetura vauxi "Vaux's Swift" (nesting)	LC SSC S2S3 G5	Breeds in coastal coniferous forests, requiring preexisting cavities created by decay, fire, or natural excavators such as woodpeckers. A significant minority of this species now uses chimneys in towns and cities. Forages in forest openings, burned-over forest, meadows, rivers, lakes, and suburban development.	**High Potential.** There have been several sightings of Vaux's swifts in Samoa as recently as 2011 and along North Spit in 2018 (eBird 2018), but it was not detected in the study area in 2018. Suitable coniferous forest habitat (with tree cavities) for nesting does exist within the northern portion of the study area.

Avian Species	Status*	Habitat Characteristics	Potential for Occurrence at Study area
Charadrius alexandrinus nivosus "Western Snowy Plover" (nesting/coastal population)	FT SSC BCC S2S3 G3T3	In Northern California, this subspecies breeds and winters along ocean beaches and gravel bars. Nesting occurs above the high tide line in sandy or friable soil substrate, and occasionally on driftwood (LeValley 1999).	**Low Potential.** European beachgrass (*Ammophila arenaria*) encroachment along Humboldt Bay has resulted in little suitable beach habitat for the subspecies within and adjacent to the study area. Sixteen consecutive years of breeding season surveys of the north spit, conducted at least once monthly, have yielded negative results for snowy plover presence directly near or within the study area. However, small breeding populations currently exist relatively near the study area at Clam Beach, in gravel bars along the Eel River, and on the South Spit of Humboldt Bay, which is reportedly their most successful site, locally (Feucht et al. 2018). Egg set localities include Samoa, Manila, and Eureka (CNDDB 2018), but little, if any, suitable nesting habitat for this species exists in the study area.
Charadrius montanus "Mountain Plover" (wintering)	NT SSC BCC S2S3 G3	Occurs in short grasslands, freshly plowed or sprouted agricultural fields, and bare ground, preferring grazed areas with burrowing rodent activity.	**No-Low Potential.** One mountain plover was reported on South Spit throughout the month of January 2009, and another (possibly the same individual) on January 5 2010 (CNDDB 2018, eBird 2018). Overwintering of this species in Humboldt Bay is possible, but unconfirmed. There is no suitable nesting habitat within the study area.
Circus cyaneus "Northern Harrier" (nesting)	SSC LC S3 G5	Found in open grassland habitats, primarily lowland pastures and marshlands of the coastal plain (Harris 1996). Builds large stick nests on the ground, usually in shrubby vegetation along marsh edges (CNDDB 2018).	**Present.** This species was detected hunting within the study area in 2018, and commonly winters and migrates in the vicinity. Northern harries are known to breed in areas of coastal bluff and grassland habitats along Humboldt Bay and the Eel River delta (CNDDB 2018). Nesting could occur along vegetated wetlands within the study area, but the extent of human-related disturbance in these areas makes this unlikely.
Coccyzus americanus occidentalis "Western Yellow-billed Cuckoo"	FT SE BCC S1 G5T2T3	Prefers riparian forest along broad river flood-bottoms. Nests in dense and complex mixed willow (*Salix* spp.) and cottonwood (*Populus* spp.) thickets, with an understory of blackberry (*Rubus* spp.) and nettles.	**Low Potential.** This species has been detected in the vicinity of Humboldt Bay and the Eel River estuary during the breeding season (per. obs., eBird 2018) but was not detected within the study area during 2018. The forested habitat in the study area is not consistent with the complexity reportedly preferred, and typically used, by this species for breeding.

Avian Species	Status*	Habitat Characteristics	Potential for Occurrence at Study area
Coturnicops noveboracensis "Yellow Rail"	LC SSC BCC S1S2 G4	Prefers freshwater marshlands. Rare in California.	**Low Potential.** The last record of a pair in Humboldt County was in 1884 (CNDDB 2018). Some wetland habitat occurs in the study area, but it is unlikely to be suitable breeding habitat for this species.
Egretta thula "Snowy Egret" (nesting colony)	LC S4 G5	Uses open mudflats and tidal sloughs, exposed rocky or sandy ocean coast (locally), salt- and freshwater marshes, wet meadows, lakeshores, and (to a limited extent) upland pastures as foraging areas. Nests colonially in dense and protected tule beds near their foraging areas.	**Present.** A common resident and uncommon breeder locally, this species was detected in previous investigations of the study area (Mad River Biologists 2003, 2004). This species forages in Humboldt Bay near the Study area and has been known to breed on Indian Island, within Humboldt Bay (Harris 1996, CNDDB 2018). Some suitable nesting habitat exists in the wooded areas bordering a few small wetlands in the study area.
Elanus leucurus "White-tailed Kite" (nesting)	FP LC S3S4 G5	Common local residents and breeders in northern California, in agricultural and riparian areas of the coastal plain (Harris 1996). Forages in open grasslands, meadows, and marshes. Perches and nests on dense-topped trees (CNDDB 2018).	**Moderate Potential.** This species is quite common in the lowland agricultural areas north of the town site and along Humboldt Bay (eBird 2018). Forested areas in the northern portion of the study area do provide some potential nesting habitat for this species.
Empidonax traillii brewsteri "Little Willow Flycatcher" (nesting)	LC BCC S1S2 G5T3T4	Inhabits riparian areas and typically breeds in large wet meadows supporting substantial willow stands. During migration, this subspecies utilizes riparian areas and forest edge habitats.	**Low Potential.** This species was not detected within the study area during 2018. The forested habitat in the study area is not consistent with the complexity preferred and typically used by this species for breeding.
Falco columbarius "Merlin" (wintering)	WL LC S3S4 G5	Found in a wide variety of open and forested habitats. Preys primarily on small shorebirds and songbirds (Fix and Bezener 2000).	**Present.** Merlins are uncommon migrants and winter visitors in northwestern California. They appear each fall in the open lowlands along the coast such as those present in the study area (Harris 1996; eBird 2018). Suitable forested wintering habitat and prey species (shorebirds) exist in the study area.

Avian Species	Status*	Habitat Characteristics	Potential for Occurrence at Study area
Falco peregrinus anatum "American Peregrine Falcon" (nesting)	FP LC BCC S3S4 G4T4	Not strictly tied to aquatic habitats, but relies upon flocking birds (such as shorebirds and ducks) during colder months and thus favors shorelines and shallows for foraging habitat (Fix and Bezener 2000; Harris 1996). Preferred nesting sites include inaccessible cliffs on rocky outcrops and in river gorges, but also successfully nests on human-made structures. This species is also known to breed in tree cavities of coast redwood trees (*Sequoia sempervirens*).	**Present.** This species forages in the vicinity of Humboldt Bay and on the North Spit, and additional suitable coastal lowland habitats supporting shorebird and other waterbird prey are present within the study area. Nesting has been suspected, but not confirmed at the Samoa Bridge. Multiple observations of this species were made in the study area during 2018, including hunting, conspecific aggressive interactions in late April 2018 (during the breeding season), and repeated roosting on a nearby smoke stack and associated industrial buildings (~ 1,600 feet to the south of the study area's southern boundary). Although no definitive nesting was confirmed during the current effort, the latter two types of behavior could indicate that a nest site or territory exists nearby.
Fratercula cirrhata "Tufted Puffin" (nesting colony)	LC SSC S1S2 G5	An open-ocean bird, foraging pelagically and usually nesting in burrows at the edges of offshore cliffs or on the grassy slopes of islands. Rarely nests on mainland cliffs.	**No-Low Potential.** There are no records of this species' occurrence in or near the study area. Suitable habitat does not exist within the study area.
Haliaeetus leucocephalus "Bald Eagle" (nesting & wintering)	FD FP CE LC S3 G5	Nesting habitat is generally located in uneven-aged, multi-storied stands with old-growth components. Typically occurs within one mile of a river, lake, or ocean shore that supports adequate food supply for both nesting and wintering. Migratory habitat is generally along the coast following the salmon runs.	**Low Potential.** This species occasionally forages along the margins of Humboldt Bay near the study area during winter, but was not detected in 2018. Suitable nesting habitat does not occur within the study area.
Numenius americanus "Long-billed Curlew" (nesting)	WL LC BCC S2 G5	Most common on tidal mud flats or flooded pastures, but also forages in the wet sand of the wave slope in coastal beach habitats. Not known to breed in coastal California.	**Moderate Potential.** Long-billed curlews are regularly present in Humboldt Bay near the study area during winter and migration periods and could potentially use the coastal habitat adjacent to the study area while foraging. They were reported very near the study area in Samoa Park as recently as 2009, at Lanphere Dunes in 2007, and along the North Spit in 2017 (eBird 2018). No suitable nesting habitat occurs within the study area.

Avian Species	Status*	Habitat Characteristics	Potential for Occurrence at Study area
Nycticorax nycticorax "Black-crowned Night-heron" (nesting colony)	LC S4 G5	Forages nocturnally in freshwater and salt marshes, pond edges, mudflats, croplands and along slow-moving streams. Roosts and nests in dense stands of trees and brush.	**Present.** Black-crowned night herons are a common local resident and breeder in coastal lowlands (Harris 1996). They were observed roosting in willow habitat in the adjacent "Dog Ranch" property on 20 June, 2003 (Mad River Biologists 2004). Some nesting habitat occurs within the study area, in the form of trees and shrubs.
Oceanodroma furcata "Fork-tailed Storm-petrel" (nesting colony)	LC SSC S1 G5	Nests colonially on small, offshore islets in burrows and crevices beneath rocks or sod. Forages over the open ocean, usually well offshore.	**No-Low Potential.** There are no records of this species' occurrence in or near the study area. Suitable nesting habitat does not occur within the study area.
Pandion haliaetus "Osprey" (nesting)	WL LC S4 G5	Forages over fish-producing lakes, reservoirs, rivers, estuaries, and the open sea coast (Fix and Bezener 2000). Roosts and builds large nests on exposed treetops, towers, pilings, or similar structures nearby. Common summer resident and breeder, with some individuals also over-wintering near major feeding areas (Harris 1996).	**Present.** Five active osprey nests were detected on electrical transmission line poles along the nearby edge of Humboldt Bay in 2018, including one located within ~100 feet of the southern edge of the study area. Numerous other known nest sites occur within the surrounding vicinity and this species is known to hunt nearby in the ocean adjacent to the study area and in Humboldt Bay. Abundant suitable (natural and anthropogenic sources of) nesting habitat occur within the study area and surrounding environment.
Parus atricapillus "Black-capped Chickadee"	WL LC S3 G5	Occupies mixed hard and softwood forests, natural and suburban woodlands, scattered trees, shrubs, and thickets, old fields, clear cuts, forest edges, and dense undergrowth replacement, as well as suburban areas such as parks and gardens. This species typically nests in cavities in trees.	**Present.** This species was observed foraging in the study area in 2018 and occurs in associated coastal coniferous and riparian forest, thickets, as well as in urban areas. There is ample suitable nesting habitat and potential for breeding within the study area.
Pelecanus occidentalis californicus "California Brown Pelican" (nesting colony & communal roosts)	FD FP LC S3 GT3T4	Nests colonially on rocky coastal islands of small to moderate size just outside the surf line, and rest on sandbars, pilings, offshore rocks and jetties when not foraging. Feeds above estuaries and shallow ocean water, but sometimes exhibits more pelagic tendencies.	**Moderate Potential.** This species was not detected in 2018, although it uses the near-shore Pacific Ocean west of the study area and may occasionally use the beach and coastal features for day-roost sites. This species also uses Humboldt Bay east of the Samoa Peninsula extensively for foraging, loafing, and roosting habitat. No nesting sites are known north of Monterey Bay, and no suitable nesting habitat occurs within the study area.

Avian Species	Status*	Habitat Characteristics	Potential for Occurrence at Study area
Phalacrocorax auritus "Double-crested Cormorant" (nesting colony)	WL LC S4 G5	Colonial nesters on coastal cliffs, offshore islands, and along lake margins in the interior of the state. Nests on the ground on sequestered coastal islets, or in tall trees along lake margins. Forages in brackish and salt water estuaries and the open ocean.	**Moderate Potential.** Present locally year-round, double-crested cormorants breed on pilings in Humboldt Bay near the Old Arcata Wharf 5 miles northeast of the study area, forage in Humboldt Bay and also in the ocean adjacent to the study area, and roost on pilings along the bay shore. No suitable nesting habitat occurs within the study area.
Progne subis "Purple Martin" (nesting)	LC SSC S3 G5	Breeds in riparian and oak woodlands, partially logged, broken or burned coniferous forests and montane mixed forests, nesting in cavities (usually old woodpecker cavities) of tall trees, often near water (Fix and Bezener 2000). Foraging occurs over bottomlands, bays, coastal lagoons, ponds, and wetlands.	**Moderate Potential.** This species has been observed near the study area on the North Spit and in the town of Manila (eBird 2018). Marginal suitable nesting habitat exists in and around the study area.
Rallus obsoletus obsoletus "California Ridgway's Rail"	FE FP SE S1 G5T1	Perennial inhabitant of tidal salt and brackish marshes in the vicinity of San Francisco Bay. Associated with abundant growths of pickleweed (*Salicornia* spp.), as well as mud-bottomed sloughs where it feeds on invertebrates (CNDDB 2018).	**No-Low Potential.** Although this species formerly occurred at Humboldt Bay (known from 1 old specimen), and other California sites, it is not expected to occur in northwestern California at present (Harris 1996). The last record of nesting in Humboldt county was in former marsh habitat on the mouth of the Mad River in 1932 (CNDDB 2018). Suitable nesting habitat does not occur within the study area.
Riparia riparia "Bank Swallow" (nesting)	ST LC S2 G5	Breeds colonially in areas with vertical embankments high enough for them to avoid nest predation and substrates friable enough to permit excavation of nest cavities. Foraging habitat generally consists of open areas near water and abundant prey (insects, etc.) resources.	**Low Potential.** This species was observed on the North Spit in 2017 (eBird 2018). Suitable nesting habitat does not occur within the study area, although migrants could use the area for foraging.
Setophaga petechia "Yellow Warbler" (nesting)	SSC LC BCC S3S4 G5	Breeding habitat consists primarily of alder-cottonwood-willow stands that offer riparian cover. Occupies habitats along the coastal strip during migration (Harris 1996).	**Present.** This species has been detected within the study area in the willow dominated dune hollows and related habitats during migration in recent years (Mad River Biologists 2003; eBird 2018), but was not detected in the study area in 2018. These same areas could serve as suitable nesting habitat.
Thalasseus elegans "Elegant Tern" (nesting colony)	WL NT S2 G2	Strictly coastal species inhabiting beaches and estuaries. Nests colonially on southern California and Baja California islands.	**Moderate Potential.** Elegant Terns are fall visitors to northwestern California and frequent the bayshore along the north spit of Humboldt Bay near the study area. Nesting in the study area is highly unlikely.

Mammal Species	Status*	Habitat Characteristics	Potential for Occurrence at Study area
Antrozous pallidus "pallid bat"	SSC LC H S3 G5	Occupies a variety of low elevation habitats including grasslands, shrub lands, woodlands, and coniferous forests (Philpott 1997). Most common in open, dry habitats that contain rocky areas (and sometimes trees) for roosting. Also occurs in man-made habitats such as abandoned structures, mines, and other shelters.	**Moderate Potential.** Due to their nocturnal nature and the low ability to identify them in flight, bats are largely undetected in areas without specific survey methods. Although not known to occur in the study area, suitable cavity habitat for roosting exists on site in the form of abandoned and other such historic structures. A mature Sitka spruce (*Picea sitchensis*) with tree cavities could serve as suitable habitat for diurnal roosting within the study area.
Aplodontia rufa humboldtiana "Humboldt mountain beaver"	SNR G5TNR	Inhabits a variety of coastal habitats, including coastal scrub, riparian forests, typically with open canopy and thickly vegetated understory. Coast range in SW Del Norte and NW Humboldt Co.	**Low Potential.** While there are several records of this species on CNDDB, they are almost all from the 1920's to 1970's, suggesting that this species may have once been much more common in the area. Coastal scrub and some marginal forest within the study area could provide suitable habitat for this species, but it is unlikely due to the limited extent of forest.
Arborimus albipes "white-footed vole"	SSC LC S2 G3G4	Mature coastal forests in Humboldt and Del Norte Counties. Prefers areas near small, clear streams with dense alder and shrubs.	**Low Potential.** There are no records of this species' occurrence in or near the study area. Forested portions of the study area provide marginal suitable habitat at best.
Arborimus pomo "Sonoma tree vole"	SSC NT S3 G3	Primarily inhabits coniferous or hardwood-conifer forests with Douglas-fir (*Pseudotsuga menziesii*), its primary forage species.	**Low-No Potential.** There are no records of this species' occurrence in or near the study area. Sonoma tree voles are known from coastal sites (CNDDB 2018), but the extent of forested habitat at the study area is likely not suitable habitat for this species, particularly due to the absence of preferred food species.
Corynorhinus townsendii townsendii "Townsend's western big-eared bat"	LC SSC H S2 G3G4	Primarily occupies a variety of habitat types in rural areas: riparian, agricultural, coastal, and coniferous forests types locally (WBWG 2018). Diurnal roosts are found within caves, abandoned mines, and buildings. Nocturnal roosts may occur in more open settings, including under bridges (Philpott 1997). Highly susceptible to human disturbance.	**Moderate Potential.** There are several roosting sites for Townsend's big-eared bats known in Humboldt County, all of which have been in anthropogenic structures, but none are known from or near the immediate study area. However, the distribution of the species in Humboldt County is poorly known due to lack of survey effort. Due to their nocturnal nature and the low ability to identify them in flight, bats are largely undetected in areas without specific survey methods. Potential suitable roosting habitat occurs within the study area in the form of abandoned buildings and other anthropogenic structures.

Mammal Species	Status*	Habitat Characteristics	Potential for Occurrence at Study area
Erethizon dorsatum "North American porcupine"	LC S3 G5	Inhabits a wide variety of coniferous and mixed woodland habitats, across Sierra Nevada, Cascade, Transverse and Coast Ranges.	**Low Potential.** There are no records of this species' occurrence in or near the study area. The extent of coniferous forest habitat within the study area is likely not suitable habitat for this species.
Lasiurus cinereus "hoary bat"	LC M S4 G5	Prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees. Feeds primarily on moths and requires fresh water nearby.	**Moderate Potential.** Due to their nocturnal nature and the low ability to identify them in flight, bats are largely undetected in areas without specific survey methods. Hoary bats are long-distance migrants, and occupy a wide variety of habitats during this time, some of which are present in the study area in the form of forest and forest edge near fresh water. It is possible that these areas serve as suitable roosting and foraging habitat for this species within the study area.
Martes caurina humboldtiensis "Humboldt marten"	SCE SSC S1 G5T1	Occurs only in the coastal redwood zone from the Oregon border south to Sonoma County. Associated with late-successional coniferous forests.	**No-Low Potential.** There are no records of this species' occurrence in or near the study area. Suitable habitat does not occur within the study area.
Myotis evotis "long-eared myotis"	LC M S3 G5	Found in brush, woodland and forest habitats from sea level to ~9000 ft. Prefers coniferous woodlands and forests. Nursery colonies in buildings, crevices, spaces under bark of trees and snags. Caves used primarily as night roosts.	**Moderate Potential.** Due to their nocturnal nature and the low ability to identify them in flight, bats are largely undetected in areas without specific survey methods. There are no historical records of this species occurring in or near the study area. Suitable habitat may exist in the form of abandoned buildings and beach pine/Sitka spruce forest at the north end of the study area.
Pekania pennanti "fisher – West Coast DPS"	SSC SCT S2S3 G5T2T3Q	Found in mature and dense coniferous forests and deciduous-riparian areas with high canopy closure. Uses cavities, snags, logs and rocky areas for cover and denning.	**No-Low Potential.** There are no records of this species' occurrence in or near the study area. Suitable habitat does not occur within the study area.

Natural Communities	Status*	Habitat Characteristics	Occurrence at Study area
Northern Foredune Grassland	S1.1 G1	Herbaceous; Restricted to the immediate foredune, and characterized by the native grass *Elymus mollis* ssp. *mollis*, which is able to tolerate intense salt spray and sand deposition occurring in this habitat type (USFWS 2018).	**Present.** Some native species associated with "Northern Foredune Grassland occur within the "Beach Strand" habitat within the study area. However, these occurrences are severely fragmented and dominated by *Ammophila arenaria*. Additional records of occurrence exist from Lanphere Dunes in 1979 (CNDDB 2018), where the community consisted of *Leymus mollis, Cakile* spp., *Carpobrotus* spp., and other associates. This occurrence was noted to be one of few remaining examples not overtaken by European beachgrass (*Ammophila arenaria*).
Sitka Spruce (*Picea sitchensis*) Forest	S2 G5	Woody; Forest dominated by Sitka spruce, typically occurring with the following species: *Maianthemum dilatatum, Rubus spectabilis, Polystichum munitum,* and *Tsuga heterophylla* (CDFW 2018b).	**Not Present.** There are no records of community occurrence in or near the study area, although individual trees of the species do occur within the Coastal Coniferous Forest within the study area.
Coastal Terrace Prairie	S1.1 G1	Herbaceous; Northern coastal prairie.	**Not Present.** There are no records of community occurrence in or near the study area.
Northern Coastal Salt Marsh	S3.2 G3	Herbaceous; Contains wetlands; marshes, swamps.	**Not Present.** No portion of the 2018 study area is subject to direct tidal influence. Northern Coastal Salt Marsh does occur throughout the Humboldt Bay area in locations subject to tidal influx, including the location of the record (CNDDB 2018) from Indian Island in North Humboldt Bay, where the community consisted of dense-flowered cordgrass (*Spartina densiflora*), pickleweed (*Salicornia pacifica*), and saltgrass (*Distichlis spicata*).

*Status Codes (CNDDB 2018)

Global (G)/State (S) Rarity Ranks ("Heritage Method")

G/S1: Critically imperiled, due to extreme rarity (often 5 or fewer occurrences) and because of factors making it especially vulnerable to extirpation.
G/S2: Imperiled, due to rarity, very restricted range, very few occurrences (20 or fewer), steep declines.
G/S3: Vulnerable, due to restricted range, populations 80 and fewer, recent declines.
G/S4: Apparently secure, but with cause for long-term concern due to declines or other factors.
G/S5: Secure, due to common or widespread abundance.

California Endangered Species Act (CESA)

SE: State Endangered
ST: State Threatened
SCE: State Candidate Endangered
SCT: State Candidate Threatened

California Department of Fish & Wildlife (CDFW)

SSC: Species of Special Concern
FP: Fully Protected species
WL: Watch List

Federal Endangered Species Act (FESA)

FE: Federal Endangered
FT: Federal Threatened
FC: Federal Candidate
FPE: Federal Proposed Endangered
FPT: Federal Proposed Threatened
FD: Federal Delisted

Western Bat Working Group (WBWG)

H: High Priority
M: Medium Priority

U.S. Fish & Wildlife Service

BCC: Birds of Conservation Concern

California Native Plant Society (CNPS)

Rare Plant Rank:

1A. Presumed extirpated in CA and rare or extinct elsewhere.
1B. Rare or endangered in CA and elsewhere.
2A. Presumed extirpated in CA but more common elsewhere.
2B. Rare or endangered in CA but more common elsewhere.
3. Plants which need more information to evaluate – a review list.
4. Plants of limited distribution – a review list.

Threat Rank:

.1 – Seriously threatened in CA (over 80% of occurrences threatened, high degree of immediacy of threat.)
.2 – Moderately threatened in CA (20-80% of occurrences threatened, moderate degree of immediacy of threat.)
.3 – Not very threatened in CA (<20% of occurrences threatened, low degree of immediacy of threat/no current threat known.)

International Union for Conservation of Nature (IUCN)

T: Threatened
NT: Near Threatened
VU: Vulnerable
LC: Least Concern

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Appendix C. List of Botanical Species Encountered During 2018.

Species*	Common Name	Native Status†	Wetland Indicator Status‡	Cal-IPC Status§
Tree species				
Chamaecyparis lawsoniana	Port Orford cedar	N	FACU	
Cupressus macrocarpa	Monterey cypress	N	NL	
Morella californica	California wax myrtle	N	FACW	
Picea sitchensis	Sitka spruce	N	FAC	
Pinus contorta ssp. *contorta*	beach pine	N	FAC	
Pinus radiata	Monterey pine	N	NL	
Salix hookeriana	coastal willow	N	FACW	
Salix lasiandra var. *lasiandra*	Pacific willow	N	FACW	
Salix lasiolepis	arroyo willow	N	FACW	
Salix sitchensis	Sitka willow	N	FACW	
Pittosporum tenuifolium	kohuhu	A	NL	
Acacia dealbata	silver wattle	I	NL	Moderate
Acacia melanoxylon	blackwood acacia	I	NL	Limited
Eucalyptus globulus	bluegum	I	NL	Limited
Ilex aquifolium	English holly	I	NL	Limited
Shrub species				
Arctostaphylos uva-ursi	bear-berry	N	FACU	
Baccharis pilularis	coyote brush	N	NL	
Ceanothus thyrsiflorus	blue blossum	N	NL	
Garrya elliptica	silk tassel	N	NL	
Gaultheria shallon	salal	N	FACU	
Lonicera hispidula	honeysuckle	N	FACU	
Lonicera involucrata var. *ledebourii*	twin berry	N	FAC	
Morella californica	California wax myrtle	N	FACW	
Rhododendron macrophyllum	California rhododendron	N	FACU	
Ribes sanguineum var. *glutinosum*	red-flowering currant	N	FACU	
Rosa californica	California rose	N	FAC	
Rosa sp.	rose	N		
Rubus parviflorus	thimbleberry	N	FACU	
Rubus spectabilis	salmonberry	N	FAC	
Rubus ursinus	California blackberry	N	FACU	
Salix hookeriana	coastal willow	N	FACW	
Salix lasiandra var. *lasiandra*	Pacific willow	N	FACW	
Salix lasiolepis	arroyo willow	N	FACW	
Salix sitchensis	Sitka willow	N	FACW	
Sambucus racemosa var. *racemosa*	red elderberry	N	FACU	
Toxicodendron diversilobum	Western poison-oak	N	FAC	
Vaccinium ovatum	evergreen huckleberry	N	FACU	
Buddleja davidii	butterfly-bush	A	FACU	Watch
Cotoneaster simonsii	Himalayan cotoneaster	A	NL	
Cotoneaster pannosus	silverleaf cotoneaster	I	NL	Moderate
Cytisus scoparius	Scotch broom	I	NL	High
Genista monspessulana	French broom	I	NL	High
Lupinus arboreus	yellow bush lupine	N.I	NL	
Rubus armeniacus	Himalayan blackberry	I	NL	High
Ulex europaeus	gorse	I	NL	High

Appendix C. List of Botanical Species Encountered During 2018.

Species*	Common Name	Native Status†	Wetland Indicator Status‡	Cal-IPC Status§
Woody vines				
Hedera helix	English ivy	I	NL	High
Herbaceous species				
Abronia latifolia	yellow sand-verbena	N	NL	
Acaena pinnatifida var. *californica*	Argentine biddy-biddy	N	NL	
Achillea millefolium	yarrow	N	FACU	
Alisma triviale	northern water-plantain	N	OBL	
Alopecurus geniculatus	meadow-foxtail	N	OBL	
Ambrosia chamissonis	beach bur-sage	N	NL	
Armeria maritima	sea thrift	N	FAC	
Artemisia douglasiana	mugwort	N	FACW	
Artemisia pycnocephala	coastal sagewort	N	NL	
Athyrium felix-femina	lady fern	N	NL	
Callitriche heterophylla	greater water-starwort	N	OBL	
Calystegia soldanella	beach morning glory	N	NL	
Camissonia cheiranthifolia	beach evening primrose	N	NL	
Cardamine oligosperma	little western bittercress	N	FAC	
Carex obnupta	slough sledge	N	OBL	
Carex pansa	sand dune sedge	N	FAC	
Castilleja exserta ssp. *latifolia*	purple owl's-clover	N	NL	
Cerastium glomeratum	sticky mouse-ear chickweed	N	FACU	
Chamerion angustifolium	fireweed	N	NL	
Claytonia parviflora ssp. *parviflora*	streambank springbeauty	N	FACU	
Claytonia perfoliata ssp. *perfoliata*	miner's-lettuce	N	FAC	
Cryptantha leiocarpa	beach cryptantha	N	NL	
Cyperus eragrostis	tall flat sedge	N	FACW	
Daucus pusillus	wild carrot	N		
Deschampsia caespitosa ssp. *caespitosa*	tufted hair grass	N	FACW	
Distichlis spicata	coastal salt grass	N	FACW	
Dryopteris expansa	spreading wood fern	N	FACW	
Eleocharis macrostachya	spike rush	N	NL	
Elymus glaucus ssp. *glaucus*	blue wild rye	N	FACU	
Epilobium ciliatum ssp. *watsonii*	Watson's willow herb	N	FACW	
Equisetum arvense	common horsetail	N	FAC	
Equisetum hymale ssp. *affine*	common scouring-rush	N	FACW	
Equisetum telmateia	giant horsetail	N	FACW	
Eriogonum latifolium	seaside wild buckwheat	N	NL	
Erysimum menziesii	**Menzies' wallflower**	**N**	**NL**	
Festuca rubra	red fescue	N	FAC	
Fragaria chiloensis	beach strawberry	N	FACU	
Fritillaria affinis	checker lily	N	NL	
Gamochaeta ustulata	featherweed	N	NL	
Gilia millefoliata	**dark-eyed gilia**	**N**	**NL**	
Grindelia stricta var. *platyphylla*	gumplant	N	NL	
Hordeum brachyantherum ssp. *californicum*	meadow barley	N	FACW	
Hydrocotyle ranunculoides	floating marsh-pennywort	N	OBL	
Isolepis cernua	low lateral-bulrush	N	OBL	
Juncus breweri	Brewer's rush	N	FACW	
Layia carnosa	**beach layia**	**N**	**NL**	

Appendix C. List of Botanical Species Encountered During 2018.

Species*	Common Name	Native Status†	Wetland Indicator Status‡	Cal-IPC Status§
Leymus mollis	American lyme grass	N	FACU	
Lupinus bicolor	miniature lupine	N	NL	
Lupinus littoralis	seashore lupine	N	NL	
Luzula comosa var. *comosa*	Pacific wood-rush	N	FAC	
Nuttallanthus texanus	blue toadflax	N	NL	
Oenanthe sarmentosa	water-parsley	N	OBL	
Oenothera elata ssp. hookeri	Hooker's evening-primrose	N	FACW	
Plantago erecta	California plantain	N	NL	
Plantago subnuda	tall coastal plantain	N	FACW	
Platystemon californicus	cream cups	N	NL	
Poa douglasii	seashore blue grass	N	FACU	
Polygonum paronychia	dune knotweed	N	NL	
Polypodium calirhiza	polypody	N	NL	
Polypodium scouleri	leather-leaf fern	N	NL	
Polystichum munitum	sword fern	N	FACU	
Potentilla anserina ssp. *pacifica*	Pacific silverweed	N	OBL	
Prunella vulgaris var. *lanceolata*	common selfheal	N	FACU	
Pseudognaphalium stramineum	cotton-batting-plant	N	FAC	
Pteridium aquilinum	bracken fern	N	FACU	
Rumex crassus	fleshy willow dock	N	FACW	
Sanicula arctopoides	footsteps of spring	N	NL	
Sanicula crassicaulis	Pacific sanicle	N	NL	
Sceptridium multifidum	leathery grape fern	N	FAC	
Schoenoplectus pungens var. *longispicatus*	three-square bulrush	N	OBL	
Scirpus microcarpus	small-flowered bulrush	N	OBL	
Scrophularia californica ssp. *californica*	California figwort	N	FAC	
Solidago spathulata	coast goldenrod	N	FACU	
Tanacetum bipinnatum	dune tansy	N	NL	
Typha latifolia	broad-leaved cattail	N	OBL	
Veronica americana	American brooklime	N	OBL	
Agapanthus sp.	lily of the Nile	A		
Aira caryophyllea	silver hair grass	A	FACU	
Aira praecox	early hair grass	A	NL	
Amaryllis belladonna	naked ladies	A	NL	
Bellis perennis	English daisy	A	NL	
Briza minor	annual quaking grass	A	FAC	
Daucus carota	Queen Anne's-lace	A	FACU	
Euphorbia lathyris	caper spurge	A	NL	Watch
Freesia leichtlinii ssp. *alba*	freesia	A	NL	
Geranium molle	crane's bill geranium	A	NL	
Hyacinth sp.	hyacinth	A		
Hypericum calycinum	Aaron's beard	A	NL	
Leontodon saxatilis ssp. *longirostris*	lesser hawkbit	A	FACU	
Linum bienne	flax	A	NL	
Lotus corniculatus	bird's-foot-trefoil	A	FAC	
Lotus tenuis	narrow-leaf bird's-foot-trefoil	A	FACU	
Lysimachia arvensis	scarlet pimpernel	A	FAC	
Malva arborea	tree mallow	A	NL	
Malva sylvestris	high mallow	A	NL	
Matricaria chamomilla	German chamomile	A	NL	

Appendix C. List of Botanical Species Encountered During 2018.

Species*	Common Name	Native Status†	Wetland Indicator Status‡	Cal-IPC Status§
Melilotus albus	white sweetclover	A	NL	
Modiola caroliniana	modiola	A	FACU	
Narcissus pseudonarcissus	daffodil	A	NL	
Oxalis articulata ssp. *rubra*	windowbox wood-sorrel	A	NL	
Plantago coronopus	cutleaf plantain	A	FAC	
Plantago major	common plantain	A	FAC	
Poa annua	annual blue grass	A	FAC	
Polypogon interruptus	ditch beard grass	A	FACW	
Rumex conglomeratus	sharp dock	A	FACW	
Senecio minimus	coastal burnweed	A	FACU	
Silene gallica	small-flower catchfly	A	NL	
Solanum aviculare	New Zealand nightshade	A	NL	Watch
Sonchus asper ssp. *asper*	prickley sow-thistle	A	FACU	
Spergula arvensis	stickwort	A	NL	
Agrostis stolonifera	creeping bent	I	FAC	Limited
Ammophila arenaria	European beachgrass	I	FACU	High
Anthoxanthum odoratum	sweet vernal grass	I	FACU	Limited
Arctotheca calendula	capeweed	I	NL	Moderate
Brassica nigra	black mustard	I	NL	Moderate
Briza maxima	rattlesnake grass	I	NL	Limited
Bromus diandrus	ripgut brome	I	NL	Moderate
Bromus hordeaceus	soft chess	I	FACU	Limited
Cakile maritima	European searocket	I	FACU	Limited
Carpobrotus chilensis	sea fig	I	FAC	Moderate
Carpobrotus edulis	highway iceplant	I	NL	High
Cortaderia jubata	jubata grass	I	FACU	High
Cotula coronopifolia	brass-buttons	I	OBL	Limited
Crocosmia x *crocosmiiflora*	montbretia	I	FAC	Limited
Cynosurus echinatus	bristly dogtail grass	I	NL	Moderate
Dactylis glomerata	orchard grass	I	FACU	Limited
Dipsacus fullonum	wild teasel	I	FAC	Moderate
Euphorbia terracina	Geraldton carnation weed	I	NL	Limited
Festuca myuros	rat-tail fescue	I	NL	Moderate
Festuca perennis	Italian ryegrass	I	NL	Moderate
Foeniculum vulgare	fennel	I	NL	Moderate
Geranium dissectum	cutleaf geranium	I	NL	Limited
Helminthotheca echioides	bristly ox-tongue	I	FAC	Limited
Hirschfeldia incana	short-pod mustard	I	NL	Moderate
Holcus lanatus	common velvet grass	I	FAC	Moderate
Hypochaeris glabra	smooth cat's-ear	I	NL	Limited
Hypochaeris radicata	rough cat's-ear	I	NL	Moderate
Leucanthemum vulgare	ox-eye daisy	I	FACU	Moderate
Lythrum hyssopifolia	hyssop loosestrife	I	OBL	Moderate
Medicago polymorpha	California burclover	I	FACU	Limited
Mentha pulegium	pennyroyal	I	OBL	Moderate
Phalaris arundinacea	reed canary grass	N, I	FACW	
Plantago lanceolata	English plantain	I	FACU	Limited
Polypogon monspeliensis	rabbitfoot grass	I	FACW	Limited
Ranunculus repens	creeping buttercup	I	FAC	Limited
Raphanus sativus	wild radish	I	NL	Limited

Appendix C. List of Botanical Species Encountered During 2018.

Species*	Common Name	Native Status†	Wetland Indicator Status‡	Cal-IPC Status§
Rumex acetosella	sheep sorrel	I	FACU	Moderate
Rumex crispus	curly dock	I	FAC	Limited
Silybum marianum	milk thistle	I	NL	Limited
Vinca major	periwinkle	I	NL	Moderate
Lichens				
Cladonia rangiferina				
Hypogymnia heterophylla				
Niebla cephalota				
Parmotrema perlatum				
Peltigera neopolydactyla				
Ramalina menziesii				
Usnea cornuta				

*Species in bold indicate special status taxa.

†Jepson Flora Project (2018)

‡ Lichvar et al. (2016)

§ Cal-IPC (2018)

Appendix D. List of Wildlife Species Encountered During 2018.

Species*	Common Name
Invertebrates	
Apis mellifera	European Honey Bee
Bombus sp.	Bumblebee
subfamily Polyommatinae	Blues
Polyphylla decemlineata	Ten-lined June Beetle
Amphibians	
Pseudacris regilla	Pacific Tree Frog
Rana aurora	**Northern Red-legged Frog**
Reptiles	
Elgaria coerulea principis	Northwestern Alligator Lizard
Thamnophis sirtalis infernalis	California Red-sided Gartersnake
Birds	
Ardea alba	**Great Egret**
Ardea herodias	**Great Blue Heron**
Bombycilla cedrorum	Cedar Waxwing
Branta hutchinsii leucopareia	**Aleutian Cackling Goose**
Buteo jamaicensis	Red-tailed Hawk
Callipepla californica	California Quail
Calypte anna	Anna's Hummingbird
Cathartes aura	Turkey Vulture
Chamaea fasciata	Wrentit
Circus hudsonius	**Northern Harrier**
Columba livia	Rock Pigeon
Corvus corax	Common Raven
Empidonax difficilis	Pacific-slope Flycatcher
Euphagus cyanocephalus	Brewer's Blackbird
Falco peregrinus anatum	**Peregrine Falcon**
Gallinago delicata	Wilson's Snipe
Haemorhous mexicanus	House Finch
Haemorhous purpureus	Purple Finch
Hirundo rustica	Barn Swallow
Larus occidentalis	Western Gull
Megaceryle alcyon	Belted Kingfisher
Melospiza melodia	Song Sparrow
Molothrus ater	Brown-headed Cowbird
Oreothlypis celata	Orange-crowned Warbler
Pandeon haliaetus	**Osprey**
Poecile atricapillus	**Black-capped Chickadee**
Poecile rufescens	Chestnut-backed Chickadee
Sayornis nigricans	Black Phoebe
Sitta canadensis	Red-breasted Nuthatch
Spinus psaltria	Lesser Goldfinch
Spinus tristis	American Goldfinch
Stelgidopteryx serripennis	Northern Rough-winged Swallow
Streptopelia decaocto	Eurasian Collared-dove
Sturnus vulgaris	European Starling
Tachycineta thalassina	Violet-green Swallow
Tern sp.	Tern
Troglodytes pacificus	Pacific Wren
Turdus migratorius	American Robin
Zanaida macroura	Mourning Dove

Appendix D. List of Wildlife Species Encountered During 2018.

Species*	Common Name
Zonotrichia atricapilla	Golden-crowned Sparrow
Zonotrichia leucophrys	White-crowned Sparrow
Mammals	
Sylvilagus bachmani	Brush Rabbit

* Bold text indicates special status species (CNDDB 2018).

Appendix E. Supplemental Wetland Determination Data Forms.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Samoa Town Master Plan Subdivision City/County: Unincorp./Humboldt Sampling Date: 11/18/18

Applicant/Owner: Samoa Pacific Group State: CA Sampling Point: 1A

Investigator(s): J. Brett Lovelace (J.B. Lovelace & Associates) Section, Township, Range: Sec. 16, T5N, R1W, Humboldt BM

Landform (hillslope, terrace, etc.): Dune slope Local relief (concave, convex, none): convex Slope (%): 20

Subregion (LRR): A Lat: 399086.46 Long: 4518364.71 Datum: (UTM Zone 10T) WGS 84

Soil Map Unit Name: Samoa-Clam Beach Complex, 0-50% Slopes / Urban Land-Xerorthents Assoc. 0-2% Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒	**Is the Sampled Area within a Wetland?**	**Yes ☐ No ☒**
Hydric Soil Present?	Yes ☐	No ☒		
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks: Regional drought: Local climate data (CA Dept. Water Resources/USGS [2018] for Woodley Island, Eureka, CA) indicate that measured recent (1 August - 17 November 2018) regional precipitation is ~14% of "normal" (NRCS' WETS data for Woodley Island, Eureka, CA. [2018]).

Dune slope

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. ____	____	____	____
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1. ____	____	____	____
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
5. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Artemisia pycnocephala*	30	yes	NL (UPL)
2. *Ammophila arenaria*	25	yes	FACU
3. *Aria praecox*	20	yes	NL (UPL)
4. *Polygonum paronychia*	15	no	NL (UPL)
5. *Plantago cronopus*	15	yes	FAC
6. *Briza maxima*	15	yes	NL (UPL)
7. *Armeria maritima*	3	no	FAC
8. ____	____	____	____
9. ____	____	____	____
10. ____	____	____	____
11. ____	____	____	____
50% = ____, 20% = ____	80	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1. ____	____	____	____
2. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	

% Bare Ground in Herb Stratum 20

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 20% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x1 =	0
FACW species	0	x2 =	0
FAC species	18	x3 =	54
FACU species	25	x4 =	100
UPL species	80	x5 =	400
Column Totals:	123 (A)		554 (B)

Prevalence Index = B/A = 4.5

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤ 3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☐ No ☒**

Remarks: Exposed sand

Project Site: Samoa Town Master Plan Subdivision

SOIL Sampling Point: 1A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-24+	5Y 3/3	100					Sand	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: 0

Depth (inches): 0

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☐	No	☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Samoa Town Master Plan Subdivision City/County: Unincorp./Humboldt Sampling Date: 11/18/18

Applicant/Owner: Samoa Pacific Group State: CA Sampling Point: 1B

Investigator(s): J. Brett Lovelace (J.B. Lovelace & Associates) Section, Township, Range: Sec. 16, T5N, R1W, Humboldt BM

Landform (hillslope, terrace, etc.): Swale dune Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): A Lat: 399097.89 Long: 4518369.49 Datum: (UTM Zone 10T) WGS 84

Soil Map Unit Name: Samoa-Clam Beach Complex, 0-50% Slopes / Urban Land-Xerorthents Assoc. 0-2% Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?**	**Yes ☒ No ☐**
Hydric Soil Present?	Yes ☒	No ☐		
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks: Regional drought: Local climate data (CA Dept. Water Resources/USGS [2018] for Woodley Island, Eureka, CA) indicate that measured recent (1 August - 17 November 2018) regional precipitation is ~14% of "normal" (NRCS' WETS data for Woodley Island, Eureka, CA. [2018]).

19 April 2018: Standing water/inundation observed when reigon was at 118% percent of normal (same sources as above).

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. ____	____	____	____
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1. ____	____	____	____
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
5. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Carex pansa*	80	yes	FAC
2. *Carex obnupta*	30	yes	OBL
3. *Juncus brewerii*	10	no	FACW
4. *Rubus ursinus*	10	no	FACU
5. *Fragaria chilensis*	5	no	FACU
6. *Briza maxima*	<5	no	NL (UPL)
7. ____	____	____	____
8. ____	____	____	____
9. ____	____	____	____
10. ____	____	____	____
11. ____	____	____	____
50% = ____, 20% = ____	100	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1. ____	____	____	____
2. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	2	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	____	x1 =	____
FACW species	____	x2 =	____
FAC species	____	x3 =	____
FACU species	____	x4 =	____
UPL species	____	x5 =	____
Column Totals:	____ (A)		____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is <3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☒ No ☐**

Remarks: Dessicated vegetation.

Project Site: Samoa Town Master Plan Subdivision

SOIL Sampling Point: 1B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/1	100					Sandy loam	Hemic
4-27+	2.5Y 3/2	70	10YR 4/4	30	C/CS	M	Loamy sand	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☒ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☒ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☐	No	☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Samoa Town Master Plan Subdivision City/County: Unincorp./Humboldt Sampling Date: 11/18/18

Applicant/Owner: Samoa Pacific Group State: CA Sampling Point: 2A

Investigator(s): J. Brett Lovelace (J.B. Lovelace & Associates) Section, Township, Range: Sec. 16, T5N, R1W, Humboldt BM

Landform (hillslope, terrace, etc.): Dune hollow Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): A Lat: 399156.59 Long: 4518489.55 Datum: (UTM Zone 10T) WGS 84

Soil Map Unit Name: Samoa-Clam Beach Complex, 0-50% Slopes / Urban Land-Xerorthents Assoc. 0-2% Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?**	**Yes ☒ No ☐**
Hydric Soil Present?	Yes ☒	No ☐		
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks: Regional drought: Local climate data (CA Dept. Water Resources/USGS [2018] for Woodley Island, Eureka, CA) indicate that measured recent (1 August - 17 November 2018) regional precipitation is ~14% of "normal" (NRCS' WETS data for Woodley Island, Eureka, CA. [2018]).

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. ____	____	____	____
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1. ____	____	____	____
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
5. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Juncus brewerii*	95	yes	FACW
2. *Veronica americana*	35	yes	OBL
3. *Gnaphalium palustre*	25	yes	FACW
4. *Rubus ursinus*	10	no	FACU
5. *Epilobium ciliatum subsp. watsonii*	10	no	FACW
6. ____	____	____	____
7. ____	____	____	____
8. ____	____	____	____
9. ____	____	____	____
10. ____	____	____	____
11. ____	____	____	____
50% = ____, 20% = ____	100	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1. ____	____	____	____
2. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	____	x1 =	____
FACW species	____	x2 =	____
FAC species	____	x3 =	____
FACU species	____	x4 =	____
UPL species	____	x5 =	____
Column Totals:	____ (A)		____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤ 3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☒ No ☐**

Remarks:

Project Site: Samoa Town Master Plan Subdivision

SOIL Sampling Point: 2A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/2	85	2.5YR 4/6	15	C	PL/M	Sandy loam	
6-27+	5Y 3/3	90	2.5YR 4/4	10	C	M	Loamy sand	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☒ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: 0

Depth (inches): 0

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☐	No	☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Regional drought.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Samoa Town Master Plan Subdivision City/County: Unincorp./Humboldt Sampling Date: 11/19/18

Applicant/Owner: Samoa Pacific Group State: CA Sampling Point: 2B

Investigator(s): J. Brett Lovelace (J.B. Lovelace & Associates) Section, Township, Range: Sec. 16, T5N, R1W, Humboldt BM

Landform (hillslope, terrace, etc.): Degraded dune slope Local relief (concave, convex, none): convex Slope (%): 20

Subregion (LRR): A Lat: 399152.81 Long: 4518500.57 Datum: (UTM Zone 10T) WGS 84

Soil Map Unit Name: Samoa-Clam Beach Complex, 0-50% Slopes / Urban Land-Xerorthents Assoc. 0-2% Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒	**Is the Sampled Area within a Wetland?**	**Yes ☐ No ☒**
Hydric Soil Present?	Yes ☐	No ☒		
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks: Regional drought: Local climate data (CA Dept. Water Resources/USGS [2018] for Woodley Island, Eureka, CA) indicate that measured recent (1 August - 17 November 2018) regional precipitation is ~14% of "normal" (NRCS' WETS data for Woodley Island, Eureka, CA. [2018]).

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. ____	____	____	____
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1. ____	____	____	____
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
5. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Briza maxima*	15	yes	NL (UPL)
2. *Eriogonum latifolium*	15	yes	NL (UPL)
3. *Polygonum paronychia*	25	yes	NL (UPL)
4. *Camissoniopsis chieranthifolia ssp. cheiranthifolia*	5	no	NL (UPL)
5. *Rumex acetosella*	5	no	FACU
6. ____	____	____	____
7. ____	____	____	____
8. ____	____	____	____
9. ____	____	____	____
10. ____	____	____	____
11. ____	____	____	____
50% = ____, 20% = ____	65	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1. ____	____	____	____
2. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	

% Bare Ground in Herb Stratum 35

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0	(A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x1 =	0
FACW species	0	x2 =	0
FAC species	0	x3 =	0
FACU species	5	x4 =	20
UPL species	60	x5 =	300
Column Totals:	65 (A)		320 (B)

Prevalence Index = B/A = 4.9

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☐ No ☒**

Remarks:

Project Site: Samoa Town Master Plan Subdivision

SOIL Sampling Point: 2B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-24+	5Y 3/3	100					Sand	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: 0

Depth (inches): 0

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☐	No	☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Samoa Town Master Plan Subdivision City/County: Unincorp./Humboldt Sampling Date: 11/19/18

Applicant/Owner: Samoa Pacific Group State: CA Sampling Point: 3A

Investigator(s): J. Brett Lovelace (J.B. Lovelace & Associates) Section, Township, Range: Sec. 16, T5N, R1W, Humboldt BM

Landform (hillslope, terrace, etc.): Dune Hollow Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): A Lat: 399290.82 Long: 4518741.85 Datum: (UTM Zone 10T) WGS 84

Soil Map Unit Name: Samoa-Clam Beach Complex, 0-50% Slopes / Urban Land-Xerorthents Assoc. 0-2% Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?**	**Yes ☒ No ☐**
Hydric Soil Present?	Yes ☒	No ☐		
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks: Regional drought: Local climate data (CA Dept. Water Resources/USGS [2018] for Woodley Island, Eureka, CA) indicate that measured recent (1 August - 17 November 2018) regional precipitation is ~14% of "normal" (NRCS' WETS data for Woodley Island, Eureka, CA. [2018]).

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. ____	____	____	____
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1. ____	____	____	____
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
5. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Carex obnupta*	45	yes	OBL
2. *Epilobium ciliatum subsp. watsonii*	35	yes	FACW
3. *Juncus brewerii*	25	yes	FACW
4. *Rubus ursinus*	15	no	FACU
5. *Rubus armeniacus*	10	no	FAC
6. *Briza maxima*	5	no	NL (UPL)
7. *Bromus hordeaceus*	5	no	FACU
8. ____	____	____	____
9. ____	____	____	____
10. ____	____	____	____
11. ____	____	____	____
50% = ____, 20% = ____	95	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1. ____	____	____	____
2. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
% Bare Ground in Herb Stratum 5			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	____	x1 =	____
FACW species	____	x2 =	____
FAC species	____	x3 =	____
FACU species	____	x4 =	____
UPL species	____	x5 =	____
Column Totals:	____ (A)		____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ☒ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤ 3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☒ No ☐**

Remarks:

Project Site: Samoa Town Master Plan Subdivision

SOIL Sampling Point: 3A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	2.5Y 3/2	98	10YR 3/4	2	C	M/PL	Loamy sand	Noticably greater root density than below.
5-11	2.5Y 3/2	98	10YR 3/4	2	C	M/PL	Sandy loam	
11-22+	10YR 4/1	100					Loamy sand	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☒ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☐	No	☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Samoa Town Master Plan Subdivision City/County: Unincorp./Humboldt Sampling Date: 11/19/18

Applicant/Owner: Samoa Pacific Group State: CA Sampling Point: 3B

Investigator(s): J. Brett Lovelace (J.B. Lovelace & Associates) Section, Township, Range: Sec. 16, T5N, R1W, Humboldt BM

Landform (hillslope, terrace, etc.): Dune slope (stabilized and degraded) Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): A Lat: 399296.3 Long: 4518739.78 Datum: (UTM Zone 10T) WGS 84

Soil Map Unit Name: Samoa-Clam Beach Complex, 0-50% Slopes / Urban Land-Xerorthents Assoc. 0-2% Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒	**Is the Sampled Area within a Wetland?**	**Yes ☐ No ☒**
Hydric Soil Present?	Yes ☐	No ☒		
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks: Regional drought: Local climate data (CA Dept. Water Resources/USGS [2018] for Woodley Island, Eureka, CA) indicate that measured recent (1 August - 17 November 2018) regional precipitation is ~14% of "normal" (NRCS' WETS data for Woodley Island, Eureka, CA. [2018]).

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. ____	____	____	____
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1. ____	____	____	____
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
5. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Cardionema ramosissimum*	60	yes	NL (UPL)
2. *Festuca myuros*	30	yes	NL (UPL)
3. *Plantago coronopus*	25	yes	FAC
4. *Rumex acetosella*	15	yes	FACU
5. *Aira praecox*	15	yes	NL (UPL)
6. *Polygonum paronychia*	10	no	NL (UPL)
7. *Lupinus bicolor*	5	no	NL (UPL)
8. *Armeria maritima*	5	no	FAC
9. *Briza maxima*	5	no	NL (UPL)
10. *Ammophila arenaria*	5	no	FACU
11. ____	____	____	____
50% = ____, 20% = ____	80	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1. ____	____	____	____
2. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
% Bare Ground in Herb Stratum 20			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	20	(A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x1 =	0
FACW species	0	x2 =	0
FAC species	30	x3 =	90
FACU species	20	x4 =	80
UPL species	125	x5 =	625
Column Totals:	175 (A)		795 (B)

Prevalence Index = B/A = 4.5

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☐ No ☒**

Remarks:

Project Site: Samoa Town Master Plan Subdivision

SOIL Sampling Point: 3B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-24+	10YR 3/4	100					Sand	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: 0

Depth (inches): 0

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☐	No	☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Samoa Town Master Plan Subdivision City/County: Unincorp./Humboldt Sampling Date: 11/19/18

Applicant/Owner: Samoa Pacific Group State: CA Sampling Point: 4A

Investigator(s): J. Brett Lovelace (J.B. Lovelace & Associates) Section, Township, Range: Sec. 16, T5N, R1W, Humboldt BM

Landform (hillslope, terrace, etc.): Dune swale Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): A Lat: 399326.96 Long: 4518808.12 Datum: (UTM Zone 10T) WGS 84

Soil Map Unit Name: Samoa-Clam Beach Complex, 0-50% Slopes / Urban Land-Xerorthents Assoc. 0-2% Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?**	**Yes ☒ No ☐**
Hydric Soil Present?	Yes ☒	No ☐		
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks: Regional drought: Local climate data (CA Dept. Water Resources/USGS [2018] for Woodley Island, Eureka, CA) indicate that measured recent (1 August - 17 November 2018) regional precipitation is ~14% of "normal" (NRCS' WETS data for Woodley Island, Eureka, CA. [2018]).

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
50% = ____, 20% = ____		= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
50% = ____, 20% = ____		= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Carex obnupta*	95	yes	OBL
2. *Epilobium ciliatum subsp. watsonii*	35	yes	FACW
3. *Rubus armeniacus*	10	no	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
50% = ____, 20% = ____	100	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
50% = ____, 20% = ____		= Total Cover	
% Bare Ground in Herb Stratum 0			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x1 =	
FACW species		x2 =	
FAC species		x3 =	
FACU species		x4 =	
UPL species		x5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☒ No ☐**

Remarks:

Project Site: Samoa Town Master Plan Subdivision

SOIL Sampling Point: 4A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 2/2	99	10YR 3/1	1		PL	Sandy loam	
3-24+	2.5Y 2.5/1	95	10YR 3/6	5	C	M/PL	Loamy sand	
	2.5Y 5/1							Lighter stripped portions of matrix

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☒ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: 0

Depth (inches): 0

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☐	No	☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Samoa Town Master Plan Subdivision City/County: Unincorp./Humboldt Sampling Date: 11/19/18

Applicant/Owner: Samoa Pacific Group State: CA Sampling Point: 4B

Investigator(s): J. Brett Lovelace (J.B. Lovelace & Associates) Section, Township, Range: Sec. 16, T5N, R1W, Humboldt BM

Landform (hillslope, terrace, etc.): Dune ridge Local relief (concave, convex, none): convex Slope (%): 0

Subregion (LRR): A Lat: 399323.41 Long: 4518820.57 Datum: (UTM Zone 10T) WGS 84

Soil Map Unit Name: Samoa-Clam Beach Complex, 0-50% Slopes / Urban Land-Xerorthents Assoc. 0-2% Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒	**Is the Sampled Area within a Wetland?**	**Yes ☐ No ☒**
Hydric Soil Present?	Yes ☐	No ☒		
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks: Regional drought: Local climate data (CA Dept. Water Resources/USGS [2018] for Woodley Island, Eureka, CA) indicate that measured recent (1 August - 17 November 2018) regional precipitation is ~14% of "normal" (NRCS' WETS data for Woodley Island, Eureka, CA. [2018]).

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. ____	____	____	____
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1. ____	____	____	____
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
5. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Artemisia pycnocephala*	35	yes	NL (UPL)
2. *Cardionema ramosissimum*	20	yes	NL (UPL)
3. *Fragaria chilensis*	15	yes	FAC
4. *Aira praecox*	15	yes	NL (UPL)
5. *Rumex acetosella*	10	yes	FACU
6. *Juncus breweri*	5	no	FACW
7. ____	____	____	____
8. ____	____	____	____
9. ____	____	____	____
10. ____	____	____	____
11. ____	____	____	____
50% = ____, 20% = ____	70	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1. ____	____	____	____
2. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	

% Bare Ground in Herb Stratum 30

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	20	(A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x1 =	0
FACW species	5	x2 =	10
FAC species	15	x3 =	45
FACU species	10	x4 =	40
UPL species	70	x5 =	350
Column Totals:	100 (A)		445 (B)

Prevalence Index = B/A = 4.5

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☐ No ☒**

Remarks:

Project Site: Samoa Town Master Plan Subdivision

SOIL Sampling Point: 4B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-22+	10YR 4/3	100					Sand	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: 0

Depth (inches): 0

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☐	No	☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Samoa Town Master Plan Subdivision City/County: Unincorp./Humboldt Sampling Date: 11/19/18

Applicant/Owner: Samoa Pacific Group State: CA Sampling Point: 4C

Investigator(s): J. Brett Lovelace (J.B. Lovelace & Associates) Section, Township, Range: Sec. 16, T5N, R1W, Humboldt BM

Landform (hillslope, terrace, etc.): Dune swale Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): A Lat: 399307.59 Long: 4518816.66 Datum: (UTM Zone 10T) WGS 84

Soil Map Unit Name: Samoa-Clam Beach Complex, 0-50% Slopes / Urban Land-Xerorthents Assoc. 0-2% Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?**	**Yes ☒ No ☐**
Hydric Soil Present?	Yes ☒	No ☐		
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks: Regional drought: Local climate data (CA Dept. Water Resources/USGS [2018] for Woodley Island, Eureka, CA) indicate that measured recent (1 August - 17 November 2018) regional precipitation is ~14% of "normal" (NRCS' WETS data for Woodley Island, Eureka, CA. [2018]).

At interface between palustrine emergent/scrub-shrub dune hollow communities.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix hookeriana*	30	yes	FACW
2.			
3.			
4.			
50% = ____, 20% = ____	30	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
50% = ____, 20% = ____		= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Carex obnupta*	95	yes	OBL
2. *Rubus ursinus*	10	no	FACU
3. *Potentilla anserina ssp. pacifica*	10	no	OBL
4. *Sceptridium multifidum*	5	no	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
50% = ____, 20% = ____	100	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
50% = ____, 20% = ____		= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x1 =	
FACW species		x2 =	
FAC species		x3 =	
FACU species		x4 =	
UPL species		x5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☒ No ☐**

Remarks:

Project Site: Samoa Town Master Plan Subdivision

SOIL Sampling Point: 4C

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 2/2						Sandy loam	
2-15	2.5Y 2.5/1	97	10YR 4/6	3	C	M/PL	Loamy sand	
15-24+	2.5Y 3/2	99	10YR 3/6	1	C	M	Sand	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☒ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: 0

Depth (inches): 0

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☐	No	☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Samoa Town Master Plan Subdivision City/County: Unincorp./Humboldt Sampling Date: 11/19/18

Applicant/Owner: Samoa Pacific Group State: CA Sampling Point: 5A

Investigator(s): J. Brett Lovelace (J.B. Lovelace & Associates) Section, Township, Range: Sec. 16, T5N, R1W, Humboldt BM

Landform (hillslope, terrace, etc.): Toe of slope Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): A Lat: 399568.45 Long: 4519161.3 Datum: (UTM Zone 10T) WGS 84

Soil Map Unit Name: Samoa-Clam Beach Complex, 0-50% Slopes / Urban Land-Xerorthents Assoc. 0-2% Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒	**Is the Sampled Area within a Wetland?**	**Yes ☐ No ☒**
Hydric Soil Present?	Yes ☐	No ☒		
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks: Regional drought: Local climate data (CA Dept. Water Resources/USGS [2018] for Woodley Island, Eureka, CA) indicate that measured recent (1 August - 17 November 2018) regional precipitation is ~14% of "normal" (NRCS' WETS data for Woodley Island, Eureka, CA. [2018]).

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. ____	____	____	____
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1. ____	____	____	____
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
5. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Ammophila arenaria*	99	yes	FACU
2. *Lupinus arboreus*	5	no	NL (UPL)
3. ____	____	____	____
4. ____	____	____	____
5. ____	____	____	____
6. ____	____	____	____
7. ____	____	____	____
8. ____	____	____	____
9. ____	____	____	____
10. ____	____	____	____
11. ____	____	____	____
50% = ____, 20% = ____	100	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1. ____	____	____	____
2. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0	(A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x1 =	0
FACW species	0	x2 =	0
FAC species	0	x3 =	0
FACU species	99	x4 =	396
UPL species	5	x5 =	25
Column Totals:	104 (A)		421 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☐ No ☒**

Remarks:

Project Site: Samoa Town Master Plan Subdivision

SOIL Sampling Point: 5A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 3/3	100					Loamy sand	
1-24+	10YR 4/3						Sand	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☐	No	☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Samoa Town Master Plan Subdivision City/County: Unincorp./Humboldt Sampling Date: 11/19/18

Applicant/Owner: Samoa Pacific Group State: CA Sampling Point: 5B

Investigator(s): J. Brett Lovelace (J.B. Lovelace & Associates) Section, Township, Range: Sec. 16, T5N, R1W, Humboldt BM

Landform (hillslope, terrace, etc.): Dune hollow - woody/herbaceous boundary Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): A Lat: 399550.46 Long: 4519172.7 Datum: (UTM Zone 10T) WGS 84

Soil Map Unit Name: Samoa-Clam Beach Complex, 0-50% Slopes / Urban Land-Xerorthents Assoc. 0-2% Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	☒	No	☐	
Hydric Soil Present?	Yes	☒	No	☐	**Is the Sampled Area within a Wetland?** **Yes** ☒ **No** ☐
Wetland Hydrology Present?	Yes	☒	No	☐	

Remarks: **Regional drought: Local climate data (CA Dept. Water Resources/USGS [2018] for Woodley Island, Eureka, CA) indicate that measured recent (1 August - 17 November 2018) regional precipitation is ~14% of "normal" (NRCS' WETS data for Woodley Island, Eureka, CA. [2018]).**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix hookeriana*	50	yes	FACW
2.			
3.			
4.			
50% = ____, 20% = ____	50	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30')			
1. *Salix hookeriana*	5	no	FACW
2.			
3.			
4.			
5.			
50% = ____, 20% = ____	5	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Carex obnupta*	85	yes	OBL
2. *Lotus corniculatus*	15	yes	FAC
3. *Epilobium ciliatum subsp. watsonii*	10	no	FACW
4. *Potentilla anserina ssp. pacifica*	10	no	OBL
5. *Rubus ursinus*	10	no	FACU
6. *Sceptridium multifidum*	<5	no	FAC
7.			
8.			
9.			
10.			
11.			
50% = ____, 20% = ____	100	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
50% = ____, 20% = ____		= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x1 =	
FACW species		x2 =	
FAC species		x3 =	
FACU species		x4 =	
UPL species		x5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ☒ **No** ☐

Remarks:

Project Site: Samoa Town Master Plan Subdivision

SOIL Sampling Point: 5B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	2.5Y 2.5/1	98	10YR 3/6	2	C	PL	Sandy loam	Mucky
4-25+	5Y 3/1	95	10YR 4/6	5	C	M	Loamy sand	Organic, streaking.

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☒ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☒ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ____

Depth (inches): ____

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	____
Water Table Present?	Yes	☐	No	☒	Depth (inches):	____
Saturation Present? (includes capillary fringe)	Yes	☒	No	☐	Depth (inches):	25"

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Samoa Town Master Plan Subdivision City/County: Unincorp./Humboldt Sampling Date: 11/19/18

Applicant/Owner: Samoa Pacific Group State: CA Sampling Point: 5C

Investigator(s): J. Brett Lovelace (J.B. Lovelace & Associates) Section, Township, Range: Sec. 16, T5N, R1W, Humboldt BM

Landform (hillslope, terrace, etc.): Stabilized dune Local relief (concave, convex, none): convex Slope (%): 10

Subregion (LRR): A Lat: 399541.38 Long: 4519190.9 Datum: (UTM Zone 10T) WGS 84

Soil Map Unit Name: Samoa-Clam Beach Complex, 0-50% Slopes / Urban Land-Xerorthents Assoc. 0-2% Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒	**Is the Sampled Area within a Wetland?**	**Yes ☐ No ☒**
Hydric Soil Present?	Yes ☐	No ☒		
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks: **Adjacent to historic access road.**

Regional drought: Local climate data (CA Dept. Water Resources/USGS [2018] for Woodley Island, Eureka, CA) indicate that measured recent (1 August - 17 November 2018) regional precipitation is ~14% of "normal" (NRCS' WETS data for Woodley Island, Eureka, CA. [2018]).

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. ____	____	____	____
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30')			
1. *Salix hookeriana*	5	no	FACW
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
5. ____	____	____	____
50% = ____, 20% = ____	5	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Briza maxima*	80	yes	NL (UPL)
2. *Bromus diandrus*	80	yes	NL (UPL)
3. *Juncus breweri*	5	no	FACW
4. ____	____	____	____
5. ____	____	____	____
6. ____	____	____	____
7. ____	____	____	____
8. ____	____	____	____
9. ____	____	____	____
10. ____	____	____	____
11. ____	____	____	____
50% = ____, 20% = ____	100	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1. ____	____	____	____
2. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	2	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0	(A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x1 =	0
FACW species	10	x2 =	20
FAC species	0	x3 =	0
FACU species	0	x4 =	0
UPL species	160	x5 =	800
Column Totals:	170 (A)		820 (B)

Prevalence Index = B/A = 4.8

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☐ No ☒**

Remarks:

Project Site: Samoa Town Master Plan Subdivision

SOIL Sampling Point: 5C

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-2	10YR 3/2						Sand/gravel	loam
2-22+	10YR 3/2						Sand/gravel	loam

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ____

Depth (inches): ____

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks: Dark soil color appears to be remnant decomposed (foreign) oreganic material (e.g., old sawdust, slash, etc.?) along historic access road edge.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	____
Water Table Present?	Yes	☐	No	☒	Depth (inches):	____
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	____

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Samoa Town Master Plan Subdivision City/County: Unincorp./Humboldt Sampling Date: 11/19/18

Applicant/Owner: Samoa Pacific Group State: CA Sampling Point: 6A

Investigator(s): J. Brett Lovelace (J.B. Lovelace & Associates) Section, Township, Range: Sec. 16, T5N, R1W, Humboldt BM

Landform (hillslope, terrace, etc.): Edge of industrial deck colonized by hydrophitic vegetation. Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): A Lat: 399603.96 Long: 4519241.96 Datum: (UTM Zone 10T) WGS 84

Soil Map Unit Name: Samoa-Clam Beach Complex, 0-50% Slopes / Urban Land-Xerorthents Assoc. 0-2% Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	☒	No	☐	
Hydric Soil Present?	Yes	☐	No	☒	**Is the Sampled Area within a Wetland?** **Yes** ☒ **No** ☐
Wetland Hydrology Present?	Yes	☒	No	☐	

Remarks: **"Man-Induced Coastal Act Wetland"**

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix hookeriana*	35	yes	FACW
2.			
3.			
4.			
50% = ____, 20% = ____	35	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30')			
1. *Lonicera involucrata*	20	yes	FAC
2. *Morella californica*	10	no	FACW
3. *Baccharis pilularis*	10	no	NL (UPL)
4.			
5.			
50% = ____, 20% = ____	40	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Carex obnupta*	85	yes	OBL
2. *Rubus ursinus*	15	no	FACU
3. *Rubus armeniacus*	15	no	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
50% = ____, 20% = ____	100	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
50% = ____, 20% = ____		= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x1 =	
FACW species		x2 =	
FAC species		x3 =	
FACU species		x4 =	
UPL species		x5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ☒ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ☒ **No** ☐

Remarks:

Project Site: Samoa Town Master Plan Subdivision

SOIL Sampling Point: 6A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/2	98	10YR 3/6	2	C	PL	Loam	Gravel within
4+								Gravel - industrial fill

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ____

Depth (inches): ____

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	____
Water Table Present?	Yes	☐	No	☒	Depth (inches):	____
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	____

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Regional drought: Local climate data (CA Dept. Water Resources/USGS [2018] for Woodley Island, Eureka, CA) indicate that measured recent (1 August - 17 November 2018) regional precipitation is ~14% of "normal" (NRCS' WETS data for Woodley Island, Eureka, CA. [2018]).

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Samoa Town Master Plan Subdivision City/County: Unincorp./Humboldt Sampling Date: 11/19/18

Applicant/Owner: Samoa Pacific Group State: CA Sampling Point: 6B

Investigator(s): J. Brett Lovelace (J.B. Lovelace & Associates) Section, Township, Range: Sec. 16, T5N, R1W, Humboldt BM

Landform (hillslope, terrace, etc.): Old industrial log deck. Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): A Lat: 399619.79 Long: 4519234.27 Datum: (UTM Zone 10T) WGS 84

Soil Map Unit Name: Samoa-Clam Beach Complex, 0-50% Slopes / Urban Land-Xerorthents Assoc. 0-2% Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒	**Is the Sampled Area within a Wetland?**	**Yes ☐ No ☒**
Hydric Soil Present?	Yes ☐	No ☒		
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks: Regional drought: Local climate data (CA Dept. Water Resources/USGS [2018] for Woodley Island, Eureka, CA) indicate that measured recent (1 August - 17 November 2018) regional precipitation is ~14% of "normal" (NRCS' WETS data for Woodley Island, Eureka, CA. [2018]).

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. ____	____	____	____
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30')			
1. *Baccharis pilularis*	15	no	NL (UPL)
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
5. ____	____	____	____
50% = ____, 20% = ____	15	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Briza maxima*	25	yes	NL (UPL)
2. *Carpobrotus sp.*	35	yes	FAC
3. *Bromus diandrus*	15	yes	NL (UPL)
4. *Rubus ursinus*	20	no	FACU
5. *Geranium molle*	5	no	NL (UPL)
6. ____	____	____	____
7. ____	____	____	____
8. ____	____	____	____
9. ____	____	____	____
10. ____	____	____	____
11. ____	____	____	____
50% = ____, 20% = ____	100	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1. ____	____	____	____
2. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0.30	(A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x1 =	0
FACW species	0	x2 =	0
FAC species	35	x3 =	105
FACU species	20	x4 =	80
UPL species	60	x5 =	300
Column Totals:	115 (A)		485 (B)

Prevalence Index = B/A = 4.2

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☐ No ☒**

Remarks:

Project Site: Samoa Town Master Plan Subdivision

SOIL Sampling Point: 6B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/3	100					Gravel loam	Fill
4+	10YR 3/3	100					Gravel fill	Compacted

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ____

Depth (inches): ____

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks: Industrial fill

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	____
Water Table Present?	Yes	☐	No	☒	Depth (inches):	____
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	____

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Samoa Town Master Plan Subdivision City/County: Unincorp./Humboldt Sampling Date: 11/20/18

Applicant/Owner: Samoa Pacific Group State: CA Sampling Point: 7A

Investigator(s): J. Brett Lovelace (J.B. Lovelace & Associates) Section, Township, Range: Sec. 16, T5N, R1W, Humboldt BM

Landform (hillslope, terrace, etc.): Dune hollow Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): A Lat: 399862.39 Long: 4519857.85 Datum: (UTM Zone 10T) WGS 84

Soil Map Unit Name: Samoa-Clam Beach Complex, 0-50% Slopes / Urban Land-Xerorthents Assoc. 0-2% Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?**	**Yes ☒ No ☐**
Hydric Soil Present?	Yes ☒	No ☐		
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks: Regional drought: Local climate data (CA Dept. Water Resources/USGS [2018] for Woodley Island, Eureka, CA) indicate that measured recent (1 August - 17 November 2018) regional precipitation is ~14% of "normal" (NRCS' WETS data for Woodley Island, Eureka, CA. [2018]).

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
50% = ____, 20% = ____		= Total Cover	
Sapling/Shrub Stratum (Plot size: 30')			
1. *Pinus contorta*	20	yes	FAC
2.			
3.			
4.			
5.			
50% = ____, 20% = ____	20	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Juncus breweri*	80	yes	FACW
2. *Carex obnupta*	40	yes	OBL
3. *Gnaphalium palustre*	5	no	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
50% = ____, 20% = ____	100	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
50% = ____, 20% = ____		= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	100	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x1 =	
FACW species		x2 =	
FAC species		x3 =	
FACU species		x4 =	
UPL species		x5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☒ No ☐**

Remarks:

Project Site: Samoa Town Master Plan Subdivision

SOIL Sampling Point: 7A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	2.5Y 3/1	95	10YR 4/6	5	C	M/PL	Loamy sand	Charcoal also
6-24+	2.5Y 3/2	98	10YR 4/6	2	C	M	Sand	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☒ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ____

Depth (inches): ____

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	____
Water Table Present?	Yes	☐	No	☒	Depth (inches):	____
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	____

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Samoa Town Master Plan Subdivision City/County: Unincorp./Humboldt Sampling Date: 11/20/18

Applicant/Owner: Samoa Pacific Group State: CA Sampling Point: 7B

Investigator(s): J. Brett Lovelace (J.B. Lovelace & Associates) Section, Township, Range: Sec. 16, T5N, R1W, Humboldt BM

Landform (hillslope, terrace, etc.): Dune slope Local relief (concave, convex, none): convex Slope (%): 10

Subregion (LRR): A Lat: 399853.46 Long: 4519867.93 Datum: (UTM Zone 10T) WGS 84

Soil Map Unit Name: Samoa-Clam Beach Complex, 0-50% Slopes / Urban Land-Xerorthents Assoc. 0-2% Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒	**Is the Sampled Area within a Wetland?**	**Yes ☐ No ☒**
Hydric Soil Present?	Yes ☐	No ☒		
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks: Regional drought: Local climate data (CA Dept. Water Resources/USGS [2018] for Woodley Island, Eureka, CA) indicate that measured recent (1 August - 17 November 2018) regional precipitation is ~14% of "normal" (NRCS' WETS data for Woodley Island, Eureka, CA. [2018]).

Carpobrotus patch.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. ____	____	____	____
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
Sapling/Shrub Stratum (Plot size: ____)			
1. ____	____	____	____
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
5. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Carpobrotus chilensis*	95	yes	FAC
2. *Ammophila arenaria*	10	no	FACU
3. *Aira praecox*	10	no	NL (UPL)
4. *Armeria maritima*	5	no	FAC
5. *Cardionema ramosissimum*	5	no	NL (UPL)
6. *Juncus breweri*	5	no	OBL
7. *Eriogonum latifolium*	5	no	NL (UPL)
8. ____	____	____	____
9. ____	____	____	____
10. ____	____	____	____
11. ____	____	____	____
50% = ____, 20% = ____	100	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1. ____	____	____	____
2. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	1	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0	(A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	5	x1 =	5
FACW species	0	x2 =	0
FAC species	100	x3 =	300
FACU species	10	x4 =	40
UPL species	20	x5 =	100
Column Totals:	135 (A)		445 (B)

Prevalence Index = B/A = 3.3

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☐ No ☒**

Remarks:

Project Site: Samoa Town Master Plan Subdivision

SOIL Sampling Point: 7B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-22+	7.5YR 3/3	100					Sand	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☐	No	☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Samoa Town Master Plan Subdivision City/County: Unincorp./Humboldt Sampling Date: 11/20/18

Applicant/Owner: Samoa Pacific Group State: CA Sampling Point: 8A

Investigator(s): J. Brett Lovelace (J.B. Lovelace & Associates) Section, Township, Range: Sec. 16, T5N, R1W, Humboldt BM

Landform (hillslope, terrace, etc.): Edge on conifer/willow woody hollow Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): A Lat: 400035.15 Long: 4519718.78 Datum: (UTM Zone 10T) WGS 84

Soil Map Unit Name: Samoa-Clam Beach Complex, 0-50% Slopes / Urban Land-Xerorthents Assoc. 0-2% Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?**	**Yes ☒ No ☐**
Hydric Soil Present?	Yes ☒	No ☐		
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks: Regional drought: Local climate data (CA Dept. Water Resources/USGS [2018] for Woodley Island, Eureka, CA) indicate that measured recent (1 August - 17 November 2018) regional precipitation is ~14% of "normal" (NRCS' WETS data for Woodley Island, Eureka, CA. [2018]).

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Picea sitchensis*	35	yes	FAC
2. *Salix hookeriana*	35	yes	FACW
3. *Morella californica*	25	yes	FACW
4.			
50% = ____, 20% = ____	75	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30')			
1. *Salix hookeriana*	30	yes	FACW
2. *Vaccinium ovatum*	25	yes	FACU
3. *Lonicera involucrata*	15	yes	FAC
4.			
5.			
50% = ____, 20% = ____	35	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Rubus ursinus*	15	yes	FACU
2. *Carex obnupta*	10	yes	OBL
3. *Holcus lanatus*	5	no	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
50% = ____, 20% = ____	30	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
50% = ____, 20% = ____		= Total Cover	

% Bare Ground in Herb Stratum 70

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 63 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	____	x1 =	____
FACW species	____	x2 =	____
FAC species	____	x3 =	____
FACU species	____	x4 =	____
UPL species	____	x5 =	____
Column Totals:	____ (A)		____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☒ No ☐**

Remarks:

Project Site: Samoa Town Master Plan Subdivision

SOIL Sampling Point: 8A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3							Organic	Picea needle decomposition
3-4	2.5Y 3/1	98	10YR 4/6	2	C	PL	Sandy loam	Increased density of Spruce roots
4-22+	2.5Y							

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☒ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ____

Depth (inches): ____

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☒ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	____
Water Table Present?	Yes	☐	No	☒	Depth (inches):	____
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	____

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Samoa Town Master Plan Subdivision City/County: Unincorp./Humboldt Sampling Date: 11/20/18

Applicant/Owner: Samoa Pacific Group State: CA Sampling Point: 8B

Investigator(s): J. Brett Lovelace (J.B. Lovelace & Associates) Section, Township, Range: Sec. 16, T5N, R1W, Humboldt BM

Landform (hillslope, terrace, etc.): Dune ridge woody-vegetation Local relief (concave, convex, none): convex Slope (%): 10

Subregion (LRR): A Lat: 400009.99 Long: 4519698.66 Datum: (UTM Zone 10T) WGS 84

Soil Map Unit Name: Samoa-Clam Beach Complex, 0-50% Slopes / Urban Land-Xerorthents Assoc. 0-2% Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒	**Is the Sampled Area within a Wetland?**	**Yes ☐ No ☒**
Hydric Soil Present?	Yes ☐	No ☒		
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks: Regional drought: Local climate data (CA Dept. Water Resources/USGS [2018] for Woodley Island, Eureka, CA) indicate that measured recent (1 August - 17 November 2018) regional precipitation is ~14% of "normal" (NRCS' WETS data for Woodley Island, Eureka, CA. [2018]).

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pinus contorta ssp. contorta*	15	yes	FAC
2.			
3.			
4.			
50% = ____, 20% = ____	15	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30')			
1. *Garrya elliptica*	30	yes	NL (UPL)
2. *Pinus contorta ssp. contorta*	20	yes	FAC
3. *Baccharis pilularis*	10	yes	NL (UPL)
4. *Vaccinium ovatum*	10	yes	FACU
5. *Salix hookeriana*	5	no	FACW
50% = ____, 20% = ____	80	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Holcus lanatus*	75	yes	FAC
2. *Anthoxanthum odoratum*	70	yes	FACU
3. *Rubus ursinus*	15	no	FACU
4. *Pteridium aquilinium spp.pubescens*	10	no	FACU
5. *Cotoneaster pannosus*	3	no	NL (UPL)
6.			
7.			
8.			
9.			
10.			
11.			
50% = ____, 20% = ____	100	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
50% = ____, 20% = ____		= Total Cover	
% Bare Ground in Herb Stratum 0			

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	3	(A)
Total Number of Dominant Species Across All Strata:	7	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	43	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x1 =	0
FACW species	5	x2 =	10
FAC species	110	x3 =	330
FACU species	105	x4 =	420
UPL species	43	x5 =	215
Column Totals:	263 (A)		975 (B)

Prevalence Index = B/A = 3.7

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☐ No ☒**

Remarks:

Project Site: Samoa Town Master Plan Subdivision

SOIL Sampling Point: 8B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	7.5YR 3/3	100					Loamy sand	
4-22+	10YR 3/3	100					Sand	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☐	No	☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Samoa Town Master Plan Subdivision City/County: Unincorp./Humboldt Sampling Date: 11/20/18

Applicant/Owner: Samoa Pacific Group State: CA Sampling Point: 8C

Investigator(s): J. Brett Lovelace (J.B. Lovelace & Associates) Section, Township, Range: Sec. 16, T5N, R1W, Humboldt BM

Landform (hillslope, terrace, etc.): Woody Dune Hollow Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): A Lat: 399991.07 Long: 4519699.54 Datum: (UTM Zone 10T) WGS 84

Soil Map Unit Name: Samoa-Clam Beach Complex, 0-50% Slopes / Urban Land-Xerorthents Assoc. 0-2% Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?**	**Yes ☒ No ☐**
Hydric Soil Present?	Yes ☒	No ☐		
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks: Regional drought: Local climate data (CA Dept. Water Resources/USGS [2018] for Woodley Island, Eureka, CA) indicate that measured recent (1 August - 17 November 2018) regional precipitation is ~14% of "normal" (NRCS' WETS data for Woodley Island, Eureka, CA. [2018]).

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix hookeriana*	40	yes	FACW
2. *Morella californica*	35	yes	FACW
3. *Pinus contorta ssp. contorta*	25	no	FAC
4.			
50% = ____, 20% = ____	85	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30')			
1. *Morella californica*	5	yes	FACW
2. *Lonicera involucrata*	5	no	FAC
3.			
4.			
5.			
50% = ____, 20% = ____	10	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Carex obnupta*	85	yes	OBL
2. *Rubus ursinus*	10	no	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
50% = ____, 20% = ____	85	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
50% = ____, 20% = ____		= Total Cover	

% Bare Ground in Herb Stratum 15

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: ____ (A)

Total Number of Dominant Species Across All Strata: ____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ____ (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	____	x1 =	____
FACW species	____	x2 =	____
FAC species	____	x3 =	____
FACU species	____	x4 =	____
UPL species	____	x5 =	____
Column Totals:	____ (A)		____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

☒ 1 – Rapid Test for Hydrophytic Vegetation

☐ 2 - Dominance Test is >50%

☐ 3 - Prevalence Index is ≤3.0[1]

☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ 5 - Wetland Non-Vascular Plants[1]

☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☒ No ☐**

Remarks:

Project Site: Samoa Town Master Plan Subdivision

SOIL Sampling Point: 8C

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR 2/1	98	10YR 3/4	2	C	PL	Sapric	Mucky sandy loam
9-26+	2.5Y 3/1	95	10YR 3/6	5	C	M	Sandy loam	Sapric but less so, organic streaks.

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☒ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ____

Depth (inches): ____

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☒ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	____
Water Table Present?	Yes	☐	No	☒	Depth (inches):	____
Saturation Present? (includes capillary fringe)	Yes	☒	No	☐	Depth (inches):	26

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Samoa Town Master Plan Subdivision City/County: Unincorp./Humboldt Sampling Date: 11/18/18

Applicant/Owner: Samoa Pacific Group State: CA Sampling Point: 9A

Investigator(s): J. Brett Lovelace (J.B. Lovelace & Associates) Section, Township, Range: Sec. 16, T5N, R1W, Humboldt BM

Landform (hillslope, terrace, etc.): Woody Dune Hollow Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): A Lat: 399624.44 Long: 4518720.99 Datum: (UTM Zone 10T) WGS 84

Soil Map Unit Name: Samoa-Clam Beach Complex, 0-50% Slopes / Urban Land-Xerorthents Assoc. 0-2% Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?**	**Yes ☒ No ☐**
Hydric Soil Present?	Yes ☒	No ☐		
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks: Regional drought: Local climate data (CA Dept. Water Resources/USGS [2018] for Woodley Island, Eureka, CA) indicate that measured recent (1 August - 17 November 2018) regional precipitation is ~14% of "normal" (NRCS' WETS data for Woodley Island, Eureka, CA. [2018]).

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix hookeriana*	45	yes	FACW
2. *Morella californica*	35	yes	FACW
3.			
4.			
50% = ____, 20% = ____	80	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30')			
1. *Baccharis pilularis*	15	no	NL (UPL)
2.			
3.			
4.			
5.			
50% = ____, 20% = ____	15	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Rubus ursinus*	10	yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
50% = ____, 20% = ____	5	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
50% = ____, 20% = ____		= Total Cover	

% Bare Ground in Herb Stratum 90

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	____	x1 =	____
FACW species	____	x2 =	____
FAC species	____	x3 =	____
FACU species	____	x4 =	____
UPL species	____	x5 =	____
Column Totals:	____ (A)		____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ☒ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☒ No ☐**

Remarks: "Bare ground" = ample leaf litter.
Accuracy of classification of Rubus ursinus as FACU (in this region) is questionable.

Project Site: Samoa Town Master Plan Subdivision

SOIL Sampling Point: 9A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/1	90	10YR 4/4	10	C	M/PL	Sandy loam	
6-27+	2.5Y 3/2	90	10YR 4/4	10	C	M	Loamy sand	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☒ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☐	No	☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Samoa Town Master Plan Subdivision City/County: Unincorp./Humboldt Sampling Date: 11/18/18

Applicant/Owner: Samoa Pacific Group State: CA Sampling Point: 9B

Investigator(s): J. Brett Lovelace (J.B. Lovelace & Associates) Section, Township, Range: Sec. 16, T5N, R1W, Humboldt BM

Landform (hillslope, terrace, etc.): Degraded dune adjacent to Vance Av. Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): A Lat: 399635.55 Long: 4518739.68 Datum: (UTM Zone 10T) WGS 84

Soil Map Unit Name: Samoa-Clam Beach Complex, 0-50% Slopes / Urban Land-Xerorthents Assoc. 0-2% Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒	**Is the Sampled Area within a Wetland?**	**Yes ☐ No ☒**
Hydric Soil Present?	Yes ☐	No ☒		
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks: Regional drought: Local climate data (CA Dept. Water Resources/USGS [2018] for Woodley Island, Eureka, CA) indicate that measured recent (1 August - 17 November 2018) regional precipitation is ~14% of "normal" (NRCS' WETS data for Woodley Island, Eureka, CA. [2018]).

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. ____	____	____	____
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30')			
1. *Baccharis pilularis*	15	yes	NL (UPL)
2. *Morella californica*	10	no	FACW
3. ____	____	____	____
4. ____	____	____	____
5. ____	____	____	____
50% = ____, 20% = ____	25	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Anthoxanthum odoratum*	30	yes	FACU
2. *Bromus diandrus*	30	yes	NL (UPL)
3. *Briza maxima*	20	yes	NL (UPL)
4. *Vicia americana*	15	yes	FAC
5. *Festuca myuros*	10	no	FACU
6. *Carpobrotus chilensis*	10	no	FAC
7. ____	____	____	____
8. ____	____	____	____
9. ____	____	____	____
10. ____	____	____	____
11. ____	____	____	____
50% = ____, 20% = ____	100	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1. ____	____	____	____
2. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	5	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	20%	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x1 =	0
FACW species	10	x2 =	20
FAC species	25	x3 =	75
FACU species	45	x4 =	180
UPL species	65	x5 =	325
Column Totals:	145 (A)		600 (B)

Prevalence Index = B/A = 4.14

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤ 3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☐ No ☒**

Remarks:

Project Site: Samoa Town Master Plan Subdivision

SOIL Sampling Point: 9B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-22+	7.5YR 3/3	100					Sand/gravel	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☐	No	☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Samoa Town Master Plan Subdivision City/County: Unincorp./Humboldt Sampling Date: 11/18/18

Applicant/Owner: Samoa Pacific Group State: CA Sampling Point: 10A

Investigator(s): J. Brett Lovelace (J.B. Lovelace & Associates) Section, Township, Range: Sec. 16, T5N, R1W, Humboldt BM

Landform (hillslope, terrace, etc.): Woody Dune Hollow Local relief (concave, convex, none): convex Slope (%): 0

Subregion (LRR): A Lat: 399707.56 Long: 4518929.3 Datum: (UTM Zone 10T) WGS 84

Soil Map Unit Name: Samoa-Clam Beach Complex, 0-50% Slopes / Urban Land-Xerorthents Assoc. 0-2% Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?**	**Yes ☒ No ☐**
Hydric Soil Present?	Yes ☒	No ☐		
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks: **Isolated landscape feature; surrounded by developed dune "habitat."**

Regional drought: Local climate data (CA Dept. Water Resources/USGS [2018] for Woodley Island, Eureka, CA) indicate that measured recent (1 August - 17 November 2018) regional precipitation is ~14% of "normal" (NRCS' WETS data for Woodley Island, Eureka, CA. [2018]).

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix hookeriana*	70	yes	FACW
2.			
3.			
4.			
50% = ____, 20% = ____	70	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30')			
1. *Salix hookeriana*	15	yes	FACW
2.			
3.			
4.			
5.			
50% = ____, 20% = ____	15	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Hedera helix*	85	yes	FACU
2. *Phalaris arundinacea*	15	no	FACW
3. *Rubus ursinus*	15	no	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
50% = ____, 20% = ____	100	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
50% = ____, 20% = ____		= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x1 =	
FACW species		x2 =	
FAC species		x3 =	
FACU species		x4 =	
UPL species		x5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☒ No ☐**

Remarks:

Project Site: Samoa Town Master Plan Subdivision

SOIL Sampling Point: 10A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/1	99	10YR 4/4	1	C	PL	Silty mucky	loam
4-22+	10YR 3/1	99	10YR 4/4	1	C	PL	Loamy sand	with occaisonal large gravel fragments

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☒ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☒ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ____

Depth (inches): ____

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☒ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	____
Water Table Present?	Yes	☐	No	☒	Depth (inches):	____
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	____

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Samoa Town Master Plan Subdivision City/County: Unincorp./Humboldt Sampling Date: 11/19/18

Applicant/Owner: Samoa Pacific Group State: CA Sampling Point: 10B

Investigator(s): J. Brett Lovelace (J.B. Lovelace & Associates) Section, Township, Range: Sec. 16, T5N, R1W, Humboldt BM

Landform (hillslope, terrace, etc.): Industrial, historic log deck Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): A Lat: 399696.43 Long: 4518934.78 Datum: (UTM Zone 10T) WGS 84

Soil Map Unit Name: Samoa-Clam Beach Complex, 0-50% Slopes / Urban Land-Xerorthents Assoc. 0-2% Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒	**Is the Sampled Area within a Wetland?**	**Yes ☐ No ☒**
Hydric Soil Present?	Yes ☐	No ☒		
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks: Regional drought: Local climate data (CA Dept. Water Resources/USGS [2018] for Woodley Island, Eureka, CA) indicate that measured recent (1 August - 17 November 2018) regional precipitation is ~14% of "normal" (NRCS' WETS data for Woodley Island, Eureka, CA. [2018]).

Old log deck. Associated wetland is surrounded by pavement. Degraded stabilzed dune.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
50% = ____, 20% = ____		= Total Cover	
Sapling/Shrub Stratum (Plot size: 30')			
1. *Salix hookeriana*	5	no	FACW
2.			
3.			
4.			
5.			
50% = ____, 20% = ____	5	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Briza maxima*	95	yes	NL (UPL)
2. *Bromus diandrus*	80	yes	NL (UPL)
3. *Carpobrotus chilensis*	25	no	FAC
4. *Festuca myuros*	10	no	NL (UPL)
5. *Daucus pusillus*	5	no	NL (UPL)
6.			
7.			
8.			
9.			
10.			
11.			
50% = ____, 20% = ____	100	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
50% = ____, 20% = ____		= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x1 =	0
FACW species	5	x2 =	10
FAC species	25	x3 =	75
FACU species	0	x4 =	0
UPL species	190	x5 =	950
Column Totals:	220 (A)		1035 (B)

Prevalence Index = B/A = 4.7

Hydrophytic Vegetation Indicators:

☐ 1 – Rapid Test for Hydrophytic Vegetation

☐ 2 - Dominance Test is >50%

☐ 3 - Prevalence Index is ≤3.0[1]

☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ 5 - Wetland Non-Vascular Plants[1]

☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☐ No ☒**

Remarks:

Project Site: Samoa Town Master Plan Subdivision

SOIL Sampling Point: 10B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2+							Rubble	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Asphalt

Depth (inches): 2

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks: Gravel/pavement

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☐	No	☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Samoa Town Master Plan Subdivision City/County: Unincorp./Humboldt Sampling Date: 11/19/18

Applicant/Owner: Samoa Pacific Group State: CA Sampling Point: 11A

Investigator(s): J. Brett Lovelace (J.B. Lovelace & Associates) Section, Township, Range: Sec. 16, T5N, R1W, Humboldt BM

Landform (hillslope, terrace, etc.): Historic log deck Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): A Lat: 399550.61 Long: 4519060.95 Datum: (UTM Zone 10T) WGS 84

Soil Map Unit Name: Samoa-Clam Beach Complex, 0-50% Slopes / Urban Land-Xerorthents Assoc. 0-2% Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒	**Is the Sampled Area within a Wetland?**	**Yes ☐ No ☒**
Hydric Soil Present?	Yes ☐	No ☒		
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks: Regional drought: Local climate data (CA Dept. Water Resources/USGS [2018] for Woodley Island, Eureka, CA) indicate that measured recent (1 August - 17 November 2018) regional precipitation is ~14% of "normal" (NRCS' WETS data for Woodley Island, Eureka, CA. [2018]).

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. ____	____	____	____
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30')			
1. *Baccharis pilularis*	5	no	NL (UPL)
2. *Morella californica*	5	no	FACW
3. ____	____	____	____
4. ____	____	____	____
5. ____	____	____	____
50% = ____, 20% = ____	10	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Ammophila arenaria*	80	yes	FACU
2. *Rubus ursinus*	35	yes	FACU
3. *Scrophularia californica*	20	yes	FAC
4. ____	____	____	____
5. ____	____	____	____
6. ____	____	____	____
7. ____	____	____	____
8. ____	____	____	____
9. ____	____	____	____
10. ____	____	____	____
11. ____	____	____	____
50% = ____, 20% = ____	100	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1. ____	____	____	____
2. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	0	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	0	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x1 =	0
FACW species	5	x2 =	10
FAC species	20	x3 =	60
FACU species	115	x4 =	460
UPL species	5	x5 =	25
Column Totals:	145 (A)		545 (B)

Prevalence Index = B/A = 3.8

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☐ No ☒**

Remarks:

Project Site: Samoa Town Master Plan Subdivision

SOIL Sampling Point: 11A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/3	100					Gravel fill	
4+							Rubble	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☐	No	☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Samoa Town Master Plan Subdivision City/County: Unincorp./Humboldt Sampling Date: 11/19/18

Applicant/Owner: Samoa Pacific Group State: CA Sampling Point: 11B

Investigator(s): J. Brett Lovelace (J.B. Lovelace & Associates) Section, Township, Range: Sec. 16, T5N, R1W, Humboldt BM

Landform (hillslope, terrace, etc.): Hollow surrounded by industrial pavement, except to west. Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): A Lat: 399545.49 Long: 4519054.73 Datum: (UTM Zone 10T) WGS 84

Soil Map Unit Name: Samoa-Clam Beach Complex, 0-50% Slopes / Urban Land-Xerorthents Assoc. 0-2% Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	☒	No	☐	
Hydric Soil Present?	Yes	☒	No	☐	**Is the Sampled Area within a Wetland?** **Yes** ☒ **No** ☐
Wetland Hydrology Present?	Yes	☒	No	☐	

Remarks: 26 APR 2018: Pseudacris regilla (Pacific Tree Frog) present, standing water at south edge of riparian forest where access road goes from upper to lower log deck (reported precip for this earlier date is ~118% of normal [same sources as above]).

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix hookeriana*	65	yes	FACW
2.			
3.			
4.			
50% = ____, 20% = ____	65	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30')			
1. *Salix hookeriana*	15	yes	FACW
2. *Baccharis pilularis*	10	no	NL (UPL)
3.			
4.			
5.			
50% = ____, 20% = ____	20	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Rubus ursinus*	25	yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
50% = ____, 20% = ____	30	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
50% = ____, 20% = ____		= Total Cover	

% Bare Ground in Herb Stratum 70

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x1 =	
FACW species		x2 =	
FAC species		x3 =	
FACU species		x4 =	
UPL species		x5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ☒ **No** ☐

Remarks:

Project Site: Samoa Town Master Plan Subdivision

SOIL Sampling Point: 11B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	10YR 2/1	100					Sandy loam	Mucky
1-17+	2.5Y 3/2	98	10YR 4/6 ?	2	C	M	Loamy sand	gravel fragments

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☒ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☒ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ____

Depth (inches): ____

Hydric Soils Present? **Yes** ☒ **No** ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☒ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	____
Water Table Present?	Yes	☐	No	☒	Depth (inches):	____
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	____

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Regional drought: Local climate data (CA Dept. Water Resources/USGS [2018] for Woodley Island, Eureka, CA) indicate that measured recent (1 August - 17 November 2018) regional precipitation is ~14% of "normal" (NRCS' WETS data for Woodley Island, Eureka, CA. [2018]).

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Samoa Town Master Plan Subdivision City/County: Unincorp./Humboldt Sampling Date: 11/20/18

Applicant/Owner: Samoa Pacific Group State: CA Sampling Point: 12A

Investigator(s): J. Brett Lovelace (J.B. Lovelace & Associates) Section, Township, Range: Sec. 16, T5N, R1W, Humboldt BM

Landform (hillslope, terrace, etc.): Expansive roadside puddle Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): A Lat: 400150.85 Long: 4519412.85 Datum: (UTM Zone 10T) WGS 84

Soil Map Unit Name: Urban Land-Xerorthents Assoc. 0-2% Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☒, Soil ☒, or Hydrology ☒, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	☒	No	☐	**Is the Sampled Area within a Wetland?** **Yes** ☒ **No** ☐
Hydric Soil Present?	Yes	☐	No	☒	
Wetland Hydrology Present?	Yes	☒	No	☐	

Remarks: "Man-Induced Wetland" = pullout & associated area on uphillside of Bay View Ave, w/compacted substrate which impedes drainage from ravine & surrounding slopes.

Psuedacris regilla (Pacific Tree Frog) audible within 3m of point.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. ____	____	____	____
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30')			
1. *Baccharis pilularis*	15	no	NL (UPL)
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
5. ____	____	____	____
50% = ____, 20% = ____	15	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Mentha pulegium*	15	yes	OBL
2. *Glyceria declinata*	10	yes	FACW
3. *Cyperus eragrostis*	10	yes	FACW
4. *Lythrum hyssopifolium*	5	yes	OBL
5. *Festuca perennis*	3	no	NL (UPL)
6. *Agrostis stolonifera*	3	no	FAC
7. *Gnaphalium palustre*	3	no	FACW
8. ____	____	____	____
9. ____	____	____	____
10. ____	____	____	____
11. ____	____	____	____
50% = ____, 20% = ____	30	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1. ____	____	____	____
2. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	

% Bare Ground in Herb Stratum 70

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: ____ (A)

Total Number of Dominant Species Across All Strata: ____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ____ (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	____	x1 =	____
FACW species	____	x2 =	____
FAC species	____	x3 =	____
FACU species	____	x4 =	____
UPL species	____	x5 =	____
Column Totals:	____ (A)		____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ☒ 1 – Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ☒ **No** ☐

Remarks:

Project Site: Samoa Town Master Plan Subdivision

SOIL Sampling Point: 12A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	2.5Y 2.5/1	97	10YR 3/6	3	C	PL	sandy/clay	loam with gravel
4+								Gravel/rubble

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ____

Depth (inches): ____

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks: Some characteristics of "Redox Dark Surface" but highly disturbed in association with proximity to paved Bay View Ave. Compacted, filled with gravel/rubble.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☒ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☒ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☒ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☒ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	____
Water Table Present?	Yes	☐	No	☒	Depth (inches):	____
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	____

Wetland Hydrology Present? **Yes** ☒ **No** ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Regional drought: Local climate data (CA Dept. Water Resources/USGS [2018] for Woodley Island, Eureka, CA) indicate that measured recent (1 August - 17 November 2018) regional precipitation is ~14% of "normal" (NRCS' WETS data for Woodley Island, Eureka, CA. [2018])

27 APR 2018: Standing water observed at this location.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project Site: Samoa Town Master Plan Subdivision City/County: Unincorp./Humboldt Sampling Date: 11/20/18

Applicant/Owner: Samoa Pacific Group State: CA Sampling Point: 12B

Investigator(s): J. Brett Lovelace (J.B. Lovelace & Associates) Section, Township, Range: Sec. 16, T5N, R1W, Humboldt BM

Landform (hillslope, terrace, etc.): Urban landscape slope Local relief (concave, convex, none): convex Slope (%): 60

Subregion (LRR): A Lat: 400145.16 Long: 4519413.51 Datum: (UTM Zone 10T) WGS 84

Soil Map Unit Name: Urban Land-Xerorthents Assoc. 0-2% Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☒ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐, significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐, naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒	**Is the Sampled Area within a Wetland?**	**Yes ☐ No ☒**
Hydric Soil Present?	Yes ☐	No ☒		
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks: Urban slope between Bay View and Fenwick Avenues.
Psuedacris regilla (Pacific Tree Frog) audible within 3m of point.

VEGETATION – Use scientific names of plants

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. ____	____	____	____
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	
Sapling/Shrub Stratum (Plot size: 30')			
1. *Baccharis pilularis*	15	no	NL (UPL)
2. ____	____	____	____
3. ____	____	____	____
4. ____	____	____	____
5. ____	____	____	____
50% = ____, 20% = ____	15	= Total Cover	
Herb Stratum (Plot size: 5')			
1. *Anthoxanthum odoratum*	65	yes	FACU
2. *Agrostis stolonifera*	15	yes	FAC
3. *Pteridium aquilinum*	20	yes	FACU
4. *Phalaris arundinacea*	5	no	FACW
5. *Rubus armeniacus*	10	no	FAC
6. ____	____	____	____
7. ____	____	____	____
8. ____	____	____	____
9. ____	____	____	____
10. ____	____	____	____
11. ____	____	____	____
50% = ____, 20% = ____	100	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1. ____	____	____	____
2. ____	____	____	____
50% = ____, 20% = ____	____	= Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test Worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC:	1	(A)
Total Number of Dominant Species Across All Strata:	3	(B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	33	(A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x1 =	0
FACW species	5	x2 =	10
FAC species	15	x3 =	45
FACU species	85	x4 =	425
UPL species	15	x5 =	75
Column Totals:	120 (A)		555 (B)

Prevalence Index = B/A = 4.6

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ☐ No ☒**

Remarks:

Project Site: Samoa Town Master Plan Subdivision

SOIL Sampling Point: 12B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-15+	10YR 3/3	100					sandy loam	
							sandy/clay	loam

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soils Present? **Yes** ☐ **No** ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B)**
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stresses Plants (D1) **(LRR A)**
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B)**
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes	☐	No	☒	Depth (inches):	
Water Table Present?	Yes	☐	No	☒	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes	☐	No	☒	Depth (inches):	

Wetland Hydrology Present? **Yes** ☐ **No** ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Regional drought: Local climate data (CA Dept. Water Resources/USGS [2018] for Woodley Island, Eureka, CA) indicate that measured recent (1 August - 17 November 2018) regional precipitation is ~14% of "normal" (NRCS' WETS data for Woodley Island, Eureka, CA. [2018])

Project Figures:

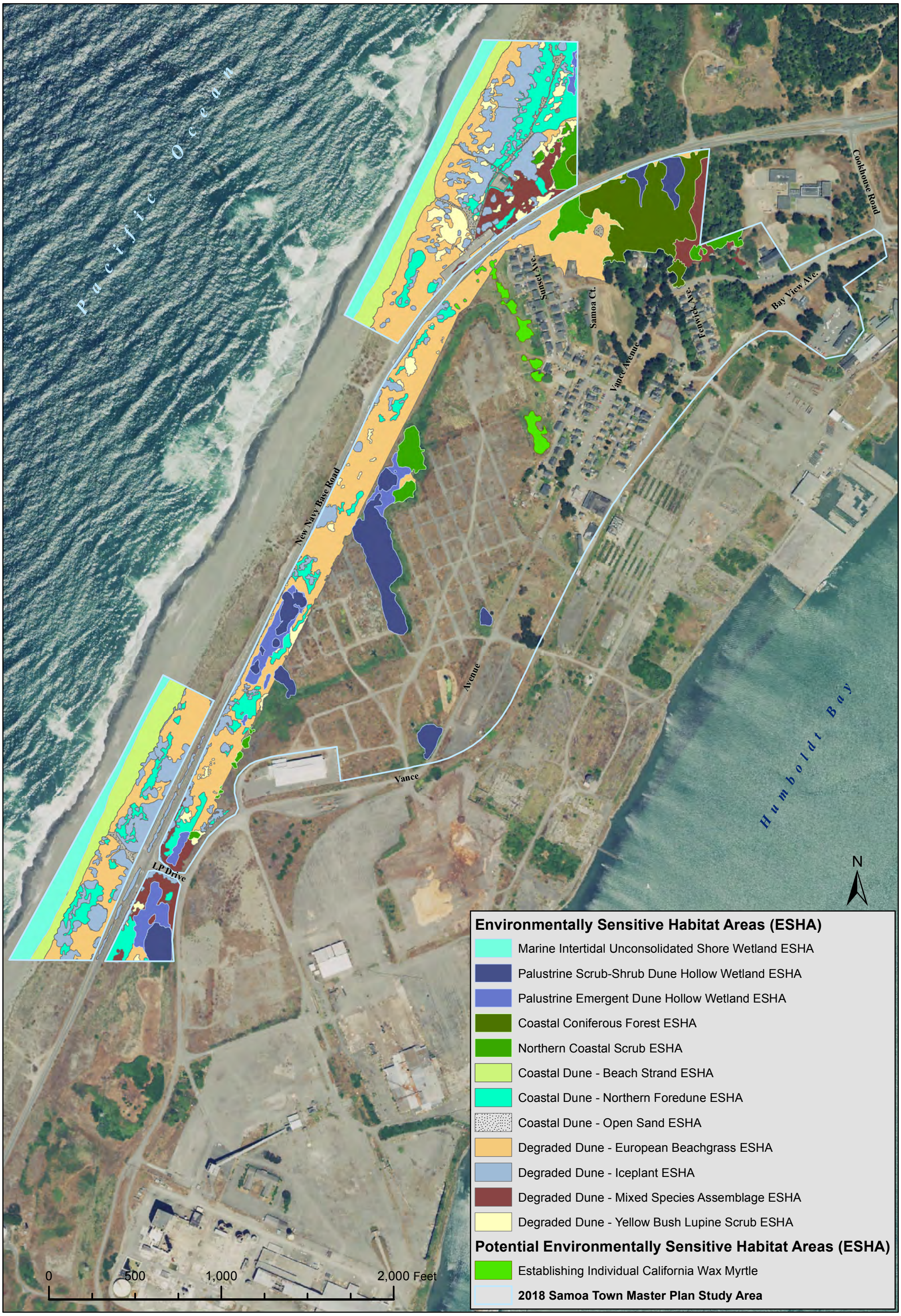
Figure 1. Wetland & Non-Wetland Environmentally Sensitive Habitat Areas (ESHA).

Figure 2. Supplemental Wetland Delineation Results.

Figure 3. 2018 Special Status Botanical Species Occurrences.

Figure 4. 2018 Special Status Wildlife Species Detections & Related Resource Observations.

Figure 5. Distribution of Invasive Vegetation.



Samoa Town Master Plan − Updated Biological Resource Study (2018)

Figure 1. Wetland & Non-Wetland Environmentally Sensitive Habitat Areas (ESHA).

Imagery Source: NAIP (2016)

J.B. LOVELACE & ASSOCIATES

Samoa Town Master Plan − Updated Biological Resource Study (2018)

Figure 2. Supplemental Wetland Delineation Results.

Imagery Source: NAIP (2016)

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Figure 3. 2018 Special Status Botanical Species Occurrences.

Imagery Source: NAIP (2016)

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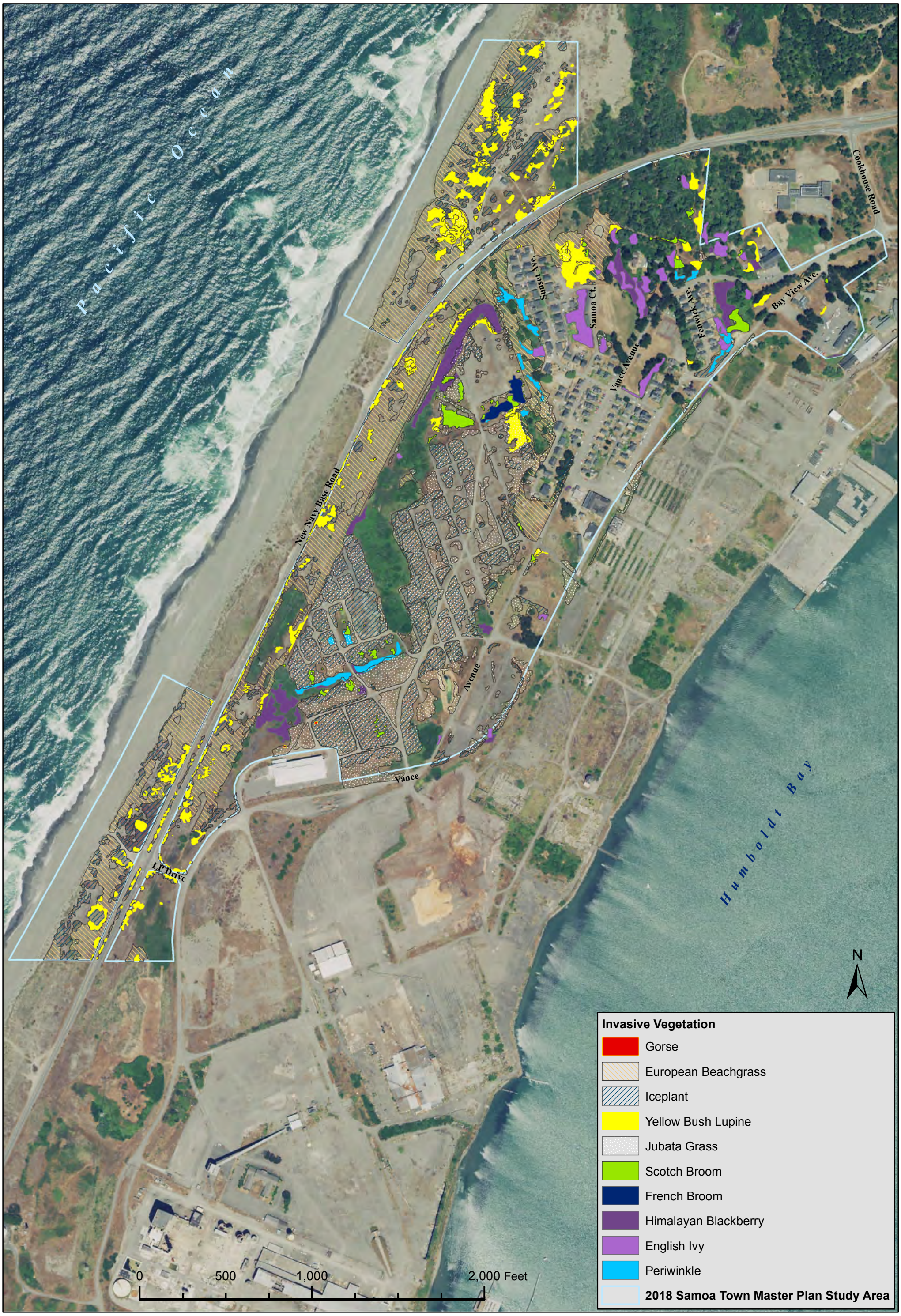

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Figure 5. Distribution of Invasive Vegetation.

Imagery Source: NAIP (2016)

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