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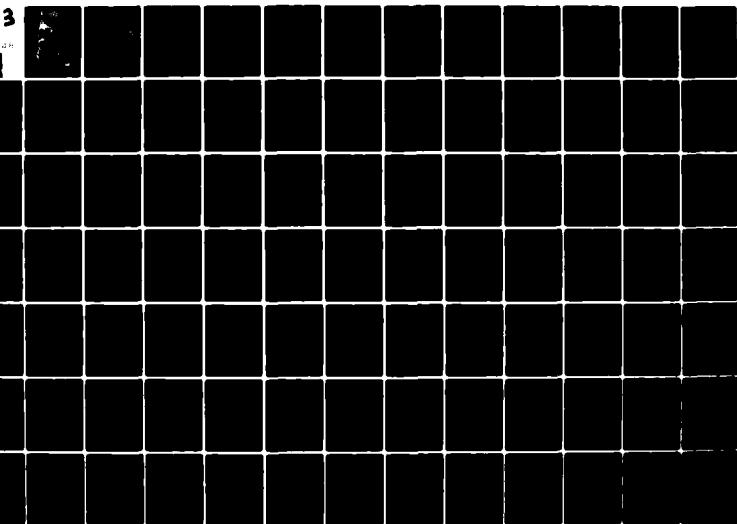
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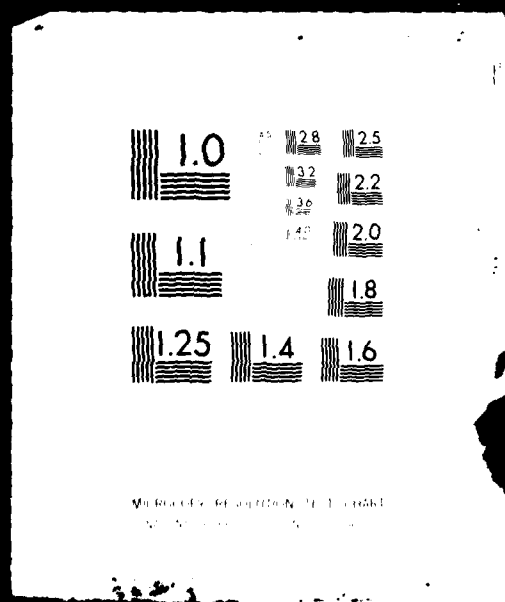
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VOLUME III

**HABITAT
CLASSIFICATION
& MAPPING**

APPENDICES



**HUMBOLDT BAY
WETLANDS
REVIEW &
BAYLANDS
ANALYSIS**

AUGUST 1980



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HUMBOLDT BAY WETLANDS REVIEW
AND
BAYLANDS ANALYSIS

11-4-80

Volume III. 10-2-80

HABITAT CLASSIFICATION AND MAPPING
AND APPENDICES.

1) Final Rept. Sept. 11 - Aug 12



Submitted to

U.S. Army Corps of Engineers
San Francisco District

Contract No. DACW07-78-C-0082 ✓

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August 1980

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HUMBOLDT BAY WETLANDS REVIEW
AND BAYLANDS ANALYSIS

The information, findings, and recommendations contained in this report are those of the consultant, Shapiro and Associates, Inc., and the consultant's subcontractors. The U.S. Army Corps of Engineers, for whom the study was completed, is fully aware of the number and complexity of regulations and legislative policies of local, state, and federal agencies with jurisdictional control over Humboldt Bay. Many of these regulations and policies, and the definitions used in them, emphasize different approaches and concerns of the different agencies. The study itself is long and in many ways complex, covering many different disciplines.

Therefore, it is our hope that agencies using the study for evaluation of permit applications or proposed projects or for planning purposes may use it as a guideline, understanding that the study findings are not regulations. Any proposed project or permit application must and should be evaluated individually and on a case-by-case basis.

It should be noted that the term "dike" is sometimes used in the document in place of the word "levee." The structures in question are protective barriers erected to reclaim wetlands and remove areas from aquatic action. As such, they are technically termed "levees." Permits for such structures are processed by the Corps under Section 10 of the River and Harbor Act of 1899 and/or Section 404 of the Clean Water Act. "Dikes" are processed under Section 9 of the River and Harbor Act, together with "dams."

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PREFACE

This document is Volume III of the Humboldt Bay Wetlands Review and Baylands Analysis, prepared by Shapiro and Associates, Inc. for the San Francisco District, U.S. Army Corps of Engineers. The general study area is Humboldt Bay, California.

The complete report is in three volumes. Volume I contains the summary and findings of the study and includes the following: the study purpose, objectives, and assumptions; a description of the study area; a discussion of the importance of wetlands and a description of wetland types found in the study area; a designation of certain parts of the study area as Areas of Importance or Areas of Environmental Concern, with a discussion of the significance of the designation and a summary description of each area; a discussion of typical activities in the study area including impacts and legal/administrative processes; a summary of development pressure and an identification and discussion of areas appropriate for compensation, mitigation, and restoration; and an identification of gaps in knowledge of the area with recommendations for future studies. Volume I covers Sections I-V of the complete report. Volume I also contains a brief summary of the detailed data base presented in Volume II.

Volume II is the data base which led to and supports the findings. It is a review and discussion of known existing information on the physical, biological, land use, and sociocultural aspects of the study area. Volume II contains Sections VI, VII, and VIII of the complete report. Section VI is the environmental profile of the study area, covering physical characteristics (geography, geology and soils, geologic hazards, tidal characteristics, hydrology, physical oceanography, bottom sediments, and water quality), and biological characteristics (habitat types, fauna, ecological processes). Section VII covers land and tideland use, ownerships, and governmental agencies with interest and/or jurisdiction. Section VIII covers cultural characteristics (historical/archaeological resources, community structure, recreation, educational/scientific uses, refuges/reserves), aesthetics, and economics.

Volume III describes the detailed classification and mapping of habitat types (land cover) conducted as part of the study. The entire study area was classified and mapped from aerial color infrared photographs at a scale of 1:6000. Volume III discusses the following: the need for habitat classification and mapping; the definition and relevance of the Corps of Engineers jurisdictional boundary under Section 404 of the Federal Water Pollution Control Act Amendments of 1972 and the Clean Water Act of 1977; a review and discussion of various land cover classification systems and a description of the system used in this study; and a discussion of mapping results, accompanied by a set of maps at 1:6000 identifying land cover and tentatively delineating the wetland boundary and/or drift line. In addition, the Appendices, including the Bibliography, are found at the end of Volume III.

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Section I

BACKGROUND

I. BACKGROUND

A. INTRODUCTION

The San Francisco District, U.S. Army Corps of Engineers, is engaged in the regulation of activities in or upon the navigable waters and adjacent wetlands of Humboldt Bay under provisions of Section 10 of the River and Harbor Act of 3 March 1899 (30 Stat. 1151; 33 U.S.C. 403) and Section 404 of the Federal Water Pollution Control Act Amendments of 1972 (Public Law 92-500, FWPCA) as amended by the Clean Water Act of 1977. Section 10 permits cover the construction of any structure in or over any navigable water of the United States, the excavation from or depositing of material in such waters, or the accomplishment of any other work affecting the course, location, condition, or capacity of such waters. Section 404 permits are specifically for the discharge of dredged or fill material into the waters of the United States at specified disposal sites. The results of the Humboldt Bay Wetlands Review and Baylands Analysis will be used in review of both Section 10 and Section 404 permit applications.

As part of the Humboldt Bay Wetlands Review and Baylands Analysis, it was necessary to classify and map the wetland and upland habitat types found within the study area. It was also necessary to identify the wetland boundary as interpreted from Section 404. This report, Volume III of the study, discusses the authorities, methods, and results of both the habitat classification and mapping, and the delineation of wetland boundaries as defined by Corps administrative regulations.

B. AUTHORITIES

As listed above, the Corps has regulatory authority over any structures or work in navigable waters of the United States under Section 10. Since 1968, the Corps has considered factors other than protection of navigation and navigable capacity in evaluating Section 10 permit applications. These other factors include fish and wildlife, conservation, pollution, aesthetics, ecology, and the public interest (42 FR 37122). For the purposes of Section 10, navigable waters includes any waters capable of interstate commerce up to the level of mean high water (MHW).

Under Section 404, the Corps was given regulatory authority over the discharge of dredged or fill material into waters of the United States. Section 404 permits are to be issued only if the proposed project is found to be in the public interest. Factors of the public interest include the conservation and preservation of wetlands, fish and wildlife resources, water quality, and historic, scenic, and recreational values (33 CFR 320.4). As defined in Corps regulations, "waters of the United States" includes the following:

The territorial seas; coastal and inland waters, lakes, rivers and streams that are navigable waters of the United States, including adjacent wetlands; tributaries to navigable waters of the United States, including adjacent wetlands; interstate waters and their tributaries, including adjacent wetlands; and all other waters of the United States. (33 CFR 323.2)

The authority for conducting the Humboldt Bay Wetlands Review and Baylands Analysis is two-fold. First, under a Resolution of the Committee on Public Works, U.S. House of Representatives, 11 April 1974, the San Francisco District, U.S. Army Corps of Engineers, was to develop data necessary for determination of the best and most compatible economic, environmental, and social uses of the Humboldt Bay area. Such data includes inventories of uses and conditions, surveys of governmental jurisdictions, evaluation of lands and wetlands for single and multiple uses, and other data needed for coordinated planning at federal, state, regional, and local levels. Second, under Corps regulations 33 CFR 320-329, the District Engineer may conduct a wetlands review to provide an objective basis for wetlands management and the evaluation of permit requests for development activities in wetlands of the study area.

In light of the preceding authorities, it became apparent that a detailed study of Humboldt Bay, its wetlands, and the factors of the public interest was needed. Certain factors of the public interest, such as fish and wildlife resources, are best assessed in terms of the habitat types available and the level of their utilization. Furthermore, the limit of Corps jurisdiction, as defined in Section 404 regulations, is primarily based on "adjacent wetlands." Thus, the classification and mapping of wetland and upland habitat types, and the delineation of wetlands boundaries, were necessary parts of this study.

C. PURPOSE AND OBJECTIVES

↓
A principal purpose of the Humboldt Bay Wetlands Review and Baylands Analysis is to provide an objective basis for the evaluation of permit requests and development activities in wetlands and associated aquatic resources of the Humboldt Bay area. To achieve this it is necessary to develop a data base against which to evaluate permit applications. It is also necessary to define the jurisdictional limits of the Corps authority in order to determine whether an activity requires a permit. → need map

↙
In consideration of these concepts, the objectives of this portion of the study are:

- To classify and map the habitat types of the study area from an ecological perspective. and
- To delineate the limits of "waters of the United States" and adjacent wetlands as interpreted from Corps regulations. (Final delineation of the limits will be determined by the Corps on a case-by-case basis. - - -)

This report and the accompanying maps are the product of this portion of the study.

Section II

CLASSIFICATION AND MAPPING

II. CLASSIFICATION AND MAPPING

In the past 25 years several systems for classifying wetlands have been proposed. As with any classification system, each of these has certain limitations imposed in part by the purpose they were intended to serve. Before a classification system could be chosen for use in the Humboldt Bay study area it was necessary to review and evaluate those available to determine which was most suitable to the project.

A. REVIEW

One of the earliest wetlands classification systems was developed by the U.S. Fish and Wildlife Service (USFWS) as a basis for an inventory of wetlands in the United States (Shaw and Fredine, 1956). This classification and inventory, known popularly as Circular 39, identified and described 20 different wetland types and discussed their distribution nationwide. It is now well accepted that while Circular 39 was the most common classification used for many years, it has some shortcomings. In particular, 20 wetland types were just not sufficient to describe the diverse wetland habitats found throughout the United States.

Since 1956 a variety of wetlands classification systems have been developed. Most of these, however, have been regional in scope, and few have related to the Pacific Coast. Wetland classifications from the Atlantic and Gulf Coast regions (Golet and Larson 1974; Penfound, 1952; Silberhorn, et al., 1974; etc.) and the prairies (Jeglum, et al., 1974; Stewart and Kantrud, 1971; etc.) are well known, but not easily applied to Pacific Coast situations.

One of the first wetland classification systems for the Pacific Coast was developed for Oregon coastal salt marshes (Jefferson, 1975). This system identified six major vegetation types and a total of 29 different plant communities. Jefferson's vegetation types were based principally on elevation within the marsh, substrate type and succession; the plant communities were identified according to species present. Coincident with Jefferson's work, Eilers (1975) carried out detailed investigations at a salt marsh in Oregon's Nehalem estuary. Eilers used a different and more detailed classification system, based strictly on the two or three dominant species present in each plant community.

The U.S. Geological Survey (USGS) has developed a land use and land cover classification for use with aerial photography (Anderson, et al., 1976). This is a hierarchical system with nine major (Level I) categories of land use or cover. Each Level I category may be subdivided into Levels II, III and IV, to provide increased

detail when necessary or desired. Of interest is the fact that Levels III and IV are not defined, giving users the capacity to expand the system to meet their needs. It should also be noted that Anderson's (1976) system is not limited to wetland habitat types, but rather extends to all types of land use and land cover, including urban and agriculture.

In 1977 USFWS published a new wetland classification system as an adjunct to the National Wetlands Inventory (NWI). Termed "An Operational Draft," the work of Cowardin, et al. (1977), is intended to be a system that "could be consistently and equally applied to the varying aspects of the wetlands resources of the United States" (Cowardin, et al., 1977, p. 1). The final version, Classification of Wetlands and Deepwater Habitats of the United States (Cowardin, et al.), was published in December 1979. Like the system previously described, the NWI system is hierarchical in nature, beginning with five major hydrologic "systems." Each system is divided according to hydrologic, geomorphic, chemical, and biological factors.

Recently a wetland classification system was developed by the Corps Waterways Experiment Station (WES) (Corps, 1978). Eight principal wetlands type are identified, some with major variants. More general than most classification systems described, this "Preliminary Guide" was intended "solely for use in the Section 404 permit program" (Corps, 1978, p. 5).

A wetlands classification system has also been developed by the Corps Board of Engineers for Rivers and Harbors (Macomber, 1978). Referred to as Macomber's System, the classification is primarily an expansion of the Circular 39 work. Some habitat types not mentioned in Circular 39 (e.g. sessile algae beds and sessile faunal assemblages) are added; some Circular 39 types are subdivided (e.g. freshwater swamp into bogs, savannahs and bayheads).

B. EVALUATION AND SELECTION

The choice of any classification system is dependent on its intended function. For the present Humboldt Bay study, several important functions had to be considered:

- . Detail - mapping was to be carried out at a scale of 1:6000.
- . Convenience - aerial photography was the principal source of information.
- . Comprehensiveness - land cover and use varied from urban and forest to wetland and subtidal channels.
- . Utility - numerous agencies, educators, and private individuals may use this classification and mapping in the future.
- . Compatibility - there should be no conflicts with the National Wetland Inventory, or other commonly used classification.

With these ideas in mind, each classification system was evaluated for its applicability to the study area.

Circular 39 (Shaw and Fredine, 1956) was the first attempt at a nationwide wetlands classification, and served well for many years. However, as noted, the 20 wetland types were not sufficient to describe wetlands nationwide. In addition, the definitions were not adequate to prevent differing interpretations, and therefore inconsistent application. In short, Circular 39 is a valuable historic classification, but it has become outdated by numerous advances in wetlands investigation.

In general, classification systems from other parts of the country do not offer reasonable means for dealing with wetlands habitats on the Pacific Coast. The climate, tides, and vegetation in the West are very different from those of the Atlantic or Gulf Coasts.

Jefferson's (1975) classification for Oregon estuaries has the obvious advantage of local origin. However, a major component of Humboldt Bay marshes, *Spartina foliosa*, is not identified in any Oregon wetlands. Additionally, most Oregon estuaries exhibit a major freshwater component resulting from riverine input. This is not the case in Humboldt Bay. Finally, many of Jefferson's marsh communities are not distinguishable on aerial photography. These difficulties are also true for Eilers' (1975) classification.

The USGS system (Anderson, et al., 1976) was not designed specifically for use on the West Coast, rather it was intended to be applicable throughout the country. It was also intended to be used

with aerial photography. The flexibility this system offers at Levels III and IV might be a boon or a bane to both the classifier and the subsequent user.

As is clearly expressed, the NWI classification is still in draft form, and is subject to revision based on the results of actual use. Although it offers a comprehensive taxonomy of wetlands habitat types, NWI (like most other classifications considered) is very specific to wetlands and offers no means to deal with uplands. Finally, the author feels the NWI system is disturbingly complex in terminology and does not deal adequately with tidal freshwater wetlands, an important wetland type in the Pacific Northwest.

The WES (Corps, 1978) classification system is extremely general in scope with a limited purpose. The eight principal types and seven major variants do not offer a comprehensive view of the diversity of wetland habitat types identified on the West Coast.

Macomber's (1978) system, while an improvement over Circular 39, has not completely eliminated its difficulties. In addition, as with many classification systems, this one is based principally on Atlantic and Gulf Coast wetlands.

From the description of important classification functions, and the above evaluation, it is apparent that no single classification system will fulfill all the needs of the Humboldt Bay study. The USGS system offers several advantages (e.g. detail, convenience, and comprehensiveness), but it is not immediately compatible with the NWI classification. In addition, the numerical identification of land cover types used in the USGS system is not immediately obvious and is subject to misinterpretation.

As a result of the above considerations, it was decided that a modified version of the USGS system would be most appropriate for the study. Modifications would include: substitution of abbreviations for numerical identification, and substitution of grassland and shrubland for ranges and non-forested vegetation categories. In addition, a table was to be provided, equating wetland types identified under this system with the proper descriptions according to the NWI classification system. Development of this classification system for the Humboldt Bay area has resulted in a land cover map which is both convenient and comprehensive. In addition, it is readily equated to the NWI system, and therefore of value to researchers, agency personnel, and others.

The basic habitat type classification system is outlined in Table II-1. Detailed descriptions of the habitat types, including all subcategories, will be found in the Results section of this report. Table II-2, following the habitat type descriptions, identifies the NWI, Macomber and WES classifications, equivalents to the habitat types described.

Table II-1

HABITAT CLASSIFICATION SYSTEM

- . Urban
- . Agriculture
- . Grassland
- . Shrubland
- . Forest
 - Deciduous forest
 - Evergreen Forest
 - Mixed deciduous/evergreen forest
 - Closed cone pine forest
- . Water
 - Deep tidal channels
 - Shallow tidal channels
 - Tidal creeks and sloughs
 - Creeks and Rivers
 - Ditches, ponds, and closed channels
- . Wetlands
 - Salt marsh
 - Brackish marsh
 - Fresh marsh
 - Swamp
 - Intertidal flat
 - Eelgrass
 - Beach
- . Dunes
 - Bare dunes
 - Sparsely vegetated dunes
 - Vegetated dunes
 - Dune hollows
 - Dune swamps
- . Jetties and Reefs

C. METHODS

The habitat type mapping undertaken for the Humboldt Bay Study utilized 1:6000 color infra-red photography and ground truth verification techniques to develop detailed 1:6000 maps. The photographs were taken in November and December 1978 and March 1979. Over 500 9-inch square photographs provided stereo coverage of the entire study area.

Ground truth verification involved seven one week field trips between October 1978 and May 1979. On these field trips, ground observations provided the information necessary to refine the classification system described in Table II-2. At the same time, the distribution of habitat types was compared to signatures on the photographs. The result was a description and map of all habitat types distinguishable on the photographs.

Unfortunately, in some areas access was physically difficult (e.g., sand dunes between Manila and Samoa) or refused (e.g., Woodley Island). In these areas we were obligated to rely on information obtained at other locations. (We have since gained admittance to Woodley Island and our final maps reflect that new information.)

Final maps were made as mylar overlays to a series of 1:6000 topographic maps of Humboldt County. These final maps have been submitted with this report. It should be noted that numerous changes have taken place within the area since March 1979 (e.g., construction of the Woodley Island Marina and the Arcata Marsh). We have tried to include these new developments where possible.

During the course of field studies, numerous plant species were collected and identified. For all grasses (*Gramineae*) Hitchcock (1970) was the principal reference. Mason (1957) was used in identification of wetlands species. Munz and Keck (1973) was the major source for all other specimens. Hitchcock and Cronquist (1973) served as a secondary source. Voucher specimens are on file at the SAI offices.

After completion of the 1:6000 maps, all areas were planimetered to determine their areal extent. The areal extent of habitat types within the bay, including channels and associated intertidal flats, was determined from the 1:24000 habitat map (Plate 10, Volume II). It was felt that the boundaries of these habitat types could not be determined from either maps or photographs to justify planimetry at the larger scale. A compensating polar planimeter was used to develop these data.

D. RESULTS

On-the-ground investigation of signatures recognized in the aerial photographs resulted in a more detailed classification, particularly with respect to wetlands than that noted in Table II-1. This section will discuss first the habitat types encountered; second, the distribution of habitat types; and third the areal extent of habitat types. Finally, there is a discussion of rare and endangered species within the Humboldt Bay region.

Habitat Types

As noted previously, nine major habitat types were identified and mapped in the Humboldt Bay region. Most of these were divided into subtypes on the basis of physical or biological characteristics. Each of these types and associated subtypes is described here in detail.

Urban

Consisting principally of residential, commercial, and industrial activities, these are areas of dense human habitation. Transportation facilities, port facilities, gravel pits, and open areas which have been scraped or filled are all included in the urban habitat type. In general, vegetation in these areas is either sparse, or exotic and managed for aesthetic reasons. As a result, there is little use of these areas by native wildlife.

Wooded urban parks may be exceptions to this description, and they are identified according to the appropriate habitat type. Cemeteries, playgrounds, and similar areas are mapped as urban/grassland, thus recognizing their similarity, but not equivalence, to meadowlands. Scraped areas, "vacant lots" and ruderal locations might also be described as grasslands; however, the dominance of escaped ornamentals and naturalized exotics in such locations recommends an urban, rather than grassland, designation. Harbor facilities, in the form of piers and pilings, often provide a substrate for aquatic flora and fauna, and habitat for water-oriented birds. Over-water activities and in-water disturbances probably dominate the ecological processes of these areas, however; thus the urban designation was used.

Agriculture

Pasture and croplands constitute most of the agriculture habitat type in the study area; grazing of cattle and sheep is the most common farming activity. Most agriculture is located in the low, flat lands of the floodplains where rich, alluvial soils are found. Most of these areas are diked and drained and were probably at or near intertidal elevations prior to reclamation. Old maps (U.S. Coast Survey, 1870), soil descriptions (McLaughlin and Harra-

dine, 1965) and old channels in pastures are evidence of the pre-settlement wetland characteristics of these areas.

Most of the agriculture lands in the study area have been simply designated as such, with no distinction between different types of agricultural activities. However, the wetlands emphasis of this study required an investigation of wet pastures and grazed wetlands. The following discussion is not intended to resolve all the problems related to the wet pasture issues. Rather, it is hoped we can offer some new insights and suggestions.

Pastures are generally seeded to encourage the dominance of forage grasses. Some of these are tolerant of saturated soils, others are not. Bentgrass, or redtop, (Agrostis alba), Timothy (Phleum pratense) and red fescue (Festuca rubra) are examples of the former. Bentgrass has been identified in brackish marshes from California to Washington (Harvey, 1978; Frenkel, 1978; Burrell, 1978); red fescue has also been noted in marshes and bogs (Hitchcock, 1950). Where these species are dominant, it would be difficult to distinguish between dry pastures, wet pastures, and seasonal wetlands on the basis of vegetation characteristics.

As a result of their elevation, location, and history, agricultural lands in the Humboldt Bay area are often saturated or flooded. The frequency, duration, and season of the flooding may have a significant impact on which vegetation will survive in these areas. Grazing pressure may also have a controlling influence. In addition to the water-tolerant forage grasses, species common in wet, and often overgrazed, pastures include buttercups (Ranunculus sp.), silverweed (Potentilla pacifica), and wiregrass or soft rush (Juncus effusus). Where possible, these areas have been identified as wet pasture (Aw). This designation recognizes the principal utilization of the land as pasture, while at the same time noting the wetland character of the habitat type.

In other locations, an area may be inside a dike and fenced for pasture, but the habitat type is dominated by wetland species and not apparently grazed heavily. Sedge (Carex obnupta), wire grass (Juncus effusus and J. balticus) and silverweed are common. Marsh pennywort (Hydrocotyl umbellata), cattail (Typha latifolia) and bulrush (Scirpus robustus) are found in standing water and shallow channels. Where tide gates are leaking, allowing partial tidal inundation, salt grass (Distichlis spicata), pickleweed (Salicornia pacifica) and jaumea (Jaumea carnosa) may dominate. These areas have been classified agriculture/wetland (A/W), thus denoting the equal standing of land use and land cover as compared with the previously described habitat type.

Grassland

These habitat types consist of mixed communities of annual and perennial grasses and forbs. Shrubs and trees may be present, but represent less than 40% of the cover. Few, if any, of the grasslands in the study area represent undisturbed habitats; most grasslands are abandoned agricultural areas, vacant lots or roadsides. Common elements of grasslands include: orchard grass (Dactylis glomerata), velvet grass (Holcus lanatus), pampas grass (Cortaderia seilloana), yarrow (Achillea millefolium), sweetclover (Melilotus spp.), broom (Cytisus spp.) and a wide variety of other species. Where grasslands are abandoned pastures within diked areas, some wetland species may also be present. Hairgrass (Deschampsia caespitosa), soft rush, rabbitfoot grass (Polypogon monspeliensis) and others are common in wet grasslands.

Shrubland

A dominance of woody vegetation up to 6 meters (20 feet) in height characterizes shrub habitat types. Greater than 40% cover was considered dominance. These habitat types often represent a stage in the succession from grassland to forest. In some cases they may also represent dynamic equilibrium situations in which physical constraints prevent the establishment of forest vegetation. Riparian shrubs on the steep banks of the lower Mad River are an example of this situation; flooding and erosion prevent the establishment of forest vegetation. Common shrub species include: blackberries (Rubus spp.), coyote brush (Baccharis pilularis), broom, and bayberry (Myrica californica). Indian plum (Osmaronia cerasiformis), cascara (Rhamnus purshiana), silk tassel (Garrya elliptica), and willow (Salix spp.) may also be found. The understory of a shrub area may be devoid of vegetation, or there may be a mixture of grasses, forbs, and vines such as bracken fern (Pteridium aquilinum), salal (Gaultheria shallon), wild cucumber (Marcia sp.), and sedge (Carex sp.).

Forest

In general, forests are dominated by deciduous or coniferous trees greater than 6 meters (20 feet) in height. As with shrubland, dominance indicates a canopy cover greater than 40%. Several different forest habitat types have been described and mapped in the Humboldt Bay study area. Although much of this area was originally wooded, only isolated remnants of those pre-settlement forests remain. Most of the woodlands around the study area are second growth, which has become established following the early timber harvests.

Four distinct forested habitat types were noted within the study area; these were divided according to whether deciduous or evergreen trees dominated. In each forest type the canopy is composed of at least 70% of the identified tree type. The forest habitat types identified are:

- . Deciduous Forest
- . Evergreen Forest
- . Mixed Deciduous/Evergreen Forest
- . Closed Cone Pine Forest

The process of succession has been described often; it is the orderly change of communities from a pioneer stage to the relatively stable climax community of the region (Odum, 1971). Typically, the pioneer stage consists of a mixed community of grasses and forbs. This community is slowly invaded by a variety of shrubs. In the Northwest these are replaced by a deciduous forest such as that described below. Eventually young conifers become established in the understory of the deciduous forest. As the conifers become larger, a mixed deciduous/evergreen forest is apparent. Ultimately, the conifers dominate, and a climax stage is reached. The exact makeup of the climax coniferous forest varies with elevation, exposure, and many other variables.

Deciduous forest is dominated by alder (Alnus oregana), although willow (Salix spp.), dogwood (Cornus stolonifera), and cottonwood (Populus trichocarpa) may be intermixed or locally dominant, especially in riparian situations. The understory of deciduous forests may range from being almost devoid of vegetation to being an impenetrable thicket. In the former situation speedwell (Veronica sp.), small headed bulrush (Scirpus microcarpus) and sedge are widely scattered beneath a high dense alder and willow canopy. In the latter case salmonberry (Rubus spectabilis), blackberry, elderberry (Sambucus racemosa), bracken fern, cow parsnip (Heracleum lanatum) and a variety of other species combine to form an almost impassable thicket.

Evergreen, or coniferous, forest is usually a mixture of redwood (Sequoia sempervirens) and Douglas fir (Pseudotsuga menziesii). Other conifers which may be present include lowland fir (Abies grandis) and Sitka spruce (Picea sitchensis). The understory of this forest may vary considerably, but alder, bayberry, tanbark oak (Lithocarpus densiflora), and chinquapin (Castanopsis chrysophylla) are all common trees and large shrubs. Smaller shrubs include: salmonberry, salal, rhododendron (Rhododendron californicum), huckleberry (Vaccinium ovatum) and Oregon grape (Berberis sp.). Grasses and forbs are not often prevalent in the understory of the evergreen forest due to the shortage of light and space. However, a variety of them may be found widely dispersed on the forest floor.

The mixed deciduous evergreen forest contains a mixture of species identified in both previous forest habitat types. As mentioned earlier, this mixed forest may represent a successional transition between deciduous and evergreen forests. In some areas, such as the steep-sided gulches of Eureka, this habitat type may represent a dynamic equilibrium resulting from conditions of light, water and steep slopes.

Closed cone pine forest is restricted to the coastal strand in the Humboldt Bay region. It is a very dense forest which is probably climax in the barren, sandy soils of the coast. Several detailed vegetative studies of the closed cone forests have been carried out (Johnson, 1963; Barker, 1976). The results of these previous studies are incorporated in this description.

Beach pine (Pinus contorta) is the dominant tree in the closed cone pine forest, but Douglas fir, Sitka spruce, and silk tassel are present also. The understory is a dense and often impenetrable thicket of salal, bearberry (Arctostaphylos uva-ursi) and huckleberry. Where the shrubs open up, everlasting (Anaphalis margaritacea), yerba buena (Satureja douglasii) and bracken fern (Pteridium aquilinum) are found.

An unusual forest habitat that is found in scattered locations consists of stands of eucalyptus (Eucalyptus spp.). This broadleaved evergreen is an exotic from Australia commonly planted as a windbreak. As a result, many of the stands are long and narrow in shape, providing a buffer between habitat types on both sides, but relatively little habitat in its own right.

Water

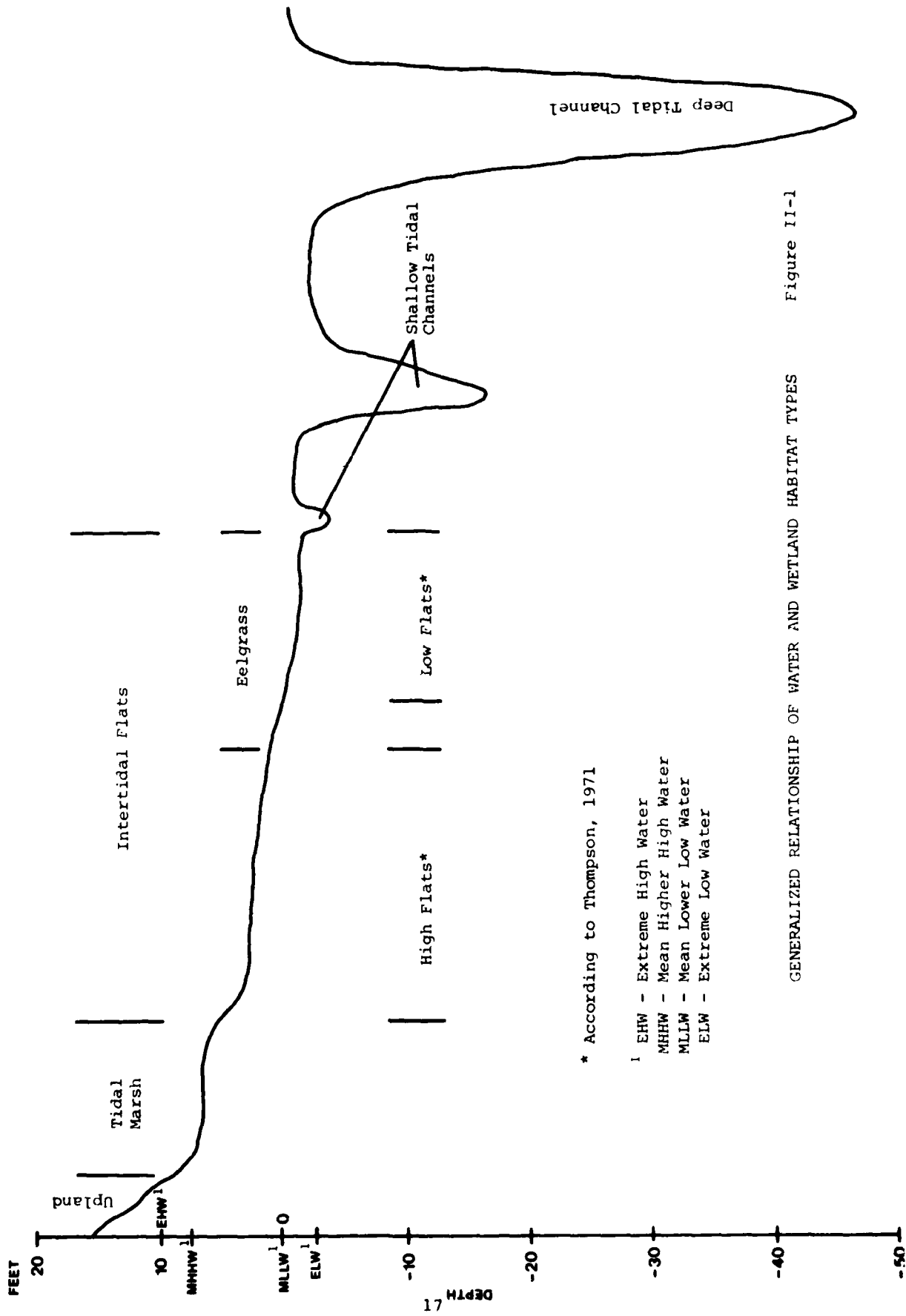
Most water in the Humboldt Bay study area is either in tidal channels of the bay or in rivers and creeks entering the bay or ocean (intertidal flats are considered in a subsequent discussion). For the purposes of this study, water habitat type is divided into the following categories:

- . Deep Tidal Channels
- . Shallow Tidal Channels
- . Tidal Creeks and Sloughs
- . Creeks and Rivers
- . Ditches, Ponds, and Closed Channels

Figure II-1 illustrates the relationships between the various water and wetland habitat types.

Deep tidal channels are those areas within the Bay which are subject to maintenance dredging for navigation and commercial purposes. The depth of these channels ranges from 17 to 47 feet below mean lower low water (MLLW) and is maintained by the Corps of Engineers (NOS, 1977). There is a total of 8.6 miles of these channels in the Bay with widths of 300-800 feet.

Deep tidal channels are generally characterized by minimal macroscopic vegetation. This is due to both the depth, and subsequent lack of available light, and also the frequent disturbance associated with maintenance dredging activities. There are, however, a few species of algae which may become established in the channels in periods between dredging activities. Invertebrate fauna are more characteristic of deep channel habitat types. In many locations, though, even benthic infauna are sparse, due to high velocity tidal currents.



* According to Thompson, 1971

- ¹ EHW - Extreme High Water
- MHHW - Mean Higher High Water
- MLLW - Mean Lower Low Water
- ELW - Extreme Low Water

GENERALIZED RELATIONSHIP OF WATER AND WETLAND HABITAT TYPES Figure 11-1

There is, however, a significant phytoplankton population which occupies the water column (Harding, 1973).

Shallow tidal channels are generally between -17 and -3 feet (MLLW); these channels are distributed throughout the bay and act to drain the intertidal flats as the tide ebbs. More importantly, most shallow channels do not undergo periodic dredging; consequently, the substrate and associated flora and fauna are not highly disturbed, as they are in deep channels.

The undisturbed and shallow character of these channels allow a few plants to survive. Eelgrass may be found along the edges or occasionally at the bottom of these channels. Where algae are found sea lettuce (Ulva sp.) or filamentous greens are most common.

Tidal creeks and sloughs are connected to the Bay, but meander through agricultural lands. The shallow channels are usually diked and occasionally dredged to prevent flooding in adjacent areas. Tidal creeks such as Elk River and Jacoby Creek are usually characterized by depressed salinities and high turbidity as a result of upland runoff and stream flow.

Tidal sloughs such as Liscom, Mad River, Fay and Hookton Sloughs generally do not have significant amounts of stream flow input and, therefore, often do not exhibit depressed salinities.

The upstream limit of tidal creeks is the limit of tidal influence, an important boundary for some regulatory agencies. In this study, however, the upstream limit of tidal influence can only be approximated, using field examination and a review of existing literature. Thus, the upper limit of tidal influence in streams mapped in this study cannot be considered exact.

Unvegetated intertidal flats are often distributed in tidal creeks and sloughs. Vegetation in tidal creeks may vary from marine or brackish algae on channel bottoms to salt or brackish marsh species along the edges. Sea lettuce (Enteromorpha sp.), widgeon grass (Ruppia sp.) and pondweed (Potamogeton sp.) may all be found along channel bottoms, along with a wide variety of benthic invertebrates (see Section VI.P, Volume II, of this study). Near the shore, narrow bands of salt marsh vegetation, such as pickleweed (Salicornia virginica) and cordgrass (Spartina foliosa*), or brackish marsh vegetation, such as bulrush (Scirpus spp.), hairgrass (Des-

*There is some question as to the species of cordgrass in the Humboldt Bay region. For a more detailed discussion, see the following discussion of salt marsh habitat types.

champsia caespitosa), rush and sedge (Carex obnupta) may be found. Where these areas were large enough they were mapped as specific wetland habitat types, rather than as part of the tidal slough.

Creeks and rivers are bodies of moving freshwater draining the surrounding watersheds and discharging into the bay or ocean. Some are freeflowing, but diked to prevent flooding of nearby lands; others are separated from the Bay by dikes and tidegates, thus eliminating any tidal intrusion in their lower reaches.

Generally, swift flowing rivers and creeks have no vegetation in their channels, although there may be some along shore or in cutoff channels. Slow moving rivers and creeks, however, such as those moving across floodplains, often have extensive vegetation along the shore and occasionally in the main channel also. Cattails (Typha spp.), marsh pennywort (Hydrocotyl sp.), canarygrass (Phalaris arundinacea) and water parsley (Oenanthe sarmentosa) may all be found in or adjacent to slow moving creeks.

Ditches, ponds, and closed ditches usually represent standing water conditions, although there may be considerable water movement during flood situations. Rarely extensive in any area, this habitat type is nonetheless widespread as farm ponds, mill ponds, and cutoff sloughs.

Phytoplankton and filamentous green algae often fill these areas in the summer, giving the water a turbid appearance. In shallow areas or around the edges cattails, bulrushes (Scirpus spp.), pennywort, and water parsley are common.

Wetlands

A wide variety of wetland habitat types are found in the Humboldt Bay study area. All the wetlands can be divided into the following categories as a function of water chemistry, water regime, substrate, and vegetation characteristics.

- . Salt Marsh
- . Brackish Marsh
- . Fresh Marsh
- . Swamp
- . Intertidal Flat
- . Eelgrass
- . Beach

Salt marshes are perhaps the most familiar wetland type in the area. They are inundated with high salinity waters with such frequency that only certain plant species tolerant of both saturated soil conditions and high salt concentrations can become established. Although usually limited to the bay or tidal sloughs, salt marsh communities have been noted in agricultural areas where leaking tidegates allow some tidal inundation.

Two basic vegetation associations can be identified in Humboldt Bay salt marshes: a cordgrass dominated community, and a pickleweed-saltgrass (Distichlis spicata) community. Where both associations are found, the cordgrass appears to be limited to middle elevations, while the pickleweed-saltgrass may be found extending from the lowest to the highest elevations.

The cordgrass association is typically a dense, near monospecific stand, with occasional etiolated specimens of pickleweed or orache (Atriplex patula) stretching up through the cordgrass. Cover is generally greater than 75%, and often 100%.

The pickleweed-saltgrass association is characterized by a low mat of vegetation which may be found from the lowest to the highest elevations of the salt marsh. At the lowest elevations, pickleweed dominates with saltgrass usually present in measurable amounts. With increased elevation, the diversity of this association increases and pickleweed cover decreases. Jaumea (Jaumea carnosa), orache (Atriplex patula), sea lavender (Limonium californicum), sea milkwort (Glaux maritima), arrowgrass (Triglochin maritimum), salt rush (Juncus lesueurii*) and gumweed (Grindelia stricta) are all common, but never dominant, in higher elevation pickleweed marshes. Brass buttons (Cotula coronopifolia) may also be found in high salt marshes, particularly in a very clayey substrate. Other species which have been reported from salt marshes of Humboldt Bay include alkali-grass (Puccinellia sp.) and arrowgrass (Triglochin concinnum) (EAI, 1979).

Of particular interest in higher elevation salt marsh habitats are Humboldt Bay tarweed (Grindelia stricta ssp. Blakei) and Humboldt Bay owl's clover (Orthocarpus castillejoides var. humboldtensis), both considered uncommon endemic species of Humboldt Bay. Two varieties of salt marsh bird's beak (Cordylanthus maritimus ssp. maritimus and C. maritimus ssp. palustris) have been reported as rare or endangered species in Humboldt Bay salt marshes (CNPS, 1974).

Vegetation zonation in Humboldt Bay salt marshes appears to differ considerably from other salt marshes in the state. Elsewhere, the cordgrass association has been identified as the low elevation community, with the pickleweed-saltgrass association in the upper elevations (Mahall and Park, 1976 ; Harvey, 1978). Harvey (1978) has

*Mason (1957) noted two forms of this rush. One he noted was "probably the form designated as Juncus lesueurii var. Tracyi-jepson" (p. 351), which "shows a preference for sand-dune habitats." The other form is found in salt marshes, but has not been designated. Investigation of these taxonomic questions is far beyond the scope of this work.

suggested that cordgrass in Humboldt Bay is Spartina spartinae, a Gulf Coast species, rather than the Pacific Coast S. foliosa. He feels this is an explanation for differences in zonation observed.

Brackish marsh is a tidal wetland inundated by low to moderate salinity water. It is usually found at the highest elevations of salt marshes where upland runoff may dilute infrequent tides, or along tidal rivers and creeks, where stream flow results in depressed salinities. Three brackish marsh associations have been identified in the study area.

A dense, monotypic community of sedge characterizes one brackish marsh type. This habitat type appears along slough borders and also in infrequently inundated areas with poor drainage of upland runoff. Lyngby's sedge (Carex lyngbyei) is more common along slough edges. Slough sedge (C. obnupta) may be present in either habitat.

The second brackish marsh type is dominated by hairgrass (Deschampsia caespitosa) although rush (Juncus spp.), bentgrass, orache and silverweed (Potentilla pacifica) are common. Other species found in this community, but usually not high concentrations, include saltgrass, arrowgrass, and yarrow (Achillea millefolium).

The other common brackish habitat type consists of rushes which constitute 75-90% cover. Other species present include hairgrass, orache, saltgrass, and silverweed. The last two communities described appear to occupy areas where inundation may occur as often as daily, but drainage is slow and upland runoff is significant. The hairgrass marsh is also common along the upper boundary of salt marshes or on berms adjacent to tidal creeks such as Jacoby Creek or Elk River.

Several fresh marsh habitat types have been identified within the study area. These are frequently associated with rivers or creeks, or closed channels such as drainage ditches or abandoned mill ponds. Some fresh marshes may also be found in tidelands which were diked for agricultural purposes, but have maintained their wetland character by changing from salt marsh to fresh marsh.

Cattail marshes are probably the most well known fresh marsh habitat type. They usually occur as dense, monospecific communities in standing or slow moving water up to 30 cm (1 foot) deep.

A common fresh marsh in the area is dominated by water parsley with occasional rush and marsh pennywort; sedge, bulrush (Scirpus microcarpus) and buttercups (Ranunculus sp.) may be locally common. This habitat type is often in several inches of water with a soft boggy substrate.

The final fresh marsh type is dominated by rush with some sedge (Carex obnupta), bulrush, silverweed, or buttercups scattered throughout. This community is common on a saturated, but rarely inundated, firm substrate.

Swamps are freshwater wetlands dominated by trees or shrubs. They may represent a successional stage which has replaced marsh habitat types. Willows are usually the dominant tree, although alder may also be present in the canopy. The understory may include salmonberry, sedge, buttercup, and bulrush. Water parsley may also be present in particular boggy conditions. Swamps in the Humboldt Bay area are generally found in saturated, but not regularly inundated situations, although they may store considerable water through the winter.

In the dune areas of North Spit, swamps have a slightly different character. In addition to the willows, beach pine (Pinus contorta) and Sitka spruce (Picea sitchensis) may also be a part of the overstory. The shrub understory may contain bayberry (Myrica californica), twinberry (Lonicera involucrata), and huckleberry (Vaccinium ovatum). Low understory species may include silverweed (Potentilla Egedii grandis), sedge, bracken fern (Pteridium aquilinum), and dock (Rumex crispus) (Johnson, 1963).

A considerable portion of the bay is included in the intertidal flats. These flats extend from the lower limit of the salt marshes or dikes shoreline out to the edges of the tidal channels. Their elevation varies from about +5 to 6 feet (MLLW) to -3 or -4 feet. Most of the flats are bare above an elevation of about +1 foot (MLLW), the only vegetation being diatoms or occasional patches of algae. The substrate of these flats is mostly mud or sand (see Section VI.J, Volume II).

Eelgrass (Zostera marina) forms dense stands on the flats below the +1 foot (MLLW) contour. Maximum biomass production generally occurs at -1 foot (MLLW). The lower limit of eelgrass growth has not been defined; but it has been identified below -1.5 feet (Harding, et al., 1975). The depth limit probably varies locally as a function of turbidity, tidal velocity, and other variables. Almost all the flats in the bay at the broader depth, except those actively used for oyster culture, are covered by eelgrass. Although eelgrass forms a monotypic community, it also supports a wide variety of epiphytic algae. [Due to difficulties of identification at the larger scale, eelgrass has only been mapped at 1:24000 (Plate 10, Vol. II).]

Beaches are unvegetated intertidal habitats along the shore, generally characterized by sand or gravel substrate. In most areas, high energy conditions such as waves or tidal currents preclude the establishment of vegetation. The porous substrate

also holds few nutrients to support macroscopic flora. Certain phytoplankton may be present, attached to the substrate.

Dunes

The coastal strand from Table Bluff to the Mad River mouth consists of a collection of distinct dune habitat types. The wind-blown sand and salt spray and the sandy substrate create a set of conditions in which only highly tolerant or well adapted organisms can survive. The habitat types noted in the dune areas include:

- . Bare Dunes
- . Sparsely Vegetated Dunes
- . Shrubby Dunes
- . Dune Hollows
- . Dune Swamps
- . Closed Cone Pine Forest

Several detailed studies of these habitat types have been carried out in the past (Johnson, 1963; Parker, 1974; Barker, 1976). This section is based primarily on those works. Dune swamps and closed cone pine forest have been described in previous portions of this narrative.

Bare dunes are unvegetated areas of moving sand. On North Spit these dunes may be over 100 meters (300 feet) wide, 200-300 meters (650-1,000 feet) long, and 15 meters (50 feet) high. These are major features in the area, but far too dynamic to support any vegetation community. In addition, their size and rate of movement are such that they will bury any habitat type in their path.

Sparsely vegetated dunes are also a mobile substrate habitat type, but not the massive dunes described previously; some vegetation is established. Most foredunes along the coastal strand are included in this habitat type. Beachgrass (Ammophila arenaria) and dunegrass (Elymus mollis) are the dominant species in this habitat. Sea rocket (Cakile spp.), ice plant (Mesembryanthemum chilense), beach strawberry (Fragaria chiloensis) and beach pea (Lathyrus littoralis) are all found in this habitat type also.

Vegetated dunes are much more stabilized habitat with a wide variety of grasses, forbs, and shrubs acting to trap moving sand. Bush lupine (Lupinus spp.) is often the dominant, or at least most apparent, species. Sand verbena (Abronia latifolia), Ambrosia chamissonis, beach strawberry, ice plant, and knotweed (Polygonum paronychia) are all low, matty perennials common on vegetated dunes. A wide variety of annual grasses and forbs including yarrow (Achillea borealis), goldenrod (Solidago spathulata) and tansy (Tanacetum douglasii) are also present. The wallflower (Erysimum menziesii) has also been noted in this habitat type.

Dune hollows are low areas between dunes in which the surface is at or near the water table. With some protection from windblown sand and available water, this habitat type is much more conducive to the establishment of vegetation. A variety of shrubs including coyote brush, bayberry, blackberry, lupine, and bearberry are present. Rush (Juncus lesueurii), birdsfoot-trefoil (Lotus micranthus), sedge, everlasting, and silverweed (Potentilla egedii) are common in the understory.

Jetties and Reefs

The final habitat type to be considered, these are man-made structures constructed from impermeable material. Concrete and rocks have been used in the construction of jetties and sea walls; tires were used to construct the artificial reef in South Bay. Although they do not support flowering plants, these structures provide substrate for a large and diverse algal community. Red, green, and brown algae are usually distributed over much of the subtidal and intertidal portions of the substrate. In addition, an even wider variety of invertebrate fauna occupy this habitat type.

Table II-2

Comparison of Humboldt Bay Habitat Types with the
the NWI, Macomber, and WES Classifications

<u>Habitat Type</u>	<u>NWI</u>	<u>Macomber</u>	<u>WES</u>
<u>WATER</u>			
Deep tidal channels	Estuarine subtidal unconsolidated bottom	Coastal brackish submergent animal assemblages	
Shallow tidal channels	Estuarine subtidal unconsolidated bottom	Coastal brackish submergent animal assemblages	
Tidal creeks and sloughs	Estuarine subtidal unconsolidated bottom or Riverine tidal un- consolidated bottom	Coastal brackish submergent animal assemblages or Inland fresh submergent animal assemblages	
Creeks and rivers	Riverine lower perennial unconsolidated bottom	Inland fresh submergent animal assemblages	
Ditches, ponds, and closed channels	Palustrine unconsolida- ted bottom	Inland fresh submergent animal assemblages	
<u>WETLANDS</u>			
Salt marsh	Estuarine intertidal emergent wetland	Coastal saline regularly (or irregularly) flooded salt marsh	Saltwater marsh
Brackish marsh	Estuarine intertidal emergent wetland or palustrine emergent wetland	Coastal brackish deep (or shallow) marsh	Saltwater marsh
Fresh marsh	Palustrine emergent wetland	Inland fresh emergent deep (or shallow) marsh	Freshwater marsh

Table II-2 (Continued)

<u>Habitat Type</u>	<u>NWI</u>	<u>Macomber</u>	<u>WES</u>
<u>WETLANDS (Continued)</u>			
Swamp	Palustrine scrub/shrub or forested wetland	Inland fresh scrub/shrub or forested wetland	Freshwater swamp
Intertidal flat	Estuarine intertidal flat	Coastal saline lowtide flats	Saltwater coastal flat
Belgrass	Estuarine intertidal aquatic bed	Coastal saline vascular plant bed	Saltwater aquatic
Beach	Coastal or estuarine intertidal beach	Coastal saline lowtide flats or Coastal brackish lowtide flats	Saltwater coastal flat

Habitat Type Distribution and Areal Extent

[For the purposes of discussion in this section, "study area" refers specifically to the 32,981 acres of upland and wetland habitat types within the subareas delineated on Plate 1 (Vol. I). The 14,853 acres of open water and associated intertidal flats are discussed here as the "bay area." Areal extent of the various habitat types within the "study area" is shown in Table II-3. The "bay area" acreages are not included in Table II-3.]

Urban habitat types constitute approximately 25% of the study area (8,400 acres) and are second only to agriculture in areal extent. The majority of the urban area is located in and around Eureka and Arcata, although there is also about 1,000 acres of urban habitat type on North Spit.

There are about 14,000 acres of agricultural habitat type, representing almost 43% of the study area. Agriculture is concentrated in the flat bottomlands west and southeast of Arcata, north of Eureka, and in the floodplains of Salmon Creek, Elk River, and Mad River. There is also extensive agriculture on Table Bluff.

Grasslands represent a very small portion of land within the study area. Most of the grassland area around Eureka is cemetery or golf course, a habitat type that may be equally described as urban. Other grasslands are generally small parcels of abandoned agriculture or vacant urban land, usually scattered around the periphery of Eureka and Arcata.

Shrublands make up only about 1% of the study area. As with grasslands, they often represent abandoned agricultural or undeveloped urban areas. Typically, they have been abandoned for a longer time and woody vegetation has invaded as in "old field succession."

The various forest types cover approximately 3,000 acres, just under 10% of the total study area. Coniferous forest is the most prevalent, covering many of the slopes adjacent to the Elk River and Eureka Slough bottomlands. Both deciduous and mixed forests are also common in these areas. The closed cone pine forest is found only within about 0.5 miles of the coast along North Spit and Arcata Bottoms. The almost 600 acres of closed cone pine forest represents less than 2% of the study area; it constitutes almost 15% of the 4,000 acres of dune habitat types within the study area.

Water habitat types may be divided into those in the "study area" and those in the "bay area." Of the almost 1,000 acres of water in the study area, approximately 60% is tidal creeks and sloughs. Elk River, Mad River, Mad River Slough, and Eureka are the four principal bodies represented. Mad River and Elk River also constitute the majority of area in rivers and creeks. Most of the remaining water in the study area consists of scattered ditches, ponds, and closed channels.

Table II-3

AREAL EXTENT OF HABITAT TYPES BY SUBAREA^{1,2}
(units in acres)

Wetlands Habitat Type ³	Beatrice Flats	Table Bluff	South Spit	Elk River	Eureka	Eureka Slough	Woodley Island	Indian Island	Bayside Bottoms	North Spit	Arcata Bottoms	Mad River	TOTAL
B			199							366	144		759
SM ₁	108		4	18	8	94	23	170	21	79	31		556
SM ₂	17		16	19	15	23	3	25	60	54	182		414
BM	26			12	18					4		4	64
BM ₁				10		8				10			28
BM ₂	1			32	2	16		2	1		26		80
BM ₃	9			33	17	15				4	3		81
FM		3		15	15	26	1				6		66
FM ₁		3		9	7				1		8		28
FM ₂				18	1	6				5	12		42
FM ₃			1	15	2					10	18		46
SW	6	3	2	45	38	30			8	3	24	26	185
M	43			31	1	44	5	6	2	13	106	51	302
Wb											15	6	21
Wc				15									15
Wd	12		5	1		16			6	1	124	1	166
Wr				35						28			63
Ws	84			49	1	131		7	6		259	156	693
Wt										2			2

(continued on following page)

Table II-3 (continued)

Uplands Habitat Type ³	Beatrice Flats	Table Bluff	South Spit	Elk River	Eureka	Eureka Slough	Woodley Island	Indian Island	Bayside Bottoms	North Spit	Arcata Bottoms	Mad River	TOTAL
A ⁴	1,626	546	120	1,691	7	2,140			1,005	33	6,278	607	14,053
Dh			31					3		57	35	2	128
Dm			10		1					141	486	116	754
Ds										47	26	14	87
Dsp			326	100				22		256	150	39	893
Dv			201	21						1,145	195	35	1,597
Fd	1	5		107	4	27	13	10	19	3	1	25	215
Fe	23	98		828	51	587		3	78	7	9	51	1,735
Fm	14	18		178	102	43			5	10	7	78	455
Fp										266	299	21	586
Fr				25	3	2					14	14	58
G	4			206	107	97	34	6	37	20	140	5	656
J			9	2						7			18
S	31	30		84	29	15	7	4	8	56	23	54	342
U	105	38	35	1,845	2,340	1,087	2	9	238	1,056	1,345	285	8,385

¹ Discrepancies between figures in this table and in Tables VII-2 through VII-9 (Volume II) are explained in Appendix E.7

² Location and boundaries of subareas are shown in Plate 1. Values do not include intertidal flats or open water within the Bay proper.

³ See Table II-4

⁴ Includes Aw and A/W

Table II-4
HABITAT TYPE KEY

UPLANDS

A Agriculture
Aw Wet Agriculture
Dh Dune Hollow
Dm Moving Dune
Ds Dune Swamp
Dsp Sparse Dune
Dv Vegetated Dune
Fd Deciduous Forest
Fc Coniferous Forest
Fm Mixed Forest
Fp Closed-cone Pine Forest
Fr Riparian Forest
G Grassland
J Jetties
S Shrubland
U Urban

WETLANDS

A/W Agricultural Wetland
SM Mixed Saltmarsh
SM₁ Cordgrass Marsh
SM Pickleweed Marsh
BM Mixed Brackish Marsh
BM₁ Sedge Marsh
BM₂ Hairgrass Marsh
BM₃ Rush Marsh
FM Mixed Fresh Marsh
FM₁ Cattail Marsh
FM₂ Water Parsley Marsh
FM₃ Rush Marsh
SW Swamp
M Intertidal Flat
B Beach
Wb River Bar
Wc Deep Channels
Wd Closed Ditches and Ponds
Wr Creeks and Rivers
Ws Tidal Creeks and Sloughs
Wt Tidal Channels

For purposes of this discussion, the "bay area" may be divided into North Bay (north of Samoa Bridge), Entrance Bay (Samoa Bridge to Buhne Point) and South Bay (south of Buhne and South Spit Jetty). Of the 8,000 acres in North Bay, there are about 750 acres of shallow channels and 830 acres of deep channels. The remaining 80% of the area is intertidal flat. In Entrance Bay there are 1,100 acres of shallow channels, 2,050 acres of deep channels, and only 120 acres of intertidal flat, mostly in the vicinity of Indian and Woodley Islands. As in North Bay, the channels only constitute about 20% of the 3,600 acres of South Bay.

Wetlands in the Humboldt Bay area have been classified as salt, brackish or fresh marsh, swamp, or intertidal flat. Marshes and swamps are all considered part of the "study area;" intertidal flats are found in both the "study area" and the bay area.

Of the 1,400 acres of marsh, about 70% (970 acres) are identified as salt marsh. The single largest parcel of salt marsh (195 acres) is located on Indian Island. There are also about 130 acres of salt marsh within Mad River Slough. The remainder of the salt marsh is scattered in small parcels around the periphery of North and South Bays, and up Eureka Slough and Elk River.

Brackish marsh is generally found along the shores of tidal creeks and rivers or behind old, partially breached levees. Hairgrass and rush marshes are the most common types, especially in the vicinity of King Salmon, Elk River, and Eureka Slough. Fresh marsh is also widely scattered throughout the study area, rarely in large parcels. Some of the larger fresh marshes are found in the Eureka Gulches and in the vicinity of South Bay Union School.

Approximately 185 acres of swamp have been mapped within the study area, not including the dune swamps found among the coastal dunes. Most of the swamp consists of scattered parcels of less than 5 acres. Several large swamp areas do exist in the Eureka Gulches, interspersed with fresh and brackish marshes.

Within the "study area," about 300 acres of intertidal flats have been identified. Most of these flats are located in Mad River Slough, Eureka Slough, Elk River, or adjacent to Beatrice Flats. Approximately 9,600 acres of flats are distributed throughout the "bay area," with about 6,400 acres in North Bay and 3,200 acres in South Bay. In North Bay, about 16% of the flats (1,000 acres) are covered by eelgrass; while in South Bay, eelgrass occupies about 60% (1,900 acres) of the intertidal flats. The significant difference in eelgrass coverage between North and South Bays can probably be attributed in part to differences in sediment and depth distribution in the two bays, and to oyster harvesting in North Bay.

Although the beach habitat type has been mapped, no estimate has been made of the areal extent. The beach area will fluctuate dramatically with season, storm, and tidal height.

Dune habitat types are found almost exclusively along the coastal strand, within 0.5 miles of the beach. Elk River Spit, however, has been recognized as a similar dune environment. Including the closed cone pine forest, about 4,000 acres of dunes have been mapped. Of this, 120 acres are located on Elk River Spit, 25 acres on Indian Island, and approximately 570 acres on South Spit. The remaining 3,300 acres are found between the Bay entrance and the mouth of Mad River. On South Spit, sparsely vegetated dunes are the most common habitat type, while north of the Bay mouth, densely vegetated dunes constitute more than 40% of the area. About 750 acres of the coastal strand is covered by unvegetated moving dunes. Of interest is the fact that about 40% of the coastal strand north of Manila is moving dune and 13% is sparsely vegetated, while south of Manila, 40% of the strand is sparsely vegetated and about 7% is moving dune.

Jetties and reefs are limited to very small areas at the distal ends of North and South Spits.

Endangered and Threatened Species

The Endangered Species Act of 1973 (P.L. 93-205) as amended, provides a program for the conservation of endangered and threatened species, and their ecosystem. Plants which have been officially listed as threatened or endangered are protected by the restrictions of that act. The most recent official list was published in the Federal Register by the Fish and Wildlife Service (USFWS) on July 11, 1978 (43 FR 58048).

USFWS also published in the Federal Register a list of "proposed endangered" species on 16 June 1976 (41 FR 24524-72) and a list of "candidate threatened" species on 1 July 1975 (40 FR 27837-46). Most of the proposed and candidate species were originally listed in a report by the Smithsonian Institution to Congress (Smithsonian, 1975) as required by the Endangered Species Act. According to 1978 amendments to the Endangered Species Act species listed as "proposed endangered" or "candidate threatened" must be finalized by December 1979. It should be noted that Federal agencies are required to treat proposed endangered and candidate threatened as if they were officially listed until a final decision has been rendered.

The California Native Plant Society has also published a list of vascular plants determined to be rare and endangered (CNPS,

1974). While this list has no "force of law," it does represent extensive work by CNPS and their recommendations to USFWS.

Table II-5 is a compilation of all plants known or thought to be found in the study area which are noted in any of the above lists. Plate 11 (Volume II) illustrates the approximate known location of all listed species within the study area.

Table II-5

RARE, THREATENED, AND ENDANGERED VASCULAR
PLANTS IN THE HUMBOLDT BAY AREA

<u>Species</u>	<u>Common Name</u>	<u>Status*</u>	<u>Source</u>	<u>Habitat</u>
<i>Cordylanthus maritimus</i> ssp. <i>maritimus</i>	Salt Marsh Bird's Beak	E	43 FR 58048	Salt Marshes
<i>Cordylanthus maritimus</i> ssp. <i>palustris</i>	Pt. Reyes Bird's Beak	CT	40 FR 27837	Salt Marshes
<i>Erysimum menziesii</i>	Menzies Wallflower	CT	40 FR 27839	Coastal Sand Dune
<i>Lilium occidentale</i>	Western Lily	PE ¹	41 FR 24552	Northern Coastal Scrubs
<i>Orthocarpus castillejoides</i> var <i>humboldtiensis</i>	Humboldt Owls-Clover	PE	41 FR 24567	Salt Marshes
<i>Monotropa uniflora</i>	Indian Pipe	R	CNPS, 1974	Redwood and Mixed Evergreen Forest

*Status: E - listed endangered
PE - proposed endangered
CT - candidate threatened
1 - possibly extinct or extirpated
R - recommended CNPS

According to the notice published in the Federal Register on 10 December 1979, the status of both proposed endangered species has been changed to candidate threatened or endangered (44 FR 70 796-97).

Section III

WETLAND-UPLAND BOUNDARY

III. WETLAND-UPLAND BOUNDARY

With the enactment of the FWPCA and subsequently the Clean Water Act (CWA), the Corps was given jurisdiction over filling activities in wetlands adjacent to "waters of the United States" (33 CFR 323.2). According to regulations promulgated by the Corps on 19 July 1977 to administer the CWA, "wetlands" means

...those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.
(33 CFR 323.2(c))

The intent of this portion of the Humboldt Bay Wetlands Review and Baylands Analysis is to identify the boundary between uplands and adjacent wetlands as interpreted from Corps regulations. Final boundaries would be determined by Corps personnel on a case-by-case basis.

A. PREVIOUS RESEARCH

As has been mentioned, numerous studies of wetlands have been performed over the last 25 years (see Section III.A, this volume). In addition to those mentioned, several projects have been carried out specifically to identify the marsh-upland boundary and/or to correlate that boundary with various physical parameters.

The first of these was a pilot study conducted by the National Ocean Survey (NOS, 1975) for the Environmental Protection Agency. At seven sites around the continental U.S., tidal marshes were sampled for vegetation along surveyed transects. The intent of this study was to:

- . "Investigate the relationship between tidal datums and upper coastal marsh vegetation."
- . "Compute the frequency of inundation for various elevations within the marsh."

(NOS, 1975, p. 1)

An important concept introduced to the marsh delineation problem in the NOS (1975) study was that of the transition zone: an area between marsh and upland where both wetland and upland flora were present. It was noted that in the two West Coast study areas the transition zone was significant, varying 10-160 feet horizontally and one foot vertically.

Following completion of the NOS pilot study (NOS, 1975), two similar, but region-specific, studies were begun in Oregon and Virginia. Each of these studies investigated the marsh-upland transition zone and attempted to correlate it to tidal datums.

In Virginia, Boon, et al. (1976), defined the "upper limit of the marsh" (ULM) as the median point in the transition zone, where the dominance of marsh vegetation matched that of upland vegetation. Careful surveying determined that this boundary was approximately 0.8 to 1.2 feet above mean high water (MHW), corresponding to inundation by 50-100 high tides per year.

The Oregon study (Frenkel and Eilers, 1976) identified the transition zone as "the ecotone between intertidal marsh and upland in which upland and intertidal species may both be present..." (p. 17). In this study, the mean elevation of the lower limit of the transition zone was approximately 1.0 feet above MHW, while the mean elevation of the upper limit was approximately 1.8 feet above MHW. These elevations were not correlated to frequencies of inundation.

A study of wetlands boundaries in Washington (NEC, 1977) investigated four alternative methods of delineating the ULM: interstitial soil salinity, groundwater movement, tidal elevation, and floral distribution. The results showed both groundwater and soil salinity to be highly variable, dependent on the recent history of tidal inundation, rainfall, storm tides, and soil factors. Tidal elevation was found to be a useful indicator but somewhat imprecise due to the low gradient of marsh surfaces. Plant communities were identified as the best indicators of marsh-upland boundaries.

Delineation of the marsh-upland boundary was an important part of the Snohomish Estuary Wetlands Study conducted for the Seattle District Corps of Engineers (Boulé and Shea, 1978). Using criteria established in Corps regulations (33 CFR 323.2) and previous transition zone studies (Boon, et al., 1976; Frenkel and Eilers, 1976; NEC, 1977) detailed maps of a recommended wetland-upland boundary were prepared. The report includes a text discussing the work, identifying difficulties in interpretation, and describing examples of situations encountered.

A second Oregon study (Frenkel, et al., 1978) is an extensive analysis of the coastal marsh-upland ecotone. Detailed vegetation sampling, soil salinity sampling and in-depth statistical analysis of data were the prominent aspects of this research effort. Detailed descriptions of numerous transition zones and application of the Multiple Occurrence Method (MOM) to identify the ULM are important contributions of this work.

The only study of wetland transition zones in California investigated 11 sites from Humboldt Bay to San Diego Bay (Harvey, et

al., 1978). Plant species composition and percent cover were determined for marsh, upland, and transition zone; transition zone limits were defined as the 5% cover value for wetland and upland species.

B. DISCUSSION OF CORPS REGULATIONS

As noted earlier, Corps regulations (33 CFR 323.2c) define wetlands as

...those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

The key portion in this definition is "...do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Within this definition are several phrases which may be subject to interpretation.

"Prevalence" has been widely defined to mean a vegetative cover greater than 50% (Boon, et al., 1976; Boulé and Shea, 1978; NEC, 1977). Unfortunately, the boundary between a prevalence of wetland vegetation and a prevalence of upland vegetation is not always defined by a distinct line. In almost every case, a transition zone has been noted (NOS, 1975; Frenkel and Eilers, 1976; Harvey, et al., 1978). At the upper limit of this transition zone upland species dominate; at the lower limit, wetland species dominate. There is rarely a regular gradient of decreasing wetland species and increasing upland species between the lower and upper limits of the transition zone. Rather, an irregular trend in cover dominance is usually noted, reflecting minute fluctuations in topography, substrate, succession, and plant adaptability. Thus, in areas where the transition zone is wide and the plant diversity is high (a common occurrence in these ecotones), there may be no exact line which represents the boundary between a prevalence of upland species and a prevalence of wetland species.

"Typically adapted" suggests vegetation which thrives under the identified conditions, in this case saturated soils. Here again, minor differences in physical parameters such as substrate character or local topography might affect the ability of certain plant species to survive. In addition, different populations or varieties of the same species may exhibit different tolerances to specific conditions. It should be noted that plant species which are typically adapted to a specific set of physical conditions are not necessarily incapable

of surviving, or thriving, under other conditions. Many wetlands plants will do well in uplands situations, provided they do not have to compete with uplands species.

Finally, while tidal marshes are frequently inundated, they do not exhibit saturated soil conditions at all times (see, for instance: Jefferson, 1975; Eilers, 1975; Disraeli, 1977). Thus, typically adapted appears to refer to species which can flourish in soils saturated for some time period, but not necessarily indefinitely.

As mentioned, tidal wetlands (and many non-tidal wetlands) do not exhibit permanently saturated soils. Rather, the substrate is saturated only during tidal inundation; the zone of saturation may drop 20-30 cm below the surface during low tide (Disraeli, 1977; Jefferson, 1975). In general, it would be expected that the frequency and duration of saturation would decrease with elevation until an upland condition was reached. However, in areas where upland runoff or seepage is significant, this trend of decreasing saturation may be altered at the upper reaches of the marsh. Figure III-1 describes, in a generalized fashion, the relationship between saturation and elevation in a tidal wetland, and the possible impact of upland runoff. This figure is strictly theoretical and should not be considered at all quantitative.

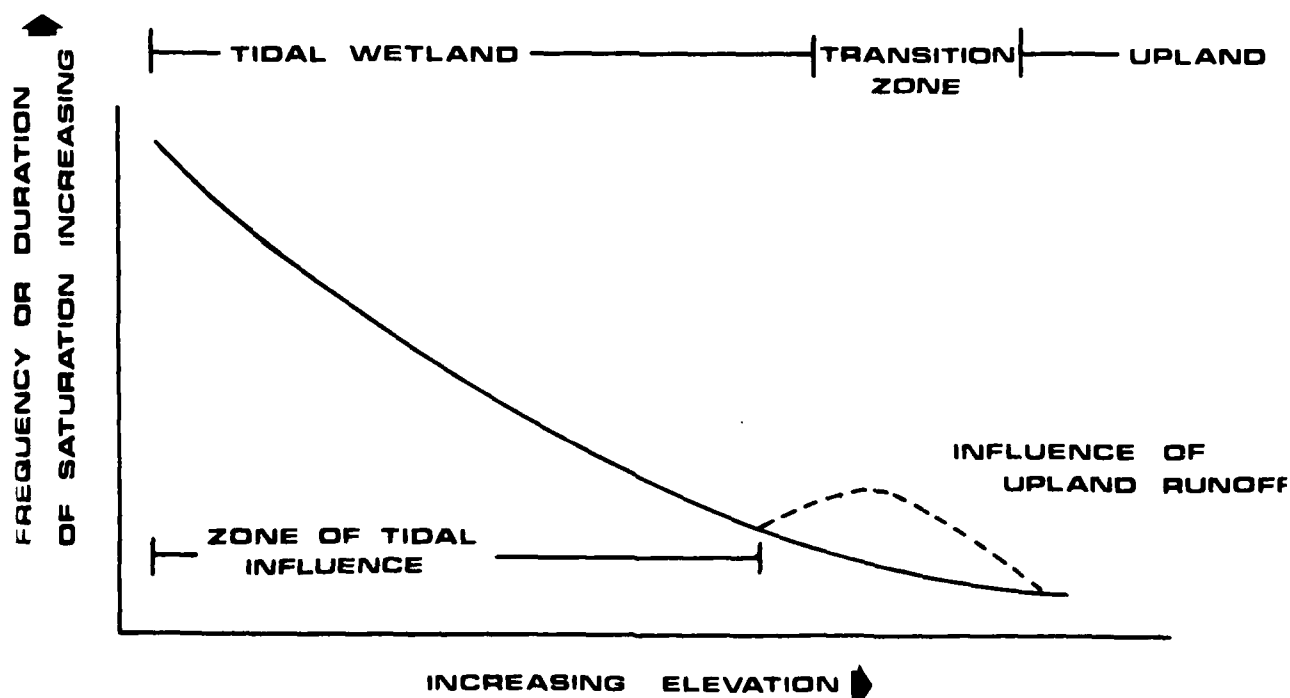


FIGURE III - 1 SUBSTRATE SATURATION AS A FUNCTION OF ELEVATION IN A TIDAL WETLAND

From the preceeding discussion, it is apparent that the boundary between wetland and upland, as defined in Corps regulations, is not a distinct line. Usually it is a zone, the elevation and location of which are controlled by a variety of physical and biological factors. Where the elevational gradient is low this zone may be very wide (up to 160 feet according to NOS (1975)) and may contain a diverse population of both wetland and upland plant species.

It is extremely important to recognize the differences between the definition of wetlands used in Section 404 regulations (33 CFR 323.2), in EO 11990, and the definition developed by USFWS. According to EO 11990

... "wetlands" means those areas that are inundated by surface or ground water with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction.

This is very similar to the Section 404 definition, differing primarily in that it includes aquatic life as well as vegetation. Both definitions, however, require the presence of vegetation "typically adapted to saturated soils."

As part of the National Wetlands Inventory, USFWS has developed the following definition:

Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes, (2) the substrate is predominantly undrained hydric soil, and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year. (Cowardin, et al., 1979)

With this definition, agricultural areas which were once wetlands but are presently diked and farmed, may be considered wetlands, since the soils may retain their hydric character. It is apparent that application of the USFWS wetland definition in an area may result in a very different wetland-upland boundary than if the Section 404 definition is used.

Another important concept which must be considered in the delineation of wetlands under Corps jurisdiction is that of adjacency. According to 33 CFR 323.2(d), "adjacent" means

*...bordering, contiguous, or neighboring.
Wetlands separated from other waters of the
United States by man-made dikes or barriers,
natural river berms, beach dunes and the
like are "adjacent wetlands."*

It is apparent from this definition that wetlands which have no direct, identifiable hydrologic connection with waters under Corps jurisdiction may still be under Corps jurisdiction, if they are close or nearby.

As a final point, it should be noted that in areas that are unvegetated, such as beaches, the Corps generally uses the highest estimated tide as the upper limit of its jurisdiction under Section 404.

Thus, delineation of the limit of Corps jurisdiction requires not only identifying wetland habitat types, but also determining their proximity to "waters of the United States." These determinations are the intent of this portion of the Humboldt Bay Wetlands Review and Baylands Analysis.

C. APPLICATION OF CORPS REGULATIONS

In order to effect the uniform application of Corps regulations on a nationwide, or even regional, basis, it is necessary that terms mentioned in the previous section, such as "typically adapted" or "adjacent," be defined nationwide. That has not yet occurred; therefore, we are left with local definitions which (1) appear to work in the area and, (2) appear to follow the regulations. Since wetland vegetation and character can change significantly from one region to another, it may be that local or regional interpretations of regulations are the only ones which will ever work. Such speculation is not the purpose of this work, rather its intent is to identify both the legal and biological obstacles which exist in this type of project.

There have been several approaches to wetland-upland boundary delineation. These include:

- . Identification of physical parameters, such as soil conditions or tidal inundation, which demarcate wetlands and uplands.
- . Identification of certain plant species indicative of wetland habitat types.
- . Identification of plant communities characteristic of wetland conditions.

Several physical parameters have been identified as indicators of wetland conditions. As mentioned, soil saturation, soil salinity, and frequency of tidal inundation have all been investigated as possible indicators of wetland conditions. In some cases, close correlations have been shown between these physical parameters and wetland habitat types (see, for example, McIntire, et al., 1975; Boon, et al., 1976; Frenkel and Eilers, 1976; NEC, 1976). As a result, it has been suggested that some of these physical parameters could be used to delineate the extent of wetlands. Indicator species have also been used to identify the extent of wetlands. In this approach, certain plant species which can only grow or compete in saturated or saline soils are identified. The presence of these species determines the extent of the wetland. The third approach identified might be called indicator community. The presence of certain plant associations determines the extent of wetland habitats.

Each of these approaches has advantages and disadvantages. Reliance on physical parameters, such as soil salinity or inundation frequency, provides a quantitative means which can be easily stated, and excludes the complexity inherent in biological systems. At some point, however, these quantitative measures must be correlated to biological systems. Such correlation involves extensive measurements and is very time-consuming. An indicator species is often easy to

identify and may strongly suggest certain specifics regarding soil conditions where it is found; however, it will not necessarily be found everywhere those soil conditions exist. In addition, presence of a single indicator species may reflect a local anomaly in soil conditions or species tolerance and therefore may not accurately delineate wetland conditions. The use of vegetative associations as indicators of wetland conditions may not be as quantitative as the other approaches described; however, it is a practical method for delineating wetlands. In addition, while some wetland species may be found in an upland, wetland vegetation associations will not be found in uplands.

In general, the Corps wetlands definition (33 CFR 323.2(c)) tends to define wetlands according to the plant community approach. The definition does, however, include the physical parameter saturated soil. In contrast, the USFWS definition of wetlands (Cowardin, et al., 1977) uses the indicator species approach augmented by physical parameters. (For further discussion, see previous section.)

Another limitation to each of these approaches is the selection of wetland species. The identification of certain plants as wetlands or uplands species may have considerable impact on the results of any wetlands boundary study. While there is general agreement among researchers about which species are characteristic of wetlands or uplands habitats, there is invariably some difference of opinion. This difference of opinion could result in differences in results.

The difference of opinion will probably have a greater impact with some approaches than others. It is apparent that with the indicator species approach, the identification of a particular plant as either a wetland or an upland species might be the controlling factor in the designation of a particular area as either wetland or upland. In the case of the physical parameter approach, the impact occurs during the preliminary study when quantitative physical relationships to complex biological systems are being deduced. The difference between identification of a particular species as either upland or wetland may affect the correlations developed. In the later use of those correlations, that effect might not be apparent. When wetlands are identified according to the presence of plant communities, the designation of a single species may have less impact on the final result.

Thus, it is apparent that the plant community approach to wetlands identification is not only best suited to Corps regulations, but also minimizes the potential for conflicting interpretations of Corps Section 404 jurisdiction. For this study, associations of plants considered to be "typically adapted to saturated soils" were considered to be indicative of wetlands.

"Adjacent" wetlands are those which are:

...bordering, contiguous, or neighboring. Wetlands separated from other waters of the United States by man-made dikes or barriers, natural river berms, beach dunes, and the like are 'adjacent wetlands'.
(33 CFR 323.2(d))

No detailed guidelines have been promulgated concerning adjacent wetlands. As a result, their delineation for this study has been based on the interpretations of the investigator. In particular, adjacent wetlands are those which appear to have an "ecologic" and/or hydrologic connection to navigable waters or their tributaries. "Ecologic connection" means the adjacent wetland is functional as a part of the immediate Humboldt Bay ecosystem, providing habitat for organisms which are a part of the Bay ecosystem. Small, isolated wetland areas may not functionally contribute to the Bay ecosystem. Hydrologic connection refers to a movement of water, either surface or subsurface, between Humboldt Bay and the adjacent wetland. Some wetlands within the study area are associated with only intermediate streams or seepage and, therefore, lack any hydrologic connection to the Bay. In each case, the interpretations are based on available information and, wherever possible, field investigations.

D. METHODS

Delineation of the wetland boundary in Humboldt Bay was undertaken in conjunction with the habitat type mapping described in Section II. Color infrared photographs at a scale of 1:6000 were used for preliminary mapping; ground truth investigations were made in areas of concern. The photographs were taken in November and December 1978 and March 1979. Over 500 9-inch square photographs provided stereo coverage of the entire study area.

Ground truth verification involved seven one-week field trips between October 1978 and May 1979. The purpose of ground truth investigations was twofold: first, to determine which habitat types were wetlands and which were uplands as interpreted from Corps regulations; second to examine potential of an "ecologic" or hydrologic connection between the wetland and Humboldt Bay. The result of these investigations was a line on each habitat map denoting the wetland-upland boundary.

Identification of wetlands and their boundaries requires not only an understanding of physical and biological processes within wetland habitats, but also a recognition of their expression in the location and region under consideration. In evaluating an area, these processes and their relation to the present habitat types must be considered.

Identification of wetlands occurred as part of the habitat classification and mapping described previously. Having identified the uplands, delineation of their upper limit requires the identification of vegetation in the vicinity of the boundary. Which species dominate the area? Are any of those species known to tolerate wide ranges of soil moisture? Are any of them hydrophillic or hydrophobic species? If a single species dominates an area, and it has a wide tolerance of soil moisture, what other species are found? What are their water tolerances?

Soil conditions should be considered. Is the soil saturated at present? Is the present moisture content the usual? How often and to what extent does it fluctuate? How well does the soil hold water? How well does it drain?

The local water table should also be considered. Is its connection with adjacent water (riverine or estuarine) direct and apparent? Does it fluctuate on a daily or seasonal basis? If so, how much, and when? Does it fluctuate in response to adjacent water level fluctuations?

The timing of an investigation is important. What were the soil moisture conditions in the spring when germination was occurring? What about late summer when warm temperatures and low humidity may result in desiccation? Can first year shrubs be expected to survive winter floods? Will the now dominant vegetation remain so throughout the season, or will late starters dominate later in the season?

Finally, it is important to examine the overall context of the site. Is the successional sequence apparent? Does that sequence offer any information concerning past or future conditions on the site? Has the sequence been interrupted due to natural or man-induced disturbance? Will that interruption affect the present condition?

An additional factor considered in these investigations was the transition zone, an ecotone between wetlands and uplands habitat types, where neither local environment prevails. In this study, every effort was made to map the wetland boundary at the median of the transition zone, where neither upland or wetland dominated.

Throughout the course of the study these questions were considered in order to most accurately and comprehensively apply the interpretations of Corps regulations to the Humboldt Bay area. Sometimes the answers were clear. Often new information forced re-evaluation of previous decisions. But in each case, wetlands were delineated according to the definitions discussed in Section III.C.

Final maps were made as part of the 1:6000 habitat type maps. These final maps have been submitted separately as a part of this report.

E. RESULTS

When discussing and delineating the wetland-upland boundary, it is important to consider the extremely dynamic nature of the wetland environment and the often indistinct transition between upland and aquatic environments. The dynamic character is a result not only of natural factors, such as climate change or sea level fluctuation, but also of human-induced factors such as reclamation or dredging. These factors have several ramifications in the delineation of wetland boundaries. Discussion of the effects of these environmental forces may be divided according to natural and human-induced factors.

Natural Factors

In all habitats, succession is a continual process until some form of climax, or stable equilibrium between physical forces and plant communities, is achieved. Climax is a self-perpetuating state in the absence of perturbations of physical conditions whereupon the plant communities respond. In wetland habitat types the primary physical factor is water regime, although substrate type, nutrient availability, salinity, and other factors undoubtedly also affect wetland plant communities.

As mentioned previously, there is some evidence that many wetlands species are not dependent on saturated soils, except inasmuch as those soil conditions may limit competition from upland species. Thus, under rising sea level conditions, uplands species near the wetlands will die back and species more tolerant of saturated soils will become established. The result is a wetland boundary slowly migrating shoreward*. In non-tidal areas a similar situation might result from increased runoff or a rising water table. Knowledge of the successional patterns of an area provide an insight into these situations.

Examples of these conditions are difficult to find in the Humboldt Bay area due to extensive human alteration. (It should also be noted that relative sea level rise within the Bay may be a result, in part, of the dredging and maintenance of navigation channels.) Along the bayshore of South Spit are several small patches of salt marsh. Some of these appear to be encroaching into the adjacent dune habitat types. The leading edge of this encroachment is apparently indicated by the dieback of some dune species and the presence of Juncus leseurii, a rush with a marsh-oriented subspecies and a dune-oriented subspecies.

As noted earlier, upland runoff may have an impact on the character of tidal marshes. The potential influence is two-fold.

*Thompson (1971) noted that sea level rise in Humboldt Bay has probably contributed to erosion of the seaward edge of tidal wetlands.

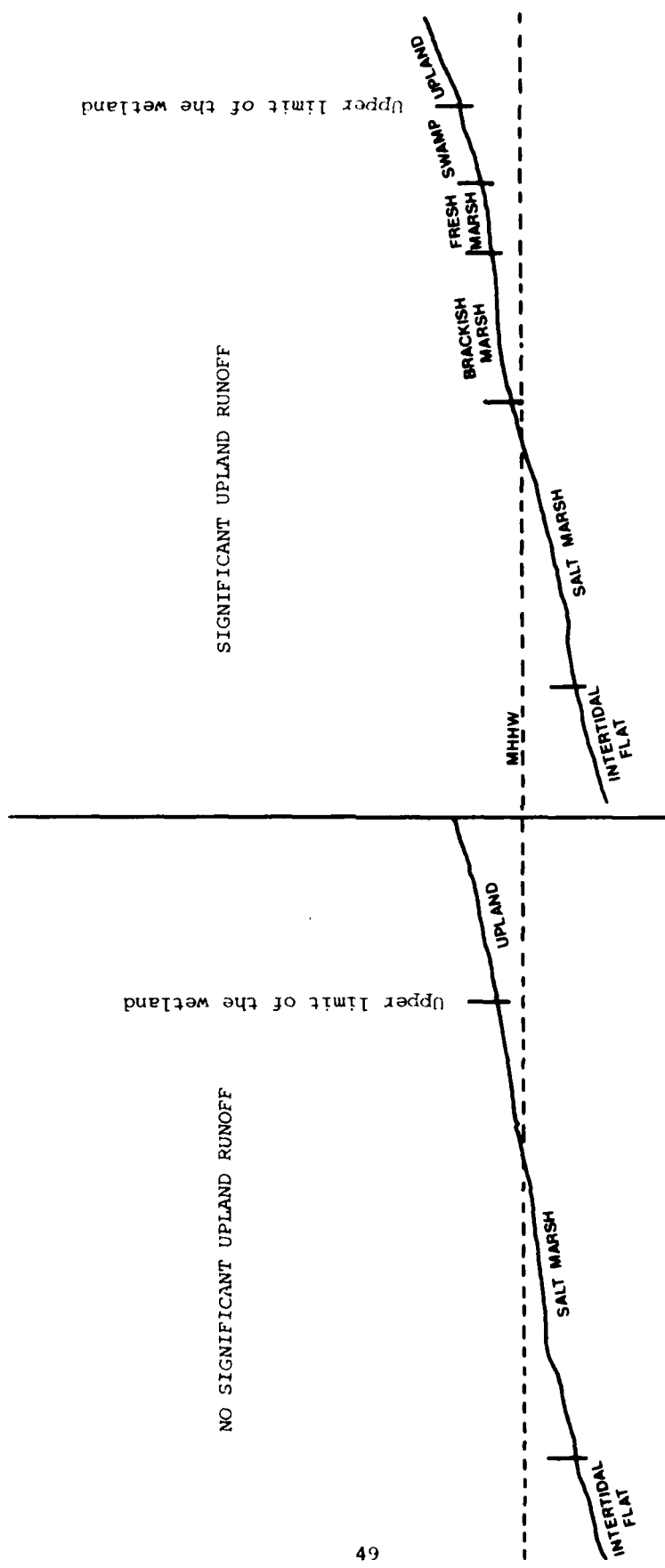
First, at the upper edges of a salt marsh, freshwater runoff may dilute the incoming saline waters. With sufficient dilution brackish, or even fresh, marsh vegetation may become established in the upper reaches of the tidal (saline) wetland. Second, the local, shallow water table may fluctuate with the tide, the upland freshwater literally floating above a subsurface salt wedge. This phenomenon has been observed in shallow near-shore wells (Cline, 1974) and in other wetlands (Boulé and Shea, 1978).

Thus, two potential features of the transition zone may appear as a result of upland runoff. The wetland and its transition zone may extend to a higher elevation above the tidal datums than would be found where no runoff existed; the wetland may exhibit a broad transition from salt to brackish to fresh marsh and even to swamp. Figure III-2 compares the potential differences in wetland character with the presence or absence of upland runoff.

Again, the extensive human alteration of the Humboldt Bay area makes it difficult to find clear examples of the upland runoff phenomenon. Furthermore, detailed surveys of tidal elevations within the wetland would be necessary to unquestionably confirm its presence at any location. Such surveys were, unfortunately, far beyond the scope of this work. Nonetheless, some areas suggest that upland runoff may be influencing the location of the wetland-upland boundary. The Eureka Gulches and the Broadway wetlands are probably good examples of this phenomenon. Other potential examples may be found on the north shore of Swain Slough, just north of the Samoa seaplane ramp on North Spit, and along the undiked portion of the west shore of Mad River Slough.

The final natural factor influencing wetland boundary delineation is sedimentation. As sediment laden water moves through a wetland, its velocity decreases and some sediment is deposited. In tidal wetlands, increased surface elevation probably results in decreased sedimentation rates, due to decreased frequency and depth of inundation (wind-borne sediments, extreme flood situations and sea level rise may all counteract the tendency toward decreased sedimentation rates). In rivers, frequency and depth of inundation and, therefore, sedimentation rates, are dominated by flooding events which are more erratic than tidal flooding.

Sediment trapping has been recognized as a valuable function of wetlands (Volume I, Section V.B). However, by raising the surface level and changing the substrate character, sedimentation may have a significant influence on the vegetational character of a wetland, and also on the location of the wetland-upland boundary. This is most apparent on bars and floodplain areas of the Mad River. Very low elevation areas (relative to the local river level) are often unvegetated gravel bars. At slightly higher elevations, sand and fine grain sediments predominate (often over a gravel base) and



COMPARISON OF THE POTENTIAL EFFECT OF UPLAND RUNOFF
ON A GENERALIZED WETLAND TRANSECT

Figure III-2

freshwater wetland species are found. If these bars persist, willows may become established. With sufficient rise in surface level, bottomland alder forests will replace the willow swamps. Thus, on river bars, succession proceeds, in part, in response to the deposition of sediment. With a sufficient rise in substrate level, the area will no longer be flooded frequently enough to prevent establishment of upland plants, and the wetland habitat type is replaced by an upland, often riparian, forest habitat type. A similar situation may occur in tidal wetlands if wind-borne or other sediment deposition raises the substrate level sufficiently.

Human-Induced Factors

The most obvious, and probably the most influential (from a habitat point of view), human activity in the area is construction of the dikes. Dikes have had, and still have, numerous and varied impacts on wetlands and their boundaries. The initial and most broad-reaching impact was to remove large wetland areas from regular tidal inundation. Ditches through these areas and tidegates allowed upland runoff to be channeled directly to the Bay, further draining the lowlands. As a result, certain upland crops could be cultivated and the bottomlands utilized as farmland (mostly pasture).

In particularly low areas, or areas with inadequate drainage structures, dikes did not completely eliminate saturated soils and wetland vegetation is still present. This is especially apparent in old tidal channels where upland runoff collects. Vegetation of freshwater, rather than saline, wetlands prevails, but the areas are nonetheless wetlands. They must also be considered adjacent to navigable waters, since the presence of a man-made berm or dike is not sufficient to remove them from jurisdiction under Section 404 (33 CFR 323.2).

In some locations, these lowland pastures are experiencing intense grazing pressures, resulting in severe physical and biological disturbance. The physical disturbance of soft, wet soils by cattle or plowing tends to increase soil moisture retention through compaction (McLaughlin and Harradine, 1965) and interferes with natural drainage patterns. This tends to increase the wetland character of the substrate. Additionally, in overgrazing situations, certain non-palatable species, such as wiregrass (Juncus effusus), tend to proliferate. Thus, it appears that overgrazing in bottomland pastures may convert them from an agricultural habitat type to a wetland habitat type. The slow reversion of overgrazed pastureland to wetland is evident in many locations around the Bay.

The succession under grazing pressure might be described as:

Agriculture (A) → Wet Agriculture (Aw) →
Agriculture/Wetland (A/W) → Fresh Rush Marsh (FM₃)

In some cases, wet agriculture and agriculture/wetland areas could be described as wetlands using the definitions in 33 CFR 323.2. Furthermore, if agricultural activities were abandoned in such an area, the exemption of "normal farming activities..." (PL 95-217, Sec. 67b) from Section 404 jurisdiction might no longer apply.

The extensive diking in Humboldt Bay required construction of numerous tidegates to allow drainage of the bottomlands. Many of these tidegates are old and have slowly fallen into disrepair. In some cases, dikes have actually been breached. Under these circumstances, tidal waters can enter into otherwise diked bottomlands. The result is reversion of pasturelands to tidal brackish wetlands. Anywhere this situation was found, the area was designated as an adjacent wetland. Subsequent repair of dikes or tidegates may halt the wetland reversion and perhaps reverse it. However, until such repair occurs, areas behind those dikes can only be considered adjacent tidal wetlands. An example of this is a faulty tidegate that is probably responsible for a wetland area in Beatrice Flats. A major dike breach occurred in King Salmon, and although it has been repaired, extensive salt and brackish wetlands persist behind the dike.

From this discussion, it is apparent that numerous physical factors impact the distribution of wetlands in Humboldt Bay. At any site, these factors must be assessed in order to determine the wetland or upland character of the habitat and its relative adjacency.

Section IV

SUMMARY AND CONCLUSIONS

IV. SUMMARY AND CONCLUSIONS

In order to provide a detailed vegetation survey of the Humboldt Bay area, and in particular a detailed wetland survey, it was necessary first to develop a habitat type classification system with sufficient detail. A review of potential classification systems resulted in the use of a modified version of the USGS habitat type classification system; the USGS classification was originally developed for aerial photographic interpretation of land use and land cover.

Interpretation and ground truth verification of 1" = 500' aerial photographs resulted in 23 habitat type maps of the study area. Approximately 33,000 acres of upland and wetland habitat were characterized and mapped. In addition, 15,000 acres of aquatic habitat within the bay were mapped at a scale of 1" = 2,000'. Finally, planimetry techniques were used to determine the areal extent and distribution of habitat types within the study area.

Analysis of habitat distribution in the area indicated some 14,000 acres of agriculture, mostly in the lowlands adjacent to the bay, 8,400 acres of urban habitat, centered around Eureka and Arcata, and 3,000 acres of forested land. Perhaps more significant to the Humboldt Bay Wetlands Review is the 970 acres of salt marsh and 250 acres of brackish marsh scattered around the bay, mostly in small isolated parcels. The single largest salt marsh area (200 acres) is located on Indian Island. Two other large marsh parcels are the island west of Beatrice Flats (92 acres), and the area southwest of the mouth of Mad River Slough (96 acres). Almost 80% of the salt marsh in Humboldt Bay is located in North Bay, while 15% is located in South Bay.

In a separate, but related, portion of the habitat classification project, the wetland-upland boundary was determined. Identification of the boundary was based on interpretation of Corps Section 404 regulations (33 CFR 323.2), with particular emphasis on the terms "wetland" and "adjacent." The wetland-upland boundary is displayed on each of the 23 habitat type maps. It should be noted that numerous freshwater wetlands within the study area are located far beyond the interpretation of "navigable waters...including adjacent wetlands..." (33 CFR 323.2) used in this study and, therefore, no wetland-upland boundary has been determined for these areas.

Numerous physical factors, both natural and human-induced, may affect the existence of wetlands and their adjacency to navigable waters as interpreted from Corps regulations. Most significant of these is the construction of dikes, and the subsequent effects of drainage, overgrazing, faulty tidegates, and breached dikes.

As a result of these studies, several characteristics of Humboldt Bay habitat types, and in particular wetlands, have been noticed. Some of these aspects may be important in the resolution of regulatory questions. They may also be important in the deter-

mination of habitat value. Issues of potential concern are:

- . Taxonomic difficulties
- . Identification of brackish marshes
- . Scattered distribution of salt marsh
- . Reversion of agriculture to wetland

There appear to be two taxonomic questions about wetlands species in this area. Resolution of these questions could have an impact on both research and regulation of wetlands in the area. It has been suggested that the cordgrass in Humboldt Bay is not Spartina foliosa, but rather S. spartinae (Harvey, 1978). Growth habit, distribution, and taxonomy are all said to support this identification. S. spartinae is a native of the Gulf Coast and has not been previously reported in California (Hitchcock, 1950). Most interesting to this study was the distribution of Spartina sp. in middle rather than low marsh situations, thus contrasting with conditions observed in other California salt marshes.

Juncus leseurii is a rush found in both marsh and dune habitats. Mason (1957) suggests there may be two subspecies, one characteristic of marshes and the other of drier dune habitats. Since this species appears to pioneer salt marsh encroachment into dunes, further taxonomic investigation might be useful.

No mention of brackish marsh types, as distinct from salt marsh, has been made in previous studies; presumably brackish marshes were consolidated with salt marsh in other vegetative studies. There appear to be significant physical and biological differences between these two habitat types which should be recognized both in the identification of wetlands boundaries and in the assessment of habitat value.

Although about 1,200 acres of tidal wetlands (salt and brackish marsh) have been identified within the study area, the distribution of these wetlands may diminish their potential habitat value. As mentioned previously, only three large parcels of salt marsh are found in the bay, all other examples are scattered in small parcels around the edge of the bay. This scattered distribution may have some impact on the species diversity and carrying capacity of the habitat. The extent of this impact is not well known.

A final issue to be considered is the reversion of lowland agriculture to wetlands, as a result of overgrazing. This phenomenon has been noticed in several poorly drained pastures around the bay. As mentioned previously, in locations where this has occurred, there is a potential for the Corps to exert its Section 404 authority over these areas. Such decisions will have to be made by Corps personnel on a case-by-case basis.

APPENDICES

Appendix A

BAY AND WETLAND POLICIES

1. Chief of Engineers' Policy on Wetlands

- a. Wetlands are vital areas that constitute a productive and valuable public resource, the unnecessary alteration or destruction of which should be discouraged as contrary to the public interest.
- b. Wetlands considered to perform functions important to the public interest include:
 - 1) Wetlands which serve important natural biological functions, including food chain production, general habitat, and nesting, spawning, rearing and resting sites for aquatic or land species;
 - 2) Wetlands set aside for study of the aquatic environment or as sanctuaries or refuges;
 - 3) Wetlands the destruction or alteration of which would affect detrimentally natural drainage characteristics, sedimentation patterns, salinity distribution, flushing characteristics, current patterns, or other environmental characteristics;
 - 4) Wetlands which are significant in shielding other areas from wave action, erosion, or storm damage. Such wetlands are often associated with barrier beaches, islands, reefs and bars;
 - 5) Wetlands which serve as valuable storage areas for storm and flood waters;
 - 6) Wetlands which are prime natural recharge areas. Prime recharge areas are locations where surface and ground water are directly interconnected; and
 - 7) Wetlands which through natural water filtration processes serve to purify water.
- c. Although a particular alteration of wetlands may constitute a minor change, the cumulative effect of numerous such piecemeal changes often results in a major impairment of the wetland resources. Thus,

the particular wetlands site involved in a Federal Project will be evaluated with the recognition that it is part of a complete and interrelated wetland area. In addition, the District Engineer may undertake reviews of particular wetland areas in consultation with the appropriate Regional Director of the Fish and Wildlife Service, the Regional Director of the National Marine Fisheries Service of the National Oceanic and Atmospheric Administration, the Regional Administrator of the Environmental Protection Agency, the local representative of the Soil Conservation Service of the Department of Agriculture, and the head of the appropriate State agency to assess the cumulative effect of activities in such areas.

- d. No construction activity will be performed in wetlands identified as important by subparagraph b above, unless the District Engineer concludes that the benefits of the proposed alteration outweigh the damage to the wetlands resource and the proposed alteration is necessary to realize those benefits. In evaluating whether a particular alteration is necessary, the District Engineer shall consider whether the proposed activity is primarily dependent on being located in, or in close proximity to the aquatic environment and whether feasible alternative sites are available. The District Engineer must demonstrate the need to locate the proposed activity in the wetland and must evaluate the availability of feasible alternative sites.
- e. In addition to these policies, the Congressional policy expressed in the Estuary Protection Act, PL 90-454, and State regulatory laws or programs for classification and protection of wetlands will be given great weight.

2. Executive Order No. 11988

Floodplain Management

Statement by the President Accompanying Executive Order 11988. May 24, 1977

The floodplains which adjoin the Nation's inland and coastal waters have long been recognized as having special values to our citizens. They have provided us with wildlife habitat, agricultural and forest products, stable ecosystems, and park and recreation areas. However, unwise use and development of our riverine, coastal, and other floodplains not only destroy many of the special qualities of these areas but pose a severe threat to human life, health, and property.

Since the adoption of a national flood control policy in 1936, the Federal Government has invested about \$10 billion in flood protection works. Despite substantial efforts by the Federal Government to reduce flood hazards and protect floodplains, annual losses from floods and adverse alteration of floodplains continue to increase.

The problem arises mainly from unwise land use practices. The Federal Government can be responsible for or can influence these practices in the construction of projects, in the management of its own properties, in the provision of financial or technical assistance including support of financial institutions, and in the uses for which its agencies issue licenses or permits. In addition to minimizing the danger to human and nonhuman communities living in floodplains, active floodplain management represents sound business practice by reducing the risk of flood damage to properties benefiting from Federal assistance.

Because unwise floodplain development can lead to the loss of human and other natural resources, it is simply a bad Federal investment and should be avoided. In order to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative, I have issued an Executive order on floodplain management.

May 24, 1977, 42 F.R. 26951

FLOODPLAIN MANAGEMENT

By virtue of the authority vested in me by the Constitution and statutes of the United States of America, and as President of the United States of America, in furtherance of the National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 et seq.), the National Flood Insurance Act of 1968, as amended (42 U.S.C. 4001 et seq.), and the Flood Disaster Protection Act of 1973 (Public Law 93-234, 87 Stat. 975), in order to avoid to the extent possible the long and short term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative, it is hereby ordered as follows:

Section 1. Each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities for (1) acquiring, managing, and disposing of Federal lands and facilities; (2) providing Federally undertaken, financed, or assisted construction and improvements; and (3) conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities.

Sec. 2. In carrying out the activities described in Section 1 of this Order, each agency has a responsibility to evaluate the potential effects of any actions it may take in a floodplain; to ensure that its planning programs and budget requests reflect consideration of flood hazards and floodplain management; and to prescribe procedures to implement the policies and requirements of this Order, as follows:

(a)(1) Before taking an action, each agency shall determine whether the proposed action will occur in a floodplain. For major Federal actions significantly affecting the quality of the human environment, the evaluation required below will be included in any statement prepared under Section 102(2)(C) of the National Environmental Policy Act. This determination shall be made according to a Department of Housing and Urban Development (HUD) floodplain map or a more detailed map of an area, if available. If such maps are not available, the agency shall make a determination of the location of the floodplain based on the best available information. The Water Resources Council shall issue guidance on this information not later than October 1, 1977.

(2) If an agency has determined to, or proposes to, conduct, support, or allow an action to be located in a floodplain, the agency shall consider alternatives to avoid adverse effects and incompatible development in the floodplains. If the head of the agency finds that the only practicable alternative consistent with the law and with the policy set forth in this Order requires siting in a floodplain, the agency shall, prior to taking action, (i) design or modify its action in order to minimize potential harm to or within the floodplain, consistent with regulations issued in accord with Section 2(d) of this Order, and (ii) prepare and circulate a notice containing an explanation of why the action is proposed to be located in the floodplain.

(3) For programs subject to the Office of Management and Budget Circular A-95, the agency shall send the notice, not to exceed three pages in length including a location map, to the state and area-wide A-95 clearinghouses for the geographic areas affected. The notice shall include: (i) the reasons why the action is proposed to be located in a floodplain; (ii) a statement indicating whether the action conforms to applicable state or local floodplain protection standards and (iii) a list of the alternatives considered. Agencies shall endeavor to allow a brief comment period prior to taking any action.

(4) Each agency shall also provide opportunity for early public review of any plans or proposals for actions in floodplains, in accordance with Section 2(b) of Executive Order No. 11514, as amended, including the development of procedures to accomplish this objective for Federal actions whose impact is not significant enough to require the preparation of an environmental impact statement under Section 102(2)(C) of the National Environmental Policy Act of 1969, as amended.

(b) Any requests for new authorizations or appropriations transmitted to the Office of Management and Budget shall indicate, if an action to be proposed will be located in a floodplain, whether the proposed action is in accord with this Order.

(c) Each agency shall take floodplain management into account when formulating or evaluating any water and land use plans and shall require land and water resources use appropriate to the degree of hazard involved. Agencies shall include adequate provision for the evaluation and consideration of flood hazards in the regulations and operating procedures for the licenses, permits, loan or grants-in-aid programs that they administer. Agencies shall also encourage and provide appropriate guidance to applicants to evaluate the effects of their proposals in floodplains prior to submitting applications for Federal licenses, permits, loans or grants.

(d) As allowed by law, each agency shall issue or amend existing regulations and procedures within one year to comply with this Order. These procedures shall incorporate the Unified National Program for Floodplain Management of the Water Resources Council, and shall explain the means that the agency will employ to pursue the nonhazardous use of riverine, coastal and other floodplains in connection with the activities under its authority. To the extent possible, existing processes, such as those of the Council on Environmental Quality and the Water Resources Council, shall be utilized to fulfill the requirements of this Order. Agencies shall prepare their procedures in consultation with the Water Resources Council, the Federal Insurance Administration, and the Council on Environmental Quality, and shall update such procedures as necessary.

Sec. 3. In addition to the requirements of Section 2, agencies with responsibilities for Federal real property and facilities shall take the following measures:

(a) The regulations and procedures established under Section 2(d) of this Order shall, at a minimum, require the construction of Federal structures and facilities to be in accordance with the standards and criteria and to be consistent with the intent of those promulgated under the National Flood Insurance Program. They shall deviate only to the extent that the standards of the Flood Insurance Program are demonstrably inappropriate for a given type of structure or facility.

(b) If, after compliance with the requirements of this Order, new construction of structures or facilities are to be located in a floodplain, accepted floodproofing and other flood protection measures shall be applied to new construction or rehabilitation. To achieve flood protection, agencies shall, wherever practicable, elevate structures above the base flood level rather than filling in land.

(c) If property used by the general public has suffered flood damage or is located in an identified flood hazard area, the responsible agency shall provide on structures, and other places where appropriate, conspicuous delineation of past and probable flood height in order to enhance public awareness of and knowledge about flood hazards.

(d) When property in floodplains is proposed for lease, easement, right-of-way, or disposal to non-Federal public or private parties, the Federal agency shall (1) reference in the conveyance those uses that are restricted under identified Federal, State or local floodplain regulations; and (2) attach other appropriate restrictions to the uses of properties by the grantee or purchaser and any successors, except where prohibited by law; or (3) withhold such properties from conveyance.

Sec. 4. In addition to any responsibilities under this Order and Sections 202 and 205 of the Flood Disaster Protection Act of 1973, as amended (42 U.S.C. 4106 and 4128), agencies which guarantee, approve, regulate, or insure any financial transaction which is related to an area located in a floodplain shall, prior to completing action on such transaction, inform any private parties participating in the transaction of the hazards of locating structures in the floodplain.

Sec. 5. The head of each agency shall submit a report to the Council on Environmental Quality and to the Water Resources Council on June 30, 1978, regarding the status of their procedures and the impact of this Order on the agency's operations. Thereafter, the Water Resources Council shall periodically evaluate agency procedures and their effectiveness.

Sec. 6. As used in this Order:

(a) The term "agency" shall have the same meaning as the term "Executive agency" in Section 195 of Title 5 of the United States Code and shall include the military departments; the directives contained in this Order, however, are meant to apply only to those agencies which perform the activities described in Section 1 which are located in or affecting floodplains.

(b) The term "base flood" shall mean that flood which has a one percent or greater chance of occurrence in any given year.

(c) The term "floodplain" shall mean the lowland and relatively flat areas adjoining inland and coastal waters including floodprone areas of offshore islands, including at a minimum, that area subject to a one percent or greater chance of flooding in any given year.

Sec. 7. Executive Order No. 11296 of August 10, 1966,²⁹ is hereby revoked. All actions, procedures, and issuances taken under that Order and still in effect shall remain in effect until modified by appropriate authority under the terms of this Order.

Sec. 8. Nothing in this Order shall apply to assistance provided for emergency work essential to save lives and protect property and public health and safety, performed pursuant to Sections 305 and 306 of the Disaster Relief Act of 1974 (88 Stat. 148, 42 U.S.C. 5145 and 5146).

Sec. 9. To the extent the provisions of Section 2(2) of this Order are applicable to projects covered by Section 104(h) of the Housing and Community Development Act of 1974, as amended (88 Stat. 640, 42 U.S.C. 5304(h)), the responsibilities under those provisions may be assumed by the appropriate applicant. If the applicant has also assumed, with respect to such projects, all of the responsibilities for environmental review, decisionmaking, and action pursuant to the National Environmental Policy Act of 1969, as amended.

JIMMY CARTER

THE WHITE HOUSE,
May 24, 1977.

3. Executive Order No. 11990

Protection of Wetlands

Statement by the President Accompanying Executive Order 11990. May 24, 1977

The Nation's coastal and inland wetlands are vital natural resources of critical importance to the people of this country. Wetlands are areas of great natural productivity, hydrological utility, and environmental diversity, providing natural flood control, improved water quality, recharge of aquifers, flow stabilization of streams and rivers, and habitat for fish and wildlife resources. Wetlands contribute to the production of agricultural products and timber, and provide recreational, scientific, and aesthetic resources of national interest.

The unwise use and development of wetlands will destroy many of their special qualities and important natural functions. Recent estimates indicate that the United States has already lost over 40 percent of our 120 million acres of wetlands inventoried in the 1950's. This piecemeal alteration and destruction of wetlands through draining, dredging, filling, and other means has had an adverse cumulative impact on our natural resources and on the quality of human life.

The problem of loss of wetlands arises mainly from unwise land use practices. The Federal Government can be responsible for or can influence these practices in the construction of projects, in the management of its own properties, and in the provisions of financial or technical assistance.

In order to avoid to the extent possible the long and short term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative, I have issued an Executive order on the protection of wetlands.

No. 11990

May 24, 1977, 42 F.R. 26961

PROTECTION OF WETLANDS

By virtue of the authority vested in me by the Constitution and statutes of the United States of America, and as President of the United States of America, in furtherance of the National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 et seq.), in order to avoid to the extent possible the long and short term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative, it is hereby ordered as follows:

Section 1. (a) Each agency shall provide leadership and shall take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities for (1) acquiring, managing, and disposing of Federal lands and facilities; and (2) providing Federally undertaken, financed, or assisted construction and improvements; and (3) conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities.

(b) This Order does not apply to the issuance by Federal agencies of permits, licenses, or allocations to private parties for activities involving wetlands on non-Federal property.

Sec. 2. (a) In furtherance of Section 101(b)(3) of the National Environmental Policy Act of 1969 (42 U.S.C. 4331(b)(3)) to improve and coordinate Federal plans, functions, programs and resources to the end that the Nation may attain the widest range of beneficial uses of the environment without degradation and risk to health or safety, each agency, to the extent permitted by law, shall avoid undertaking or providing assistance for new construction located in wetlands unless the head of the agency finds (1) that there is no practicable alternative to such construction, and (2) that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use. In making this finding the head of the agency may take into account economic, environmental and other pertinent factors.

(b) Each agency shall also provide opportunity for early public review of any plans or proposals for new construction in wetlands, in accordance with Section 2(b) of Executive Order No. 11514, as amended, including the development of procedures to accomplish this objective for Federal actions whose impact is not significant enough to require the preparation of an environmental impact statement under Section 102(2)(C) of the National Environmental Policy Act of 1969, as amended.

Sec. 3. Any requests for new authorizations or appropriations transmitted to the Office of Management and Budget shall indicate, if an action to be proposed will be located in wetlands, whether the proposed action is in accord with this Order.

Sec. 4. When Federally-owned wetlands or portions of wetlands are proposed for lease, easement, right-of-way or disposal to non-Federal public or private parties, the Federal agency shall (a) reference in the conveyance those uses that are restricted under identified Federal, State or local wetlands regulations; and (b) attach other appropriate restrictions to the uses of properties by the grantee or purchaser and any successor, except where prohibited by law; or (c) withhold such properties from disposal.

Sec. 5. In carrying out the activities described in Section 1 of this Order, each agency shall consider factors relevant to a proposal's effect on the survival and quality of the wetlands. Among these factors are:

(a) public health, safety, and welfare, including water supply, quality, recharge and discharge; pollution; flood and storm hazards; and sediment and erosion;

(b) maintenance of natural systems, including conservation and long term productivity of existing flora and fauna, species and habitat diversity and stability, hydrologic utility, fish, wildlife, timber, and food and fiber resources; and

(c) other uses of wetlands in the public interest, including recreational, scientific, and cultural uses.

Sec. 6. As allowed by law, agencies shall issue or amend their existing procedures in order to comply with this Order. To the extent possible, existing processes, such as those of the Council on Environmental Quality and the Water Resources Council, shall be utilized to fulfill the requirements of this Order.

Sec. 7. As used in this Order:

(a) The term "agency" shall have the same meaning as the term "Executive agency" in Section 105 of Title 5 of the United States Code and shall include the military departments; the directives contained in this Order, however, are meant to apply only to those agencies which perform the activities described in Section 1 which are located in or affecting wetlands.

(b) The term "new construction" shall include draining, dredging, channelizing, filling, diking, impounding, and related activities and any structures or facilities begun or authorized after the effective date of this Order.

(c) The term "wetlands" means those areas that are inundated by surface or ground water with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, mud flats, and natural ponds.

Sec. 8. This Order does not apply to projects presently under construction, or to projects for which all of the funds have been appropriated through Fiscal Year 1977, or to projects and programs for which a draft or final environmental impact statement will be filed prior to October 1, 1977. The provisions of Section 2 of this Order shall be implemented by each agency not later than October 1, 1977.

Sec. 9. Nothing in this Order shall apply to assistance provided for emergency work, essential to save lives and protect property and public health and safety, performed pursuant to Sections 305 and 306 of the Disaster Relief Act of 1974 (88 Stat. 148, 42 U.S.C. 5145 and 5146).

Sec. 10. To the extent the provisions of Sections 2 and 5 of this Order are applicable to projects covered by Section 104(h) of the Housing and Community Development Act of 1974, as amended (88 Stat. 640, 42 U.S.C. 5304(h)), the responsibilities under those provisions may be assumed by the appropriate applicant, if the applicant has also assumed, with respect to such projects, all of the responsibilities for environmental review, decisionmaking, and action pursuant to the National Environmental Policy Act of 1969, as amended.

JIMMY CARTER

THE WHITE HOUSE,
May 24, 1977.

4. California Coastal Act

The Coastal Act is briefly summarized as follows:

Chapter 1. Recognizes the value of the coastal zone, the existence of a coastal plan, an ongoing need for development in the coastal zone, and basic goals for protection and use of the coast.

Chapter 2. Defines terms. Of particular interest are the following:

Coastal-dependent use - any use which requires a site on, or adjacent to, the sea to be able to function at all.

Environmentally sensitive area - any 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.

Sensitive coastal resource areas - those identifiable and geographically bounded land and water areas within the coastal zone of vital interest and sensitivity, including the following:

- a) Special marine and land habitat areas, wetlands, lagoons, and estuaries as mapped and designated in Part 4 of the coastal plan.
- b) Areas possessing significant recreational value.
- c) Highly scenic areas.
- d) Archaeological sites referenced in the California Coastline and Recreation Plan or as designated by the State Historic Preservation Officer.
- e) Special communities or neighborhoods which are significant visitor destination areas.
- f) Areas that provide existing coastal housing or recreational opportunities for low- and moderate-income persons.
- g) Areas where divisions of land could substantially impair or restrict coastal access.

Wetland - lands 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.

Chapter 3. Lists coastal resources planning and management policies. These policies are the heart of the Coastal Act and deal with the following issues:

- a) Shoreline access
- b) Recreation and visitor-serving facilities
- c) Housing
- d) Water and marine resources
- e) Diking, dredging, filling, and shoreline structures
- f) Commercial fishing and recreational boating
- g) Environmentally sensitive habitat areas
- h) Agriculture
- i) Hazards
- j) Forestry and soils resources
- k) Locating and planning new development
- l) Coastal visual resources and special communities
- m) Public works
- n) Industrial development and energy facilities

Chapter 4. Creates the Coastal Commission and six regional commissions. The North Coast Regional Commission covers Del Norte, Humboldt, and Mendocino Counties. Establishes powers and duties of the commissions.

Chapter 5. Discusses interaction with state agencies. In particular, the CC must review proposed projects for the Water Resources Control Board (treatment works) and the Energy Resources Conservation and Development Commission (power plant siting).

Chapter 6. Requires local governments to prepare local coastal programs (LCP) and establishes preparation, approval, and certification of LCP's.

Chapter 7. Requires coastal development permits from local government or the regional commission for developments in the coastal zone. Requires mitigation and/or compensation areas for dike and fill in wetlands. Exempts certain activities and areas from the permit requirements. Establishes permit procedures.

Chapter 8. Establishes policies for ports, including the Humboldt Bay Harbor, Recreation and Conservation District, and requires preparation of a port master plan.

Chapter 9 and 10. Judicial review, penalties, and severability.

5. U.S. Fish & Wildlife Service Wetland Definition

"Wetland is 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. In certain types of wetlands, vegetation is lacking and soils are 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 water as 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."

"Wetland as defined here includes land that is identified under other categories in some land-use classifications. For example, wetland and farmland are not necessarily exclusive. Many areas that we define as wetland are farmed during dry periods, but if they are not tilled or planted to crops, they will support hydrophytes . . ."

"The upland limit of wetland is designated as: 1) the boundary between land with predominately hydrophytic cover and land with predominately mesophytic or xerophytic cover; 2) the boundary between soil that is predominately hydric and soil that is predominately nonhydric; or, in the case of wetland without vegetation or soils; 3) the boundary between land that is flooded or saturated at some time during years of normal precipitation and land that is not. Areas with drained hydric soils that are no longer capable of supporting hydrophytes are not considered wetlands."

From U.S. Fish & Wildlife Service - Classification of Wetland and Deep Water Habitats of the United States - October 1977

6. Department of Fish and Game Working Definition of "Wetlands"

While the state does not have formally adopted definition of wetlands, the Department of Fish and Game uses the following as a working definition:

The term "wetlands" means those areas that are inundated by surface or ground water with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, mud flats, and natural ponds, as well as areas separated from their natural supply of water through man-made alterations such as dikes, berms, flood walls, and levees.

(Source: Department of Commerce, Floodplain and Wetland Executive Order-Procedures for Implementation; Federal Register Volume 43, No. 190, September 29, 1978)

Appendix B

STANDARD FORM - PERMIT APPLICATION
AND CONDITIONS

Application No. _____

Name of Applicant _____

Effective Date _____

Expiration Date (If applicable) _____

DEPARTMENT OF THE ARMY PERMIT

Referring to written request dated _____ for a permit to:

() Perform work in or affecting navigable waters of the United States, upon the recommendation of the Chief of Engineers, pursuant to Section 10 of the Rivers and Harbors Act of March 3, 1899 (33 U.S.C. 403);

() Discharge dredged or fill material into navigable waters upon the issuance of a permit from the Secretary of the Army acting through the Chief of Engineers pursuant to Section 404 of the Federal Water Pollution Control Act (86 Stat. 816, P.L. 92-500);

() Transport dredged material for the purpose of dumping it into ocean waters upon the issuance of a permit from the Secretary of the Army acting through the Chief of Engineers pursuant to Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (86 Stat. 1052; P.L. 92-532);

◀ (Here insert the full name and address of the permittee)

Is hereby authorized by the Secretary of the Army:
to

◀ (Here describe the proposed structure or activity, and its intended use. In the case of an application for a fill permit, describe the structures, if any, proposed to be erected on the fill. In the case of an application for the discharge of dredged or fill material into navigable waters or the transportation for discharge in ocean waters of dredged material, describe the type and quantity of material to be discharged.)

at

◀ (Here to be named the ocean, river, harbor, or waterway concerned.)

it

◀ (Here to be named the nearest well-known locality—preferably a town or city—and the distance in miles and tenths from some definite point in the same, stating whether above or below or giving direction by points of compass.)

in accordance with the plans and drawings attached hereto which are incorporated in and made a part of this permit (on drawings give the number or other definite identification marks):

subject to the following conditions:

I. General Conditions:

a. That all activities identified and authorized herein shall be consistent with the terms and conditions of this permit, and that any activities not specifically identified and authorized herein shall constitute a violation of the terms and conditions of this permit which may result in the modification, suspension or revocation of this permit, in whole or in part, as set forth more specifically in General Conditions j or k hereto, and in the institution of such legal proceedings as the United States Government may consider appropriate, whether or not this permit has been previously modified, suspended or revoked in whole or in part.

b. That all activities authorized herein shall, if they involve a discharge or deposit into navigable waters or ocean waters, be at all times consistent with applicable water quality standards, effluent limitations and standards of performance, prohibitions, and pretreatment standards established pursuant to Sections 301, 302, 306 and 307 of the Federal Water Pollution Control Act of 1972 (P.L. 92-500; 86 Stat. 816), or pursuant to applicable State and local law.

c. That when the activity authorized herein involves a discharge or deposit of dredged or fill material into navigable waters, the authorized activity shall, if applicable water quality standards are revised or modified during the term of this permit, be modified, if necessary, to conform with such revised or modified water quality standards within 6 months of the effective date of any revision or modification of water quality standards, or as directed by an implementation plan contained in such revised or modified standards, or within such longer period of time as the District Engineer, in consultation with the Regional Administrator of the Environmental Protection Agency, may determine to be reasonable under the circumstances.

d. That the permittee agrees to make every reasonable effort to prosecute the work authorized herein in a manner so as to minimize any adverse impact of the work on fish, wildlife and natural environmental values.

e. That the permittee agrees to prosecute the work authorized herein in a manner so as to minimize any degradation of water quality.

f. That the permittee shall permit the District Engineer or his authorized representative(s) or designee(s) to make periodic inspections at any time deemed necessary in order to assure that the activity being performed under authority of this permit is in accordance with the terms and conditions prescribed herein.

g. That the permittee shall maintain the structure or work authorized herein in good condition and in accordance with the plans and drawings attached hereto.

h. That this permit does not convey any property rights, either in real estate or material, or any exclusive privileges; and that it does not authorize any injury to property or invasion of rights or any infringement of Federal, State, or local laws or regulations, nor does it obviate the requirement to obtain State or local assent required by law for the activity authorized herein.

i. That this permit does not authorize the interference with any existing or proposed Federal project and that the permittee shall not be entitled to compensation for damage or injury to the structures or work authorized herein which may be caused by or result from existing or future operations undertaken by the United States in the public interest.

j. That this permit may be summarily suspended, in whole or in part, upon a finding by the District Engineer that immediate suspension of the activity authorized herein would be in the general public interest. Such suspension shall be effective upon receipt by the permittee of a written notice thereof which shall indicate (1) the extent of the suspension, (2) the reasons for this action, and (3) any corrective or preventative measures to be taken by the permittee which are deemed necessary by the District Engineer to abate imminent hazards to the general public interest. The permittee shall take immediate action to comply with the provisions of this notice. Within ten days following receipt of this notice of suspension, the permittee may request a hearing in order to present information relevant to a decision as to whether his permit should be reinstated, modified or revoked. If a hearing is requested, it shall be conducted pursuant to procedures prescribed by the Chief of Engineers. After completion of the hearing, or within a reasonable time after issuance of the suspension notice to the permittee if no hearing is requested, the permit will either be reinstated, modified or revoked.

k. That this permit may be either modified, suspended or revoked in whole or in part if the Secretary of the Army or his authorized representative determines that there has been a violation of any of the terms or conditions of this permit or that such action would otherwise be in the public interest. Any such modification, suspension, or revocation shall become effective 30 days after receipt by the permittee of written notice of such action which shall specify the facts or conduct warranting same unless (1) within the 30-day period the permittee is able to satisfactorily demonstrate that (a) the alleged violation of the terms and the conditions of this permit did not, in fact, occur or (b) the alleged violation was accidental, and the permittee has been operating in compliance with the terms and conditions of the permit and is able to provide satisfactory assurances that future operations shall be in full compliance with the terms and conditions of this permit; or (2) within the aforesaid 30-day period, the permittee requests that a public hearing be held to present oral and written evidence concerning the proposed modification, suspension or revocation. The conduct of this hearing and the procedures for making a final decision either to modify, suspend or revoke this permit in whole or in part shall be pursuant to procedures prescribed by the Chief of Engineers.

l. That in issuing this permit, the Government has relied on the information and data which the permittee has provided in connection with his permit application. If, subsequent to the issuance of this permit, such information and data prove to be false, incomplete or inaccurate, this permit may be modified, suspended or revoked, in whole or in part, and/or the Government may, in addition, institute appropriate legal proceedings.

m. That any modification, suspension, or revocation of this permit shall not be the basis for any claim for damages against the United States.

n. That the permittee shall notify the District Engineer at what time the activity authorized herein will be commenced, as far in advance of the time of commencement as the District Engineer may specify, and of any suspension of work, if for a period of more than one week, resumption of work and its completion.

o. That if the activity authorized herein is not started on or before _____ day of _____, 19____, (one year from the date of issuance of this permit unless otherwise specified) and is not completed on or before _____ day of _____, 19____ (three years from the date of issuance of this permit unless otherwise specified) this permit, if not previously revoked or specifically extended, shall automatically expire.

p. That no attempt shall be made by the permittee to prevent the full and free use by the public of all navigable waters at or adjacent to the activity authorized by this permit.

q. That if the display of lights and signals on any structure or work authorized herein is not otherwise provided for by law, such lights and signals as may be prescribed by the United States Coast Guard shall be installed and maintained by and at the expense of the permittee.

r. That this permit does not authorize or approve the construction of particular structures, the authorization or approval of which may require authorization by the Congress or other agencies of the Federal Government.

s. That if and when the permittee desires to abandon the activity authorized herein, unless such abandonment is part of a transfer procedure by which the permittee is transferring his interests herein to a third party pursuant to General Condition v hereof, he must restore the area to a condition satisfactory to the District Engineer.

t. That if the recording of this permit is possible under applicable State or local law, the permittee shall take such action as may be necessary to record this permit with the Register of Deeds or other appropriate official charged with the responsibility for maintaining records of title to and interests in real property.

u. That there shall be no unreasonable interference with navigation by the existence or use of the activity authorized herein.

v. That this permit may not be transferred to a third party without prior written notice to the District Engineer, either by the transferee's written agreement to comply with all terms and condition of this permit or by the transferee subscribing to this permit in the space provided below and thereby agreeing to comply with all terms and conditions of this permit. In addition, if the permittee transfers the interests authorized herein by conveyance of realty, the deed shall reference this permit and the terms and conditions specified herein and this permit shall be recorded along with the deed with the Register of Deeds or other appropriate official.

The following Special Conditions will be applicable when appropriate:

STRUCTURES FOR SMALL BOATS: That permittee hereby recognizes the possibility that the structure permitted herein may be subject to damage by wave wash from passing vessels. The issuance of this permit does not relieve the permittee from taking all proper steps to insure the integrity of the structure permitted herein and the safety of boats moored thereto from damage by wave wash and the permittee shall not hold the United States liable for any such damage.

DISCHARGE OF DREDGED MATERIAL INTO OCEAN WATERS: That the permittee shall place a copy of this permit in a conspicuous place in the vessel to be used for the transportation and/or dumping of the dredged material as authorized herein.

ERECTION OF STRUCTURE IN OR OVER NAVIGABLE WATERS: That the permittee, upon receipt of a notice of revocation of this permit or upon its expiration before completion of the authorized structure or work, shall, without expense to the United States and in such time and manner as the Secretary of the Army or his authorized representative may direct, restore the waterway to its former conditions. If the permittee fails to comply with the direction of the Secretary of the Army or his authorized representative, the Secretary or his designee may restore the waterway to its former condition, by contract or otherwise, and recover the cost thereof from the permittee.

MAINTENANCE DREDGING: (1) That when the work authorized herein includes periodic maintenance dredging, it may be performed under this permit for _____ years from the date of issuance of this permit (ten years unless otherwise indicated); and (2) That the permittee will advise the District Engineer in writing at least two weeks before he intends to undertake any maintenance dredging.

II. Special Conditions (Here list conditions relating specifically to the proposed structure or work authorized by this permit):

This permit shall become effective on the date of the District Engineer's signature.

Permittee hereby accepts and agrees to comply with the terms and conditions of this permit.

PERMITTEE

DATE

BY AUTHORITY OF THE SECRETARY OF THE ARMY:

DISTRICT ENGINEER,
U.S. ARMY, CORPS OF ENGINEERS

DATE

Transferee hereby agrees to comply with the terms and conditions of this permit.

TRANSFEEE

DATE

Appendix C

LEGISLATIVE AUTHORITY OF U.S. ARMY
CORPS OF ENGINEERS *

1. Direct Corps Authority. Brief descriptions of the various laws giving permit authority to the Corps.

Section 1 of the River and Harbor Act of 1902

Section 1 of the River and Harbor Act of June 13, 1902 (32 Stat. 371; 33 U.S.C. 565) allows any persons or corporations desiring to improve any navigable river at their own expense and risk to do so upon the approval of the plans and specifications by the Secretary of the Army and the Chief of Engineers. Improvements constructed under this authority, which are primarily in Federal project areas, remain subject to the control and supervision of the Secretary of the Army and Chief of Engineers. The instrument of authorization is designated a permit.

Section 9 of the River and Harbor Act of 1899

Section 9 of the River and Harbor Act approved March 3, 1899 (30 Stat. 1151; 33 U.S.C. 401) prohibits the construction of any dam or dike across any navigable water of the United States in the absence of Congressional consent and approval of the plans by the Chief of Engineers and the Secretary of the Army. Where the navigable portions of the waterbody lie wholly within the limits of a single State, the structure may be built under authority of the legislature of that State, if the location and plans or any modification thereof, are approved by the Chief of Engineers and by the Secretary of the Army. The instrument of authorization is designated a permit. Section 9 also pertains to bridges and causeways but the authority of the Secretary of the Army and Chief of Engineers with respect to bridges and causeways was transferred to the Secretary of Transportation under the Department of Transportation Act on October 16, 1966 (80 Stat. 941, U.S.C., 40 1165g(c)(a)).

Section 10 of the River and Harbor Act of 1899

Section 10 of the River and Harbor Act approved March 3, 1899 (30 Stat. 1151; 33 U.S.C. 403) prohibits the unauthorized obstruction or alteration of any navigable water of the United States. The construction of any structure in or over any navigable water of the United States, the excavation from or depositing of material in such waters, or the accomplishment of any other work affecting the course, location, condition, or capacity of such waters are unlawful unless the work has been recommended by the Chief of Engineers and authorized by the Secretary of the Army. The instrument of authorization is designated a permit or letter of permission. The authority of the Secretary of the Army to prevent obstructions to navigation in the navigable waters of

*See footnote at the end of Appendix C

the United States was extended to artificial islands and fixed structures located on the outer continental shelf by section 4(f) of the Outer Continental Shelf Lands Act of 1953 (67 Stat. 463; 43 U.S.C. 1333(f)).

Section 11 of the River and Harbor Act of 1899

Section 11 of the River and Harbor Act approved March 3, 1899 (30 Stat. 1151; 33 U.S.C. 404) authorizes the Secretary of the Army to establish harbor lines channelward of which no piers, wharves, bulkheads, or other works may be extended or deposits made without approval of the Secretary of the Army. Regulations (ER 1145-2-304) have been promulgated relative to this authority and published at 209.150. By policy stated in those regulations effective May 27, 1970, harbor lines are guidelines only for defining the offshore limits of structures and fills insofar as they impact on navigation interests. Except as provided in paragraph (e)(1) of this section below, permits for work shoreward of those lines must be obtained in accordance with Section 10 of the same Act, cited above.

Section 13 of the River and Harbor Act of 1899

Section 13 of the River and Harbor Act approved March 3, 1899 (30 Stat. 1152; 33 U.S.C. 407) provides that the Secretary of the Army, whenever the Chief of Engineers determines that anchorage and navigation will not be injured thereby, may permit the discharge of refuse into navigable waters. In the absence of a permit, such discharge of refuse is prohibited. While the prohibition of this section, known as the Refuse Act, is still in effect, the permit authority of the Secretary of the Army has been superseded by the permit authority provided the Administrator, Environmental Protection Agency, under sections 402 and 405 of the Federal Water Pollution Control Act (PL 92-500, 86 Stat. 816, 33 U.S.C. 1342 and 1345).

Section 14 of the River and Harbor Act of 1899

Section 14 of the River and Harbor Act approved March 3, 1899 (30 Stat. 1152; 33 U.S.C. 408) provides that the Secretary of the Army on the recommendation of the Chief of Engineers may grant permission for the temporary occupation or use of any seawall, bulkhead, jetty, dike, levee, wharf, pier, or other work built by the United States. This permission will be granted by an appropriate real estate instrument in accordance with existing real estate regulations.

Section 404 of the Federal Water Pollution Control Act Amendments of 1972

Section 404 of the Federal Water Pollution Control Act (PL 92-500, 86 Stat. 816, 33 U.S.C. 1344) authorizes the Secretary of the Army,

acting through the Chief of Engineers, to issue permits, after notice and opportunity for public hearings, for the discharge of dredged or fill material into the waters of the U.S. at specified disposal sites. The selection of disposal sites will be in accordance with guidelines developed by the Administrator of the Environmental Protection Agency (EPA) in conjunction with the Secretary of the Army. Furthermore, the Administrator can prohibit or restrict the use of any defined area as a disposal site whenever he determines, after notice and opportunity for public hearings, that the discharge of such materials into such areas will have an unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas, wildlife or recreational areas.

Section 103 of Marine Protection, Research and Sanctuaries Act of 1972

Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (PL 92-532, 86 Stat. 1052, 33 U.S.C. 1413) authorizes the Secretary of the Army to issue permits, after notice and opportunity for public hearings, for the transportation of dredged material for the purpose of dumping it in ocean waters. However, similar to the EPA Administrator's limiting authority cited in paragraph (b)(7) of this section, the Administrator can prevent the issuance of a permit under this authority if he finds that the dumping of the material will result in an unacceptable adverse impact on municipal water supplies, shellfish beds, wildlife, fisheries or recreational areas.

Section 404 of the Clean Water Act of 1977 (PL 95-217; CWA)

Section 404 of the Clean Water Act of 1977 (91 Stat. 1600; 33 U.S.C. 1344) is an amendment to Section 404 of the FWPCA: it affirms the authority of the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredged or fill material into navigable waters. Section 404 specifies conditions for the issuance of general permits by the Secretary of the Army and establishes exemptions from the permit requirements. It also authorizes the development and administration of permit programs by the states to cover the discharge of dredged or fill material into the navigable waters (other than those waters which are presently used, or are susceptible to use in their natural condition or by reasonable improvement as a means to transport interstate or foreign commerce shoreward to their ordinary high water mark, including all waters which are subject to the ebb and flow of the tide shoreward to their mean higher high water mark on the West Coast, including wetlands adjacent thereto). This section would limit Corps 404 authority for permit issuance to Category 1 waters (33 CFR 323.329; FR 42, 138, 14 July 1977) in states with EPA approved individual and general permit programs.

2. Related Legislation. Brief description of other legislation requiring coordination or review during the Corps permit process.

Section 401 of the Clean Water Act (CWA)

Section 401 of the Clean Water Act (PL 95-217; 91 Stat. 1600; 33 U.S.C. 1344) requires any non-federal applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into waters of the United States to obtain a certification from the state in which the discharge is occurring, or from the interstate water pollution control agency having jurisdiction over the discharge location. Federal agencies are subject to certification requirements.

Section 307(c) of the Coastal Zone Management Act of 1972

Section 307(c) of the Coastal Zone Management Act of 1972, as amended (PL 94-370, 90 Stat. 1013, 16 U.S.C. 1456(c)) requires that federal agencies conducting activities directly affecting a state's coastal zone to comply, to the maximum extent practicable, with an approved state coastal zone management program. In addition, non-federal applicants for federal licenses or permits to conduct activities in the coastal zone must have a state certification that the proposed activity will comply with the state's CZM program.

The Marine Protection, Research, and Sanctuaries Act of 1972

Section 302 of the Marine Protection, Research, and Sanctuaries Act of 1972, as amended (PL 92-532, 86 Stat. 1052, 16 U.S.C. 1432), authorizes the Secretary of Commerce to designate as marine sanctuaries those areas of ocean waters and Great Lakes or of other coastal waters which he deems necessary for the purpose of preserving or restoring such areas for their conservation, recreational, ecological, or aesthetic values. Activities in the sanctuary authorized by other authorities are valid only if certified by the Secretary of Commerce as consistent with Title III of the Act. Section 103 of this Act (often referred to as The Ocean Dumping Act) gives permit authority for transportation of dredged materials for ocean dumping to the Corps of Engineers.

The National Environmental Policy Act of 1969 (PL 91-190)

The National Environmental Policy Act of 1969 (42 U.S.C. 4321-4347) declares in Section 102 that "...all agencies of the Federal Government shall...insure that presently unquantified environmental amenities and values may be given appropriate consideration in decision making along with economic and technical considerations..."

The Fish and Wildlife Coordination Act of 1934 (PL 85-624)

Under the Fish and Wildlife Coordination Act (16 U.S.C. 661-666c) as amended, the Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS) review and report on projects receiving federal funds or those permitted under Sections 9 and 10 of the River and Harbor Act of 1899 and under Sections 402 and 404 of CWA. Under this Act, any federal agency proposing to control or modify any body of water must consult with FWS, NMFS, and the head of the appropriate state agency exercising administration over the wildlife resources of the affected state.

The Fish and Wildlife Act of 1956

The Fish and Wildlife Act of 1956 (16 U.S.C. 742a et seq.) authorizes the use of funds by FWS and NMFS for research, acquisition of refuge lands, and development of existing facilities to conserve and manage fish and wildlife.

The Marine Migratory Game Fish Act of 1959

The Marine Migratory Game Fish Act of 1959 (16 U.S.C. 760a et seq.) supports marine game fish research on migration, identity of stocks, mortality rates, and environmental influences including pollution under the authority of NMFS.

The Anadromous Fish Conservation Act of 1974

The Anadromous Fish Conservation Act of 1974 (16 U.S.C. 757a) as amended has as its objective the conservation, development, and enhancement of anadromous fishery resources. Under this Act FWS and NMFS conduct research, operate facilities, acquire lands, and make agreements with states for management and operation of facilities pursuant to meeting the objectives of the Act.

Fishery Conservation and Management Act of 1976 (16 U.S.C. 971 et seq.)*

Under the Fishery Conservation and Management Act of 1976 (PL 94-265), NMFS conducts biological fishery research on the impacts of pollution and wetlands and estuary degradation. The objective of the Act is to conserve and manage fishery resources. For anadromous fish, authority extends beyond the 200-mile limit.

The Federal Power Act of 1920

The Federal Power Act of 1920 (41 Stat. 1063; 16 U.S.C. 791a et seq.) as amended, allows the Federal Power Commission to permit construction of certain physical structures related to a power project. If the navigability of a waterway is affected, all plans must be approved by the Secretary of the Interior. In all cases involving the discharge of dredged or fill material or the transportation of dredged material for the purposes of dumping in ocean waters, Section 404 or Section 103 will be applicable.

The National Historic Preservation Act of 1966 (PL 80-665)

The National Historic Preservation Act of 1966 (80 Stat. 915, 16 U.S.C. 470), created an Advisory Council on Historic Preservation. The council reviews and comments upon activities licensed by the Federal Government which will have an effect upon properties listed in the National Register of Historic Places.

The Endangered Species Act of 1973 (PL 93-205)

The Endangered Species Act of 1973 (16 U.S.C. 1531 et. seq.) states that Federal agencies must carry out programs for the conservation of endangered or threatened species, and take any action necessary to insure that any actions authorized by that Agency will not jeopardize the continued existence of these endangered or threatened species or their habitats.

The Deepwater Port Act of 1974

The Deepwater Port Act of 1974 (33 U.S.C. 1501 et. seq.) prohibits ownership, construction, or operation of a deepwater port beyond territorial seas without a license issued by the Secretary of Transportation. A permit from this authority must be concurrent with the issuance of the necessary permits from the Department of the Army pursuant to the authorities listed in Section 320.2.

The Marine Mammal Protection Act of 1972

The Marine Mammal Protection Act of 1972 (16 U.S.C. 1361 et. seq.) perpetually prohibits the harassment, hunting, capturing, or killing of marine mammals or the importation of marine mammals and marine mammal products without a permit from either the Secretary of the Interior or the Secretary of Commerce, depending upon the species involved.

Section 7(a) of the Wild and Scenic Rivers Act of 1968 (16 U.S.C. 1271-1287)*

This Act states that no department or agency of the United States shall recommend authorizing of any water resources project that would have a direct and adverse effect on the values for which such river was established, as determined by the Secretary charged with its administration. Also, no requests to begin construction of any such project shall be made without advising the Secretary of the Interior or the Secretary of Agriculture.

Section 6(f) of the Land and Water Conservation Fund Act of 1965

This Section provides that no property acquired or developed with assistance from the Land and Water Conservation Fund shall, without the approval of the Secretary of the Interior, be converted to other than public outdoor recreational uses. (16 U.S.C.

The Estuary Protection Act of 1968 (16 U.S.C. 1221-1226)*

The Estuary Protection Act of 1968 (PL 90-454, 82 Stat. 625-628) is a declaration of the Congressional policy to preserve, protect, and restore estuaries. The Act authorized a study and inventory of the nation's estuaries, including coastal marshlands, bays, sounds, and lagoons to determine their physical, biological, and economic values.

Interstate Land Sales Full Disclosure Act of 1970

In the event that a lot subject to the full disclosure provision of this act is in a "wetlands" area, HUD requires certification that no permit for development has been granted by COE under the River and Harbor Act of 1899. (15 U.S.C. 1714)*

Water Resources Planning Act (42 U.S.C. 1962d)*

To the extent that COE grants of permits may affect the plans of river basin commissions established by this Act, COE must coordinate with the commissions.

Leslie Salt vs. Froehlke [518f. 2d 742 (9th Circuit, 1978)]

The Leslie Salt case specifically held that the jurisdiction of the Corps of Engineers under Section 10 of the River and Harbor Act of 1899 extends only to mean high water (MHW) in its unobstructed natural state and not to mean higher high water. The term "historic tidal water line" was used by the court only with reference to Corps jurisdiction under Section 404.

Opinion of the Attorney General of the United States, September 7, 1979

On September 7, 1979, the Attorney General signed and delivered an Opinion requested by the Secretary of the Army. In his request, the Secretary asked for clarification of two issues:

- a. Whether ultimate authority to determine the jurisdictional scope of Section 404 waters of the United States rests with the Secretary or with the Administrator of EPA; and
- b. whether ultimate authority to determine the scope of the Section 404(f) exemptions resides with the Secretary or the Administrator.

In both cases, the Attorney General's opinion is that these authorities ultimately rest with the Administrator.

Water Resources Policies and Authorities; Implementation of
Executive Order 11990 - Protection of Wetlands (33 CFR 235)

This reference is the proposed regulation of the Corps of Engineers for implementation of Executive Order (EO) 11990, dated 10 June 1980. It will apply to civil works planning, design, construction, operation, maintenance, and real estate activities of the Corps. It is not applicable to the Corps regulatory program for activities involving wetlands on non-federal property. The proposed regulations would require that federal agencies contemplating new construction in wetlands must examine practicable alternatives, preserve and enhance beneficial values and minimize their loss or degradation in wetlands, and involve the public in the decision making process. The regulations state the proposed Corps policy of avoiding actions in important wetlands as described in 33 CFR 235.6 (the same as 33 CFR 320.4) and specify factors of the public interest which must be considered. The regulations specify general procedures for incorporating EO 11990 in the planning, design, construction and management of civil works activities and procedures for public involvement, real estate activities, and implementation of EO 11990 in the various stages of civil works activities.

*Footnote: According to legal standards, once a Public Law (PL listing) has been encoded, the correct reference number becomes the United States Code (U.S.C.) number.

Appendix D

CORPS REGULATIONS 33 CFR 320-329; 33 CFR 239

1. The authorities of the Corps to review permits for certain types of activities and construction in or affecting navigable waters were consolidated into the River and Harbor Act of 1899. Section 9 of this Act requires a permit from the Corps of Engineers to construct any dam or dike in a navigable water of the United States, and Section 10 identifies other types of structures or work in or affecting navigable waters of the U.S. that are prohibited unless permitted by the Corps.

2. The 1899 Act was administered only for protection of navigation until 1968, when the following factors were included: fish and wildlife, conservation, pollution, aesthetics, ecology, and the general public interest (33 CFR 209.120).

3. On September 9, 1972 the Corps published a revised administrative definition of the term "navigable waters of the United States" in the Federal Register (33 CFR 209.260). This definition is used to administer Sections 9 and 10 of the River and Harbor Act of 1899.

4. On April 7, 1971, the Corps implemented a nationwide waste permit program based on Section 13 of the 1899 Act, commonly known as "The Refuse Act". The permit program was enjoined by the District Court for the District of Columbia in the case of *Kalut v. Resort*, 335 F. Supp. 1, (D.D.C. 1971) on December 24, 1971. It remained suspended until the enactment of the FWPCA on October 18, 1972. Section 402 of the FWPCA subsumed the Refuse Act permit program with the establishment of the National Pollutant Discharge Elimination System, although earlier Refuse Act prohibitions can only be lifted by the issuance of a FWPCA permit.

5. Section 404 of the CWA created a permit program which is administered by the Secretary of the Army, acting through the Corps of Engineers. This program is to regulate the discharge of dredged material and of those pollutants that comprise fill material into the waters of the United States. The regulations then established by the Department of the Army limited the Section 404 permit program to the same waters regulated by the River and Harbor Act of 1899. These regulations were challenged by the Natural Resources Defense Council and the National Wildlife Federation as being inconsistent with the intent of Congress to regulate "all waters of the United States." (A major portion of the coastal wetlands were outside the permit review requirements of Section 404 by the Army's regulations.)

6. On March 27, 1975, the District Court for the District of Columbia ordered the revocation and revision of the Department of

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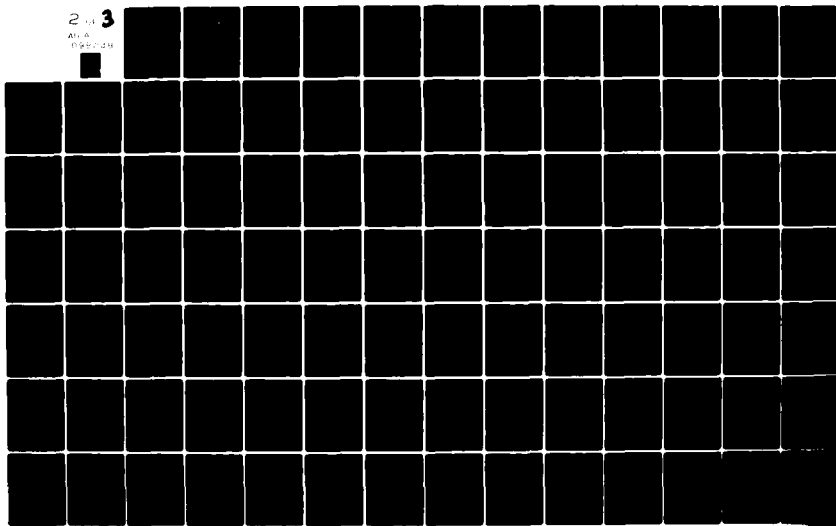
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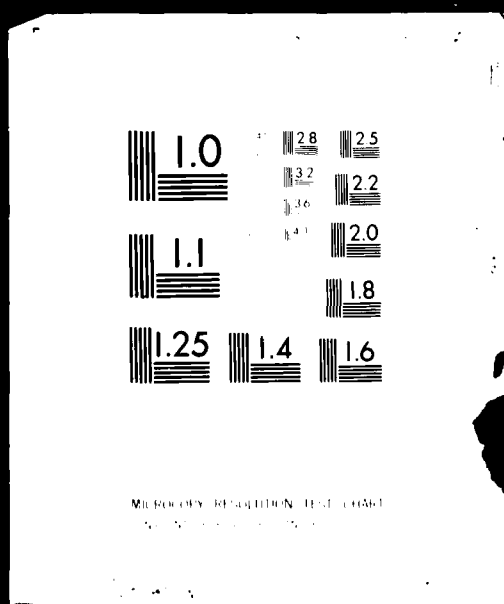
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the Army's original regulations concerning boundaries to be used in granting permits under Section 404. The Court also ordered publication of new proposed regulations within 40 days.

7. The interim final regulation was published on July 25, 1975, and included definitions for "navigable water," "dredged material," "fill material," and "headwaters." It also adopted a phase-in schedule for implementation of the permit requirements for Section 404.

8. The following document is the final regulations adopted by the Department of the Army on July 19, 1977 for administration of its regulatory program. In it, the following regulations were rescinded: 33 CFR 209.120, 33 CFR 209.125, 33 CFR 209.131, 33 CFR 209.133, 33 CFR 209.150, and 33 CFR 209.260. New regulations were also published, all included in Parts 320 to 329.

TUESDAY, JULY 19, 1977

PART II



DEPARTMENT OF DEFENSE

**Department of the Army,
Engineers Corps**



REGULATORY PROGRAM OF THE CORPS OF ENGINEERS

**PART 209—ADMINISTRATIVE
PROCEDURES**

§§ 209.120, 209.125, 209.131, 209.132, 209.150, and 209.260 [Reserves]

1. The above sections are revoked as reserved.

2. The following parts 320 through 329 are added:

**PART 320—GENERAL REGULATORY
POLICIES**

Sec
320.1 Purpose and scope
320.2 Authorities to issue permits
320.3 Related legislation
320.4 General policies for evaluating permit applications

Authority: 33 USC 401 et seq. 33 USC 1344, 33 USC 1413.

§ 320.1 Purpose and scope.

(a) *Types of activities regulated.* The regulation and the regulations that follow (33 CFR 321-329) prescribe the statutory authorities, and general and special policies and procedures applicable to the review of applications for Department of the Army permits for various types of activities that occur in waters of the United States or the oceans. This part identifies the various Federal statutes that require Department of the Army permits before these activities can be lawfully undertaken. The relevant Federal legislation applicable to the review of each activity that requires a Department of the Army permit, and the general policies that are applicable

to the review of all activities that require Department of the Army permits. Parts 321-324 address the various types of activities that require Department of the Army permits, including special policies and procedures applicable to those activities, as follows:

(1) Dams or dikes in navigable waters of the United States (Part 321);

(2) All other structures or work including excavation, dredging, and/or disposal activities, in navigable waters of the United States (Part 322);

(3) All activities that alter or modify the course, condition, location, or capacity of a navigable water of the United States (Part 322);

(4) Construction of fixed structures and artificial islands on the outer continental shelf (Part 322);

(5) All discharges of dredged or fill material into the waters of the United States (Part 323); and

(6) All activities involving the transportation of dredged material for the purpose of dumping it in ocean waters (Part 324).

(b) *Forms of authorization.* Department of the Army permits for the above described activities are issued under various forms of authorization. These include individual permits; letters of permission that are issued following a review of an individual application for a Department of the Army permit; general permits that authorize the performance of a category or categories of activities in a specific geographical region after it is determined that these activities will cause only a minimal individual and cumulative adverse environmental impact; and nationwide permits that authorize the performance of certain specified activities throughout the Nation. The nationwide permits are found in 33 CFR 322.4 and 323.4. If an activity is covered by a general or nationwide permit, an application for a Department of the Army permit does not have to be made. In such cases, a person must only comply with the conditions contained in the general or nationwide permit to satisfy the requirements of law.

(c) *General instructions.* The procedures for processing all letters of permission, individual permits, and general permits are contained in 33 CFR 325. However, before reviewing those procedures, a person desiring to perform any activity that requires a Department of the Army permit is advised to review the general and special policies that relate to the particular activity as outlined in this Part 320 and Parts 321 through 324. The terms "navigable waters of the United States" and "waters of the United States" are used frequently throughout these regulations, and it is important that the reader understand the difference from the outset. "Navigable waters of the United States" are defined in 33 CFR 329. These are the traditional waters where permits are required for work or structures pursuant to sections 9 and 10 of the River and Harbor Act of 1899. "Waters of the United States" are defined in 33 CFR 321.2(a). These waters include more than navigable waters of the

United States and are the waters where permits are required for the discharge of dredged or fill material pursuant to section 404 of the Federal Water Pollution Control Act Amendments of 1972.

§ 320.2 Authorities to issue permits.

(a) Section 9 of the River and Harbor Act approved March 3, 1899 (30 Stat. 1151; 33 USC 401) (hereinafter referred to as Section 9) prohibits the construction of any dam or dike across any navigable water of the United States in the absence of Congressional consent and approval of the plans by the Chief of Engineers and the Secretary of the Army. Where the navigable portions of the waterbody lie wholly within the limits of a single State, the structure may be built under authority of the legislature of that State. If the location and plans or any modification thereof, are approved by the Chief of Engineers and by the Secretary of the Army, the instrument of authorization is designated a permit. Section 9 also pertains to bridges and causeways but the authority of the Secretary of the Army and Chief of Engineers with respect to bridges and causeways was transferred to the Secretary of Transportation under the Department of Transportation Act of October 15, 1966 (80 Stat. 941, 49 USC 1155; 6(A)). See also 33 CFR Part 321. A Department of the Army authorization is required for the discharge of dredged or fill material into waters of the United States associated with bridges and causeways pursuant to Section 404 of the Federal Water Pollution Control Act Amendments of 1972 (33 USC 1344). See 33 CFR Part 323.

(b) Section 10 of the River and Harbor Act approved March 3, 1899 (30 Stat. 1151; 33 USC 403) (hereinafter referred to as Section 10) prohibits the unauthorized obstruction or alteration of any navigable water of the United States. The construction of any structure in or over any navigable water of the United States, the excavation from or depositing of material in such waters, or the accomplishment of any other work affecting the course, location, condition, or capacity of such waters is unlawful unless the work has been recommended by the Chief of Engineers and authorized by the Secretary of the Army. The instrument of authorization is designated a permit, general permit, or letter of permission. The authority of the Secretary of the Army to prevent obstructions to navigation in the navigable waters of the United States was extended to artificial islands and fixed structures located on the outer continental shelf by Section 4(f) of the Outer Continental Shelf Lands Act of 1953 (67 Stat. 463; 43 USC 1333(f)). See also 33 CFR Part 322.

(c) Section 11 of the River and Harbor Act approved March 3, 1899 (30 Stat. 1151; 33 USC 404) authorizes the Secretary of the Army to establish harbor lines channelward of which no piers, wharves, bulkheads or other works may be extended or deposits made without approval of the Secretary of the Army.

By policy stated in 33 CFR 328, effective May 27, 1970, harbor lines are guidelines only for defining the offshore limits of structures and fills insofar as they impact on navigation interests. Permits for work shoreward of those lines must be obtained in accordance with Section 10 and, if applicable, Section 404.

(d) Section 13 of the River and Harbor Act approved March 3, 1899 (30 Stat. 1152; 33 USC 407) provides that the Secretary of the Army, whenever the Chief of Engineers determines that anchorage and navigation will not be injured thereby, may permit the discharge of refuse into navigable waters. In the absence of a permit, such discharge of refuse is prohibited. While the prohibition of this section, known as the Refuse Act, is still in effect, the permit authority of the Secretary of the Army has been succeeded by the permit authority provided the Administrator, Environmental Protection Agency, and the States under Sections 402 and 405 of the Federal Water Pollution Control Act Amendments of 1972 (PL 92-500, 86 Stat. 816, 33 USC 1342 and 1345). See 40 CFR Part 124 and 125.

(e) Section 14 of the River and Harbor Act approved March 3, 1899 (30 Stat. 1152; 33 USC 408) provides that the Secretary of the Army on the recommendation of the Chief of Engineers may grant permission for the temporary occupation or use of any sea wall, bulkhead, jetty, dike, levee, wharf, pier, or other work built by the United States. This permission will be granted by an appropriate real estate instrument in accordance with existing real estate regulations.

(f) Section 1 of the River and Harbor Act of June 13, 1902 (32 Stat. 371; 33 USC 565) allows any persons or corporations desiring to improve any navigable river at their own expense and risk to do so upon the approval of the plans and specifications by the Secretary of the Army and the Chief of Engineers. Improvements constructed under this authority, which are primarily in Federal project areas, remain subject to the control and supervision of the Secretary of the Army and the Chief of Engineers.

(g) Section 404 of the Federal Water Pollution Control Act Amendments of 1972 (PL 92-500, 86 Stat. 816, 33 USC 1344) (hereinafter referred to as Section 404) authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits, after notice and opportunity for public hearings, for the discharge of dredged or fill material into the waters of the United States at specified disposal sites. See 33 CFR 323. The selection and use of disposal sites will be in accordance with guidelines developed by the Administrator of the Environmental Protection Agency (EPA) in conjunction with the Secretary of the Army, published in 40 CFR Part 230. If these guidelines prohibit the selection or use of a disposal site, the Chief of Engineers may consider the economic impact on navigation of such a prohibition in reaching his decision. Furthermore, the

RULES AND REGULATIONS

Administrator can prohibit or restrict the use of any defined area as a disposal site whenever he determines, after notice and opportunity for public hearings and after consultation with the Secretary of the Army, that the discharge of such materials into such areas will have an unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas, wildlife, or recreational areas.

(h) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972, as amended (PL 92-532, 86 Stat. 1052, 33 U.S.C. 1413) (hereinafter referred to as Section 103) authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits, after notice and opportunity for public hearings, for the transportation of dredged material for the purpose of dumping it in ocean waters where it is determined that the dumping will not unreasonably degrade or endanger human health, welfare, or amenities or the marine environment, ecological system, or economic potentialities. The selection of disposal sites will be in accordance with criteria developed by the Administrator of the EPA in consultation with the Secretary of the Army, published in 40 CFR Parts 220-229. However, similar to the EPA Administrator's limiting authority cited in subparagraph (g), above, the Administrator can prevent the issuance of a permit under this authority if he finds that the dumping of the material will result in an unacceptable adverse impact on municipal water supplies, shellfish beds, wildlife, fisheries or recreational areas. See also 33 CFR Part 324.

§ 320.3 Related legislation.

(a) Section 401 of the Federal Water Pollution Control Act Amendments of 1972 (PL 92-500; 86 Stat. 816, 33 U.S.C. 1341) requires any non-Federal applicant for a Federal license or permit to conduct any activity that may result in a discharge of a pollutant into waters of the United States to obtain a certification from the State in which the discharge originates or will originate, or, if appropriate, from the interstate water pollution control agency having jurisdiction over the affected waters at the point where the discharge originates or will originate, that the discharge will comply with the applicable effluent limitations and water quality standards. A certification obtained for the construction of any facility must also pertain to the subsequent operation of the facility.

(b) Section 307(c) of the Coastal Zone Management Act of 1972, as amended (PL 94-370, 90 Stat. 1013, 16 U.S.C. 1456(c)) requires Federal agencies conducting activities, including development projects, directly affecting a State's coastal zone, to comply, to the maximum extent practicable, with an approved State coastal zone management program. It also requires any non-Federal applicant for a Federal license or permit to conduct an activity affecting land or water uses in the State's coastal zone to furnish a certification that the proposed activity will comply with the State's

coastal zone management program. Generally, no permit will be issued until the State has concurred with the non-Federal applicant's certification. This provision becomes effective upon approval by the Secretary of Commerce of the State's coastal zone management program. See also 15 CFR Part 930.

(c) Section 302 of the Marine Protection, Research and Sanctuaries Act of 1972, as amended, (PL 92-532, 86 Stat. 1052, 16 U.S.C. 1432) authorizes the Secretary of Commerce, after consultation with other interested Federal agencies and with the approval of the President, to designate as marine sanctuaries those areas of the ocean waters or of the Great Lakes and their connecting waters or of other coastal waters which he determines necessary for the purpose of preserving or restoring such areas for their conservation, recreational, ecological, or aesthetic values. After designating such an area, the Secretary of Commerce shall issue regulations to control any activities within the area. Activities in the sanctuary authorized under other authorities are valid only if the Secretary of Commerce certifies that the activities are consistent with the purposes of Title III of the Act and can be carried out within the regulations for the sanctuary.

(d) The National Environmental Policy Act of 1969 (42 U.S.C. 4321-4347) declares the national policy to encourage a "productive and enjoyable harmony between man and his environment. Section 102 of that Act directs that "to the fullest extent possible: (1) The policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this Act, and (2) all agencies of the Federal Government shall . . . insure that presently unquantified environmental amenities and values may be given appropriate consideration in decision making along with economic and technical considerations . . .". See also 33 CFR Part 325 and 33 CFR 209.410.

(e) The Fish and Wildlife Act of 1956 (16 U.S.C. 742a, et seq.), the Migratory Marine Game-Fish Act (16 U.S.C. 760c-760g) and the Fish and Wildlife Coordination Act (16 U.S.C. 661-666c) and other acts express the concern of Congress with the quality of the aquatic environment as it affects the conservation, improvement and enjoyment of fish and wildlife resources. Reorganization Plan No. 4 of 1970 transferred certain functions, including certain fish and wildlife-water resources coordination responsibilities, from the Secretary of the Interior to the Secretary of Commerce. Under the Fish and Wildlife Coordination Act and Reorganization Plan No. 4, any Federal agency that proposes to control or modify any body of water must first consult with the United States Fish and Wildlife Service, the National Marine Fisheries Service, as appropriate, and with the head of the appropriate State agency exercising administration over the wildlife resources of the affected State.

(f) The Federal Power Act of 1920 (Stat. 1063; 16 U.S.C. 791a et seq.) amended, authorizes the Federal Power Commission (FPC) to issue licenses for the construction, operation and maintenance of dams, water conduits, reservoirs, power houses, transmission lines and other physical structures of a project. However, where such structures will affect the navigable capacity of navigable waters of the United States defined in 16 U.S.C. 796), the plan for the dam or other physical structure affecting navigation must be approved by the Chief of Engineers and the Secretary of the Army. In such cases, the intent of navigation should normally be protected by a recommendation to the FPC for the inclusion of appropriate provisions in the FPC license rather than issuance of a separate Department of Army permit under 33 U.S.C. 401 et seq. As to any other activities in navigable waters not constituting construction, operation and maintenance of physical structures licensed by the FPC under the Federal Power Act of 1920, as amended, the provisions of 33 U.S.C. et seq remain fully applicable. In cases involving the discharge of dirt or fill material into waters of the United States or the transportation of dredged material for the purpose of dumping in ocean waters, Section 404 or Section 401 will be applicable.

(g) The National Historic Preservation Act of 1966 (80 Stat. 915, 16 U.S.C. 470) created the Advisory Council on Historic Preservation to advise the President and Congress on matters involving historic preservation. In performing its function the Council is authorized to view and comment upon activities licensed by the Federal Government which will have an effect upon properties in the National Register of Historic Places, or eligible for listing. The concern of Congress for the preservation of significant historical sites is also expressed in the Preservation of Historic and Archeological Data Act of 1959 (U.S.C. 459 et seq.), which amended the Act of June 27, 1960. By this Act, whenever a Federal construction project, whether Federally licensed project, activity, program alters any terrain such that significant historical or archeological resources are threatened, the Secretary of the Interior may take action necessary to identify and preserve the data prior to the commencement of the project. See 33 CFR Part 305.

(h) The Interstate Land Sales Disclosure Act (15 USC 1701 et seq.) prohibits any developer or agent selling or leasing any lot in a subdivision (as defined in 15 USC 1701(3)) if the purchaser is furnished in advance a printed property report containing information which the Secretary of Housing and Urban Development may require or regulations, requiring the disclosure of purchasers. In the event the lot in question is part of a project requiring Department of the Authorization, the Property Report required by Housing and Urban Development regulation to state whether

a permit has been applied for, issued, or denied by the Corps of Engineers for the development under Section 10 or Section 404. The Property Report is also required to state whether or not any enforcement action has been taken as a consequence of non-application for or denial of such permit.

(i) The Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.) declares the intention of the Congress to conserve threatened and endangered species and the ecosystems on which those species depend. The Act provides that Federal agencies must utilize their authorities in furtherance of its purposes by carrying out programs for the conservation of endangered or threatened species, and by taking such action necessary to insure that any action authorized by that Agency will not jeopardize the continued existence of such endangered or threatened species or result in the destruction or modification of habitat of such species which is determined by the Secretaries of Interior or Commerce, as appropriate, to be critical. See also 50 CFR Part 17.

(j) The Deepwater Port Act of 1974 (33 U.S.C. 1501 et seq.) prohibits the ownership, construction, or operation of a deepwater port beyond the territorial seas without a license issued by the Secretary of Transportation. The Secretary of Transportation may issue such a license to an applicant if he determines, among other things, that the construction and operation of the deepwater port is in the national interest and consistent with national security and other national policy goals and objectives. An application for a deepwater port license constitutes an application for all Federal authorizations required for the ownership, construction, and operation of a deepwater port, including applications for Section 10, Section 404 and Section 103 permits which must also be issued by the Department of the Army pursuant to the authorities listed in § 320.2. The Secretary of Transportation must obtain the views and recommendations of all Federal agencies having jurisdiction over any aspect of the deepwater port construction and operation prior to issuing a license.

(k) The Marine Mammal Protection Act of 1972 (16 U.S.C. 1361 et seq.) expresses the intent of Congress that marine mammals be protected and encouraged to develop in order to maintain the health and stability of the marine ecosystem. The Act imposes a perpetual moratorium on the harassment, hunting, capturing, or killing of marine mammals and on the importation of marine mammals and marine mammal products without a permit from either the Secretary of the Interior or the Secretary of Commerce, depending upon the species of marine mammal involved. Such permits may be issued only for purposes of scientific research and for public display if the purpose is consistent with the policies of the Act. The appropriate Secretary is also empowered in certain restricted circumstances to waive the requirements of the Act.

(l) Section 7(a) of the Wild and Scenic Rivers Act (82 Stat. 906, 16 U.S.C. 1278 et seq.) provides that no department or agency of the United States shall assist by loan, grant, license, or otherwise in the construction of any water resources project that would have a direct and adverse effect on the values for which such river was established, as determined by the Secretary charged with its administration. No department or agency of the United States shall recommend authorizing of any water resources project that would have a direct and adverse effect on the values for which such river was established, as determined by the Secretary charged with its administration, or request appropriations to begin construction of any such project, whether heretofore or hereafter authorized, without advising the Secretary of the Interior or the Secretary of Agriculture, as the case may be, in writing of its intention so to do at least sixty days in advance, and without specifically reporting to the Congress in writing at the time it makes its recommendation or request in what respect construction of such project would be in conflict with the purposes of this Act and would affect the component and the values to be protected by it under this Act.

(m) Section 6(f) of the Land and Water Conservation Fund Act of 1965 (78 Stat. 897, 16 USC 460 (f), et seq.) provides that no property acquired or developed with assistance from the Land and Water Conservation Fund shall, without the approval of the Secretary of the Interior, be converted to other than public outdoor recreation uses. The Secretary shall approve such conversion only if he finds it to be in accord with the then existing comprehensive statewide outdoor recreation plan and only upon such conditions as he deems necessary to assure the substitution of other recreation properties of at least equal fair market value and of reasonably equivalent usefulness and location.

§ 320.4 General policies for evaluating permit applications.

The following policies shall be applicable to the review of all applications for Department of the Army permits. Additional policies specifically applicable to certain types of activities are identified in Parts 321-324 of this chapter.

(a) *Public interest review.* (1) The decision whether to issue a permit will be based on an evaluation of the probable impact of the proposed activity and its intended use on the public interest. Evaluation of the probable impact which the proposed activity may have on the public interest requires a careful weighing of all those factors which become relevant in each particular case. The benefit which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. The decision whether to authorize a proposal, and if so, the conditions under which it will be allowed to occur, are therefore determined by the

outcome of the general balancing process (e.g., see 33 CFR 209.400, *Guidelines for Assessment of Economic, Social and Environmental Effects of Civil Works Projects*). That decision should reflect the national concern for both protection and utilization of important resources. All factors which may be relevant to the proposal must be considered; among those are conservation, economics, aesthetics, general environmental concerns, historic values, fish and wildlife values, flood damage prevention, land use, navigation, recreation, water supply, water quality, energy needs, safety, food production, and, in general, the needs and welfare of the people. No permit will be granted unless its issuance is found to be in the public interest.

(2) The following general criteria will be considered in the evaluation of every application:

(i) the relative extent of the public and private need for the proposed structure or work;

(ii) the desirability of using appropriate alternative locations and methods to accomplish the objective of the proposed structure or work;

(iii) the extent and permanence of the beneficial and/or detrimental effects which the proposed structure or work may have on the public and private uses to which the area is suited; and

(iv) the probable impact of each proposal in relation to the cumulative effect created by other existing and anticipated structures or work in the general area.

(b) *Effect on wetlands.* (1) Wetlands are vital areas that constitute a productive and valuable public resource, the unnecessary alteration or destruction of which should be discouraged as contrary to the public interest.

(2) Wetlands considered to perform functions important to the public interest include:

(i) Wetlands which serve important natural biological functions, including food chain production, general habitat, and nesting, spawning, rearing and resting sites for aquatic or land species.

(ii) Wetlands set aside for study of the aquatic environment or as sanctuaries or refuges;

(iii) Wetlands the destruction or alteration of which would affect detrimentally natural drainage characteristics, sedimentation patterns, salinity distribution, flushing characteristics, current patterns, or other environmental characteristics;

(iv) Wetlands which are significant in shielding other areas from wave action, erosion, or storm damage. Such wetlands are often associated with barrier beaches, islands, reefs and bars;

(v) Wetlands which serve as valuable storage areas for storm and flood waters;

(vi) Wetlands which are prime natural recharge areas. Prime recharge areas are locations where surface and ground water are directly interconnected, and

(vii) Wetlands through natural water filtration processes serve to purify water.

(3) Although a particular alteration of wetlands may constitute a minor change,

the cumulative effect of numerous such piecemeal changes often results in a major impairment of the wetland resources. Thus, the particular wetland site for which an application is made will be evaluated with the recognition that it is part of a complete and interrelated wetland area. In addition, the District Engineer may undertake reviews of particular wetland areas in consultation with the appropriate Regional Director of the Fish and Wildlife Service, the Regional Director of the National Marine Fisheries Service of the National Oceanic and Atmospheric Administration, the Regional Administrator of the Environmental Protection Agency, the local representative of the Soil Conservation Service of the Department of Agriculture, and the head of the appropriate State agency to assess the cumulative effect of activities in such areas.

(4) No permit will be granted to work in wetlands identified as important by subparagraph (2), above, unless the District Engineer concludes, on the basis of the analysis required in paragraph (a), above, that the benefits of the proposed alteration outweigh the damage to the wetlands resource and the proposed alteration is necessary to realize those benefits. In evaluating whether a particular alteration is necessary, the District Engineer shall consider whether the proposed activity is primarily dependent on being located in, or in close proximity to the aquatic environment and whether feasible alternative sites are available. The applicant must provide sufficient information on the need to locate the proposed activity in the wetland and must provide data on the basis of which the availability of feasible alternative sites can be evaluated.

(5) In addition to the policies expressed in this subpart the Congressional policy expressed in the Estuary Protection Act, PL 90-454, and State regulatory laws or programs for classification and protection of wetlands will be given great weight.

(c) *Fish and wildlife.* In accordance with the Fish and Wildlife Coordination Act (16 U.S.C. 1832) (a) above, Corps of Engineers officials will consult with the Regional Director, U.S. Fish and Wildlife Service, the Regional Director, National Marine Fisheries Service, and the head of the agency responsible for fish and wildlife for the State in which the work is to be performed, with a view to the conservation of wildlife resources by prevention of their direct and indirect loss and damage due to the activity proposed in a permit application. They will give great weight to these views on fish and wildlife considerations in evaluating the application. The applicant will be urged to modify his proposal to eliminate or mitigate any damage to such resources, and in appropriate cases the permit may be conditioned to accomplish this purpose.

(d) *Water quality.* Applications for permits for activities which may affect the quality of a water of the United States will be evaluated for compliance with applicable effluent limitations, water

quality standard and management practices during the construction, operation, and maintenance of the proposed activity. Certification of compliance with applicable effluent limitations and water quality standards required under provisions of Section 401 of the Federal Water Pollution Control Act will be considered conclusive with respect to water quality considerations unless the Regional Administrator, Environmental Protection Agency (EPA), advises of other water quality aspects to be taken into consideration. Any permit issued may be conditioned to implement water quality protection measures.

(e) *Historic, scenic, and recreational values.* (1) Applications for permits covered by this regulation may involve areas which possess recognized historic, cultural, scenic, conservation, recreational or similar values. Full evaluation of the general public interest requires that due consideration be given to the effect which the proposed structure or activity may have on the enhancement, preservation, or development of such values. Recognition of those values is often reflected by State, regional, or local land use classifications, or by similar Federal controls or policies. In both cases, action on permit applications should, insofar as possible, be consistent with, and avoid adverse effect on, the values or purposes for which those classifications, controls, or policies were established.

(2) Specific application of the policy in subparagraph (1) above, applies to:

(i) Rivers named in Section 3 of the Wild and Scenic Rivers Act (16 U.S.C. 1273 et seq.), those proposed for inclusion as provided by Sections 4 and 5 of the Act, or by later legislation; and wild, scenic, and recreational rivers established by State and local entities;

(ii) Historic, cultural, or archeological sites or practices as provided in the National Historic Preservation Act of 1966 (16 U.S.C. 4321 et seq.) (see also Executive Order 11593, May 13, 1971, and Statutes there cited). Particular attention should be directed toward any district site, building, structure or object listed or eligible for listing in the National Register of Historic Places;

(iii) Sites included in or determined eligible for listing in the National Registry of Natural Landmarks which are published periodically in the Federal Register;

(iv) Sites acquired or developed with the assistance of the Land and Water Conservation Fund (16 U.S.C. 460, 1-4, (c) seq.) or the Recreational Demonstration Projects Act of 1942 (PL 77-591, 56 Stat. 336) and other public parks and recreation areas; and

(v) Any other areas named in Acts of Congress or Presidential Proclamations as National Rivers, National Wilderness Areas, National Seashores, National Recreation Areas, National Lakeshores, National Parks, National Monuments, and such areas as may be established under Federal law for similar and related purposes, such as estuarine and marine sanctuaries.

(f) *Effect on limits of the territorial sea.* Structures or work affecting coastal waters may modify the coast line or line from which the three mile belt measured for purposes of the Submerged Lands Act and International Law. Generally, the coast line or base line is line of ordinary low water on the mainland, however, there are exceptions where there are islands or low tide elevations offshore. (The Submerged Lands Act, 67 Stat. 29, U.S. Code Sec. 1301(c), and United States vs. California, 381 U.S. 139 (1965), 382 U.S. 448 (1966)). All applications for structures or work affecting coastal waters will therefore be reviewed specifically to determine whether the coast line or base line might be altered. If it is determined that such change might occur, coordination with the Attorney General and the Solicitor of the Department of the Interior is required before final action is taken. The District Engineer will submit a description of the proposed work and a copy of the plans to the Solicitor, Department of the Interior, Washington, D.C. 20540 and request his comments concerning effects of the proposed work on the continental rights of the United States. These comments will be included in the file of the application. After completion of standard processing procedures, the file will be forwarded to the Chief Engineers. The decision on the application will be made by the Secretary of the Army after coordination with the Attorney General.

(g) *Interference with adjacent properties or water resource projects.* Authorization of work or structures by the Department of the Army does not confer a property right, nor authorize any injury to property or invasion of rights.

(1) Because a landowner has the general right to protect his property from erosion, applications to erect protective structures will usually receive favorable consideration. However, if the proposed structure may cause damage to property of others, the District Engineer will so advise the applicant and inform him of possible alternative methods of protecting his property. Such advice will be given in terms of general guidance only so as not to compete with professional engineering firms nor require undue use of government resources. A significant probability of resulting damage to nearby properties can be a basis for denial of an application.

(2) A landowner's general right of access to navigable waters of the United States is subject to the limitation of access held by nearby landowners to the general public's right of navigation on the water surface. Projects which create undue interference with access to, or use of, navigable waters will generally not receive favorable consideration.

(3) Where it is found that the work for which a permit is desired is in navigable waters of the United States (33 CFR Part 329) and may interfere with an authorized Federal project, the applicant should be apprised in writing

of the fact and of the possibility that a Federal project which may be constructed in the vicinity of the proposed work might necessitate its removal or reconstruction. The applicant should also be informed that the United States will in no case be liable for any damage or injury to the structures or work authorized by Sections 9 or 10 of the River and Harbor Act of 1899 (see 33 CFR Parts 321 and 322) which may be caused by or result from future operations undertaken by the Government for the conservation or improvement of navigation, or for other purposes, and no claims or right to compensation will accrue from any such damage.

(4) Proposed activities which are in the area of a Federal project which exists or is under construction will be evaluated to insure that they are compatible with the purposes of the project.

(h) *Activities affecting coastal zones.* Applications for Department of the Army permits for activities affecting the coastal zones of those States having a coastal zone management program approved by the Secretary of Commerce will be evaluated with respect to compliance with that program. No permit will be issued to a non-Federal applicant until certification has been provided that the proposed activity complies with the coastal zone management program and the appropriate State agency has concurred with the certification or has waived its right to do so. However, a permit may be issued to a non-Federal applicant if the Secretary of Commerce, on his own initiative or upon appeal by the applicant, finds that the proposed activity is consistent with the objectives of the Coastal Zone Management Act of 1972 or is otherwise necessary in the interest of national security. Federal agency applicants for Department of the Army permits are responsible for complying with the Coastal Zone Management Act's directives for assuring that their activities directly affecting the coastal zone are consistent, to the maximum extent practicable, with approved State coastal zone management programs.

(i) *Activities in marine sanctuaries.* Applications for Department of the Army authorization for activities in a marine sanctuary established by the Secretary of Commerce under authority of Section 302 of the Marine Protection, Research and Sanctuaries Act of 1972, as amended, will be evaluated for impact on the marine sanctuary. No permit will be issued until the applicant provides a certification from the Secretary of Commerce that the proposed activity is consistent with the purposes of Title III of the Marine Protection, Research and Sanctuaries Act of 1972, as amended, and can be carried out within the regulations promulgated by the Secretary of Commerce to control activities within the marine sanctuary. Authorizations so issued will contain such special conditions as may be required by the Secretary of Commerce in connection with his certification.

(j) *Other Federal, state, or local requirement.* (1) Processing of an appli-

cation for a Department of the Army permit normally will proceed concurrently with the processing of other required Federal, State, and/or local authorizations or certification. Where the required Federal State and/or local certification and/or authorization has been denied, the application for a Department of the Army permit will be denied without prejudice to the right of the applicant to reinstate processing of his application if subsequent approval is received from the appropriate Federal, State and/or local agency. Even if official certification and/or authorization is not required by State or Federal law, but a State, regional, or local agency having jurisdiction or interest over the particular activity comments on the application, due consideration shall be given to those official views as a reflection of local factors of the public interest.

(2) Where officially adopted State, regional, or local land-use classifications, determinations, or policies are applicable to the land or water areas under consideration, they shall be presumed to reflect local factors of the public interest and shall be considered in addition with the other national factors of the public interest identified in § 320.4(a).

(3) A proposed activity may result in conflicting comments from several agencies within the same State. While many States have designated a single State agency or individual to provide a single and coordinated State position regarding pending permit applications, where a State has not so designated a single source, District Engineers will elicit from the Governor an expression of his views and desires concerning the application or, in the alternative, an expression from the Governor as to which State agency represents the official State position in this particular case.

(4) In the absence of overriding national factors of the public interest that may be revealed during the processing of the permit application, a permit will generally be issued following receipt of a favorable State determination provided the concerns, policies, goals, and requirements as expressed in 33 CFR Parts 320-324, and the following statutes have been followed and considered: The National Environmental Policy Act; the Fish and Wildlife Coordination Act; the Historical and Archaeological Preservation Act; the National Historic Preservation Act; the Endangered Species Act; the Coastal Zone Management Act; the Marine Protection, Research and Sanctuaries Act of 1972, as amended; and the Federal Water Pollution Control Act (see § 320.3, above).

(5) If the responsible Federal, State, and/or local agency fails to take definitive action to grant or deny required authorizations or to furnish comments as provided in subparagraph (3) above, within three months of the issuance of the public notice, the District Engineer shall process the application to a conclusion.

(6) Permits will not be issued where certification or authorization of the proposed work is required by Federal, State

and/or local law and that certification or authorization has been denied.

(7) The District Engineer may, in those States with ongoing permit programs for activities regulated by Department of the Army permits, enter into an agreement with the States to jointly process and evaluate Department of the Army and State permit applications. This may include the issuance of joint public notices; the conduct of joint public hearings, if held; and the joint review and analysis of information and comments developed in response to the public notice, public hearing, the environmental assessment and the environmental impact statement (if necessary), the Fish and Wildlife Coordination Act, the Historical and Archaeological Preservation Act, the National Historic Preservation Act, the Endangered Species Act, the Coastal Zone Management Act, the Marine Protection, Research and Sanctuaries Act of 1972, as amended, and the Federal Water Pollution Control Act. In such cases, applications for Department of the Army permits may be processed concurrently with the processing of the State permit to an independent conclusion and decision by the District Engineer and appropriate State agency.

(k) *Safety of impoundment structures.* Unless an adequate inspection program is required by another Federal law, an agency or will be performed by another Federal agency, the District Engineer will condition permits for impoundment structures to require that the permittee operate and maintain the structure properly to insure public safety. The District Engineer may condition such permits to require periodic inspections and to indicate that failure to accomplish action to assure the public safety will be considered cause to revoke the permit.

(l) *Floodplains.* Executive Order 11988 dated May 24, 1977, requires each Federal agency, in its conduct of Federal programs that affect land use including the regulation of water resources, to take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains. In evaluating whether activities located in a floodplain that require Department of the Army permits are in the public interest, available alternatives to avoid adverse effects from and incompatible development in floodplains shall be considered.

PART 321—PERMITS FOR DAMS AND DIKES IN NAVIGABLE WATERS OF THE UNITED STATES

Sec.
321.1 General
321.2 Definitions
321.3 Special policies and procedures.

AUTHORITY: 33 USC 401.

§ 321.1 General.

This regulation prescribes, in addition to the general policies of 33 CFR 320.4 and procedures of 33 CFR Part 325, those special policies, practices, and procedures to be followed by the Corps of En-

gineers in connection with the review of applications for Department of Army permits to authorize the construction of a dike or dam in a navigable water of the United States pursuant to Section 9 of the River and Harbor Act of 1899 (33 U.S.C. 401). See 33 CFR 320.2(a). Dams and dikes in navigable waters of the United States also require Department of the Army permits under Section 404 of the Federal Water Pollution Control Act Amendments of 1972 (33 U.S.C. 1344). Applicants for Department of the Army permits under this Part should also refer to 33 CFR Part 323 to satisfy the requirements of Section 404.

§ 321.2 Definitions.

For the purpose of this regulation, the following terms are defined:

(a) The term "navigable waters of the United States" means those waters of the United States that are subject to the ebb and flow of the tide shoreward to the mean high water mark (mean higher high water mark on the Pacific coast), and/or are presently used, or have been used in the past, or may be susceptible to use to transport interstate or foreign commerce. See 33 CFR Part 329 for a more complete definition of this term.

(b) The term "dam" means an impoundment structure that completely spans a navigable water of the United States and that may obstruct interstate waterborne commerce.

(c) The term "dike" means an embankment, low dividing wall, or other protective barrier that completely spans a navigable water of the United States and that may obstruct interstate waterborne commerce.

§ 21.3 Special policies and procedures.

The following additional special policies and procedures shall be applicable to the evaluation of permit applications under this regulation:

(a) The Secretary of the Army will decide whether Department of the Army authorization for a dam or dike in a navigable water of the United States will be issued, since this authority has not been delegated to the Chief of Engineers. The conditions to be imposed in any instrument of authorization will be recommended by the District Engineer when he forwards his report to the Secretary of the Army, through the Chief of Engineers, pursuant to 33 CFR 325.11.

(b) A Department of the Army application under Section 9 will not be processed until the approval of the United States Congress has been obtained if the navigable water of the United States is an interstate waterbody, or until the approval of the appropriate State legislature has been obtained if the navigable water of the United States is solely within the boundaries of one State.

PART 322—PERMITS FOR STRUCTURES OR WORK IN OR AFFECTING NAVIGABLE WATERS OF THE UNITED STATES

Sec.

322.1 General.

322.2 Definitions.

Sec.

322.3 Activities requiring permits.

322.4 Structures and work permitted by this regulation.

322.5 Special policies and procedures.

Appendix A.—U.S. Coast Guard/Chief of Engineers Memorandum of Agreement.

Appendix B.—Delegation of Authority.

Authority: 33 U.S.C. 403.

§ 322.1 General.

This regulation prescribes, in addition to the general policies of 33 CFR 320.4 and procedures of 33 CFR Part 325 those special policies, practices and procedures to be followed by the Corps of Engineers in connection with the review of applications for Department of Army permits to authorize structures or work in or affecting navigable waters of the United States pursuant to Section 10 of the River and Harbor Act of 1899 (33 U.S.C. 403) (hereinafter referred to as Section 10). See 33 CFR 320.2(b). Certain structures or work in or affecting navigable waters of the United States are also regulated under other authorities of the Department of the Army. These include discharges of dredged or fill material into waters of the United States, including the territorial seas, pursuant to Section 404 of the Federal Water Pollution Control Act Amendments of 1972 (33 U.S.C. 1344; see 33 CFR Part 323) and the transportation of dredged material by vessel for purposes of dumping in ocean waters, including the territorial seas, pursuant to Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972, as amended (33 U.S.C. 1413; see 33 CFR Part 324). A Department of the Army permit will also be required under these additional authorities if they are applicable to structures or work in or affecting navigable waters of the United States. Applicants for Department of the Army permits under this part should refer to the other cited authorities and implementing regulations for these additional permit requirements to determine whether they also are applicable to their proposed activities.

§ 322.2 Definitions.

For the purpose of this regulation, the following terms are defined:

(a) The term "navigable waters of the United States" means those waters of the United States that are subject to the ebb and flow of the tide shoreward to the mean high water mark (mean higher high water mark on the Pacific coast), and/or are presently used, or have been used in the past, or may be susceptible to use to transport interstate or foreign commerce. See 33 CFR Part 329 for a more complete definition of this term.

(b) The term "structure" shall include, without limitation, any pier, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, jetty, permanent mooring structure, power transmission lines, permanently moored floating vessels, piling, aids to navigation, or any other permanent or semi-permanent obstacle or obstruction.

(c) The term "work" shall include, without limitation, any dredging or disposal of dredged material, excavation,

filling, or other modification of a navigable water of the United States.

(d) The term "letter of permission" means an individual permit issued in accordance with the abbreviated procedures of 33 CFR 325.5(b).

(e) The term "individual permit" means a Department of the Army authorization that is issued following case-by-case evaluation of a specific structure or work in accordance with procedures of this regulation and 33 CFR Part 325 and a determination that proposed structure or work is in the public interest pursuant to 33 CFR Part 320.

(f) The term "general permit" means a Department of the Army authorization that is issued for a category or category of structures or work in a specified region of the country, when those structures or work are substantially similar in nature and cause only minimal individual cumulative adverse environmental impact. A general permit is issued following an evaluation of the proposed category of activities that it will authorize in accordance with the procedures of this regulation (322.5(b)). 33 CFR Part 320 and a determination that the proposed discharges will be in the public interest pursuant to 33 CFR Part 320.

(g) The term "nationwide permit" means a Department of the Army authorization that has been issued by regulation in § 322.4 to permit certain structures or work in or affecting navigable waters of the United States throughout the Nation.

§ 322.3 Activities requiring permits.

(a) *General.* Department of the Army permits are required under Section 10 for all structures or work in or affecting navigable waters of the United States except for bridges and causeways (Appendix A) and structures or work licensed under the Federal Power Act of 1920. Activities that were commenced, completed shoreward of established Federal harbor lines before May 27, 1970 (33 CFR Part 328) also do not require Section 10 permits; however, if the activities involve the discharge of dredged or fill material into waters of the United States after October 18, 1970, Section 404 permit is required (see 33 CFR Part 323).

(1) Structures or work are in the navigable waters of the United States if they are within limits defined in 33 CFR 329. Structures or work outside the limits are subject to the provisions of 33 CFR 329.1(a) above, if the structures or work affect the navigation, or condition of the waterbody such a manner as to impair the navigable capacity of the waterbody. The purposes of a Section 10 permit, a letter of permission, or other structure under or over a navigable water of the United States is considered to have an impact on the navigable capacity of the waterbody.

(2) Pursuant to Section 154 of the Water Resource Development Act of 1966 (PL 94-587), Department of the Army permits will not be required under Section 10 to construct wharves and piers in any waterbody, located entirely within one State, that is a navigable water

the United States solely on the basis of its historical use to transport interstate commerce. Section 154 applies only to the construction of a single pier or wharf and not to marinas. Furthermore, Section 154 is not applicable to any pier or wharf that would cause an unacceptable impact on navigation.

(b) *Outer continental shelf.* Department of the Army permits will also be required for the construction of artificial islands and fixed structures on the outer continental shelf pursuant to Section 4(f) of the Outer Continental Shelf Lands Act (see 33 CFR 320.2(b)).

(c) *Activities of Federal agencies.* Except as specifically provided in this subparagraph, activities of the type described in (a) and (b), above, done by or on behalf of any Federal agency, other than any work or structures in or affecting navigable waters of the United States that are part of the Civil Works activities of the Corps of Engineers, are subject to the authorization procedures of this regulation. Agreement for construction or engineering services performed for other agencies by the Corps of Engineers does not constitute authorization under this regulation. Division and District Engineers will therefore advise Federal agencies accordingly, and cooperate to the fullest extent in expediting the processing of their applications.

(1) Congress has delegated to the Secretary of the Army and the Chief of Engineers in Section 10 the duty to authorize or prohibit certain work or structures in navigable waters of the United States. The general legislation by which Federal agencies are empowered to act generally is not considered to be sufficient authorization by Congress to satisfy the purposes of Section 10. If an agency asserts that it has Congressional authorization meeting the test of Section 10 or would otherwise be exempt from the provisions of Section 10, the legislative history and/or provisions of the Act should clearly demonstrate that Congress was approving the exact location and plans from which Congress could have considered the effect on navigable waters of the United States or that Congress intended to exempt that agency from the requirements of Section 10. Very often such legislation reserves final approval of plans or construction for the Chief of Engineers. In such cases evaluation and authorization under this regulation are limited by the intent of the statutory language involved.

(2) The policy provisions set out in 33 CFR 320.4(f) relating to State or local certifications and/or authorizations, do not apply to work or structures undertaken by Federal agencies, except where compliance with non-Federal authorization is required by Federal law or Executive policy.

§ 322.1 Structures and work permitted by this regulation.

The following structures or work are hereby permitted for purposes of Section 10 and do not require separate Department of the Army permits:

(a) The placement of aids to navigation by the U.S. Coast Guard, see § 322.5 (e), below;

(b) Structures constructed in artificial canals within principally residential developments where the connection of the canal to a navigable water of the United States has been previously authorized; see § 322.5(g), below;

(c) The repair, rehabilitation, or replacement of any previously authorized, currently serviceable, structure or of any currently serviceable structure constructed prior to the requirement for authorization; provided such repair, rehabilitation, or replacement does not result in a deviation from the plans of the original structure, and further provided that the structure to be maintained has not been put to uses differing from uses specified for it in any permit authorizing its original construction;

(d) Marine life harvesting devices such as pound nets, crab traps, eel pots, lobster traps, provided there is no interference with navigation;

(e) Staff gages, tide gages, water recording devices, water quality testing and improvement devices, and similar scientific structures provided there is no interference with navigation;

(f) Survey activities including core sampling; and

(g) Structures or work completed before 18 December 1968 or in waterbodies over which the District Engineer has not asserted jurisdiction provided there is no interference with navigation.

§ 322.5 Special policies.

The Secretary of the Army has delegated to the Chief of Engineers the authority to issue or deny Section 10 permits. (See Appendix B). The following additional special policies and procedures shall also be applicable to the evaluation of permit applications under this regulation.

(a) *General.* Department of the Army permits will be required for structures or work in or affecting navigable waters of the United States. Certain structures or work specified in § 322.4 are permitted by this regulation. If a structure or work is not permitted by this regulation, an individual or general Section 10 permit will be required.

(b) *General Permits.* The District Engineer may, after compliance with the other procedures of 33 CFR Part 325, issue general permits for certain clearly described categories of structures or work requiring Department of the Army permits. After a general permit has been issued, individual activities falling within those categories will not require individual permit processing by the procedures of 33 CFR Part 325 unless the District Engineer determines, on a case-by-case basis, that the public interest requires such individual review.

(1) District Engineers will include only those activities that are substantially similar in nature, that cause only minimal adverse environmental impact when performed separately, and that will have only a minimal adverse cumula-

tive effect on the environment as categories which are candidates for general permits.

(2) In addition to the conditions prescribed in Appendix C of 33 CFR Part 325, any general permit issued by the District Engineer shall prescribe the following conditions:

(i) The maximum quantity of material that may be discharged and the maximum area that may be modified by structure or work that are authorized for a single or incidental operation (if applicable);

(ii) A description of the category or categories of activities included in the general permit; and

(iii) The type of water(s) into which the activity may occur.

(3) The District Engineer may require reporting procedures.

(4) A general permit may be revoked if it is determined that the cumulative effects of the activities authorized by it will have an adverse impact on the public interest provided the procedures of 33 CFR 325.7 are followed. Following revocation, application for any future activities in areas covered by the general permit shall be processed as applications for individual permits.

(c) *Non-Federal dredging for navigation.*—(1) The benefits which an authorized Federal navigation project are intended to produce will often require similar and related operations by non-Federal agencies (e.g., dredging an access channel to dock and berthing facilities or deepening such a channel to correspond to the Federal project depth). These non-Federal activities will be considered by Corps of Engineers officials in planning the construction and maintenance of Federal navigation projects and, to the maximum practical extent, will be coordinated with interested Federal, State, regional and local agencies and the general public simultaneously with the associated Federal projects. Non-Federal activities which are not so coordinated will be individually evaluated in accordance with this regulation. In evaluating the public interest in connection with applications for permits for such coordinated operations, equal treatment will, therefore, be accorded to the fullest extent possible to both Federal and non-Federal operations. Furthermore, permits for non-Federal dredging operations will contain conditions requiring the permittee to comply with the same practices or requirements utilized in connection with related Federal dredging operations with respect to such matters as turbidity, water quality, containment of material, nature and location of approved spoil disposal areas (non-Federal use of Federal contained, disposal areas will be in accordance with laws authorizing such areas and regulations governing their use), extent and period of dredging, and other factors relating to protection of environmental and ecological values.

(2) A permit for the dredging of a channel, slip, or other such project for navigation will also authorize the periodic maintenance dredging of the

project. Authority for maintenance dredging will be subject to revalidation at regular intervals to be specified in the permit. Revalidation will be in accordance with the procedures prescribed in 33 CFR 325.6. The permit, however, will require the permittee to give advance notice to the District Engineer each time maintenance dredging is to be performed. Where the maintenance dredging involves the discharge of dredged material into waters of the United States or the transportation of dredged material for the purpose of dumping in the ocean waters, the procedures in 33 CFR Parts 323 and 324 respectively shall also be followed.

(d) *Structures for small boats.* As a matter of policy, in the absence of overriding public interest, favorable consideration will generally be given to applications from riparian owners for permits for piers, boat docks, moorings, platforms and similar structures for small boats. Particular attention will be given to the location and general design of such structures to prevent possible obstructions to navigation with respect to both the public's use of the waterway and the neighboring proprietors' access to the waterway. Obstructions can result from both the existence of the structure, particularly in conjunction with other similar facilities in the immediate vicinity, and from its inability to withstand wave action or other forces which can be expected. District Engineers will inform applicants of the hazards involved and encourage safety in location, design and operation. Corps of Engineers officials will also encourage cooperative or group use facilities in lieu of individual proprietor use facilities.

(1) Letters transmitting permits for structures for small boats will, where applicable, include the following language: "Notice is hereby given that a possibility exists that the structure permitted may be subject to damage by wave wash from passing vessels. Your attention is invited to special condition _____ of the permit." The appropriate designation of the permit condition placing responsibility on the permittee and not on the United States for integrity of the structure and safety of boats moored thereto will be inserted.

(2) Floating structures for small recreational boats or other recreational purposes in lakes controlled by the Corps of Engineers under a Resources Manager are normally subject to permit authorities cited in § 322.3, above, when those waters are regarded as navigable waters of the United States. However, such structures will not be authorized under this regulation but will be regulated under applicable regulations of the Chief of Engineers published in 36 CFR 327.19 if the land surrounding those lakes is under complete Federal ownership. District Engineers will delineate those portions of the navigable waters of the United States where this provision is applicable and post notices of this designation in the vicinity of the lake Resources Manager's office.

(e) *Aids to navigation.* The placing of fixed and floating aids to navigation in a navigable water of the United States is within the purview of Section 10 of the River and Harbor Act of 1899. Furthermore, these aids are of particular interest to the U.S. Coast Guard because of their control of marking, lighting and standardization of such navigation aids. Applications for permits for installation of aids to navigation will, therefore, be coordinated with the appropriate District Commander, U.S. Coast Guard, and permits for such aids will include a condition to the effect that the permittee will conform to the requirements of the Coast Guard for marking, lighting, etc. Since most fixed and floating aids to navigation will not ordinarily significantly affect environmental values, the usual form of authorization to be used will be a letter of permission (See 33 CFR 325.1(b)).

(f) *Outer continental shelf.* Artificial islands and fixed structures located on the outer continental shelf are subject to the standard permit procedures of this regulation. Where the islands or structures are to be constructed on lands which are under mineral lease from the Bureau of Land Management, Department of the Interior, that agency, in cooperation with other Federal agencies, fully evaluates the potential effect of the leasing program on the total environment. Accordingly, the decision whether to issue a permit on lands which are under mineral lease from the Department of the Interior will be limited to an evaluation of the impact of the proposed work on navigation and national security. The public notice will so identify the criteria.

(g) *Canals and other artificial waterways connected to navigable waters of the United States.* (1) A canal or similar artificial waterway is subject to the regulatory authorities discussed in § 322.3, above, if it constitutes a navigable water of the United States, or if it is connected to navigable waters of the United States in a manner which affects their course, condition, or capacity. In all cases the connection to navigable waters of the United States requires a permit. Where the canal itself constitutes a navigable water of the United States, evaluation of the permit application and further exercise of regulatory authority will be in accordance with the standard procedures of this regulation. For all other canals, the exercise of regulatory authority is restricted to those activities which affect the course, condition, or capacity of the navigable waters of the United States. Examples of the latter may include the length and depth of the canal, the currents, circulation, quality and turbidity of its waters, especially as they affect fish and wildlife values; and modifications or extensions of its configuration.

(2) The proponent of canal work should submit his application for a permit, including a proposed plan of the entire development, and the location and

description of anticipated docks, piers and other similar structures which will be placed in the canal to the District Engineer before commencing any form of work. If the connection to navigable waters of the United States has already been made without a permit, the District Engineer will proceed in accordance with 33 CFR Part 326. Where a canal connection is planned, an application for a Section 10 permit should be made at the earliest stage of planning. Where the canal construction has already begun, the District Engineer will, in writing, advise the proponent of the need for a permit to connect the canals to navigable waters of the United States. He will also ask the proponent if he intends to make such a connection and will request the immediate submission of the plans and permit application if it is so intended. The District Engineer will also advise the proponent that any work is done at the risk that, if a permit is required, it may not be issued, and that the existence of partially completed excavation work will not be allowed to weigh favorably in evaluation of the permit application.

(h) *Facilities at the borders of the United States.* (1) The construction, operation, maintenance, or connection of facilities at the borders of the United States are subject to Executive control and must be authorized by the President, Secretary of State, or other delegated official.

(2) Applications for permits for the construction, operation, maintenance, or connection at the borders of the United States of facilities for the transmission of electric energy between the United States and a foreign country, or for the exportation or importation of natural gas to or from a foreign country, must be made to the Federal Power Commission. (Executive Order 10485, September 3, 1953, 16 U.S.C. 874(a) (6), 15 U.S.C. 717(b), and 18 CFR Parts 32 and 153.)

(3) Applications for the landing or operation of submarine cables must be made to the Federal Communication Commission. (Executive Order 10530, May 10, 1951, 47 U.S.C. 34 to 39, and 47 CFR 1.765.)

(4) The Secretary of State is to receive applications for permits for the construction, connection, operation, or maintenance, at the borders of the United States, of pipelines, conveyors, belts, and similar facilities for the exportation or importation of petroleum products, coals, minerals, or other products to or from a foreign country, facilities for the exportation or importation of water or sewage to or from a foreign country, and monorails, aerial cable cars, aerial tramways and similar facilities for the transportation of persons or things or both, to or from a foreign country. (Executive Order 11423, August 16, 1968.)

(5) A Department of the Army permit under Section 10 of the River and Harbor Act of 1899 is also required for all of the above facilities which affect the navigable waters of the United States, but in each case in which a permit has

been issued as provided above, the decision whether to issue the Department of the Army permit will be based primarily on factors of navigation, since the basic existence and operation of the facility will have been examined and permitted as provided by the Executive orders. Furthermore, in those cases where the construction, maintenance, or operation at the above facilities involves the discharge of dredged or fill material in waters of the United States or the transportation of dredged material for the purpose of dumping it into ocean waters, appropriate Department of the Army authorizations under Section 404 of the Federal Water Pollution Control Act or under Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972, as amended, are also required (See 33 CFR Part 3.3.22).

(1) **Power transmission lines.** (1) Permits under Section 10 of the River and Harbor Act of 1890 are required for power transmission lines crossing navigable waters of the United States unless those lines are part of a water power project subject to the regulatory authorities of the Federal Power Commission under the Federal Water Power Act of 1920. If an application is received for a permit for lines which are part of a water power project, the applicant will be instructed to submit his application to the Federal Power Commission. If the lines are not part of a water power project, the application will be processed in accordance with the procedures prescribed in this regulation.

(2) The following minimum clearances are required for aerial electric power transmission lines crossing navigable waters of the United States. These clearances are related to the clearances over the navigable channel provided by existing fixed bridges, or the clearances which would be required by the U.S. Coast Guard for new fixed bridges, in the vicinity of the proposed power line crossing. The clearances are based on the low point of the line under conditions which produce the greatest sag, taking into consideration temperature, load, wind, length or span, and type of supports as outlined in the National Electrical Safety Code.

Minimum additional clearance above clearance required for bridges

Nominal system voltage (kilovolt)	Feet
115 and below	20
138	22
161	24
230	26
350	30
500	35
700	42
750 to 765	45

¹ Above clearance required for bridges.

(3) Clearances for communication lines, stream gaging cables, ferry cables, and other aerial crossings are usually required to be a minimum of ten feet above clearances required for bridges. Greater clearances will be required if the public interest so indicates.

(4) **Seaplane operations.** (1) Structures in navigable waters of the United States

associated with seaplane operations require Department of the Army permits, but close coordination with the Federal Aviation Administration (FAA), Department of Transportation, is required on such applications.

(2) The FAA must be notified by an applicant whenever he proposes to establish or operate a seaplane base. The FAA will study the proposal and advise the applicant, District Engineer, and other interested parties as to the effects of the proposal on the use of airspace. The District Engineer will therefore refer any objections regarding the effect of the proposal on the use of airspace to the FAA, and give due consideration to the recommendations when evaluating the general public interest.

(3) If the seaplane base will serve air carriers licensed by the Civil Aeronautics Board, the applicant must receive an airport operating certificate from the FAA. That certificate reflects determination and conditions relating to the installation operation, and maintenance of adequate air navigation facilities and safety equipment. Accordingly, the District Engineer may, in evaluating the general public interest, consider such matters to have been primarily evaluated by the FAA.

(4) **Foreign Trade Zones.** The Foreign Trade Zones Act (48 Stat. 998-1033, 19 U.S.C. 81a to 81u, as amended) authorizes the establishment of foreign-trade zones in or adjacent to United States ports of entry under terms of a grant and regulations prescribed by the Foreign-Trade Zones Board. Pertinent regulations are published in 15 CFR Part 400. The Secretary of the Army is a member of the Board, and construction of a zone is under the supervision of the District Engineer. Laws governing the navigable waters of the United States remain applicable to foreign-trade zones, including the general requirements of this regulation. Evaluation by a District Engineer of a permit application may give recognition to the consideration by the Board of the general economic effects of the zone on local and foreign commerce, general location of wharves and facilities, and other factors pertinent to construction, operation, and maintenance of the zone.

APPENDIX A—U.S. COAST GUARD/CHIEF OF ENGINEERS, MEMORANDUM OF AGREEMENT

1. PURPOSE AND AUTHORITY

A. The Department of Transportation Act, the Act of October 15, 1968, P.L. 89-670, transferred to and vested in the Secretary of Transportation certain functions, powers and duties previously vested in the Secretary of the Army and the Chief of Engineers. By delegation of authority from the Secretary of Transportation (49 CFR 148(c)) the Commandant U.S. Coast Guard, has been authorized to exercise certain of these functions, powers and duties relating to bridges and causeways conferred by:

(1) The following provision of law relating generally to drawbridge operating regulations: Section 5 of the Act of August 18, 1894, as amended (28 Stat. 362; 33 U.S.C. 493);

(2) The following law relating generally to obstructive bridges: The Act of June 21, 1940, as amended (The Truman-Hobbs Act) (54 Stat. 497, 33 U.S.C. 511 et seq.);

(3) The following laws and provisions of law to the extent that they relate generally to the location and clearances of bridges and causeways in the navigable waters of the United States:

(a) Section 9 of the Act of March 2, 1909, as amended (30 Stat. 1151, 33 U.S.C. 409);

(b) The Act of March 23, 1906, as amended (34 Stat. 84; 33 U.S.C. 491 et seq.), and

(c) The General Bridge Act of 1946, as amended (60 Stat. 847, 33 U.S.C. 512 et seq.) except Sections 502(c) and 503.

B. The Secretary of the Army and the Chief of Engineers continue to be vested with broad and important authorities and responsibilities with respect to navigable waters of the United States, including, but not limited to, jurisdiction over excavation, filling, design flood flows and construction of certain structures in such waters, and the prosecution of waterway improvement projects.

C. The purposes of this agreement are:

(1) To recognize the common and mutual interest of the Chief and Engineers and the Commandant U.S. Coast Guard, in the orderly and efficient administration of their respective responsibilities under certain Federal statutes to regulate certain activities in navigable waters of the United States;

(2) To clarify the areas of jurisdiction and the responsibilities of the Corps of Engineers and the Coast Guard with respect to:

(a) The alteration of bridges;

(1) In connection with Corps of Engineers; waterway improvement projects; and

(2) Under the Truman-Hobbs Act;

(b) The construction, operation and maintenance of bridges and causeways as distinguished from other types of structures, over or in navigable waters of the United States;

(c) The closure of waterways and the restriction of passage through or under bridges in connection with their construction, operation, maintenance and removal; and

(d) The selection of an appropriate design flood flow for flood hazard analysis of any proposed water opening;

(3) To provide for coordination and consultation on projects and activities affecting the navigable waters of the United States.

In furtherance of the above purposes, the undersigned do agree upon the definitions, policies and procedures set forth below.

2. ALTERATION OF BRIDGES IN OR ACROSS NAVIGABLE WATERS WITHIN CORPS OF ENGINEERS PROJECTS

A. The Chief of Engineers agrees to advise and consult with the Commandant of navigation projects contemplated by the Corps of Engineers which require the alteration of bridges across the waterways involved in such projects. The Chief of Engineers also agrees to include in such project proposals the alterations exclusive of betterments of bridges within the limits of the designated project which after consultation with the Commandant he determines require attention to meet the needs of existing and prospective navigation. Under this agreement the federal costs would be furnished under the project.

B. The Commandant of the Coast Guard agrees to undertake all actions and assume all responsibilities essential to the determination of navigational requirements for horizontal and vertical clearance of bridges across navigable waters necessary in connection with any navigation project by the Chief of Engineers. Further, the Commandant agrees to conduct all public proceedings necessary thereto and establish guide clearance criteria where needed for the project objectives.

3. ALTERATION OF BRIDGES UNDER THE TRUMAN-HOBBS ACT

The Commandant of the Coast Guard acknowledges and affirms the responsibility of the Coast Guard, under the Truman-Hobbs Act, to program and fund for the alteration of bridges which, as distinct from project related alterations described in paragraph 2 herein, become unreasonable obstructions to navigation as a result of factors or changes in the character of navigation and this agreement shall in no way affect, impair or modify the powers or duties conferred by that Act.

4. APPROVAL, ALTERATION AND REMOVAL OF OTHER BRIDGES AND CAUSEWAYS

A. General Definitions. For purposes of this Agreement and the administration of the statutes cited in 1 A (2) above, a "bridge" is any structure over, on or in the navigable waters of the United States which (1) is used for the passage or conveyance of persons, vehicles, commodities and other physical matter and (2) is constructed in such a manner that either the horizontal or vertical clearance or both may affect the passage of vessels or boats through or under the structure. This definition includes, but is not limited to, highway bridges, railroad bridges, foot bridges, aqueducts, aerial tramways and conveyors, overhead pipelines and similar structures of like function together with their approaches, fenders, pier protection systems, appurtenances and foundations. This definition does not include aerial power transmission lines, tunnels, submerged pipelines and cables, dams, dikes, dredging and filling in, wharves, piers, breakwaters, bulkheads, jetties and similar structures and works (except as they may be integral features of a bridge and used in its construction, maintenance, operation or removal) except when they are affixed to the bridge and will have an effect on the clearances provided by the bridge over which jurisdiction remains with the Department of the Army and the Corps of Engineers under Sections 9 and 10 of the Act of March 3, 1899, as amended (33 USC 401 and 403). A "causeway" is a raised road across water or marshy land, with the water or marshy land on both sides of the road, and which is constructed in or affects navigation, navigable waters and design flood flows.

B. Combined Structures and Appurtenances. For purposes of the Acts cited in 1 A (3) above, a structure serving more than one purpose and having characteristics of either a bridge or causeway, as defined in 4 A., and some other structure, shall be considered as a bridge or causeway when the structure in its entirety, including its appurtenances and incidental features, has as its predominant characteristics and purpose of a bridge or causeway. A structure shall not be considered a bridge or causeway when its primary and predominant characteristics and purpose are other than those set forth above and it meets the general definitions above only in a narrow technical sense as a result of incidental features. This interpretation is intended to minimize the number of instances which will require an application for a single project to secure a permit or series of permits from both the Department of Transportation and the Department of the Army for each separate feature or detail of the project when it serves incidentally to its primary purpose, more than one purpose and has features of either a bridge or causeway and features of some other structure. However, if parts of the project are separable and can be fairly and reasonably characterized or classified in an engineering sense as separate structures, each such structure will be so treated and consid-

ered for approval by the agency having jurisdiction thereover.

C. Alteration of the Character of Bridges and Causeways. The jurisdiction of the Secretary of Transportation and the Coast Guard over bridges and causeways includes authority to approve the removal of such structures when the owners thereof desire to discontinue their use. If the owner of a bridge or causeway discontinues its use and wishes to remove or alter any part thereof in such a manner that it will lose its character as a bridge or causeway, the Coast Guard will normally require removal of the structure from the waterway in its entirety. However, if the owner of a bridge or causeway wishes to retain it in whole or in part for use other than for operation and maintenance as a bridge or causeway, the proposed structure will be considered as coming within the jurisdiction of the Corps of Engineers. The Coast Guard will refer requests for such uses to the Corps of Engineers for consideration. The Corps of Engineers agrees to advise the Commandant of the receipt of an application for approval of the conversion of a bridge or causeway to another structure and to provide opportunity for comment thereon. If the Corps of Engineers approves the conversion of a bridge or causeway to another structure, no residual jurisdiction over the structure will remain with the Coast Guard. However, if the Corps of Engineers does not approve the proposed conversion, then the structure remains a bridge subject to the jurisdiction of the Coast Guard.

5. CLOSURE OF WATERWAYS AND RESTRICTION OF PASSAGE THROUGH OR UNDER BRIDGES

Under the statutes cited in Section 1 of this Memorandum of Agreement, the Commandant must approve the clearances to be made available for navigation through or under bridges. It is understood that it is duty and authority extends to and may be exercised in connection with the construction, alteration, operation, maintenance and removal of bridges, and includes the power to authorize the temporary restriction of passage through or under a bridge by use of falsework, piling, floating equipment, closure of draws or any works or activities which temporarily reduce the navigation clearances and design flood flows, including closure of any or all spans of the bridge. Moreover, under the Ports and Waterways Safety Act of 1972, Public Law 92-340, 86 Stat. 424, the Commandant exercises broad powers in violation of control vessel traffic in areas he determines to be especially hazardous and to establish safety zones or other measures for limited controls, or conditional access and activity when necessary to prevent damage to or the destruction or loss of any vessel, bridge, or other structure on or in the navigable waters of the United States. Accordingly, in the event that work in connection with the construction, alteration or repair of a bridge or causeway is of such a nature that for the protection of life and property navigation through or in the vicinity of the bridge or causeway must be temporarily prohibited, the Coast Guard may close that part of the affected waterway while such work is being performed. However, it is understood that the Secretary of the Army and the Chief of Engineers have the authority, under Section 4 of the Act of August 18, 1894, as amended, (33 USC 41) to prescribe rules for the use, administration and navigation of the navigable waters of the United States. In recognition of that authority, and pursuant to Section 102(c) of the Ports and Waterways Safety Act, the Coast Guard will consult with the Corps of Engineers when any significant restriction of passage through

or under a bridge is contemplated to be authorized or a waterway is to be temporarily closed.

6. COORDINATION AND COOPERATION PROCEDURES

A. District Commanders, Coast Guard Districts, shall send notices of applications for permits for bridge or causeway construction, modification, or removal to the Corps of Engineers Divisions and Districts in which the bridge or causeway is located.

B. District Engineers, Corps of Engineers shall send notices of applications for permits for other structures or dredge and fill work to local Coast Guard District Commander.

C. In cases where proposed structures, modifications of structures do not clearly fall within one of the classifications set forth in paragraph 4 A. above, the application will be forwarded with recommendations of the reviewing officers through channels to the Chief of Engineers and the Commandant, the Coast Guard who shall, after mutual consultation, attempt to resolve the question.

D. If the above procedures fail to produce agreement, the application will be forwarded to the Secretary of the Army and Secretary of Transportation for their determination.

E. The Chief of Engineers and the Commandant, Coast Guard, pledge themselves to mutual cooperation and consultation, making available timely information, data, seeking uniformity and consistency among field offices, and providing timely and complete review of all matters arising in connection with the administration of the responsibilities governed by the Acts cited herein.

Dated: March 21, 1973

C. R. BENDER

Dated: April 19, 1973

F. J. CLARKE

APPENDIX II—DELEGATION OF AUTHORITY TO ISSUE OR DENY PERMITS FOR CONSTRUCTION OF OTHER WORK AFFECTING NAVIGABLE WATERS OF THE UNITED STATES

May 24, 1971

Pursuant to the authority vested in me by the Act of March 3, 1899, c. 425, Sections 9 and 10, 33 Stat. 1151, 1152, 33 USC Section 401 and 408, and the Act of June 13, 1906, c. 1072, Section 1, 32 Stat. 371, 33 USC Section 565, I hereby authorize the Chief of Engineers and his authorized representatives to issue or deny permits for construction, other work affecting navigable waters of the United States. Except in cases involving applications for permits for artificial island or fixed structures on Outer Continental Shelf lands under mineral lease from the Department of the Interior, the Chief of Engineers shall, in exercising such authority, evaluate the impact of the proposed work on the public interest. In cases involving applications for permits for artificial island or fixed structures on Outer Continental Shelf lands under mineral lease from the Department of the Interior, the Chief of Engineers shall, in exercising such authority, evaluate the impact of the proposed work on navigation and national security. The permit application may be made subject to such conditions as the Chief of Engineers or his authorized representatives may consider necessary in order to effect the purposes of the above Acts.

The Chief of Engineers and his authorized representatives shall exercise the authority hereby delegated subject to such conditions as I or my authorized representative may from time to time impose.

STANLEY R. RESOR
Secretary of the Army

PART 323—PERMITS FOR DISCHARGES OF DREDGED OR FILL MATERIAL INTO WATERS OF THE UNITED STATES

Sec.

- 323.1 General
- 323.2 Definitions
- 323.3 Activities requiring permits
- 323.4 Discharges permitted by this regulation.
 - 323.4-1 Discharges prior to effective dates of phasing.
 - 323.4-2 Discharges into certain waters of the United States.
 - 323.4-3 Specific categories of discharges.
 - 323.4-4 Discretionary authority to require individual or general permits.
- 323.5 Special policies and procedures

Appendix A—Delegation of authority

Authority 33 USC 1344

§ 323.1 General.

This regulation prescribes, in addition to the general policies of 33 CFR 320.4 and procedures of 33 CFR Part 325, those special policies, practices, and procedures to be followed by the Corps of Engineers in connection with the review of applications for Department of the Army permits to authorize the discharge of dredged or fill material into waters of the United States pursuant to Section 404 of the Federal Water Pollution Control Act Amendments of 1972 (33 U.S.C. 1344) (hereinafter referred to as Section 404). See 33 CFR 320.2(g). Certain discharges of dredged or fill material into waters of the United States are also regulated under other authorities of the Department of the Army. These include dams and dikes in navigable waters of the United States pursuant to Section 9 of the River and Harbor Act of 1899 (33 U.S.C. 401; see 33 CFR 321) and structures or work in or affecting navigable waters of the United States pursuant to Section 10 of the River and Harbor Act of 1899 (33 U.S.C. 403; see 33 CFR 322). A Department of the Army permit will also be required under these additional authorities if they are applicable to activities involving discharges of dredged or fill material into waters of the United States. Applicants for Department of the Army permits under this Part should refer to the other cited authorities and implementing regulations for these additional permit requirements to determine whether they also are applicable to their proposed activities.

§ 323.2 Definitions.

For the purpose of this regulation, the following terms are defined:

(a) The term "waters of the United States" means:

(1) The territorial seas with respect to the discharge of fill material. (The transportation of dredged material by

vessel for the purpose of dumping in the oceans, including the territorial seas, at an ocean dump site approved under 40 CFR 225 is regulated by Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972, as amended (33 USC 1413). See 33 CFR 324. Discharges of dredged or fill material into the territorial seas are regulated by Section 401.)

(2) Coastal and inland waters, lakes, rivers, and streams that are navigable waters of the United States, including adjacent wetlands;

(3) Tributaries to navigable waters of the United States, including adjacent wetlands (unnatural tidal drainage and irrigation ditches excavated on dry land are not considered waters of the United States under this definition);

(4) Interstate waters and their tributaries, including adjacent wetlands; and

(5) All other waters of the United States not identified in paragraphs (1) through (4) above, such as isolated wetlands and lakes, intermittent streams, prairie potholes, and other waters that are not part of a tributary system to interstate waters or to navigable waters of the United States, the degradation or destruction of which could affect interstate commerce.

The landward limit of jurisdiction in tidal waters, in the absence of adjacent wetlands, shall be the high tide line and the landward limit of jurisdiction in all other waters, in the absence of adjacent

waters, shall be the ordinary high water mark.

(b) The term "navigable waters of the United States" means those waters of the United States that are subject to the ebb and flow of the tide shoreward to the mean high water mark (mean higher high water mark on the Pacific coast) and/or are presently used, or have been used in the past, or may be susceptible to use to transport interstate or foreign commerce. (See 33 CFR 329 for a more complete definition of this term.)

(c) The term "wetlands" means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas.

(d) The term "adjacent" means bordering, contiguous, or neighboring. Wetlands separated from other waters of the United States by man-made dikes or barriers, natural river berms, beach ridges and the like are "adjacent wetlands."

(e) The term "natural lake" means a standing body of open water that occurs in a natural depression fed by one or more streams and from which a stream may flow, that occurs due to the widening or natural blockage of a river or stream, or that occurs in an isolated natural depression that is not a part of a surface river or stream.

(f) The term "impoundment" means a standing body of open water created by artificially blocking or restricting the flow of a river, stream or tidal area. As used in this regulation, the term does not include artificial lakes or ponds created by excavating and/or diking dry land to collect and retain water for such purposes as stock watering, irrigation, settling basins, cooling, or rice growing.

(g) The term "ordinary high water mark" means the line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

(h) The term "high tide line" means a line or mark left upon tide flats, beaches, or along shore objects that indicates the intersection of the land with the water's surface at the maximum height reached by a rising tide. The mark may be determined by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gauges, or other suitable means that delineate the general height reached by a rising tide. The term includes spring high tides and other high tides that occur with periodic frequency, but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast

The terminology used by the FWPCA in "navigable waters" which is defined in Section 502(7) of the Act as "waters of the United States including the territorial seas." For purposes of clarity, and to avoid confusion with other Corps of Engineers regulatory programs, the term "waters of the United States" is used throughout this regulation.

by strong winds such as those accompanying a hurricane or other intense storm.

(i) The term "headwaters" means the point on a non-tidal stream above which the average annual flow is less than five cubic feet per second. The District Engineer may estimate this point from available data by using the mean annual area precipitation, area drainage basin maps, and the average runoff coefficient, or by similar means.

(j) The term "primary tributaries" means the main stems of tributaries directly connecting to navigable waters of the United States up to their headwaters, and does not include any additional tributaries extending off of the main stems of these tributaries.

(k) The term "dredged material" means material that is excavated or dredged from waters of the United States.

(l) The term "discharge of dredged material" means any addition of dredged material into the waters of the United States. The term includes, without limitation, the addition of dredged material to a specified disposal site located in waters of the United States and the runoff or overflow from a contained land or water disposal area. Discharges of pollutants into waters of the United States resulting from the onshore subsequent processing of dredged material that is extracted for any commercial use (other than fill) are not included within this term and are subject to Section 402 of the Federal Water Pollution Control Act even though the extraction and deposit of such material may require a permit from the Corps of Engineers. The term does not include plowing, cultivating, seeding and harvesting for the production of food, fiber, and forest products.

(m) The term "fill material" means any material used for the primary purpose of replacing an aquatic area with dry land or of changing the bottom elevation of a waterbody. The term does not include any pollutant discharged into the water primarily to dispose of waste, as that activity is regulated under Section 402 of the Federal Water Pollution Control Act Amendments of 1972.

(n) The term "discharge of fill material" means the addition of fill material into waters of the United States. The term generally includes, without limitation, the following activities: Placement of fill that is necessary to the construction of any structure in a water of the United States; the building of any structure or impoundment requiring rock, sand, dirt, or other material for its construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or

road fills, dams and dikes; artificial islands, property protection and/or reclamation devices such as riprap, groins, seawalls, breakwaters, and revetments; beach nourishment; levees; fill for structures such as sewage treatment facilities, intake and outfall pipes associated with power plants and subaqueous utility lines; and artificial reefs. The term does not include plowing, cultivating, seeding and harvesting for the production of food, fiber, and forest products.

(o) The term "individual permit" means a Department of the Army authorization that is issued following a case-by-case evaluation of a specific project involving the proposed discharge(s) in accordance with the procedures of this regulation and 33 CFR 325 and a determination that the proposed discharge is in the public interest pursuant to 33 CFR Part 320.

(p) The term "general permit" means a Department of the Army authorization that is issued for a category or categories of discharges of dredged or fill material that are substantially similar in nature and that cause only minimal individual and cumulative adverse environmental impact. A general permit is issued following an evaluation of the proposed category of discharges in accordance with the procedures of this regulation (§ 323.3(c)), 33 CFR Part 325, and a determination that the proposed discharges will be in the public interest pursuant to 33 CFR Part 320.

(q) The term "nationwide permit" means a Department of the Army authorization that has been issued by this regulation in § 323.4 to permit certain discharges of dredged or fill material into waters of the United States throughout the Nation.

§ 323.3 Discharges requiring permits.

(a) General. Department of the Army permits will be required for the discharge of dredged or fill material into waters of the United States. Certain discharges specified in §§ 323.4-1, 323.4-2 and 323.4-3 are permitted by this regulation. If a discharge of dredged or fill material is not permitted by this regulation, an individual or general Section 404 permit will be required for the discharge of dredged or fill material into waters of the United States in accordance with the following phased schedule:

(1) Before July 25, 1975, discharges into navigable waters of the United States.

(2) After July 25, 1975, discharges into navigable waters of the United States and adjacent wetlands.

(3) After September 1, 1976, discharges into navigable waters of the United States and their primary tributaries, including adjacent wetlands, and into natural lakes greater than 5 acres in surface area. (See also § 323.4-2 for discharges that are permitted by this regulation.)

(4) After July 1, 1977, discharges into all waters of the United States. (See also § 323.4-2 for discharges that are permitted by this regulation.)

(b) Individual permits. Unless permitted by this regulation (§§ 323.4-1,

323.4-2 and 323.4-3) or authorized by general permits (§ 323.3(c)), the discharge of dredged or fill material into waters of the United States will require an individual Department of the Army permit issued in accordance with the policies in § 320.4 and procedures in 33 CFR Part 325.

(c) General permits. The District Engineer may, after compliance with the other procedures of 33 CFR Part 3, issue general permits for certain clearly described categories of structures, work, including discharges of dredged or fill material, requiring Department of the Army permits. After a general permit has been issued, individual activities falling within those categories will not require individual permit processing, the procedures of 33 CFR Part 325 unless the District Engineer determines, on a case-by-case basis, that the public interest requires individual review.

(1) District Engineers will include on those activities that are substantially similar in nature, that cause only minimal adverse environmental impact when performed separately, and that will have only a minimal adverse cumulative effect on the environment as categories which are candidates for general permits.

(2) The District Engineer shall include appropriate conditions as specified in Appendix C of 33 CFR Part 325 in each general permit and shall prescribe the following additional conditions:

(i) The maximum quantity of material that may be discharged and the maximum area that may be modified in a single or incidental operation (if applicable);

(ii) A description of the category, categories of activities included in the general permit; and

(iii) The type of water(s) into which the activity may occur.

(3) The District Engineer may require reporting procedures.

(4) A general permit may be revoked if it is determined that the effects of the activities authorized by it will have adverse impact on the public interest provided the procedures of 33 CFR 325 are followed. Following revocation, applications for future activities in areas covered by the general permit shall be processed as applications for individual permits.

(d) Activities of Federal agencies. Discharges of dredged or fill material into waters of the United States done or on behalf of any Federal agency, instrumentality other than the Corps of Engineers, are subject to the authorization procedures of this regulation. Agreement for construction or engineering services performed for other agencies by the Corps of Engineers does not constitute authorization under the regulation. Division and District Engineers will therefore advise Federal agencies accordingly and cooperate to the fullest extent in the expeditious processing of their applications.

(2) The policy provisions set out in 33 CFR 320.4(j), relating to State or local authorizations, do not apply to discharges of dredged or fill material.

*For streams that are dry during long periods of the year, District Engineers, after notifying the Regional Administrator of EPA, may establish the headwater point as that point on the stream where a flow of five cubic feet per second is equaled or exceeded 50 percent of the time. The District Engineer shall notify the Regional Administrator of his determination of these headwater points.

waters of the United States undertaken by Federal agencies, except where compliance with non-Federal authorization is required by Federal law or Executive policy. Federal agencies are required to comply with the appropriate State, Interstate and local water-quality standards and effluent limitations as are applicable by law that are adopted in accordance with or effective under the provisions of the Federal Water Pollution Control Act, as amended, in the design, construction, management, operation, and maintenance of their respective facilities. (See Executive Order No. 11752, dated 17 Dec. 73). They are not required, however, to provide certification of compliance with effluent limitations and water-quality standards from State or interstate water pollution control agencies in connection with activities involving discharges into waters of the United States.

(c) *Activities licensed under the Federal Power Act of 1920.* Any part of a structure or work licensed by the Federal Power Commission that involves the discharge of dredged or fill material into waters of the United States shall require a Department of the Army authorization under this regulation.

§ 323.4 Discharges permitted by this regulation.

(a) *General.* Discharges of dredged or fill material specified in §§ 323.4-1, 323.4-2 and 323.4-3, below, are hereby permitted for purposes of Section 404 without further processing under this regulation (individual applications are not needed), except as provided in § 323.4-4 below. Permits may, however, be required under Section 10 of the River and Harbor Act of 1899 (see 33 CFR 322). Sections 323.4-1, 323.4-2, and 323.4-3 do not obviate the requirement to obtain State or local assent required by law for the activities permitted therein.

(b) *Management practices.* In addition to the conditions specified in §§ 323.4-2(b) and 323.4-3(b), the following management practices should be followed, to the maximum extent practicable, in the discharge of dredged or fill material permitted by §§ 323.4-2 and 323.4-3 to minimize the adverse effects of these discharges on the aquatic environment:

(1) Discharges of dredged or fill material into waters of the United States should be avoided or minimized through the use of other practical alternatives;

(2) Discharges in spawning areas during spawning seasons should be avoided;

(3) Discharges should not restrict or impede the movement of aquatic species indigenous to the waters or the passage of normal or expected high flows or cause the relocation of the waters (unless the primary purpose of the fill is to impound waters);

(4) If the discharge creates an impoundment water, adverse impacts on the aquatic system caused by the accumulation and passage of water and/or the restriction of its flow, should be minimized;

(5) Discharges in wetlands areas should be avoided;

(6) Heavy equipment working in wetlands should be placed on mats;

(7) Discharges into breeding and nesting areas for migratory waterfowl should be avoided; and

(8) All temporary fills should be removed in their entirety.

§ 323.4-1 Discharges prior to effective dates of phasing.

(a) Discharges of dredged or fill material in waters of the United States that occur before the phase-in dates specified in § 323.4-1(2)-(4) above are hereby permitted for purposes of Section 404, provided the conditions in paragraph (c) below are met.

(b) Discharges of dredged or fill material of less than 500 cubic yards into waters other than navigable waters of the United States (see 33 CFR 329) that are part of an activity that was commenced before July 25, 1975, that were completed by January 25, 1976, and that involve a single and complete project and not a number of projects associated with a complete development plan are hereby permitted for purposes of Section 404, provided the conditions in paragraph (c) below are met. The term "commenced" as used herein shall be satisfied if there has been, before July 25, 1975, some discharge of dredged or fill material as a part of the above activity or an entering into of a written contractual obligation to have the dredged or fill material discharged at a designated disposal site by a contractor.

(c) For the purposes of Section 404 the following conditions must have been satisfied for the discharges occurring before the dates specified in paragraph (a) and (b) above:

(1) That the discharge was not located in the proximity of a public water intake;

(2) That the discharge did not contain unacceptable levels of pathogenic organisms in areas used for recreation involving physical contact with the water;

(3) That the discharge did not occur in areas of concentrated shellfish production; and

(4) That the discharge did not destroy or endanger the critical habitat or a threatened or endangered species, as identified under the Endangered Species Act.

§ 323.4-2 Discharges into certain waters of the United States.

(a) Discharges of dredged or fill material into the following waters of the United States are hereby permitted for purposes of Section 404, provided the conditions in paragraph (b) below are met:

(1) Non-tidal rivers, streams and their impoundments, including adjacent wetlands that are located above the headwaters;

(2) Natural lakes, including their adjacent wetlands, that are less than 10 acres in surface area and that are fed or drained by a river or stream above the headwaters. In the absence of adjacent wetlands, the surface area of a lake shall be determined at the ordinary high water mark;

(3) Natural lakes, including their adjacent wetlands, that are less than 10 acres in surface area and that are isolated and not a part of a surface river or stream. In the absence of adjacent wetlands, the surface area of a lake shall be determined at the ordinary high water mark; and

(4) Other non tidal waters of the United States other than isolated lakes larger than 10 acres (see (3) above) that are not part of a surface tributary system to interstate waters or navigable waters of the United States (see § 323.2(a)(5)).

(b) For purposes of Section 404, the following conditions must be satisfied for any discharge of dredged or fill material in waters described in paragraph (a) above:

(1) That the discharge will not destroy a threatened or endangered species as identified under the Endangered Species Act, or endanger the critical habitat of such species;

(2) That the discharge will consist of suitable material free from toxic pollutants in other than trace quantities;

(3) That the fill created by the discharge will be properly maintained to prevent erosion and other non point sources of pollution; and

(4) That the discharge will not occur in a component of the National Wild and Scenic Rivers System or in a component of a State wild and scenic river system.

§ 323.4-3 Specific categories of discharges.

(a) The following discharges of dredged or fill material into waters of the United States are hereby permitted for purposes of Section 404, provided the conditions specified in this paragraph and paragraph (b) below are met:

(1) Dredged or fill material placed as backfill or bedding for utility line crossings provided there is no change in pre-construction bottom contours. Excess material must be removed to an upland disposal area. A "utility line" is defined as any pipe or pipeline for the transportation of any gaseous, liquid, liquefiable or slurry substance for any purpose and any cable, line, or wire for the transmission for any purpose of electrical energy, telephone and telegraph messages, and radio and television communication. (The utility line will require a Section 10 permit if in navigable waters of the United States. See 33 CFR Part 322.)

(2) Material discharged for bank stabilization, provided that the bank stabilization activity is less than 500 feet in length, is necessary for erosion prevention, and is limited to less than an average of one cubic yard per running foot along the bank, provided further, that no material for bank stabilization is placed in any wetland area, and provided further that no material is placed in any locality or in any manner so as to impede surface water flow into or out of any wetland area. (This activity will require a Section 10 permit if in navigable waters of the United States. See 33 CFR part 322.)

(3) Minor road crossing fills including all attendant features both temporary and permanent that are part of a single and complete crossing of a non-tidal waterbody, provided that the crossing is culverted or bridged to prevent the restriction of expected high flows and provided further that discharges into any wetlands adjacent to the waterbody do not extend beyond 100 feet on either side of the ordinary high water mark of that waterbody. A "minor road crossing fill" is defined as a crossing that involves the discharge of less than 200 cubic yards of fill material below the plane of ordinary high water. The crossing will require a permit from the U.S. Coast Guard if located in navigable waters of the United States (see 33 USC 401).

(4) Fill placed incidental to the construction of bridges across tidal water including cofferdams, abutments, foundation seals, piers, and temporary construction and access fills. Approach fills and causeways are not included in this permit and will require an individual or general Section 404 permit if located in waters of the United States; these fills as well as the bridge itself will also require a permit from the U.S. Coast Guard and

(5) The repair, rehabilitation or replacement of any previously authorized currently serviceable fill or of any currently serviceable fill discharged prior to the requirement for authorization provided such repair, rehabilitation or replacement does not result in a deviation from the specifications of the original work and further provided that the fill to be maintained has not been put to uses differing from uses specified for it in any permit authorizing its original construction.

(b) For the purposes of Section 401, the following conditions must be satisfied prior to any discharge of dredged or fill material associated with the activities described above:

(1) That the discharge will not be located in the proximity of a public water supply intake;

(2) That the discharge will not occur in areas of concentrated shellfish production;

(3) That the discharge will not destroy a threatened or endangered species as identified under the Endangered Species Act, or endanger the critical habitat of such species;

(4) That the discharge will not disrupt the movement of those species of aquatic life indigenous to the waterbody;

(5) That the discharge will contain no suitable material free from toxic pollutants in other than trace quantities;

(6) That the fill created by the discharge will be properly maintained to prevent erosion and other non point sources of pollution; and

(7) That the discharge will not occur in a component of the National Wild and Scenic River System or in a component of a State wild and scenic river system.

§ 324.4-1. Discretionary authority to require individual or general permits.

Notwithstanding the provisions of §§ 324.4-1, 324.4-2 and 324.4-3, above the provisions of this regulation and 33 CFR Part 325 including those pertaining to individual and general permits, shall apply to any discharges of dredged or fill material if the District Engineer determines that the concerns of the aquatic environment as expressed in the guidance of 40 CFR Part 230 indicate the need for such action because of individual and/or cumulative adverse impacts to the adjacent waters. In such cases the discharge is such that as are necessary to protect resources that would be affected by such action. If the Regional Administrator (R.A.) or the District Engineer, that the concerns for the aquatic environment as expressed in the Section 104(b) Guidelines require action, then of and from under § 324.4-4 and the District Engineer and Division Engineer (see the Office of the Chief of Engineers (DAEP, CWO, and DAEN-CCH) shall be notified for further coordination and resolution with the Administrator.

§ 324.4-5. Special policies and procedures.

The Secretary of the Army has delegated to the Chief of Engineers the authority to issue or deny Section 404 permits (see Appendix A). The following additional special procedures shall also be applicable to the evaluation of permit applications under this regulation:

(a) *EPA Guidelines.* Applications for permits for the discharge of dredged or fill material into waters of the United States will be reviewed in accordance with guidelines promulgated by the Administrator EPA under authority of Section 401(b) of the Federal Water Pollution Control Act (see 40 CFR Part 230). If the EPA guidelines do prohibit the discharge of a proposed disposal site, the economic impact on navigation and anchorage of the Federal to authorize the use of the proposed disposal site will also be considered in evaluating whether or not the proposed discharge is in the public interest.

(b) *Section 101 of the Clean Water Act.* From to the Chief of Engineers, for the discharge of dredged or fill material in waters of the United States, Corps of Engineers officials will advise appropriate Federal Administrators (R.A.) of the nature of the permit, which EPA has approved, and provide for methods or for such applications and are proposed in the Regional Administrator's advice, notification and action advice of the intent to propose that the effects to the nature of the permit, the case will be reviewed by the Chief of Engineers in accordance with the 101 of the Federal Water Pollution Control Act (see 40 CFR Part 230) for further coordination with the Administrator EPA and determine the report for the permit and will continue apply is of the economic impact on navigation and anchorage of the Federal by failing to authorize the discharge of a proposed disposal site and whether there are other

economically feasible methods or sites available other than those to which the Regional Administrator objects.

APPENDIX A. DELEGATION OF AUTHORITY TO ISSUE OR DENY PERMITS FOR THE DISCHARGE OF DREDGED OR FILL MATERIAL INTO NAVIGABLE WATERS.

MARCH 12, 1973.

Pursuant to the Authority vested in me by Section 404 of the Federal Water Pollution Control Act Amendments of 1972, 86 Stat. 887 (P.L. 92-500) I hereby authorize the Chief of Engineers and his authorized representative to issue or deny permits, after notice and opportunity for public hearings for the discharge of dredged or filled material into navigable waters at specified disposal sites. The Chief of Engineers shall, in exercising such authority, evaluate the impact of the proposed discharge on the public interest. A permit issued shall specify a disposal site for the discharge of the dredged or fill material through the application of guidelines developed by the Administrator of the Environmental Protection Agency and myself. In those cases where these guidelines would prohibit the specification of a disposal site, the Chief of Engineers in his evaluation, whether the proposed discharge is in the public interest, is authorized also to consider the economic impact on navigation and anchorage which would occur by failing to authorize the use of a proposed disposal site. The permit, if granted may be made subject to such special conditions as the Chief of Engineers or his authorized representatives may deem necessary in order to effect the purposes of the above Act. Other pertinent laws and any applicable memoranda of understanding between the Secretary of the Army and that of other governmental agencies.

The Chief of Engineers and his authorized representative shall exercise the authority hereby delegated subject to the approval of any authorized representative from time to time impose.

KENNETH F. BELMONT
Acting Secretary of the Army.

PART 325—PERMITS FOR OCEAN DUMPING OF DREDGED MATERIAL.

- 325.1. General.
- 325.2. Definitions.
- 325.3. Activities requiring permits.
- 325.4. Special procedures.

Appendix A. Delegation of authority.
Authority: 33 USC 1413.

§ 325.1. General.

This regulation prescribes the authority to the general policies of 33 CFR 325 and procedures of 33 CFR Part 325. These special policies, practices and procedures to be followed by the Corps of Engineers in connection with the review of applications for Department of the Army permits to authorize the transportation of dredged material by vessel for the purpose of dumping it in ocean waters. Dumping sites designated under 40 CFR Part 225 pursuant to Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972, as amended (33 USC 1413) (hereinafter referred to as Section 103). See 33 CFR 320.2(h). Activities involving the transportation of dredged material for the purpose of dumping in the ocean waters also require Department of the Army permits under Section

10 of the River and Harbor Act of 1899 (33 USC 403) for the dredging in navigable waters of the United States. Applicants for Department of the Army permits under this Part should also refer to 33 CFR Part 322 to satisfy the requirements of Section 10.

§ 324.2 Definitions.

For the purpose of this regulation, the following terms are defined:

(a) The term "ocean waters" means those waters of the open seas lying seaward of the base line from which the territorial sea is measured, as provided for in the Convention on the Territorial Sea and the Contiguous Zone (15 UST 1606, TIAS 5639).

(b) The term "dredged material" means any material excavated or dredged from navigable waters of the United States or ocean waters.

(c) The term "transport" or "transportation" refers to the carriage and related handling of dredged material by a vessel.

§ 324.3 Activities requiring permits.

(a) General. Department of the Army permits are required for the transportation of dredged material for the purpose of dumping it in ocean waters.

(b) Activities of Federal agencies. (1) The transportation of dredged material for the purpose of dumping in ocean waters done by or on behalf of any Federal agency other than the activities of the Corps of Engineers are subject to the procedures of this regulation. Agreement for construction or engineering services performed for other agencies by the Corps of Engineers does not constitute authorization under the regulation. Division and District Engineers will therefore advise Federal agencies accordingly and cooperate to the fullest extent in the expeditious processing of their applications. The activities of the Corps of Engineers that involve the transportation of dredged material for dumping in ocean waters are regulated by 33 CFR 209.145.

(2) The policy provisions set out in 33 CFR 320.4(a) relating to State or local authorizations do not apply to work or structures undertaken by Federal agencies, except where compliance with non-Federal authorization is required by Federal law or Executive policy. Federal agencies are required to comply with the substantive State, interstate, and local water-quality standards and effluent limitations as are applicable by law that are adopted in accordance with or effective under the provisions of the Marine Protection, Research and Sanctuaries Act of 1972, as amended, and related laws in the design, construction, management, operation, and maintenance of their respective facilities. (See Executive Order No. 11752, dated 17 Dec 73.) They are not required, however, to obtain and provide certification of compliance with effluent limitations and water quality standards from State or interstate water pollution control agencies in connection with activities involving discharges into ocean waters.

§ 324.4 Special procedures.

The Secretary of the Army has delegated to the Chief of Engineers the authority to issue or deny Section 103 permits. (See Appendix A.) The following additional procedures shall also be applicable under this regulation.

(a) Public notice. For all applications for Section 103 permits, the District Engineer will issue a public notice which shall contain, in addition to the information specified in 33 CFR 325.3, the following information:

(1) The location of the proposed disposal site and its physical boundaries;

(2) A statement as to whether the site has been designated for use by the Administrator, EPA, pursuant to Section 102(c) of the Act;

(3) If the proposed disposal site has not been designated by the Administrator, EPA, a description of the characteristics of the proposed disposal site and an explanation as to why no previously designated disposal site is feasible;

(4) A brief description of known dredged material discharges at the proposed disposal site;

(5) Existence and documented effects of other authorized dumpings that have been made in the dumping area (e.g., heavy metal background reading and organic carbon content);

(6) An estimate of the length of time during which disposal will continue at the proposed site;

(7) Characteristics and composition of the dredged material; and

(8) A statement concerning a preliminary determination of the need for and/or availability of an environmental impact statement.

(b) Evaluation. Applications for permits for the transportation of dredged material for the purpose of dumping it in ocean waters will be evaluated to determine whether the proposed dumping will unreasonably degrade or endanger human health, welfare, or amenities, or the marine environment, ecological systems, or economic potentialities. In making this evaluation, criteria established by the Administrator, EPA, pursuant to Section 102 of the Marine Protection Research and Sanctuaries Act of 1972, as amended, shall be applied including an evaluation of the need for the ocean dumping and including the availability of alternatives to ocean dumping. Where ocean dumping is determined to be necessary, the District Engineer will, to the extent feasible, specify disposal sites using the recommendations of the Administrator pursuant to Section 102(c) of the Act. See 40 CFR Parts 220 to 229.

(c) EPA review. If the Regional Administrator, EPA, advises the District Engineer that the proposed dumping will comply with the criteria, the District Engineer shall complete his evaluation of the Section 103 application under this regulation and 33 CFR Parts 320 and 325. If, however, the Regional Administrator advises the District Engineer that the proposed dumping will not comply with the criteria, the District Engineer will proceed as follows:

(1) The District Engineer shall determine whether there is an economically feasible alternative method or site available other than the proposed ocean disposal site. If there are other feasible alternative methods or sites available, the District Engineer shall evaluate them in accordance with 33 CFR Parts 320, 322, 323, 325 and this regulation, as appropriate.

(2) If the District Engineer makes a determination that there is no economically feasible alternative method or site available, he shall so advise the Regional Administrator of his intent to issue the permit setting forth his reasons for such determination.

(d) EPA objection. If the Regional Administrator advises, within 15 days of the notice of the intent to issue, that he still objects to the issuance of the permit, the case will be forwarded to the Chief of Engineers, for further coordination with the Administrator, EPA, and decision. The report forwarding the case will contain, in addition to the analysis required by 33 CFR 325.11, an analysis of whether there are other economically feasible methods or sites available to dispose of the dredged material.

(e) Chief of Engineers review. The Chief of Engineers shall evaluate the permit application and make a decision to deny the permit or recommend its issuance. If the decision of the Chief of Engineers is that ocean dumping at the proposed disposal site is required because of the unavailability of economically feasible alternatives, he shall so certify and request that the Secretary of the Army seek a waiver from the Administrator, EPA, of the Criteria or of the critical site designation in accordance with 40 CFR 225.4.

APPENDIX A—DELEGATION OF AUTHORITY TO ISSUE OR DENY PERMITS FOR THE TRANSPORTATION OF DREDGED MATERIAL FOR THE PURPOSE OF DUMPING IT INTO OCEAN WATERS

MARCH 12, 1973

Pursuant to the authority vested in me by Section 101 of the Marine Protection, Research and Sanctuaries Act of 1972 (86 Stat. 1052, Pub. L. 92-532) I hereby authorize the Chief of Engineers and his authorized representatives to issue or deny permits after notice and opportunity for public hearings for the transportation of dredged material for the purpose of dumping it in ocean waters. The Chief of Engineers and his authorized representatives shall, in exercising such authority, evaluate the impact of the proposed dumping on the public interest. No permit shall be issued unless a determination is made that the proposed dumping will not unreasonably degrade or endanger human health, welfare, or amenities, or the marine environment, ecological systems, or economic potentialities. In making this determination, the criteria for ocean dumping established by the Administrator of the Environmental Protection Agency pursuant to Section 102 (a) of the above Act which relate to the effects of the proposed dumping shall be applied. In addition, based upon an evaluation of the potential effect which a permit denial will have on navigation, economic and industrial development, and foreign and domestic commerce of the United States, the Chief of Engineers or his authorized representatives, in evaluating the permit application,

cation, shall make an independent determination as to the need for the dumping, other possible methods of disposal, and appropriate locations for the dumping. In considering appropriate disposal sites, recommended sites designated by the Administrator of the Environmental Protection Agency pursuant to Section 102(c) of the above Act will be utilized to the extent feasible. Prior to issuing any permit, the Chief of Engineers or his authorized representative shall first notify the Administrator of the Environmental Protection Agency or his authorized representative of his intention to do so. In any case in which the Administrator or his authorized representative disagrees with the determination of the Chief of Engineers or his authorized representative as to compliance with the criteria established pursuant to Section 102(a) of the above Act relating to the effects of the dumping or with the restrictions established pursuant to Section 102(c) of the above Act relating to critical areas, the determination of the Administrator or his authorized representative shall prevail. If, in any such case the Chief of Engineers or his Director of Civil Works finds that, in the disposition of dredged material, there is no economically feasible method or site available other than a dumping site the utilization of which would result in non-compliance with such criteria or restrictions, he shall so certify and request that I seek a waiver from the Administrator of the Environmental Protection Agency of the specific requirements involved. Unless the Administrator of the Environmental Protection Agency grants a waiver, the Chief of Engineers or his authorized representatives shall not issue a permit which does not comply with such criteria and restrictions. The permits so granted may be made subject to such special conditions as the Chief of Engineers or his authorized representatives may consider necessary in order to effect the purposes of the above Act or other pertinent laws, and any applicable memoranda of understanding between the Secretary of the Army and the heads of other governmental agencies.

The Chief of Engineers and his authorized representative shall exercise the authority hereby delegated subject to such conditions, as I or my authorized representative may from time to time impose.

KENNETH E. BRLEIN,
Acting Secretary of the Army

PART 325—PROCESSING OF DEPARTMENT OF THE ARMY PERMITS

Sec	
325.1	Applications for permits.
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Appendix A—	Permit Form
Appendix B—	Army/Interior Memorandum of Understanding

Authority: 33 USC 401 et seq.; 33 USC 1344, 33 USC 1413.

§ 325.1 Applications for permits.

(a) General. The processing procedures of this regulation (Part 325) apply

to any form of Department of the Army permit. Special procedures and additional information are contained in Parts 320 through 324. This Part is arranged in the basic timing sequence used by the Corps of Engineers in processing Department of the Army permits.

(b) Application form. Any person proposing to undertake any activity requiring Department of the Army authorization as specified in 33 CFR 321-324 must apply for a permit to the District Engineer in charge of the District where the proposed activity is to be performed. Applications for permits must be prepared in accordance with instructions in Engineer Pamphlet 1145-2-1, "A Guide for Applicants," utilizing the prescribed application form (ENR Form 4345). The form and pamphlet may be obtained from the District Engineer having jurisdiction over the waterway in which the proposed activity will be located. Local variations of the application form for purposes of facilitating coordination with State and local agencies may be used.

(c) Content of application. (1) Generally, the application must include a complete description of the proposed activity including necessary drawings, sketches or plans, the location, purpose and intended use of the proposed activity; scheduling of the activity, the names and addresses of adjoining property owners, the location and dimensions of adjacent structures; and the approvals required by other Federal, interstate, State or local agencies for the work, including all approvals received or denials already made.

(2) If the activity involves dredging in waters of the United States, the application must include a description of the type, composition and quantity of the material to be dredged, the method of dredging, and the site and plans for disposal of the dredged material.

(3) If the activity includes the discharge of dredged or fill material in the waters of the United States or the transportation of dredged material for the purpose of dumping it in ocean waters, the application must include the source of the material; a description of the type, composition and quantity of the material; the method of transportation and disposal of the material; and the location of the disposal site. (See Part 324 for additional information requirements on ocean dumping applications.) Certification under Section 401 of the Federal Water Pollution Control Act is required for such discharges into waters of the United States.

(4) If the activity includes the construction of a fill or pile or float-supported platform, the project description must include the use and specific structures to be erected on the fill or platform.

(d) Additional information. In addition to the information indicated in subparagraph (c), above, the applicant will be required to furnish such additional information as the District Engineer may deem necessary to assist him in his evaluation of the application. Such additional information may include

environmental data and information on alternate methods and sites, as may be necessary for the preparation of the Environmental Assessment or Environmental Impact Statement (see § 325.4).

(e) Signature of application. The application must be signed by the person who desires to undertake the proposed activity; however, the application may be signed by a duly authorized agent if accompanied by a statement by that person designating the agent and agreeing to furnish, upon request, supplemental information in support of the application. In either case, the signature of the applicant will be understood to be an affirmation that he possesses the authority to undertake the activity proposed in his application, except where the lands are under the control of the Corps of Engineers, in which cases the District Engineer will coordinate the transfer of the real estate and the permit action. When the application is submitted by an agent, the application may include the activity of more than one owner provided the character of the activity of each owner is similar and in the same general area.

(f) Fees. Fees are required for permit applications under Section 404 of the Federal Water Pollution Control Act Amendments of 1972, Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972, as amended, and Sections 9 and 10 of the River and Harbor Act of 1899. A fee of \$100.00 will be charged when the planned or ultimate purpose of the project is commercial or industrial in nature and is in support of operations that charge for the production, distribution or sale of goods or services. A \$10.00 fee will be charged for permit applications when the work is non-commercial in nature and provides personal benefits that have no connection with a commercial enterprise. The final decision as to basis for fee (commercial vs non-commercial) shall be solely the responsibility of the District Engineer. No fee will be charged if the applicant withdraws his application at any time prior to issuance of the permit and, or if his application is denied. Collection of the fee will be deferred until the applicant is notified by the District Engineer that a public interest review has been completed and that the proposed activity has been determined to be in the public interest. Upon receipt of this notification the applicant will forward a check or money order to the District Engineer, made payable to the Treasurer of the United States. The permit will then be issued upon receipt of the application fee. Multiple fees are not to be charged if more than one law is applicable. Any modification significant enough to require a permit will also require a fee. No fee will be assessed when a permit is transferred from one property owner to another. No fees will be charged for time extensions or general permits. Agencies or instrumentalities of Federal, State or local governments will not be required to pay any fee in connection with the applications for permits. The fee structure will be reviewed from time to time.

§ 325.2 Processing of applications.

(a) *Standard procedures.* (1) When an application for a permit is received, the District Engineer shall immediately assign it a number for identification, acknowledge receipt thereof, and advise the applicant of the number assigned to it. He shall review the application for completeness, and obtain from the applicant any additional information he deems necessary for further processing.

(2) When all required information has been provided, the District Engineer will issue a public notice as described in § 325.3, below, unless specifically exempted by other provisions of this regulation.

(3) The District Engineer shall consider all comments received in response to the public notice (see § 325.3) in his subsequent actions on the permit application. Receipt of the comments will be acknowledged and they will be made a part of the official file on the application. Comments received as form letters or petitions may be acknowledged as a group to the person or organization responsible for the form letter or petition. If comments relate to matters within the special expertise of another Federal agency, the District Engineer may seek the advice of that agency. The applicant must be given the opportunity to furnish the District Engineer his proposed resolution or rebuttal to all objections from Government agencies and other substantive adverse comments before final decision will be made on the application.

(4) The District Engineer shall prepare an Environmental Assessment on all applications. The Environmental Assessment shall be dated, signed, and placed in the record and shall include the expected environmental impact of the proposal. Where the District Engineer has delegated authority to sign permits for and in his behalf, he may similarly delegate the signing of the Environmental Assessment. In those cases requiring an Environmental Impact Statement (EIS), the draft EIS may serve as the Environmental Assessment. Where an EIS is not prepared, the Environmental Assessment will include a statement that the decision on the application is not a major Federal action significantly affecting the quality of the human environment.

(5) The District Engineer shall also evaluate the proposed application to determine the need for a public hearing pursuant to 33 CFR Part 327.

(6) After all above actions have been completed, the District Engineer will determine in accordance with the record and applicable regulations whether or not the permit should be issued. He shall prepare a Findings of Fact on all applications to support his determination. The Findings of Fact shall include the District Engineer's views on the probable effect of the proposed work on the public interest including conformity with the guidelines published for the discharge of dredged or fill material in waters of the United States, 40 CFR Part 230, or with the criteria for dumping of dredged material in navigable waters (45 CFR Parts 220 to 229), if applicable, and the con-

clusions of the District Engineer. The Findings of Fact shall be dated, signed, and included in the record prior to final action on the application. Where the District Engineer has delegated authority to sign permits for and in his behalf, he may similarly delegate the signing of the Findings of Fact. If a permit is warranted, the District Engineer will determine the conditions and duration which should be incorporated into the permit. In accordance with the authorities specified in § 325.8, the District Engineer will take final action on or forward the application with all pertinent comments, records, and studies, including the final Environmental Impact Statement, if prepared, through channels to the official authorized to make the final decision. The report forwarding the application for decision will be in the format prescribed in § 325.11. Notice that the application has been forwarded to higher headquarters will be furnished the applicant and to any Federal agency expressing an interest in the application. Such notice shall not divulge the District Engineer's recommendations. In those cases where the application is forwarded for decision in the format prescribed in § 325.11, the report will serve as the Findings of Fact.

(7) If the final decision is to deny the permit, the applicant will be advised in writing of the reason for denial. If the final decision is to issue the permit, the issuing official will forward two copies of the draft permit to the applicant for signature accepting the conditions of the permit. The applicant will retain both signed copies to the issuing official who then signs and dates the permit. The permit is not valid until signed by the issuing official. Final action on the permit application is the signature on the letter notifying the applicant of the denial of his application or signature of the issuing official on the authorizing document.

(8) The District Engineer will publish monthly a list of permits issued or denied during the previous month. The list will identify each action by public notice number, name of applicant, and brief description of activity involved. This list will be distributed to all persons who received any of the public notices listed.

(9) If the applicant fails to respond within 45 days to any request or inquiry of the District Engineer, the District Engineer may advise the applicant by certified letter that his application will be considered as having been withdrawn unless the applicant responds thereto within thirty days of the date of the letter.

(c) *Procedure for particular types of permit situations.* (1) If the District Engineer determines that water quality certification for the proposed activity is necessary under the provisions of the Federal Water Pollution Control Act, he shall notify the applicant and obtain from him either the appropriate certification or a copy of his application for such certification. The District Engineer may issue the public notice of the application jointly with the certifying agency if arrangements for such joint notices

have been approved by the Division Engineer. When the activity may affect the waters of another State, a copy of the certification will be forwarded to the Regional Administrator of EPA who shall determine if the proposed activity may affect the quality of the waters of any State or States other than the State in which the work is to be performed. If he needs supplemental information in order to make this determination, the Regional Administrator may request it from the District Engineer who shall obtain it from the applicant and forward it to the Regional Administrator. The Regional Administrator shall, within thirty days of receipt of the application, certification and supplemental information, notify the affected State, the District Engineer, and the applicant in the event such a second State may be affected. The second State then has sixty days to advise the District Engineer that it objects to the issuance of the permit on the basis of the effect on the quality of its waters and to request a hearing. No authorization will be granted until required certification has been obtained or has been waived. Waiver is deemed to occur if the certifying agency fails or refuses to act on a request for certification within a reasonable period of time after receipt of such request. The request for certification must be made in accordance with the regulations of the certifying agency. In determining whether or not a waiver period has commenced, the District Engineer will verify that the certifying agency has received a valid request for certification. Three months shall generally be considered to be a reasonable period of time. If, however, special circumstances identified by the District Engineer require that action on an application be taken within a more limited period of time, the District Engineer shall determine a reasonable lesser period of time, advise the certifying agency of the need for action by a particular date and that, if certification is not received by that date, it will be considered that the requirement for certification has been waived. Similarly, if it appears that circumstances may reasonably require a period of time longer than three months, the District Engineer may afford the certifying agency up to one year to provide the required certification before determining that a waiver has occurred. District Engineers shall check with the certifying agency at the end of the allotted period of time before determining that a waiver has occurred.

(2) If the proposed activity is to be undertaken in a State operating under a coastal zone management program approved by the Secretary of Commerce pursuant to the Coastal Zone Management Act (see 33 CFR 320.3(b)), the District Engineer shall proceed as follows:

(i) If the applicant is a Federal agency, and the application involves a Federal activity in or affecting the coastal zone or a Federal development project in the coastal zone, the District Engineer shall forward a copy of the public notice to

the agency of the State responsible for reviewing the consistency of Federal activities. The Federal agency applicant shall be responsible for complying with the Coastal Zone Management Act's directives for ensuring that Federal agency activities are undertaken in a manner which is consistent, to the maximum extent practicable, with approved coastal zone management programs. (See 15 CFR Part 930.) If the State coastal zone agency objects to the proposed Federal activity on the basis of its inconsistency with the State's approved coastal zone management program, the District Engineer shall not make a final decision on the application until the disagreeing parties have had an opportunity to utilize the procedures specified by the Coastal Zone Management Act for resolving such disagreements.

(b) If the applicant is not a Federal agency and the application involves an activity affecting the coastal zone, the District Engineer shall obtain from the applicant a certification that his proposed activity complies with and will be conducted in a manner that is consistent with the approved State coastal zone management program. Upon receipt of the certification, the District Engineer will forward a copy of the public notice (which will include the applicant's certification statement) to the State coastal zone agency and request its concurrence or objection. The District Engineer can issue the public notice of the application jointly with the State agency if arrangements for such joint notices have been approved by the Division Engineer. If the State agency objects to the certification or issues a decision indicating that the proposed activity requires further review, the District Engineer shall not issue the permit until the State concurs with the certification statement or the Secretary of Commerce determines that the proposed activity is consistent with the purposes of the Coastal Zone Management Act or is necessary in the interest of national security. If the State agency fails to concur or object to a certification statement within six months of the State agency's receipt of the certification statement, State agency concurrence with the certification statement shall be conclusively presumed.

(3) If the proposed activity involves any property listed or eligible for listing in the National Register of Historic Places (which is published in its entirety in the *Federal Register* annually in February with addenda published each month), the District Engineer will proceed in accordance with 33 CFR Part 305.

(4) If the proposed activity consists of the dredging of an access channel and/or berthing facility associated with an authorized Federal navigation project, the activity will be included in the planning and coordination of the construction or maintenance of the Federal project to the maximum extent feasible. Separate notice, hearing, and En-

vironmental Impact Statement will not be required for activities so included and coordinated; and the public notice issued by the District Engineer for these Federal and associated non-Federal activities will be the notice of intent to issue permits for those included non-Federal dredging activities. The decision whether to issue or deny such a permit will be consistent with the decision on the Federal project unless special considerations applicable to the proposed activity are identified. (See § 322.5(n).)

(5) Copies of permits will be furnished to other agencies in appropriate cases as follows:

(i) If the activity involves the construction of structures or artificial islands on the outer continental shelf, to the Director, Defense Mapping Agency, Hydrographic Center, Washington, DC 20390; Attention, Code N512; and to the Director, National Ocean Survey, NOAA, Department of Commerce, Rockville, Maryland 20850.

(ii) If the activity involves the construction of structures to enhance fish production (fish houses) along the coasts of the United States, to Defense Mapping Agency, Hydrographic Center and National Ocean Survey as in (i), above, and to the Director, Office of Marine Conservation, Fisheries, National Marine Fisheries Service, Washington, DC 20540.

(3) If the activity involves the erection of an aerial transmission line across a navigable water of the United States, to the Director, National Ocean Survey, NOAA, Department of Commerce, Rockville, Maryland 20850, reference C322.

(iv) If the activity is listed in subparagraphs (ii), (iii), or (iv), above, or involves the transportation of dredged material for the purpose of dumping it in ocean waters, to the appropriate District Commander, U.S. Coast Guard.

(c) *Emergency procedure.* An "emergency" is a situation which would result in an unacceptable hazard to life or severe loss of property if corrective action requiring a permit is not undertaken within a time period less than the normal time needed to process the application under required procedures. In such cases the District Engineer will explain the circumstance and recommend special procedure in writing to the Chief of Engineers, ATTN: DAEN-CWO N. The Chief of Engineers, upon consultation with the Secretary of the Army or his authorized representative, will instruct the District Engineer as to further processing of the application.

(d) *Timing of processing of applications.* In view of the extensive coordination with other agencies and the public and the many or all aspects of proposed activities required by the above procedures, applicants must allow adequate time for the processing of their applications. The District Engineer will be guided by the following time limits for the indicated steps in processing permit applications:

(1) Public notice should be issued within fifteen days of receipt of all required information from the applicant,

unless joint notice with State agency is to be used.

(2) The receipt of comments as a result of the public notice should not extend beyond thirty days from the date of the notice. However, if unusual circumstances warrant, the District Engineer may extend the comment period up to a maximum of seventy-five days.

(3) The District Engineer should either send notice of denial to the applicant or issue the draft permit to the applicant for acceptance and signature, or forward the application to higher headquarters within thirty days of one of the following which ever is latest: Closing of the public notice comment period with no objections received; receipt of notice of withdrawal of objections; completion of coordination following receipt of applicant's rebuttal of objections; closing of the record of a public hearing; or expiration of the waiting period following the filing of the final Environmental Impact Statement with CEQ.

§ 322.3 Public notice.

(a) *General.* The Public notice is the primary method of advising all interested parties of the proposed activity to which a permit is sought and of soliciting comments and information necessary to evaluate the probable impact on the public interest. The notice must, therefore, include sufficient information to give a clear understanding of the nature of the activity to generate meaningful comments. The notice should include the following items of information:

(1) Applicable statutory authority or authorities;

(2) The name and address of the applicant;

(3) The location of the proposed activity;

(4) A brief description of the proposed activity, its purpose and intended use including a description of the type of structures if any to be erected on fill or pile or float-supported platforms, and a description of the type, composition and quantity of materials to be discharged or dumped and means of conveyance. See also 33 CFR 324 for additional information required on ocean dumping public notices;

(5) A plan and elevation drawing showing the general and specific site location and character of all proposed activities, including the size relationship of the proposed structures to the size of the impacted waterway and depth of water in the area;

(6) If the proposed activity would occur in the territorial seas or ocean waters, a description of the activity's relationship to the baseline from which the territorial sea is measured;

(7) A list of other government authorizations obtained or requested, including required certification relative to water quality, coastal zone management, or marine sanctuaries;

(8) A statement concerning a preliminary determination of the need for and/or availability of an Environmental Impact Statement;

(9) Any other available information which may assist interested parties in evaluating the likely impact of the proposed activity, if any, on factors affecting the public interest, including environmental values; and

(10) A reasonable period of time, normally thirty days but not less than fifteen days from date of mailing, within which interested parties may express their views concerning the permit application.

(b) *Evaluation factors.* A paragraph describing the various factors on which decisions are based during evaluation of a permit application shall be included in every public notice.

(1) Except as provided in paragraph (b)(4) below, the following will be included:

The decision whether to issue a permit will be based on an evaluation of the probable impact of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit which reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors which may be relevant to the proposal will be considered: among those are conservation, economics, aesthetics, general environmental concerns, historic values, fish and wildlife values, flood damage prevention, land use, navigation, recreation, water supply, water quality, energy needs, safety, food production and, in general, the needs and welfare of the people.

(2) If the activity involves the discharge of dredged or fill material into the waters of the United States or the transportation of dredged material for the purpose of dumping it in ocean waters, the public notice shall also indicate that the evaluation of the impact of the activity on the public interest will include application of the guidelines promulgated by the Administrator, EPA, under authority of Section 404(b) of the Federal Water Pollution Control Act (40 CFR Part 230) or of the criteria established under authority of Section 102(a) of the Marine Protection, Research and Sanctuaries Act of 1972, as amended (40 CFR Parts 220 to 228), as appropriate. See also 33 CFR Part 324.

(3) If the activity includes the discharge of dredged or fill material in the waters of the United States or the transportation of dredged material for the purpose of dumping it in ocean waters, the following statement will also be included in the public notice:

Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider this application. Requests for public hearings shall state, with particularity, the reasons for holding a public hearing.

(4) In cases involving construction of fixed structures or artificial islands on Outer Continental Shelf lands which are under mineral lease from the Department of the Interior, the notice will contain the following statement: "The decision as to whether a permit will be issued will be based on an evaluation of the impact of the proposed work on navigation and national security."

(c) *Distribution of public notices.* (1) Public notices will be distributed for posting in post offices or other appropriate public places in the vicinity of the site of the proposed work and will be sent to the applicant, to appropriate city and county officials, to adjoining property owners, to appropriate State agencies, to concerned Federal agencies, to local, regional and national shipping and other concerned business and conservation organizations, to appropriate River Basin Commissions, and to any other interested party. If in the judgment of the District Engineer the proposal may result in substantial public interest, the public notice (without drawings) may be published for five consecutive days in the local newspaper, and the applicant shall reimburse the District Engineer for the costs of publication. Copies of public notices will be sent to all parties who have specifically requested copies of public notices, to the U.S. Senators and Representatives for the area where the work is to be performed, the Field Representative of the Secretary of the Interior, the Regional Director of the Fish and Wildlife Service, the Regional Director of the National Park Service, the Regional Administrator of the Environmental Protection Agency (EPA), the Regional Director of the National Marine Fisheries Service of the National Oceanic and Atmospheric Administration (NOAA), the head of the State agency responsible for fish and wildlife resources, and the District Commander, U.S. Coast Guard.

(2) In addition to the general distribution of public notices cited above, notices will be sent to other addresses in appropriate cases as follows:

(i) If the activity involves structures or dredging along the shores of the sea or Great Lakes, to the Coastal Engineering Research Center, Washington, D.C. 20016.

(ii) If the activity involves construction of fixed structures or artificial islands on the Outer Continental Shelf or in the territorial seas, to the Deputy Assistant Secretary of Defense (Installations and Housing), Washington, D.C. 20310; the Director, Defense Mapping Agency, Hydrographic Center, Washington, D.C. 20390, Attention, Code NS12; and the Director, National Ocean Survey, NOAA, Department of Commerce, Rockville, Maryland 20852.

(iii) If the activity involves the construction of structures to enhance fish propagation along the Atlantic, Pacific, and Gulf coasts, to the Director, Office of Marine Recreational Fisheries, National Marine Fisheries Service, Washington, D.C. 20235.

(iv) If the activity involves the construction of structures which may affect aircraft operations or for purposes associated with seaplane operations, to the Regional Director of the Federal Aviation Administration.

(v) If the activity is in connection with a foreign-trade zone, to the Executive Secretary, Foreign-Trade Zones Board, Department of Commerce, Washington, D.C. 20230 and to the appropriate Dis-

trict Director of Customs as Resident Representative, Foreign-Trade Zones Board.

(3) It is presumed that all interested parties and agencies will wish to respond to public notices; therefore, a lack of response will be interpreted as meaning that there is no objection to the application. A copy of the public notice with the list of the addressees to whom the notice was sent will be included in the record. If a question develops with respect to an activity for which another agency has responsibility and that other agency has not responded to the public notice, the District Engineer may request their comments. Whenever a response to a public notice has been received from a member of Congress, either in behalf of a constituent or himself, the District Engineer will inform the member of Congress of the final decision.

(d) *General permit notices (RCS: DAEN-CWO-52).* For purposes of performing a nationwide analysis of the effectiveness of the general permit program, Division offices will submit "Public Notices on General Permits" reports (RCS: DAEN-CWO-52) by COB on the 15th day, following the end of each quarter, to HQDA (DAEN-CWO-N) Washington, D.C. 20314. Said reports will be in the form of a letter listing the public notices published during the previous month to announce proposals or to finalize issuances of general permits; copies of the public notices are to be made inclosures to the reports. Negative reports will be submitted if no general permit actions have taken place in the Division during the reporting period.

§ 325.4 Environmental impact statements.

(a) *General.* Section 102(2)(c) of the National Environmental Policy Act of 1969 (NEPA) requires all Federal agencies, with respect to major Federal actions significantly affecting the quality of the human environment, to submit to the President's Council on Environmental Quality a detailed statement on:

(1) The environmental impact of the proposed actions.

(2) Any adverse environmental effects which cannot be avoided should the proposal be implemented.

(3) Alternatives to the proposed action.

(4) The relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity.

(5) Any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented. The District Engineer must determine whether such an Environmental Impact Statement (EIS) is required in connection with each permit application.

(b) *EIS procedures.* In addition to the procedures required by 33 CFR 299.410 (ER 1105.2-507), the following special procedures apply to the processing of permits involving the preparation of an EIS.

(1) The District Engineer, at the earliest practicable time prior to the is-

suance of the public notice, shall make a preliminary assessment of impacts of the project should it be approved and make a preliminary determination as to whether the quality of the human environment would be significantly affected. This preliminary assessment will normally be based on experience with similar type activities performed in the past. A statement of the District Engineer's preliminary determination shall be included in the public notice. This preliminary determination will be reconsidered as additional information is developed.

(2) If the District Engineer's final determination after consideration of all additional information developed (including responses to the public notice) is that the proposed work will not significantly affect the quality of the human environment, the District Engineer's determination shall be documented, dated, and placed in the record as his Environmental Assessment (see § 325.2(a)(4)).

(3) At such time as the District Engineer believes that a permit may be warranted but that the proposed activity would significantly affect the quality of the human environment, he will require the applicant to furnish any additional information that the District Engineer considers necessary to allow his preparation of an EIS. The applicant should also be advised at this time that there is no assurance that favorable action will ultimately be taken on his application. Additionally, if the District Engineer has previously announced a preliminary determination that no EIS would be required, he shall issue a supplemental public notice to advise the public of the changed determination. If the applicant is unable to furnish certain information considered by the District Engineer to be necessary for the EIS, the District Engineer may, after obtaining written approval from the Division Engineer, charge the applicant pursuant to 31 U.S.C. 483(a) for those extraordinary expenses incurred by the Government in developing the information. All money so collected shall be paid into the Treasury of the United States as miscellaneous receipts. Otherwise the costs of the preparation and distribution of the EIS itself shall be borne by the Federal Government. In those cases when the determination has been made that an EIS will be required, the District Engineer shall consider inviting public comments as to specific factors of concern which should be addressed in the draft EIS. Upon preparation of the draft EIS, a public notice shall be issued summarizing the facts of the case and announcing the availability of the draft EIS. A copy of that notice shall be furnished to all recipients of the draft EIS including CEQ. If a public hearing is to be held pursuant to § 325.2(a)(5), the hearing may be held anytime after completion of the draft EIS.

(4) If another agency is the lead agency as defined by the CEQ guidelines (40 CFR 1500.7(b)), the District Engineer will coordinate with that agency to in-

sure that the resulting EIS adequately describes the impact of the activity which is subject to Corps permit authority. That previously prepared EIS will be referenced in the public notice announcing the permit application and a statement included that the effects of the proposed activity on the environment as outlined therein will be carefully considered in the evaluation of the permit application.

(c) *Public notice on EIS filing.* The 30-day wait period required by the National Environmental Policy Act for issuing a permit for which an EIS has been prepared begins with notation in the Federal Register that the FEIS has been filed with CEQ or on the date of delivery to U.S. Postal Service facilities for mailing of copies of the FEIS to agencies, groups, and individuals on the project mailing list, whichever date is later. In order to notify the interested public of their opportunity to comment on the FEIS, the District Engineer shall issue a public notice when the filing notation has been published in the Federal Register to all parties receiving the original application notice or draft EIS and to all others who have expressed an interest in the application. The public notice should include:

(1) A brief summary of application (significant work, date of public notice, date of draft EIS release, date of public hearing if held);

(2) Opportunity to comment to the District Engineer on the FEIS until the deadline date projected by the 30-day wait period;

(3) A statement that the comments received on the FEIS will be evaluated and considered in arriving at the final decision on the application; and

(4) Information on how interested parties can obtain or have access to the FEIS.

§ 325.5 Forms of authorization.

(a) *General.* (1) Department of the Army authorizations under this regulation shall be in the form of an individual permit, general permit, or letter of permission, as appropriate. The basic format shall be FNG Form 1721, Department of the Army Permit (Appendix A).

(2) While the general conditions included in FNG Form 1721 are normally applicable to all permits, some may not apply to certain authorizations (e.g., after-the-fact situations where work is completed, or situations in which the permittee is a Federal agency) and may be deleted by the issuing officer. Special conditions applicable to the specific activity will be included in the permit as necessary to protect the public interest.

(b) *Letters of permission.* In those cases subject to Section 10 of the River and Harbor Act of 1899 in which, in the opinion of the District Engineer, the proposed work is minor, will not have significant impact on environmental values, and should encounter no opposition, the District Engineer may omit the publishing of a public notice and authorize the work by a letter of permission. However,

he will coordinate the proposal with a concerned fish and wildlife agency, Federal and State, as required by the Fish and Wildlife Coordination Act. The letter of permission will not be used to authorize the discharge of dredged or fill material into waters of the United States nor the transportation of dredged material for purposes of dumping it in ocean waters. The letter of permission will be in letter form and will identify the permittee, the authorized work and location of the work, the statutory authority (e.g., 33 U.S.C. 403), any limitation on the work, a construction time limit, and a requirement for a report of completed work. A copy of the general conditions from FNG Form 1721 will be attached and will be incorporated by reference into the letter of permission.

(c) *General permits.* The District Engineer may, after compliance with the other procedures of this regulation, issue general permits for certain clearly described categories of structures or work including discharges of dredged or fill material, requiring Department of the Army permits. After a general permit has been issued, individual activities falling within those categories that are authorized by such general permits do not have to be further authorized by the procedures of this regulation unless the District Engineer determines on a case-by-case basis, that the public interest requires.

(d) *Section 9 permits.* Permits for structures under Section 9 of the River and Harbor Act of 1899 will be drafted during review procedures at Department of the Army level.

(e) *Nationwide permits.* Nationwide permits mean Department of the Army authorizations that have been issued to the regulations for certain specified activities nationwide. If certain conditions are met, the specified activities can take place without the need for an individual or general permit.

§ 325.6 Duration of authorizations.

(a) *General.* Department of the Army authorization may authorize both the work and the resulting use. Authorizations continue in effect until they automatically expire or are modified, suspended, or revoked.

(b) *Structures.* Authorizations for the existence of a structure or other activity of a permanent nature are usually for an indefinite duration with no expiration date cited. However, where a temporary structure is authorized, or where restoration of a waterway is contemplated, the authorization will be of limited duration with a definite expiration date. Except as provided in subparagraph (c), below, permits for the discharge of dredged material in the waters of the United States or for the transportation of dredged material for the purpose of dumping it in ocean waters will be of limited duration with a definite expiration date.

(c) *Works.* Authorizations for construction work or other activity will specify time limits for accomplishing the work or activity. The time limits will specify a date by which the work must be stated, normally one year from the date

of issuance, and a date by which the work must be completed. The dates will be established by the issuing official and will provide reasonable times based on the scope and nature of the work involved. An authorization for work or other activity will automatically expire if the permittee fails to request an extension or revalidation.

(d) *Extensions of time.* Extensions of time may be granted by the District Engineer for authorizations of limited duration, or for the time limitations imposed for starting or completing the work or activity. The permittee must request the extension and explain the basis of the request, which will be granted only if the District Engineer determines that an extension is in the general public interest. Requests for extensions will be processed in accordance with the regular procedures of § 325.2, including issuance of a public notice, except that such processing is not required where the District Engineer determines that there have been no significant changes in the attendant circumstances since the authorization was issued and that the work is proceeding essentially in accordance with the approved plans and conditions.

(e) *Periodic maintenance.* If the authorized work includes periodic maintenance dredging, an expiration date for the authorization of that maintenance dredging will be included in the permit. The expiration date, which in no event is to exceed ten years from the date of issuance of the permit, will be established by the issuing official after his evaluation of the proposed method of dredging and disposal of the dredged material in accordance with the requirements of 33 CFR Parts 320 to 325. In such cases, the District Engineer shall require notification of the maintenance dredging prior to actual performance to insure continued compliance with the requirements of the regulation and 33 CFR Parts 320-324. If the permittee desires to continue maintenance dredging beyond the expiration date, he must request a revalidation of that portion of his permit which authorized the maintenance dredging. The request must be made to the District Engineer six months prior to the expiration date, and include full description of the proposed methods of dredging and disposal of dredged materials. The District Engineer will process the request for revalidation in accordance with the standard procedures including the issuance of a public notice describing the authorized work to be maintained and the proposed methods of maintenance.

§ 325.7 Modification, suspension or revocation of authorizations.

(a) *General.* The District Engineer may reevaluate the circumstance and conditions of a permit either on his own motion or as the result of periodic progress inspection, and initiate action to modify, suspend, or revoke a permit as may be made necessary by considerations of the general public interest. Among the factors to be considered are the extent of the permittee's compliance with the terms and conditions of the permit;

whether or not circumstances relating to the activity authorized have changed since the permit was issued, extended or revalidated, and the continuing adequacy of the permit conditions; any significant objections to the activity authorized by the permit which were not earlier considered, revisions to applicable statutory and/or regulatory authorities; and the extent to which modification, suspension, or other action would adversely affect plans, investments and actions the permittee has reasonably made or taken in reliance on the permit. Significant increases in scope of a permitted activity will be processed as new applications for permits in accordance with Part 325.2 and not as modifications under this paragraph.

(b) *Modification.* The District Engineer, as a result of reevaluation of the circumstances and conditions of a permit, may determine that protection of the general public interest requires a modification of the terms or conditions of the permit. In such cases, the District Engineer will hold informal consultations with the permittee to ascertain whether the terms and conditions can be modified by mutual agreement. If a mutual agreement is reached on modification of the terms and conditions of the permit, the District Engineer will give the permittee written notice of the modification, which will then become effective on such date as the District Engineer may establish, which in no event shall be less than ten days from its date of issuance. In the event a mutual agreement cannot be reached by the District Engineer and the permittee, the District Engineer will proceed in accordance with subparagraph (c), below, if immediate suspension is warranted. In cases where immediate suspension is not warranted but the District Engineer determines that the permit should be modified, he will notify the permittee of the proposed modification and reasons therefor, and that he may request a hearing. The modification will become effective on the date set by the District Engineer which shall be at least ten days after receipt of the notice unless a hearing is requested within that period. If the permittee fails or refuses to comply with the modification, the District Engineer will proceed in accordance with 33 CFR Part 326.

(c) *Suspension.* The District Engineer may suspend a permit after preparing a written determination and finding that immediate suspension would be in the general public interest. The District Engineer will notify the permittee in writing by the most expeditious means available that the permit has been suspended with the reasons therefor, and order the permittee to stop all previously authorized activities. The permittee will also be advised that following this suspension a decision will be made to either reinstate, modify, or revoke the permit, and that he may request a hearing within 10 days of receipt of notice of the suspension to present information in this matter. If a hearing is requested the procedures prescribed in 33 CFR 327 will be followed. After the completion of the

hearing (or within a reasonable period of time after issuance of the notice to the permittee that the permit has been suspended if no hearing is requested), the District Engineer will take action to reinstate the permit, modify the permit, or recommend revocation of the permit in accordance with subparagraph (d), below.

(d) *Revocation.* Following completion of the suspension procedures in subparagraph (c), above, if revocation of the permit is recommended, the District Engineer will prepare a report of the circumstances and forward it together with the record of the suspension proceedings to DAEN-CWO-N. The Chief of Engineers may, prior to deciding whether or not to revoke the permit, afford the permittee the opportunity to present any additional information not made available to the District Engineer at the time he made the recommendation to revoke the permit including, where appropriate, the means by which he intends to comply with the terms and conditions of the permit. The permittee will be advised in writing of the final decision.

§ 325.8 Authority to issue or deny authorizations.

(a) *General.* Except as otherwise provided in this regulation, the Secretary of the Army subject to such conditions as he or his authorized representative may from time to time impose, has authorized the Chief of Engineers and his authorized representatives to issue or deny authorizations for construction or other work in or affecting navigable waters of the United States pursuant to Sections 10 and 14 of the Act of March 3, 1899, and Section 1 of the Act of June 13, 1902. He also has authorized the Chief of Engineers and his authorized representatives to issue or deny authorizations for the discharge of dredged or fill material in waters of the United States pursuant to Section 401 of the Federal Water Pollution Control Act Amendments of 1972 or for the transportation of dredged material for the purpose of dumping it into ocean waters pursuant to Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972, as amended. The authority to issue or deny permits pursuant to Section 9 of the River and Harbor Act of March 3, 1899 has not been delegated to the Chief of Engineers or his authorized representatives.

(b) *District Engineer's authority.* District Engineers are authorized to issue in accordance with this regulation permits and letters of permission which are subject to such special conditions as are necessary to protect the public interest in the waters of the United States or ocean waters pursuant to Sections 10 and 14 of the River and Harbor Act of March 3, 1899; Section 1 of the River and Harbor Act of June 13, 1902; Section 401 of the Federal Water Pollution Control Act Amendments of 1972, and Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972, as amended, in all cases in which there are no known substantive objections to the proposed work or activity or in which objections

have been resolved to the satisfaction of the District Engineer. Unless otherwise precluded by this regulation, District Engineers may issue permits over an unresolved objection of another Federal agency if that agency indicates to the District Engineer that it does not desire to refer the application to a higher level of authority for review. It is essential to the legality of a permit that it contain the name of the District Engineer as the issuing officer. However, the permit need not be signed by the District Engineer, in person; but may be signed for and in behalf of him by whoever he designates. District Engineers shall deny permits when required State or local authorization and/or certification has been denied or when a State has objected to a required certification of compliance with its coastal zone management program and the Secretary of Commerce has not reviewed the action and reached a contrary finding. A District Engineer may also deny any permit if he determines that the proposed activity is not in the public interest provided the referral requirements of § 325.8(d) below are not applicable. In such cases the Findings of Fact should be in the general format required for reports under Sec. 325.11 and must conclusively justify a denial decision. All other permit applications including those cases in § 325.7 (c) and (d) below will be referred to Division Engineers. District Engineers are also authorized to add, modify, or delete special conditions in permits, except for those conditions which have been imposed by higher authority, and to suspend permits according to the procedures of § 325.7(c).

(c) *Division Engineer's authority.* Division Engineers will review, attempt to resolve outstanding matters, and evaluate all permit applications referred by District Engineers. Division Engineers may authorize the issuance or denial of permits pursuant to Sections 10 and 14 of the River and Harbor Act of March 3, 1899; Section 1 of the River Harbor Act of June 13, 1902; Section 404 of the Federal Water Pollution Control Act Amendments of 1972; and Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972, as amended; and the inclusion of conditions to those permits as may be necessary to protect the public interest in waters of the United States or ocean waters in accordance with the policies cited in this regulation. Except as provided in subparagraph (d), below, if the Division Engineer determines that issuance of a permit with or without conditions is in the public interest, but there is continuing objection to the issuance of the permit by another Federal agency, he shall advise the regional representative of that Federal agency of his intent to issue the permit. The Division Engineer shall not proceed with the issuance of a permit if, within 15 days after the date of this notice of intent to issue a permit, an authorized representative of that Federal agency indicates to the Division Engineer in writing that he wishes to bring his concerns to the Departmental level and

has Departmental concurrence to do so. In such cases, the proposed permit will be forwarded to higher authority for resolution. Thereafter, a permit will be issued only pursuant to and in accordance with instructions from such higher authority. Every effort should be made to resolve differences at the Division Engineer level before referring the matter to higher authority.

(d) *Referral to the Chief of Engineers.* Division Engineers will refer to the Chief of Engineers the following cases:

(1) When it is proposed to issue a permit and there are unresolved objections from another Federal agency which must be handled under special procedures specified in statutes or Memoranda of Understanding which thereby preclude final resolution by the Division Engineer;

(2) When the recommended decision is contrary to the stated position of the Governor of the State in which the work is to be performed;

(3) When there is substantial doubt as to authority, law, regulations, or policies applicable to the proposed activity;

(4) When the Chief of Engineers requests the case be forwarded for decision;

(5) When the proposed activity would affect the baseline used for determination of the limits of the territorial sea, and

(6) When Section 9 of the River and Harbor Act of 1899 authority is involved.

§ 325.9 Supervision and enforcement.

(a) *Inspection and monitoring.* District Engineers will assure that authorized activities are conducted and executed in conformance with approved plans and other conditions of the permits. Appropriate inspections should be made on timely occasions during performance of the activity and appropriate notices and instructions given permittees to insure that they do not depart from the approved plans. Reevaluation of permits to assure compliance with its purposes and conditions will be carried out as provided in § 325.7. If there are approved material departures from the authorized plans, the District Engineer will require the permittee to furnish corrected plans showing the activity as actually performed.

(b) *Non-compliance.* Where the District Engineer determines that there has been non-compliance with the terms or conditions of a permit, he should first contact the permittee and attempt to resolve the problem. If a mutually agreeable resolution cannot be reached, a written demand for compliance will be made. If the permittee has not agreed to comply within 5 days of receipt of the demand, the District Engineer will issue an immediately effective notice of suspension in accordance with § 325.7(c) and consider initiation of appropriate legal action.

(c) *Surveillance.* For purposes of inspection of permitted activities and for surveillance of the waters of the United States for enforcement of the permit authorizes the District Engineer will use all means at his disposal. All Corps of

Engineers employees will be instructed to observe and report all activities in waters of the United States which would require permits. The assistance of members of the public and personnel of other interested Federal, State and local agencies to observe and report such activities will be encouraged. To facilitate this surveillance, the District Engineer will, in appropriate cases, require a copy of ENG Form 4336 to be posted conspicuously at the site of authorized activities and will make available to all interested persons information on the scope of authorized activities and the conditions prescribed in the authorizations. Furthermore, significant actions taken under § 325.7 will be brought to the attention of those Federal, State and local agencies and other persons who express particular interest in the affected activity. Surveillance in ocean waters will be accomplished primarily by the Coast Guard pursuant to section 107(c) of the Marine Protection, Research and Sanctuaries Act of 1972, as amended.

(d) *Inspection expenses.* The expenses incurred in connection with the inspection of permitted activity in waters of the United States normally will be paid by the Federal Government in accordance with the provisions of section 6 of the River and Harbor Act of 3 March 1905 (33 U.S.C. 417) unless daily supervision or other unusual expenses are involved. In such unusual cases, and after approval by the Division Engineer, the permittee will be required to bear the expense of inspections in accordance with the conditions of his permit; however, the permittee will not be required or permitted to pay the United States inspector either directly or through the District Engineer. The inspector will be paid on regular payrolls or service vouchers. The District Engineer will collect the cost from the permittee in accordance with the following:

(1) At the end of each month the amount chargeable for the cost of inspection pertaining to the permit will be collected from the permittee and will be taken up on the statement of accountability and deposited in a designated depository to the credit of the Treasurer of the United States, on account of reimbursement of the appropriation from which the expenses of the inspection were paid.

(2) If the District Engineer considers such a procedure necessary to insure the United States against loss through possible failure of the permittee to supply the necessary funds in accordance with subparagraph (1) above he may require the permittee to keep on deposit with the District Engineer at all times an amount equal to the estimated cost of inspection and supervision for the ensuing month, such deposit preferably being in the form of a certified check payable to the order of Treasurer of the United States. Certified checks so deposited will be carried in a special deposit account (guaranty for inspection expenses) and upon completion of the work under the permit the funds will be returned to the permittee provided he has paid the actual cost of inspection.

3) On completion of work under a permit, and the payment of expenses by the permittee without protest, the account will be closed, and outstanding deposits returned to the permittee. If the account is protested by the permittee, it will be referred to the Division Engineer for approval before it is closed and before any deposits are returned to the permittee.

(e) Bonds. If the permitted activity includes restoration of the waterway to its original condition, or if the issuing official has reason to consider that the permittee might be prevented from completing work which is necessary to protect the public interest in the waterway, he may require the permittee to post a bond of sufficient amount to indemnify the government against any loss as a result of corrective action it might take.

§ 325.10 Publicity.

The District Engineer will establish and maintain a program to assure that potential applicants for permits are informed of the requirements of this regulation and of the steps required to obtain permits for activities in navigable waters or ocean waters. Whenever the District Engineer becomes aware of plans being developed by either private or public entities who might require permits in order to implement the plans, he will advise the potential applicant in writing of the statutory requirements and the provisions of this regulation. Similarly when the District Engineer is aware of changes in Corps of Engineers regulatory jurisdiction, he will issue appropriate public notices.

§ 325.11 Reports.

The report of a District Engineer on an application for a permit requiring action by the Division Engineer or by the Chief of Engineers will be in a letter form with the application and all pertinent comments, records, photographs, maps, and studies including the final Environmental Impact Statement if prepared, as inclosures. The inclosures for all cases referred to the Chief of Engineers will be in duplicate. If an EIS has been prepared, the report shall not be forwarded until expiration of the 30-day comment period following filing of the final EIS and shall address any comments received on the final EIS. The following items will be included or discussed in the report:

- (a) Name of applicant.
- (b) Location, character and purpose of proposed activity, including a description of any wetlands involved.
- (c) Applicable statutory authorities and administrative determinations conferring Corps of Engineers regulatory jurisdiction.
- (d) Other Federal, State, and local authorizations obtained or required and pending.
- (e) Date of public notice and public hearings, if held, and summary of objections offered with comments of the District Engineer thereon. The comments should explain the objections and not merely refer to inclosed letters.

(f) Views of State and local authorities.

(g) Views of District Engineer concerning probable effect of the proposed work on:

- (1) Navigation, present and prospective.
- (2) Harbor lines, if established.
- (3) Flood heights, drift and flood damage protection.
- (4) Beach erosion or accretion.
- (5) Fish and Wildlife.
- (6) Water Quality.
- (7) Aesthetics.
- (8) Historic values.
- (9) Recreation.
- (10) Economy.
- (11) Water supply.
- (12) Energy needs.
- (13) Land use classification and coastal zone management plans.
- (h) Other pertinent remarks, such as:
 - (1) Extent of public and private need.
 - (2) Appropriate alternatives.
 - (3) Extent and permanence of beneficial and/or detrimental effects.
 - (4) Probable impact in relation to cumulative effects created by other activities.

(i) A copy of the environmental assessment or the Environmental Impact Statement. If an EIS is prepared, a summary of comments received on the final EIS together with the District Engineer's response to those comments.

(j) A discussion of conformity with the guidelines published for the discharge of dredged or fill material in waters of the United States (40 CFR Part 230) or the dumping of dredged material in ocean waters (40 CFR Parts 220 to 229), as applicable.

(k) Conclusions.

(l) Recommendations including any proposed special conditions.

APPENDIX A—PERMIT FORM

Application No. _____
 Name of Applicant _____
 Effective Date _____
 Expiration Date (if applicable) _____

DEPARTMENT OF THE ARMY

Permit

Referring to written request dated _____ for a permit to:

() Perform work in or affecting navigable waters of the United States, upon the recommendation of the Chief of Engineers, pursuant to Section 10 of the Rivers and Harbors Act of March 3, 1899 (33 U.S.C. 403);

() Discharge dredged or fill material into waters of the United States upon the issuance of a permit from the Secretary of the Army acting through the Chief of Engineers pursuant to Section 404 of the Federal Water Pollution Control Act (86 Stat. 816, Pub. L. 92-500);

() Transport dredged material for the purpose of dumping it into ocean waters upon the issuance of a permit from the Secretary of the Army acting through the Chief of Engineers pursuant to Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (86 Stat. 1052, Pub. L. 92-532);

() _____
 (Here insert the full name and address of the permittee.)

Is hereby authorized by the Secretary of the Army: to _____

(Here describe the proposed structure or activity, and its intended use. In the case of an application for a fill permit, describe the structures, if any proposed to be erected on the fill. In the case of an application for the discharge of dredged or fill material into waters of the United States or the transportation for discharge in ocean waters of dredged material, describe the type and quantity of material to be discharged.)

In _____
 (Here to be named the ocean, river, harbor, or waterway concerned.)

At _____
 (Here to be named the nearest well-known locality—preferably a town or city—and the distance in miles and tenths from some definite point in the same, stating whether above or below or giving direction by points of compass.)

In accordance with the plans and drawings attached hereto which are incorporated in and made a part of this permit (on drawings, give file number or other definite identification marks) Subject to the following conditions:

1 General conditions: (a) That all activities identified and authorized herein shall be consistent with the terms and conditions of this permit, and that any activities not specifically identified and authorized herein shall constitute a violation of the terms and conditions of this permit which may result in the modification, suspension or revocation of this permit, in whole or in part as set forth more specifically in General Conditions J or K hereto; and in the institution of such legal proceedings as the United States Government may consider appropriate, whether or not this permit has been previously modified, suspended or revoked in whole or in part.

(b) That all activities authorized herein shall if they involve, during their construction or operation, any discharge of pollutants into waters of the United States or ocean waters, be at all times consistent with applicable water quality standards, effluent limitations and standards of performance, prohibitions, pretreatment standards and management practices established pursuant to the Federal Water Pollution Control Act of 1972 (Pub. L. 92-500, 86 Stat. 816), the Marine Protection Research and Sanctuaries Act of 1972 (Pub. L. 92-532, 86 Stat. 1052), or pursuant to applicable State and local law.

(c) That when the activity authorized herein involves a discharge during its construction or operation, of any pollutant (including dredged or fill material), into waters of the United States, the authorized activity shall, if applicable water quality standards are revised or modified during the term of this permit, be modified, if necessary, to conform with such revised or modified water

quality standards within 6 months of the effective date of any revision or modification of water quality standards, or as directed by an implementation plan contained in such revised or modified standards, or within such longer period of time as the District Engineer, in consultation with the Regional Administrator of the Environmental Protection Agency, may determine to be reasonable under the circumstances.

(d) That the discharge will not destroy a threatened or endangered species as identified under the Endangered Species Act or endanger the critical habitat of such species.

(e) That the permittee agrees to make every reasonable effort to prosecute the construction or operation of the work authorized herein in a manner so as to minimize any adverse impact on fish, wildlife, and natural environmental values.

(f) That the permittee agrees that it will prosecute the construction or work authorized herein in a manner so as to minimize any degradation of water quality.

(g) That the permittee shall permit the District Engineer or his authorized representative(s) or designee(s) to make periodic inspections at any time deemed necessary in order to assure that the activity being performed under authority of this permit is in accordance with the terms and conditions prescribed herein.

(h) That the permittee shall maintain the structure or work authorized herein in good condition and in accordance with the plans and drawings attached hereto.

(i) That this permit does not convey any property rights, either in real estate or material, or any exclusive privileges, and that it does not authorize any injury to property or invasion of rights or any infringement of Federal, State, or local laws or regulations nor does it obviate the requirement to obtain State or local consent required by law for the activity authorized herein.

(j) That this permit may be summarily suspended, in whole or in part, upon a finding by the District Engineer that immediate suspension of the activity authorized herein would be in the general public interest. Such suspension shall be effective upon receipt by the permittee of a written notice thereof which shall indicate (1) the extent of the suspension, (2) the reasons for this action, and (3) any corrective or preventative measures to be taken by the permittee which are deemed necessary by the District Engineer to abate imminent hazards to the general public interest. The permittee shall take immediate action to comply with the provisions of this notice. Within ten days following receipt of this notice of suspension, the permittee may request a hearing in order to present information relevant to a decision as to whether his permit should be reinstated, modified or revoked. If a hearing is requested, it shall be conducted pursuant to procedures prescribed by the Chief of Engineers. After completion of the hearing, or within a reasonable time after issuance of the suspension notice to the permittee if no hearing is requested, the permit will either be reinstated, modified or revoked.

(k) That this permit may be either modified, suspended or revoked in whole or in part if the Secretary of the Army or his authorized representative determines that there has been a violation of any of the terms or conditions of this permit or that such action would otherwise be in the public interest. Any such modification, suspension, or revocation shall become effective 30 days after receipt by the permittee of written notice of such action which shall specify the facts or conduct warranting same unless (1) within the 30-day period the permittee is able to satisfactorily demonstrate that (a) the alleged violation of the terms and the con-

ditions of this permit did not, in fact, occur or (b) the alleged violation was accidental, and the permittee has been operating in compliance with the terms and conditions of the permit and is able to provide satisfactory assurance that future operations shall be in full compliance with the terms and conditions of this permit, or (2) within the aforesaid 30-day period, the permittee requests that a public hearing be held to present oral and written evidence concerning the proposed modification, suspension or revocation. The conduct of this hearing and the procedures for making a final decision either to modify, suspend or revoke this permit in whole or in part shall be pursuant to procedures prescribed by the Chief of Engineers.

(l) That in issuing this permit, the Government has relied on the information and data which the permittee has provided in connection with his permit application. If, subsequent to the issuance of this permit, such information and data prove to be false, incomplete or inaccurate, this permit may be modified, suspended or revoked, in whole or in part, and the Government may, in addition, institute appropriate legal proceedings.

(m) That any modification, suspension, or revocation of this permit shall not be the basis for any claim for damages against the United States.

(n) That the permittee shall notify the District Engineer at what time the activity authorized herein will be commenced, as far in advance of the time of commencement as the District Engineer may specify, and of any suspension of work, if for a period of more than one week, resumption of work and its completion.

(o) That if the activity authorized herein is not started on or before _____ day of _____, 19____, (one year from the date of issuance of this permit unless otherwise specified) and is not completed on or before _____ day of _____, 19____, (three years from the date of issuance of this permit unless otherwise specified) this permit, if not previously revoked or specifically extended, shall automatically expire.

(p) That this permit does not authorize or approve the construction of particular structures, the authorization or approval of which may require authorization by the Congress or other agencies of the Federal Government.

(q) That if and when the permittee desires to abandon the activity authorized herein unless such abandonment is part of a transfer procedure by which the permittee is transferring his interests herein to a third party pursuant to General Condition 8 hereof, he must restore the area to a condition satisfactory to the District Engineer.

(r) That if the recording of this permit is possible under applicable State or local law, the permittee shall take such action as may be necessary to record this permit with the Register of Deeds or other appropriate official charged with the responsibility for maintaining records of title to and interests in real property.

(s) That there shall be no unreasonable interference with navigation by the existence or use of the activity authorized herein.

(t) That this permit may not be transferred to a third party without prior written notice to the District Engineer, either by the transferee's written agreement to comply with all terms and conditions of this permit or by the transferee subscribing to this permit in the space provided below and thereby agreeing to comply with all terms and conditions of this permit. In addition, if the permittee transfers the interests authorized herein by conveyance of realty, the deed shall reference this permit and the terms and conditions specified herein and this permit

shall be recorded along with the deed with the Register of Deeds or other appropriate official.

II Special Conditions. Here list conditions relating specifically to the proposed structure or work authorized by this permit. The following Special Conditions will be applicable when appropriate.

Structures In or Affecting Navigable Waters of the United States

(a) That this permit does not authorize the interference with any existing or proposed Federal project and that the permittee shall not be entitled to compensation for damage or injury to the structures or work authorized herein which may be caused by or result from existing or future operations undertaken by the United States in the public interest.

(b) That no attempt shall be made by the permittee to prevent the full and free use by the public of all navigable waters at or adjacent to the activity authorized by this permit.

(c) That if the display of lights and signals on any structure or work authorized herein is not otherwise provided for by law, such lights and signals as may be prescribed by the United States Coast Guard shall be installed and maintained by and at the expense of the permittee.

(d) That the permittee, upon receipt of a notice of revocation of this permit or upon its expiration before completion of the authorized structure or work, shall, without expense to the United States and in such time and manner as the Secretary of the Army or his authorized representative may direct, restore the waterway to its former conditions. If the permittee fails to comply with the direction of the Secretary of the Army or his authorized representative, the Secretary or his designee may restore the waterway to its former condition, by contract or otherwise, and recover the cost thereof from the permittee.

(e) **Structures for Small Boats.** That permittee hereby recognizes the possibility that the structure permitted herein may be subject to damage by wave wash from passing vessels. The issuance of this permit does not relieve the permittee from taking all proper steps to insure the integrity of the structure permitted herein and the safety of boats moored thereto from damage by wave wash and the permittee shall not hold the United States liable for any such damage.

Maintenance Dredging

(a) That when the work authorized herein includes periodic maintenance dredging, it may be performed under this permit for _____ years from the date of issuance of this permit (ten years unless otherwise indicated).

(b) That the permittee will advise the District Engineer in writing at least two weeks before he intends to undertake any maintenance dredging.

Discharges of Dredged or Fill Material Into Waters of the United States

(a) That the discharge will be carried out in conformity with the goals and objectives of the EPA Guidelines established pursuant to Section 404(b) of the FWPCA and published in 40 CFR 230.

(b) That the discharge will consist of suitable material free from toxic pollutants in other than trace quantities.

(c) That the fill created by the discharge will be properly maintained to prevent erosion and other non-point sources of pollution, and

(d) That the discharge will not occur in a component of the National Wild and Scenic River System or in a component of a State wild and scenic river system.

RULES AND REGULATIONS

Dumping of Dredged Material Into Ocean Waters

(a) That the dumping will be carried out in conformity with the goals, objectives, and requirements of the EPA criteria established pursuant to Section 102 of the Marine Protection, Research and Sanctuaries Act of 1972, published in 40 CFR 220.228.

(b) That the permittee shall place a copy of this permit in a conspicuous place in the vessel to be used for the transportation and/or dumping of the dredged material as authorized herein.

This permit shall become effective on the date of the District Engineer's signature.

Permittee hereby accepts and agrees to comply with the terms and conditions of this permit.

.....
(Permittee)

.....
(Date)

By authority of the Secretary of the Army:

.....
(District Engineer)

.....
(Date)

Transferee hereby agrees to comply with the terms and conditions of this permit

.....
(Transferee)

.....
(Date)

APPENDIX B—MEMORANDUM OF UNDERSTANDING BETWEEN THE SECRETARY OF THE INTERIOR AND THE SECRETARY OF THE ARMY

In recognition of the responsibilities of the Secretary of the Army under sections 10 and 13 of the Act of March 3, 1899 (33 U.S.C. 403 and 407), relating to the control of dredging, filling, and excavation in the navigable waters of the United States, and the control of refuse in such waters, and the interrelationship of those responsibilities with the responsibilities of the Secretary of the Interior under the Federal Water Pollution Control Act, as amended (33 U.S.C. 466 et seq.), the Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661-666e), and the Fish and Wildlife Act of 1956, as amended (16 U.S.C. 742a et seq.), relating to the control and prevention of water pollution in such waters and the conservation of the Nation's natural resources and related environment, including fish and wildlife and recreational values therein; in recognition of our joint responsibilities under Executive Order No. 11258 to improve water quality through the prevention, control, and abatement of water pollution from Federal and federally licensed activities; and in recognition of other provisions of law and policy, we, the two Secretaries, adopt the following policies and procedures:

POLICIES

1. It is the policy of the two Secretaries that there shall be full coordination and cooperation between their respective Departments on the above responsibilities at all organizational levels, and it is their view that maximum efforts in the discharge of those responsibilities, including the resolution of differing views, must be undertaken at the earliest practicable time and at the field organizational unit most directly concerned. Accordingly, District Engineers of the U.S. Army Corps of Engineers shall coordinate with the Regional Directors of the Secretary of the Interior on fish and wildlife, recreation, and pollution problems associated with dredging, filling, and excavation operations to be conducted under permits issued under the 1899 Act in the navigable waters of the United States, and they shall avail themselves of the technical advice and assistance which such Directors may provide.

2. The Secretary of the Army will seek the advice and counsel of the Secretary of the Interior on difficult cases. If the Secretary of the Interior advises that proposed operations will unreasonably impair natural resources or the related environment, including the fish and wildlife and recreational values thereof, or will reduce the quality of such waters in violation of applicable water quality standards, the Secretary of the Army in acting on the request for a permit will carefully evaluate the advantages and benefits of the operations in relation to the resultant loss or damage, including all data presented by the Secretary of the Interior, and will either deny the permit or include such conditions in the permit as he determines to be in the public interest, including provisions that will assure compliance with water quality standards established in accordance with law.

PROCEDURES FOR CARRYING OUT THESE POLICIES

1. Upon receipt of an application for a permit for dredging, filling, excavation, or other related work in navigable waters of the United States, the District Engineers shall send notices to all interested parties, including the appropriate Regional Directors of the Federal Water Pollution Control Administration, the United States Fish and Wildlife Service, and the National Park Service of the Department of the Interior, and the appropriate State conservation, resources, and water pollution agencies.

2. Such Regional Directors of the Secretary of the Interior shall immediately make such studies and investigations as they deem necessary or desirable, consult with the appropriate State agencies, and advise the District Engineers whether the work proposed by the permit applicant, including the deposit of any material in or near the navigable waters of the United States, will reduce the quality of such waters in violation of applicable water quality standards or unreasonably impair natural resources or the related environment.

3. The District Engineer will hold public hearings on permit applications whenever response to a public notice indicates that hearings are desirable to afford all interested parties full opportunity to be heard on objections raised.

4. The District Engineer, in deciding whether a permit should be issued, shall weigh all relevant factors in reaching his decision. In any case where Directors of the Secretary of the Interior advise the District Engineers that proposed work will impair the water quality in violation of applicable water quality standards or unreasonably impair the natural resources or the related environment, he shall, within the limits of his responsibility, encourage the applicant to take steps that will resolve the objections to the work. Failing in this respect, the District Engineer shall forward the case for the consideration of the Chief of Engineers and the appropriate Regional Director of the Secretary of the Interior shall submit his views and recommendations to his agency's Washington Headquarters.

5. The Chief of Engineers shall refer to the Under Secretary of the Interior all those cases referred to him containing unresolved substantive differences of views and he shall include his analysis thereof, for the purpose of obtaining the Department of Interior's comments prior to final determination of the issues.

6. In those cases where the Chief of Engineers and the Under Secretary are unable to resolve the remaining issues, the cases will be referred to the Secretary of the Army for decision in consultation with the Secretary of the Interior.

7. If in the course of operations within this understanding, either Secretary finds its terms in need of modification, he may notify the other of the nature of the desired changes. In that event the Secretaries shall within 90 days negotiate such amendment as is considered desirable or may agree upon termination of this understanding at the end of the period.

Dated: July 13, 1967.

STEWART L. UDALL,
Secretary of the Interior.

Dated: July 13, 1967.

STANLEY RESOR,
Secretary of the Army.

PART 326—ENFORCEMENT

Sec	
326.1	Purpose
326.2	Discovery
326.3	Investigation
326.4	Legal Action
326.5	Processing After-the-Fact Applications.

AUTHORITY: 33 U.S.C. 401 et seq.; 33 U.S.C. 1344, 33 U.S.C. 1413.

§ 326.1 Purpose.

This regulation prescribes the policy, practice, and procedures to be followed by the Corps of Engineers in connection with activities requiring Department of the Army permits that are performed without prior authorization.

§ 326.2 Discovery of unauthorized activity in progress.

When the District Engineer becomes aware of any unauthorized activity which is still in progress, he shall immediately issue a cease and desist order to all persons responsible for and/or involved in the performance of the activity. If appropriate, the District Engineer may also order interim protective measures to be taken in order to protect the public interest.

§ 326.3 Investigation.

The District Engineer shall commence an immediate investigation of all unauthorized activities brought to his attention to ascertain the facts surrounding the activity. In making this investigation, the District Engineer shall solicit the views of the Regional Administrator of the Environmental Protection Agency, the Regional Director of the U.S. Fish and Wildlife Service, and the Regional Director of the National Marine Fisheries Service, and other appropriate Federal, State, and local agencies. He shall also request the persons involved in the unauthorized activity to provide appropriate information on the activity to assist him in his evaluation and in recommending the course of action to be taken. The District Engineer shall evaluate the information and views developed during this investigation in conjunction with the appropriate factors and criteria that pertain to the particular unauthorized activity as cited in 33 CFR Parts 320, 321, 322, 323, and 324, and the guidance contained in § 326.4, below. Following this evaluation, the District Engineer shall formulate recommendations as to the appropriate administrative and/or legal action to be taken.

§ 326.4 Legal action.

(a) District Engineers shall be guided by the following policies in determining whether an unauthorized activity requires appropriate legal action:

(1) *Criminal action.* Criminal action is considered appropriate when the facts surrounding an unauthorized activity reveal the necessity for punitive action and/or when deterrence of future unauthorized activities in the area is considered essential to the establishment or maintenance of a viable permit program.

(2) *Civil action.* Civil action is considered appropriate when the preliminary evaluation of the unauthorized activity reveals that (i) restoration is in the public interest and attempts to secure voluntary restoration have failed, or (ii) the unauthorized activity is in the public interest but must be altered or modified by judicial order because attempts to secure voluntary compliance have failed, or (iii) a civil penalty under Section 309 of the FWPCA is warranted.

(b) *Preparation of case.* If the District Engineer determines that legal action is appropriate, he shall prepare a litigation report which shall contain an analysis of the data and information obtained during his investigation and a recommendation of appropriate civil and criminal action. In those cases where the analysis of the facts developed during his investigation (when made in conjunction with the appropriate factors and criteria specified in 33 CFR Parts 320, 321, 322, 323, and 324) leads to the preliminary conclusion that removal of the unauthorized activity is in the public interest, the District Engineer shall also recommend restoration of the area to its original or comparable condition.

(c) *Referral to local U.S. Attorney.* Except as provided in subsection (d), District Engineers are authorized to refer the following cases directly to the local U.S. Attorney:

(1) All unauthorized structures or work in or affecting navigable waters of the United States that fall exclusively within the purview of Section 10 of the River and Harbor Act of 1899 (see 33 CFR Part 322) for which a criminal fine or penalty under Section 12 of that Act (33 USC 406) is considered appropriate.

(2) All civil actions involving small unauthorized structures, such as piers, which the District Engineer determines are (i) not in the public interest and therefore must be removed, or (ii) are in the public interest but must be altered or modified by judicial order, because attempts to secure voluntary compliance have failed.

(3) All violations of Section 301 of the Federal Water Pollution Control Act Amendment, of 1972 (33 USC 1311) involving the unauthorized discharge of dredged or fill material into the waters of the United States where the District Engineer determines, with the concurrence of the Regional Administrator, that civil and/or criminal action pursuant to Section 309 of the FWPCA is appropriate.

(4) All cases for which a temporary restraining order and/or preliminary in-

junction is appropriate following non-compliance with a cease and desist order.

Information copies of all letters of referral shall be forwarded to the Chief of Engineers, ATTN: DAEN-CCK, and the Chief Pollution Control Section, Land and Natural Resources Division, Department of Justice, Washington, D.C. 20530.

(d) *Referral to Office, Chief of Engineers.* District Engineers shall prepare and forward a litigation report to the Office, Chief of Engineers, ATTN: DAEN-CCK, for all other cases not identified in subsection (c) in which civil and/or criminal action is considered appropriate, including:

(1) All cases involving significant questions of law or fact;

(2) All cases involving discharges of dredged or fill material into waters of the United States that are not interstate waters or navigable waters of the United States, or part of a surface tributary system to these waters;

(3) All cases involving recommendations for substantial or complete restoration;

(4) All cases involving violations of Section 9 of the River and Harbor Act of 1899; and

(5) All cases involving violations of the Marine Protection, Research and Sanctuaries Act of 1972.

(e) If the District Engineer refers a case to the local U.S. Attorney or if criminal and/or civil action is instituted against the responsible person for any unauthorized activity, the District Engineer shall not accept for processing any application for a Department of the Army permit until final disposition of the referral action and/or all judicial proceedings, including the payment of all prescribed penalties and fines and/or completion of all work ordered by the court. Thereafter, the District Engineer may accept an application for a permit; provided, that with respect to any judicial order requiring partial or total restoration of an area, the District Engineer, if so ordered by the court, shall supervise this restoration effort and may allow the responsible persons to apply for a permit for only that portion of the unauthorized activity for which restoration has not been so ordered.

§ 326.5 Processing after-the-fact applications.

In those cases in which the District Engineer determines that the unauthorized activity does not warrant legal action, the following procedures shall be followed:

(a) Processing and evaluation of applications for after-the-fact authorizations for activities undertaken without the required Department of the Army permits will in all other respects follow the standard policies and procedures of 33 CFR Parts 320-325. Thus, authorization may still be denied in accordance with the policies and procedures of those regulations.

(b) Where after-the-fact authorization is determined to be in the public interest, the standard permit form for the activity will be used omitting inappropriate

conditions, and including whatever special conditions the District Engineer may deem appropriate to mitigate or prevent undesirable effects which may have occurred or might occur.

(c) Where after-the-fact authorization is not determined to be in the public interest, the notification of the denial of the permit will prescribe any corrective actions to be taken in connection with the work already accomplished, including restoration of those areas subject to denial, and establish a reasonable period of time for the applicant to complete such actions. The District Engineer, after denial of the permit, will again consider whether civil and/or criminal action is appropriate in accordance with § 326.4.

(d) If the applicant declines to accept the proposed permit conditions, or fails to take corrective action prescribed in the notification of denial, or if the District Engineer determines, after denying the permit application, that legal action is appropriate, the matter will be referred to the Chief of Engineers, ATTN: DAEN-CCK, with recommendations for appropriate action.

PART 327—PUBLIC HEARINGS

Sec	Purpose
327.1	Applicability
327.2	Definitions
327.3	General policies
327.4	Presiding officer
327.5	Legal adviser
327.6	Representation
327.7	Conduct of hearings
327.8	Filing of transcript of the public hearing
327.9	Powers of the presiding officer
327.10	Public notice

Authority: 33 USC 1344, 33 USC 1413

§ 327.1 Purpose.

This regulation prescribes the policy practice and procedures to be followed by the U.S. Army Corps of Engineers in the conduct of public hearings conducted in the evaluation of a proposed Department of the Army permit action or Federal project as defined in § 327.3 below including those held pursuant to Section 404 of the Federal Water Pollution Control Act (FWPCA) (33 USC 1344) and Section 103 of the Marine Protection Research and Sanctuaries Act (MPRSA) as amended (33 USC 1413).

§ 327.2 Applicability.

This regulation is applicable to all Divisions and Districts responsible for the conduct of public hearings.

§ 327.3 Definitions.

(a) Public hearing means a public proceeding conducted for the purpose of acquiring information or evidence which will be considered in evaluating a proposed Department of the Army permit action, or Federal project, and which affords to the public the opportunity to present their views, opinions, and information on such permit actions or Federal projects.

(b) Permit action, as used herein means the review of an application for permit pursuant to Section 10 of the

River and Harbor Act of 1899 (33 U.S.C. 403). Section 404 of the FWPCA (33 U.S.C. 1344), the Outer Continental Shelf Act (43 U.S.C. 1333(f)), and Section 103 of the MPRSA of 1972, as amended (33 U.S.C. 1713), or the modification or revocation of any Department of the Army permit. (See 33 CFR 325.7.)

(c) Federal project means a Corps of Engineers project (work or activity of any nature for any purpose which is to be performed by the Chief of Engineers pursuant to Congressional authorizations) involving the discharge of dredged or fill material into waters of the United States or the transportation of dredged material for the purpose of dumping it in ocean waters subject to Section 404 of the FWPCA (33 U.S.C. 1344) or Section 103 of the MPRSA, as amended (33 U.S.C. 1413; and 33 CFR 209.145. (This regulation supersedes all references to public meetings in 33 CFR 209.145.)

§ 327.4 General policies.

(a) A public hearing will be held in connection with the consideration of a Department of the Army permit application under Section 404 of the FWPCA or Section 103 of the MPRSA, or a Federal project whenever a public hearing will assist in making a decision on such permit application or Federal project. In addition, a public hearing may be held when it is proposed to modify or revoke a permit. (See 33 CFR 325.7.)

(b) Unless the public notice specifies that a public hearing will be held, any person may request, in writing, within the comment period specified in the public notice on a Department of the Army permit application under Section 404 of the FWPCA or Section 103 of the MPRSA or on a Federal project, that a public hearing be held to consider the material matters in issue in the permit application or Federal project. Upon receipt of any such request, stating with particularity the reasons for holding a public hearing, the District Engineer shall promptly set a time and place for the public hearing, and give due notice thereof, as prescribed in § 327.11 below. Requests for a public hearing under this paragraph shall be granted, unless the District Engineer determines that the issues raised are insubstantial or there is otherwise no valid interest to be served by a hearing. The District Engineer will make such a determination in writing, and communicate his reasons therefor to the requesting parties.

(c) In cases involving the evaluation of a Department of the Army permit application only under Section 10 of the River and Harbor Act of 1899 (33 U.S.C. 403), public hearings will be held upon written request whenever the District Engineer determines that there is sufficient public interest to warrant such action. Among the instances warranting public hearings are general public opposition to a proposed work, Congressional requests or requests from responsible local authorities, or controversial cases involving significant environmental issues.

(d) In case of doubt, a public hearing shall be held. HQDA has the discretionary power to require hearings in any case.

(e) In fixing the time and place for a hearing, due regard shall be had for the convenience and necessity of the interested public.

§ 327.5 Presiding officer.

(a) The District Engineer, in whose District a matter arises, shall normally serve as the Presiding Officer. When the District Engineer is unable to serve, he may designate the Deputy District Engineer as such Presiding Officer. In any case, he may request the Division Engineer to designate another Presiding Officer. In cases of unusual interest, the Chief of Engineers reserves the power to appoint such person as he deems appropriate to serve as the Presiding Officer.

(b) The Presiding Officer in each case shall establish a hearing file. The hearing file shall include a copy of any permit application or permits and supporting data, any public notices issued in the case, the request or requests for the hearing and any data or material submitted in justification thereof, materials submitted in opposition to the proposed action, the hearing transcript, and such other material as may be relevant or pertinent to the subject matter of the hearing. The hearing file shall be available for public inspection with the exception of material exempt from disclosure under the Freedom of Information Act.

§ 327.6 Legal adviser.

In each public hearing, the District Counsel or his designee shall serve as legal adviser to the Presiding Officer in ruling upon legal matters and issues that may arise.

§ 327.7 Representation.

At the public hearing, any person may appear on his own behalf, and may be represented by counsel, or by other representatives.

§ 327.8 Conduct of hearings.

(a) Hearings shall be conducted by the Presiding Officer in an orderly but expeditious manner. Any person shall be permitted to submit oral or written statements concerning the subject matter of the hearing, to call witnesses who may present oral statements, and to present recommendations as to an appropriate decision. Any person may present written statements for the hearing file prior to the time the hearing file is closed to public submissions, and may present proposed findings and recommendations. The Presiding Officer shall afford participants an opportunity for rebuttal.

(b) The Presiding Officer shall have discretion to establish reasonable limits upon the time allowed for statements of witnesses, for arguments of parties or their counsel or representatives, and upon the number of rebuttals.

(c) Cross-examination of witnesses shall not be permitted.

(d) All public hearings shall be reported verbatim. Copies of the transcripts of proceedings may be purchased

by any person from the Corps of Engineers or the reporter of such hearing. A copy will be available for public inspection at the office of the appropriate District Engineer.

(e) All written statements, charts, tabulations, and similar data offered in evidence at the hearing shall, subject to exclusion by the Presiding Officer for reasons of redundancy, be received in evidence and shall constitute a part of the hearing file.

(f) At any hearing, the Presiding Officer shall make an opening statement, outlining the purpose of the hearing and prescribing the general procedures to be followed. The Presiding Officer shall afford participants an opportunity to respond to his opening statement.

(g) The Presiding Officer shall allow a period of 10 days after the close of the public hearing for submission of written comments. After such time has expired, unless such period is extended by the Presiding Officer or the Chief of Engineers for good cause, the hearing file shall be closed to additional public written comments.

(h) In appropriate cases, the District Engineer may participate in joint public hearings with other Federal or State agencies, provided the procedures of those hearings meet the requirements of this regulation. In those cases in which the other Federal or State agency is required to allow cross-examination in its public hearing, the District Engineer may still participate in the joint public hearing but shall not require cross examination as a part of his participation.

(i) The procedures in subparagraphs (d), (f) and (g) of this Section may be waived by the Presiding Officer in appropriate cases.

§ 327.9 Filing of transcript of the public hearing.

Where the Presiding Officer is the initial action authority, the transcript of the public hearing, together with all evidence introduced at the public hearing, shall be made a part of the administrative record of the permit action or Federal project. The initial action authority shall fully consider the matters discussed at the public hearing in arriving at his initial decision or recommendation and shall address, in his decision or recommendation, all substantial and valid issues presented at the hearing. Where a person other than the initial action authority serves as Presiding Officer, such person shall forward the transcript of the public hearing and all evidence received in connection therewith to the initial action authority together with a report summarizing the issues covered at the hearing. The report of the Presiding Officer and the transcript of the public hearing and evidence submitted there shall in such cases be fully considered by the initial action authority in making his decision or recommendation to higher authority as to such permit action or Federal project.

§ 327.10 Powers of the Presiding Officer.

Presiding Officers shall have the following powers:

(a) To regulate the course of hearing including the order of all sessions and the scheduling thereof, after any initial session, and the recessing, reconvening, and adjournment thereof; and

(b) To take any other action necessary or appropriate to the discharge of the duties vested in them, consistent with the statutory or other authority under which the Chief of Engineers functions, and with the policies and directives of the Chief of Engineers and the Secretary of the Army.

§ 327.11 Public notice.

(a) Public notice shall be given of any public hearing to be held pursuant to this regulation. Such notice shall provide for a period of not less than 30 days following the date of public notice during which time interested parties may prepare themselves for the hearing, except that, in cases of public necessity, a shorter time may be allowed. Notice shall also be given to all Federal agencies affected by the proposed action, and to State and local agencies having an interest in the subject matter of the hearing. Notice shall be sent to all persons requesting a hearing and shall be posted in appropriate government buildings and published in newspapers of general circulation.

(b) The notice shall contain time, place, and nature of hearing; the legal authority and jurisdiction under which the hearing is held; and location of and availability of the draft Environmental Impact Statement or Environmental Assessment.

PART 328—HARBOR LINES

Sec.	
328.1	Purpose and scope
328.2	Applicability
328.3	References
328.4	Definition
328.5	The purpose of harbor lines
328.6	Establishment or modification of harbor lines

AUTHORITY: 33 USC 401 et seq.

§ 328.1 Purpose and scope.

This regulation prescribes the policy, practice and procedures concerning harbor lines and any work in navigable waters of the United States shoreward of such lines.

§ 328.2 Applicability.

This regulation is applicable to all Corps of Engineers activities and installations having Civil Work responsibilities.

§ 328.3 References.

(a) Section 11 of the River and Harbor Act of 1899 (33 USC 404).

(b) Section 10 of the River and Harbor Act of 1899 (33 USC 403).

(c) Public Law 91-190, the National Environmental Policy Act of 1969.

§ 328.4 Definition.

The term "harbor lines" is used here in its generic sense. It includes types of harbor lines frequently referred to by other names, including, for example, pierhead lines and bulkhead lines.

§ 328.5 The purpose of harbor lines.

(a) Under previous policies, practices and procedures, riparian owners could erect open pile structures or undertake solid fill construction shoreward of established harbor lines without obtaining a permit under 33 USC 403. This was a matter of great concern, particularly in cases involving long established harbor lines, since all factors affecting the public interest may not have been taken into account at the time the lines were established. Accordingly, under previous policies, practices and procedures there was the danger that work shoreward of existing harbor lines could be undertaken without appropriate consideration having been given to the impact which such work may have on the environment and without a judgment having been made as to whether or not the work was, on balance, in the public interest.

(b) In order to assure that the public interest will be considered and protected in all instances, all existing and future harbor lines were declared on 27 May 1970 (33 CFR 209.150) to be guidelines for defining, with respect to the impact on navigation interests alone, the offshore limits of open pile structures (pierhead lines) or fills (bulkhead lines). A permit under 33 USC 403 is required in each case for any work which is commenced shoreward of existing or future harbor lines after 27 May 1970. Applications for permits for work in navigable waters of the United States shoreward of harbor lines shall be filed and processed in accordance with the provisions of 33 CFR Part 325. No permit is required for work completed or commenced prior to 27 May 1970 in conformance with existing harbor line authority.

§ 328.6 Establishment or modification of harbor lines.

Applications for the establishment of new harbor lines or the modification of existing harbor lines will be processed in a manner similar to applications for permits for work in navigable waters of the United States. Public notice concerning any such application will be sent to all parties known or believed to be interested in the application and a copy of the notice will be posted in post offices or other public places in the area. Public notice must contain providing information relative to any harbor line application shall make it clear that harbor lines are guidelines for defining, with respect to the impact on navigation interests alone, the offshore limits of open pile structures or fills and that the establishment of a harbor line carries with it no presumption that individual applications for permits to undertake work shoreward of any harbor line will be granted. Public hearings will be held in connection with applications for the establishment or modification of harbor lines whenever there appears to be sufficient public interest to justify the holding of a public hearing or when responsible Federal, State or local authorities, including members of the Congress, request that a hearing be held and it is likely that information will be presented at the hearing that will be of assistance in determining whether the harbor line should be established or modified. District Engineers will forward all recommendations concerning the establishment or modification of harbor line through the appropriate Division Engineer to the Office of the Chief of Engineers, DAEN-CWO-N. No new harbor lines will be established and no existing harbor lines will be modified unless specifically authorized by the Chief of Engineers.

PART 329—DEFINITION OF NAVIGABLE WATERS OF THE UNITED STATES

Sec.	Purpose
329.1	Applicability
329.2	General policies
329.3	General definitions
329.4	General scope of determinations
329.5	Interstate or foreign commerce
329.6	Intrastate or interstate nature of waterway
329.7	Improved or natural conditions of waterway
329.8	Time at which commerce exists or determination is made
329.9	Existence of obstructions
329.10	Geographic and jurisdictional limit of rivers and lakes
329.11	Geographic and jurisdictional limit of oceanic and tidal waters
329.12	Geographic limits, shifting boundaries
329.13	Determination of navigability
329.14	Inquiries regarding determinations
329.15	Use and maintenance of lists of determinations

AUTHORITY: 33 USC 401 et seq.

§ 329.1 Purpose.

This regulation defines the term "navigable waters of the United States" as it is used to define authorities of the Corps of Engineers. It also prescribes the policy, practice and procedure to be used in determining the extent of the jurisdiction of the Corps of Engineers and in answering inquiries concerning "navigable waters."

§ 329.2 Applicability.

This regulation is applicable to all Corps of Engineers Districts and Divisions having Civil Works responsibilities.

§ 329.3 General policies.

Precise definitions of "navigable waters" or "navigability" are ultimately dependent on judicial interpretation and cannot be made conclusively by administrative agencies. However, the policy and criteria contained in this regulation are in close conformance with the test used by the Federal Courts and determinations made under this regulation are considered binding in regard to the activities of the Corps of Engineers.

§ 329.4 General definition.

Navigable waters of the United States are those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use in transport interstate or foreign commerce. A determination of navigability

nce made, applies laterally over the entire surface of the waterbody, and is not extinguished by later actions or events which impede or destroy navigable capacity.

§ 329.5 General scope of determination.

The several factors which must be examined when making a determination whether a waterbody is a navigable water of the United States are discussed in detail below. Generally, the following conditions must be satisfied:

- (a) Past, present, or potential presence of interstate or foreign commerce.
- (b) Physical capabilities for use by commerce as in subparagraph (a) above; and
- (c) Defined geographic limits of the waterbody.

§ 329.6 Interstate or foreign commerce.

(a) *Nature of Commerce: type, means, and extent of use.* The types of commercial use of a waterway are extremely varied and will depend on the character of the region, its products, and the difficulties or dangers of navigation. It is the waterbody's capability of use by the public for purposes of transportation of commerce which is the determinative factor, and not the time, extent or manner of that use. As discussed in § 329.9 below, it is sufficient to establish the potential for commercial use at any past, present, or future time. Thus, sufficient commerce may be shown by historical use of canoes, bateaux, or other frontier craft, as long as that type of boat was common or well-suited to the place and period. Similarly, the particular items of commerce may vary widely, depending again on the region and period. The goods involved might be grain, furs, or other commerce of the time. Logs are a common example; transportation of logs has been a substantial and well-recognized commercial use of many navigable waters of the United States. Note, however, that the mere presence of floating logs will not of itself make the river "navigable"; the logs must have been related to a commercial venture. Similarly, the presence of recreational craft may indicate that a waterbody is capable of bearing some forms of commerce, either presently, in the future, or at a past point in time.

(b) *Nature of commerce: interstate and intrastate.* Interstate commerce may of course be existent on an intrastate voyage which occurs only between waters within the same state. It is only necessary that goods may be brought from, or eventually be destined to go to, another state. (For purposes of this regulation, the term "interstate commerce" hereinafter includes "foreign commerce" as well.)

§ 329.7 Intrastate or interstate nature of waterway.

A waterbody may be entirely within a state, yet still be capable of carrying interstate commerce. This is especially clear when it physically connects with a generally acknowledged avenue of

interstate commerce, such as the ocean or one of the Great Lakes, and is yet wholly within one state. Nor is it necessary that there be a physically navigable connection across a state boundary. Where a waterbody extends through one or more states, but substantial portions, which are capable of bearing interstate commerce, are located in only one of the states, the entirety of the waterway up to the head (upper limit) of navigation is subject to Federal jurisdiction.

§ 329.8 Improved or natural conditions of the waterbody.

Determinations are not limited to the natural or original condition of the waterbody. Navigability may also be found where artificial aids have been or may be used to make the waterbody suitable for use in navigation.

(a) *Existing improvements: artificial waterbodies.* (1) An artificial channel may often constitute a navigable water of the United States, even though it has been privately developed and maintained, or passes through private property. The test is generally as developed above, that is, whether the waterbody is capable of use to transport interstate commerce. Canals which connect two navigable waters of the United States and which are used for commerce clearly fall within the test, and themselves become navigable. A canal open to navigable waters of the United States on only one end is itself navigable where it in fact supports interstate commerce. A canal or other artificial waterbody that is subject to ebb and flow of the tide is also a navigable water of the United States.

(2) The artificial waterbody may be a major portion of a river or harbor area or merely a minor backwash, slip, or turning area. (See § 329.12(b).)

(3) Private ownership of the lands underlying the waterbody, or of the lands through which it runs, does not preclude a finding of navigability. Ownership does become a controlling factor if a privately constructed and operated canal is not used to transport interstate commerce nor used by the public; it is then not considered to be a navigable water of the United States. However, a private waterbody, even though not itself navigable, may so affect the navigable capacity of nearby waters as to nevertheless be subject to certain regulatory authorities.

(b) *Non-existing improvements, past or potential.* A waterbody may also be considered navigable depending on the feasibility of use to transport interstate commerce after the construction of whatever "reasonable" improvements may potentially be made. The improvements need not exist, be planned, nor even authorized; it is enough that potentially they could be made. What is a "reasonable" improvement is always a matter of degree; there must be a balance between cost and need at a time when the improvement would be (or would have been) useful. Thus, if an

improvement were "reasonable" at a time of past use, the water was therefore navigable in law from that time forward. The changes in engineering practices or the coming of new industries with varying classes of freight may affect the type of the improvement; those which may be entirely reasonable in a thickly populated, highly developed industrial region may have been entirely too costly for the same region in the days of the pioneers. The determination of reasonable improvement is often similar to the cost analyses presently made in Corps of Engineers studies.

§ 329.9 Time at which commerce exists or determination is made.

(a) *Past use.* A waterbody which was navigable in its natural or improved state, or which was susceptible of reasonable improvement (as discussed in § 329.8(b) above) retains its character as "navigable in law" even though it is not presently used for commerce, or is presently incapable of such use because of changed conditions or the presence of obstructions. Nor does absence of use because of changed economic conditions affect the legal character of the waterbody. Once having attained the character of "navigable in law," the Federal authority remains in existence and cannot be abandoned by administrative officers or court action. Nor is mere inattention or ambiguous action by Congress an abandonment of Federal control. However, express statutory declarations by Congress that described portions of a waterbody are nonnavigable, or have been abandoned, are binding upon the Department of the Army. Each statute must be carefully examined, since Congress often reserves the power to amend the Act, or assigns special duties of supervision and control to the Secretary of the Army or Chief of Engineers.

(b) *Future or potential use.* Navigability may also be found in a waterbody's susceptibility for use in its ordinary condition or by reasonable improvement to transport interstate commerce. This may be either in its natural or improved condition, and may thus be existent although there has been no actual use to date. Non-use in the past therefore does not prevent recognition of the potential for future use.

§ 329.10 Existence of obstructions.

A stream may be navigable despite the existence of falls, rapids, sand bars, bridges, portages, shifting currents, or similar obstructions. Thus, a waterway in its original condition might have had substantial obstructions which were overcome by frontier boats and/or portages, and nevertheless be a "channel" for commerce, even though boats had to be removed from the water in some stretches, or logs be brought around an obstruction by means of artificial chutes. However, the question is ultimately a matter of degree, and it must be recognized that there is some point beyond which navigability could not be established.

§ 329.11 Geographic and jurisdictional limits of rivers and lakes.

(a) *Jurisdiction over entire bed.* Federal regulatory jurisdiction, and powers of improvement for navigation, extend laterally to the entire water surface and bed of a navigable waterbody, which includes all the land and waters below the ordinary high water mark.

(1) The "ordinary high water mark" on non-tidal rivers is the line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter and debris; or other appropriate means that consider the characteristics of the surrounding areas.

(2) Ownership of a river or lake bed or of the lands between high and low water marks will vary according to state law; however, private ownership of the underlying lands has no bearing on the existence or extent of the dominant Federal jurisdiction over a navigable waterbody.

(b) *Upper limit of navigability.* The character of a river will, at some point along its length, change from navigable to non-navigable. Very often that point will be at a major fall or rapids, or other place where there is a marked decrease in the navigable capacity of the river. The upper limit will therefore often be the same point traditionally recognized as the head of navigation, but may, under some of the tests described above, be at some point yet further upstream.

§ 329.12 Geographic and jurisdictional limits of oceanic and tidal waters.

(a) *Ocean and coastal waters.* The navigable waters of the United States over which Corps of Engineers regulatory jurisdiction extends include all ocean and coastal waters within a zone three geographic (nautical) miles seaward from the coast line. Wider zones are recognized for special regulatory powers, such as those exercised over the Outer Continental Shelf.

(1) *Coast line defined.* Generally, where the shore directly contacts the open sea, the line on the shore reached by the ordinary low tides comprises the coast line from which the distance of three geographic miles is measured. On the Pacific coast the line of mean lower low water is used. The line has significance for both domestic and international law (in which it is termed the "baseline"), and is subject to precise definitions. Special problems arise when offshore rocks, islands, or other bodies exist, and the line may have to be drawn to seaward of such bodies.

(2) *Seaward limit of jurisdiction.* Regulatory jurisdiction in coastal areas extends to the line on the shore reached by the plane of the mean (average) high water. However, on the Pacific coast, the line reached by the mean of the higher high waters is used. Where precise determination of the actual location of the line becomes necessary, it must be established by survey with reference to

the available tidal datum, preferably averaged over a period of 18.6 years. Less precise methods, such as observation of the "apparent shoreline" which is determined by reference to physical markings, lines of vegetation, or changes in type of vegetation, may be used only where an estimate is needed of the line reached by the mean high water.

(b) *Bays and estuaries.* Regulatory jurisdiction extends to the entire surface and bed of all waterbodies subject to tidal action. Jurisdiction thus extends to the edge (as determined by § 329.12(a)) (2) above) of all such waterbodies, even though portions of the waterbody may be extremely shallow, or obstructed by shoals, vegetation, or other barriers. Marshlands and similar areas are thus considered "navigable in law," but only so far as the area is subject to inundation by the mean high waters. The relevant test is therefore the presence of the mean high tidal waters, and not the general test described above, which generally applies to inland rivers and lakes.

§ 329.13 Geographic limits: shifting boundaries.

Permanent changes of the shoreline configuration result in similar alterations of the boundaries of the navigable waters of the United States. Thus, gradual changes which are due to natural causes and are perceptible only over some period of time constitute changes in the bed of a waterbody which also change the shoreline boundaries of the navigable waters of the United States. However, an area will remain "navigable in law," even though no longer covered with water, whenever the change has occurred suddenly, or was caused by artificial forces intended to produce that change. For example, shifting sand bars within a river or estuary remain part of the navigable water of the United States, regardless that they may be dry at a particular point in time.

§ 329.14 Determination of navigability.

(a) *Effect on determinations.* Although conclusive determinations of navigability can be made only by Federal Courts, those made by Federal agencies are nevertheless accorded substantial weight by the courts. It is therefore necessary that when jurisdictional questions arise, District personnel carefully investigate those waters which may be subject to Federal regulatory jurisdiction under the guidelines set out above, as the resulting determination may have substantial impact upon a judicial body. Official determinations by an agency made in the past can be revised or reversed as necessary to reflect changed rules or interpretations of the law.

(b) *Procedure of determination.* A determination whether a waterbody is a navigable water of the United States will be made by the Division Engineer, and will be based on a report of findings prepared at the District level in accordance with the criteria set out in this regulation. Each report of findings will be prepared by the District Engineer, accompanied by an opinion of the District Court, and forwarded to the Division

Engineer for a final determination. Each report of findings will be based substantially on applicable portions of the format in subparagraph (c) below.

(c) *Suggested format of report of findings:*

- (1) Name of waterbody.....
- (2) Tributary to.....
- (3) Physical characteristics.....
- (4) Type (river, bay, slough, estuary, etc.).....
- (5) Length.....
- (6) Approximate discharge volumes.....
 - Maximum.....
 - Minimum.....
 - Mean.....
- (7) Fall per mile.....
- (8) Extent of tidal influence.....
- (9) Range between ordinary high and ordinary low water.....
- (10) Description of improvements to navigation not listed in subparagraph (9) below.....
- (11) Nature and location of significant obstructions to navigation in portions of the waterbody used or potentially capable of use in interstate commerce.....
- (12) Authorized projects.....
 - (i) Nature, condition and location of any improvements made under projects authorized by Congress.....
 - (ii) Description of projects authorized but not constructed.....
 - (iii) List of known survey documents or reports describing the waterbody.....
- (13) Past or present interstate commerce.....
 - (i) General types, extent, and period in time.....
 - (ii) Documentation if necessary.....
 - (iii) Potential use for interstate commerce if applicable.....
 - (A) If in natural condition.....
 - (B) If improved.....
 - (iv) Nature of jurisdiction known to have been exercised by Federal agencies if any.....
 - (v) State or Federal court decisions relating to navigability of the waterbody, if any.....
- (14) Remarks.....
- (15) Finding of navigability (with date) and recommendation for determination.....

§ 329.15 Inquiries regarding determinations.

(a) *Findings and determinations.* should be made whenever a question arises regarding the navigability of a waterbody. Where no determination has been made, a report of findings will be prepared and forwarded to the Division Engineer, as described above. Inquiries may be answered by an interim reply which indicates that a final agency determination must be made by the Division Engineer. If a need develops for an emergency determination, District Engineers may act in reliance on a finding prepared as in § 329.14 above. The report of findings should then be forwarded to the Division Engineer on an expedited basis.

(b) Where determinations have been made by the Division Engineer, inquiries regarding the navigability of specific portions of waterbodies covered by these determinations may be answered as follows:

This Department, in the administration of the laws enacted by Congress for the protection and preservation of the navigable waters of the United States, has determined that (River) (Bay) (Lake, etc.) is a navigable water of the United States from to . Actions which modify or otherwise affect those waters are subject to the jurisdiction of this Department.

RULES AND REGULATIONS

whether such actions occur within or outside the navigable areas.

(c) Specific inquiries regarding the jurisdiction of the Corps of Engineers can be answered only after a determination whether (1) the waters are navigable waters of the United States or (2) if not navigable, whether the proposed type of activity may nevertheless so affect the navigable waters of the United States that the assertion of regulatory jurisdiction is deemed necessary.

§ 329.16 Use and maintenance of lists of determinations.

(a) Tabulated lists of final determinations of navigability are to be maintained in each District office, and be updated as necessitated by court decisions, jurisdictional inquiries, or other changed conditions.

(b) It should be noted that the lists represent only those waterbodies for which determinations have been made; absence from that list should not be

taken as an indication that the waterbody is not navigable.

(c) Deletions from the list are not authorized. If a change in status of a waterbody from navigable to non-navigable is deemed necessary, an updated finding should be forwarded to the Division Engineer; changes are not considered final until a determination has been made by the Division Engineer.

[FR Doc. 77-20484 Filed 7-18-77; 8:46 am]

[3710-92]

DEPARTMENT OF DEFENSE

Corps of Engineers, Department of the Army

[33 CFR Part 239]

WATER RESOURCES POLICIES AND AUTHORITIES

Implementation of Executive Order 11988 on
Floodplain Management

AGENCY: U.S. Army Corps of Engineers.

ACTION: Proposed regulation.

SUMMARY: This proposed regulation prescribes policies to be used by the Corps of Engineers in implementing Executive Order 11988, Floodplain Management as it pertains to the planning, design and construction of civil works projects, and to the activities under the operation and maintenance and the regulatory programs of the Corps.

DATE: Comments must be received by June 24, 1978.

FOR FURTHER INFORMATION
CONTACT:

Mr. Maurice B. Jackson, 202 693-6807, or write: Office of the Chief of Engineers, Forrestal Building, Washington, D.C. 20314, Attn: DAEN-CWR-R.

Dated: May 19, 1978.

C. A. SELLECK, Jr.,
Colonel, Corps of Engineers,
Executive Director of Civil Works.

PART 239—WATER RESOURCES POLICIES AND AUTHORITIES: IMPLEMENTATION OF EXECUTIVE ORDER 11988 ON FLOOD PLAIN MAN- AGEMENT

Sec

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AUTHORITY: E.O. 11988, 43 FR 6030, February 10, 1978.

§ 239.1 Purpose.

The purpose of this regulation is to provide policy and guidance for Corps of Engineers implementation of Executive Order 11988, Floodplain Management, as it pertains to the planning, design and construction of Civil Works projects, and to the activities under the operation and maintenance and the regulatory programs of the Corps.

§ 239.2 Applicability.

This regulation is applicable to all OCE elements and all field operating agencies having Civil Works responsibilities.

§ 239.3 References.

- (a) Executive Order 11988, Floodplain Management, May 24, 1977.
- (b) Water Resources Council, Floodplain Management Guidelines for Implementing E.O. 11988, February 10, 1978 (43 FR 6030).
- (c) Water Resources Council, A Unified National Program for Flood Plain Management, July 1976.
- (d) 33 CFR Parts 320 through 329 (42 FR 37121-37164, July 19, 1977).
- (e) ER 1105-210.
- (f) ER 1105-2-230.
- (g) ER 1105-2-240.
- (h) ER 1105-2-250.
- (i) ER 1105-2-351.
- (j) ER 1105-2-502.
- (k) ER 1105-2-800.
- (l) ER 1105-2-811.
- (m) ER 1120-2-117.
- (n) ER 1165-2-500.

§ 239.4 Definitions.

(a) "Action" is any Federal activity including (1) acquiring, managing, and disposing of Federal lands and facilities, (2) providing federally undertaken, financed, or assisted construction and improvements, and (3) conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities.

(b) "Base Floodplain" is the one percent chance floodplain.

(c) "Minimize" is to reduce to the smallest possible amount or degree.

(d) "Practicable" is capable of being done within existing constraints. The test of what is practicable depends upon the situation and includes consideration of the pertinent factors, such as environment, cost or technology.

(e) "Preserve" is to prevent modification to the natural floodplain environment or to maintain it as closely as possible to its natural state.

(f) "Restore" is to reestablish a setting or environment in which the natural functions of the floodplain can again operate.

§ 239.5 Background.

Executive Order 11988, Floodplain Management, signed May 24, 1977, revoked and replaced Executive Order 11296 issued August 10, 1966. The new Order is based in part on the National Environmental Policy Act of 1969 (NEPA) and adds new prominence to the environmental aspects of floodplains that were not present in Executive Order 11296. Federal agencies are required, during the decisionmaking process, to recognize significant public

values of floodplains and to consider the public benefits that will be derived from the restoration and preservation of floodplains. The new Order requires agencies to amend their existing procedures and regulations within a year in consultation with the Water Resources Council (WRC), Federal Insurance Administration (FIA) and the Council on Environmental Quality (CEQ). In this regard, a task force formed under the leadership of WRC for the purpose of developing guidance on the interpretation of the Order to assist Federal agencies in developing their procedures and regulations. The efforts of the task force resulted in the publication of the Floodplain Management Guidelines for Implementing E.O. 11988 in the *Federal Register* on February 10, 1978 (43 FR 6030) (Reference 3b). The guidelines provide an explanation of key terms in the Order, floodplain management concepts, and procedures necessary to comply with the EO. The Order requires that agency procedures incorporate the conceptual framework of floodplain management as set out in the "Unified National Program for Flood Plain Management" (Reference 3c). The Unified Program has as a sound floodplain management embodied the "wise use, conservation, development and utilization of related land and water resources" and objectives of economic efficiency, environmental quality and social justice being as consonant with responsibilities assigned to respective levels of government by law."

§ 239.6 The objective of the order.

The objective of the Executive Order is to avoid to the extent possible the long and short term adverse impacts associated with occupation, modification of floodplains, and avoid direct and indirect impacts on floodplain development where there is a practicable alternative. The Order requires Federal agencies provide leadership and take action:

(a) Avoid the base floodplain. It is the only practicable alternative.

(b) Reduce the hazard and flood loss.

(c) Minimize the impact of flood on human safety, health and welfare.

(d) Restore and preserve the natural and beneficial floodplain. Direct support of floodplain development is an action in the floodplain that encourages, allows, or otherwise facilitates additional floodplain development. An example of direct support would be provision of protection measures to increase underutilized floodplain for the purposes of permitting future development and growth.

§ 239.7 General policy.

It shall be Corps policy to support projects which, to the extent

use of floodplains and avoid inducing development in the base floodplain unless there is no practicable alternative to the development. The determination whether a practicable alternative exists shall be based on the advantages and disadvantages of floodplain sites and non-floodplain sites. Factors to be considered include recreation, economics, aesthetics, natural and beneficial values served by floodplains, impact of floods on human safety, locational advantage, functional need for locating the development in the floodplain, historic values, fish and wildlife habitat values, endangered and threatened species, Federal and State designations of wild scenic rivers, refuges, etc., recreation, water supply, water quality, food production, and, in general, the needs and welfare of the people. The test of practicability will apply to both the proposed action and to any induced development caused by the action. When it is determined that no practicable alternative to actions in the floodplain exists, the features or qualities of the floodplain that make it advantageous to locate alternative non-floodplain sites must be described and adequately supported. The practicability analysis is required for lots or small tracts of undeveloped lands in closely spaced urban areas, unless these vacant areas have lost most of the unique environmental values associated with undisturbed floodplains.

8. General procedures.

The basic determinations necessary to implement the Executive Order are:

- (a) Determine whether the proposed action is in the base floodplain.

If so, determine whether there is a practicable alternative to locating the action in the base floodplain as outlined in 7 above.

Identify adverse impacts due to the action and the induced development, and identify losses of natural and beneficial values of the floodplain.

If the proposed action induces development in the base floodplain, determine if there is a practicable alternative to the development as outlined in 239.7.

As part of the multiobjective planning approach under the Principles and Standards, determine viable methods to minimize the adverse impacts of the action and the induced development and methods to restore and preserve the natural and beneficial values of the floodplain. Successive iterations of the planning process as set forth in ER 1105-2-200 should be used to develop methods for minimizing the adverse impacts. (See paragraphs 10 and 11). This is the reevaluation of the no action alternative.

Advise the general public if the proposed action will be located in the

base floodplain. The procedures of ER 1105-2-502 shall be utilized to the extent possible to advise the public.

(g) Recommend the most desirable plan responsive to the established planning objectives and consistent with the requirements of the Executive Order stated in § 239.6 above.

§ 239.9 Assessment of impacts.

The determination called for in § 239.8c above, requires an assessment of the impacts of the action. Impact identification and assessment apply to both the Corps action and to the induced development, if any, that would occur in the base floodplain with the proposed action, but not in the absence of the action. Existing procedures and guidance for identifying and assessing impacts are contained in ER 1105-2-240 for multiobjective planning and ER 1105-2-507 for responding to NEPA requirements. These procedures are designed to ensure that all significant adverse and beneficial effects of actions are identified and measured. ER 1105-2-240 requires identifying sources of impacts, tracing impacts, describing the magnitude of impacts and specifying the location, timing, and duration of impacts. ER 1105-2-507 generally requires the identification of impacts and effects of an action on the environment. In this regard, impact identification and assessment procedures required by existing regulations meet the requirements of the EO and shall be followed.

§ 239.10 Minimize.

As previously defined, minimize is to reduce to the smallest possible amount or degree. The goal of minimization is to avoid the adverse impacts associated with induced floodplain use. "Minimize" as defined in the WRC guidelines is broad and open-ended. There is an implicit acceptance of practical limitations which makes it consistent with the Principles and Standards. It is expected that all practicable workable means and measures will be utilized to minimize adverse impacts. Application of "minimization" to Corps activities and programs will require careful consideration and evaluation of the floodplain action and any adverse impacts of induced floodplain development. For example, successive iterations of the planning process should normally result in the deletion of separable segments of a project when such segment protects undeveloped land and induces development in the floodplain for which there would be another practicable non-floodplain alternative.

§ 239.11 Restore and preserve.

Restoration and preservation are methods of enhancing the natural and beneficial values of floodplains. Such

quality (EQ) objectives. Therefore, restoration and preservation should be considered as EQ components of overall plans or as EQ Plans under the Principles and Standards and the ER 1105-2-200 series. The implementation of actions or measures to restore or preserve floodplain values shall be recommended in reporting documents if they fall under existing Corps authorities. If they are not within existing authorities of the Corps, the report shall describe how the measures can be implemented. Example of actions that could be taken to restore floodplain values are as follows:

(a) Relocate non-conforming structures and facilities out of the floodplain.

(b) Reestablish damaged floodplain ecosystems.

(c) Restore, preserve, and create wetlands, marshes, and etc.

(d) Implement measures that will enhance fish and wildlife values.

(e) Restore and revegetate damaged beaches and dunes.

§ 239.12 Regulatory.

The policy in this regulation is consistent with the general policies for evaluating permit applications under the Corps of Engineers regulatory program as contained in reference 3d. Section 2(c) of the Order pertaining to the issuance of permits or licenses requires agencies to: (a) Consider and evaluate flood hazards for actions in floodplains; (b) provide early public review of plans or proposals in floodplains for which the impact is not significant to require preparation of an EIS; and (c) provide guidance to applicants to enable them to evaluate the effects of their proposal on the floodplain prior to submitting an application. Parts 320.4 and 325.3 of reference 3d contain policies and procedures that comply with the intent of the Order for items 1 and 2 above, respectively, and shall be continued. A forthcoming Corps of Engineers regulation will provide broad general guidance that will assist an applicant in preparing an application for a permit to evaluate early in the planning process the effects the proposal will have on the floodplain.

§ 239.13 Reporting requirements and public involvement.

When a determination has been made that there is no practicable alternative to locating an action in the floodplain, the EO requires the reporting of this finding by various procedures. In addition, the Order requires early public review of plans whenever an action is proposed for the floodplain. The Order requirements generally include and relate to reporting procedures that are presently accomplished under existing Corps regula-

tions, with some minor exceptions. The following additional information shall be included in existing reporting requirements, as appropriate, for general investigation studies, projects in engineering and design stages, studies under the special continuing authorities program, and activities under the operations and maintenance program.

(a) Section 2(a)(2). If there is no practicable alternative to locating an action in the floodplain, a public notice shall be prepared and circulated to the general public. The notice shall include the following: (1) A description of why the action must be located in the floodplain; (2) a description of significant facts considered in making the determination to locate in the floodplain, including alternative sites and actions considered and any tradeoffs that were made; and (3) a statement indicating whether the proposal conforms to applicable State or local floodplain protection standards. The public notice issued upon completion of a study action or its equivalent will serve as the means to satisfy this requirement of the Order. Public notices shall provide specific information pertaining to subparagraphs (1), (2) and (3) of this paragraph, and the notices shall be appropriately disseminated to the general public in the affected area.

(b) Section 2(a)(3) requires the submission of a notice, not to exceed three pages in length, including a location map, to State and arcwide A-95 Clearinghouse for the geographic area affected, when an action is to be located in the floodplain. Continuation of existing procedures and requirements stated in ER 1105-2-811 will comply with the intent of the Order with the exception that future notices to clearinghouses shall also include the additional information requested in paragraph (a) of this section.

(c) Section 2b. Requests for new authorizations or new appropriations for construction starts transmitted to the Office of Management and Budget shall provide information on whether a proposed Corps action will be located in the floodplain. If the proposed action is located in the floodplain the transmittal to OMB shall provide information on compliance with the EO. This shall include statements on whether the action affects the natural and beneficial values of the floodplains; steps taken to minimize potential harm to or within the floodplain caused by the action; and steps taken to restore and preserve the natural and beneficial floodplain values of the floodplain area.

(d) Statement of findings. Since Corps actions in the floodplain are subject to NEPA, the Statement of

Findings that accompanies the EIS (paragraph 6b of ER 1105-2-509), or covered in the feasibility report will include, in addition to existing requirements, the following:

(1) Reasons why the proposed action must be located in the floodplain.

(2) Facts considered in making the determination to locate in the floodplain, including alternative sites and actions considered.

(3) Statement on whether the proposed action conforms to applicable State or local floodplain protection standards.

(4) Statement on whether the action affects the natural and beneficial values of the floodplain.

(5) Description of steps taken to design or modify the proposed action in order to minimize potential harm to or within the floodplain; and

(6) A general listing of other involved agencies, groups, and organizations.

(e) Public involvement. To insure that adequate information and opportunities are provided early in the decision-making process to allow the public to participate effectively in floodplain management decisions, a public involvement program shall: (1) Include as broad an audience as possible; (2) provide continuous interaction and involvement opportunities for the public during the decision-making process; (3) provide information which promotes the fullest understanding of the proposed action; and (4) provide timely opportunities for all segments of the public to affect an action or plan before alternative actions have been precluded. The policies and objectives for public involvement contained in ER 1105-2-800 for planning Civil Works projects are generally parallel to the requirements of the Order. However, public participation programs shall include early, specific reference to Executive Order 11988 and its objectives. The public in the affected area shall be advised early, through the public participation process, whenever a proposed plan will result in action in the base floodplain.

§ 239.11 Application of EO to Civil Works program.

The provisions of Executive Order 11988 shall be implemented by each agency not later than May 24, 1978.

(a) Preauthorization studies. At the earliest stages of planning, the policy and procedures of this regulation shall be incorporated in the multiobjective planning process (ER 1105-2-209 series of regulations) to a scope and level of detail appropriate for preauthorization studies. For those studies for

which reports have been completed and forwarded by the reporting officers, supplemental information concerning the implementation of the Executive Order has been requested.

(b) Advanced engineering or design. Reporting officers shall insure that projects in the advanced engineering and design stage comply with the intent and objective of the Executive Order as set forth in this regulation.

(c) Continuing authorities program (ER 1105-2-50). The policies and procedures of this regulation are applicable to the planning and design of projects under the Continuing Authorities Program. Current studies under the Continuing Authorities Program shall incorporate the policies and procedures of this regulation early in the multi-objective planning process as required by ER 1105-2-50.

(d) Projects under construction. This Order does not apply to projects presently under construction, or to projects for which all of the funds have been appropriated through fiscal year 1978, or to projects and programs for which a draft or final environmental impact statement was filed prior to October 1, 1977, as part of AE&D activities.

(e) Operation and Maintenance activities. The policies and procedures of this regulation are applicable to operation and maintenance activities of the Corps of Engineers. District Engineers shall insure that projects operated and maintained by the Corps comply with the policies and procedures set forth in this regulation. 33 CFR 209.145.

(f) Emergency Activities. Emergency and flood related activities conducted under Pub. L. 84-99 essential to lives and protecting property, public health and safety, are exempt from the provisions of the Order. The requirement to prepare and file a notice of a proposed action in the floodplain. However, relocation activities performed under Pub. L. 84-99 by the Corps shall be carried out in a manner that reflects compliance with the spirit and intent of the Executive Order. This shall include providing leadership and taking action to:

(1) Avoid harm to the natural and beneficial values of floodplains.

(2) Minimize the impact of flood on human safety, health and welfare.

(3) Restore the natural and beneficial floodplain values that have been impacted by an emergency action.

(ER Doc 78 14541 Filed 5-23-78 8:45)

Appendix E

TECHNICAL APPENDIX

Table E-1

Common Plants of Humboldt Bay
Area by Habitat Types¹

Agriculture

Agropyron repens
Agrostis alba
Festuca rubra
Juncus effusus
Phleum pratense
Potentilla pacifica
Ranunculus sp.

Grassland

Achillea millefolium
Cirsium vulgare
Cortaderia selloana
Cytisus spp.
Dactylis glomerata
Deschampsia caespitosa
Holcus lanatus
Hypochaeris radicata
Lolium multiflorum
Melilotus spp.
Phragmites communis
Plantago lanceolata
Poa pratensis
Polypogon monspeliensis
Rumex crispus
Trifolium repens

Shrubland

Baccharis pilularis
Carex sp.
Ceanothus integerrimus
Garrya eliptica
Gaultheria shallon
Lithocarpus densiflorus
Marah sp.
Myrica californica
Osmaronia cerasiformis
Pteridium aquilinum
Pyrus usca
Rhus diversiloba
Rhamnus purshiana
Ribes spp.
Rubus spp.
Salix spp.

Forest

Abies grandis
Alnus oregana
Anaphalis margaritacea
Arotostaphylos uva-ursi
Arbutus menziesii
Berberis sp.
Castanopsis chrysophylla
Cornus stolonifera
Cupressus macrocarpa
Eucalyptus sp.
Heracleum lanatum
Lithocarpus densiflora
Myrica californica
Oxalis oregana
Picea sitchensis
Pinus contorta
Polystichum sp.
Populus trichocarpa
Pseudotsuga menziesii
Pteridium aquilinum
Rhododendron californicum
Rubus spectabilis
Salix spp.
Sambucus racemosa
Satureja douglasii
Scirpus microcarpus
Sequoia sempervirens
Tsuga heterophylla
Vaccinium ovatum
Veronica sp.

Water

Cladophora spp.
Enteromorpha sp.
Hydrocotyl sp.
Lemna minor
Nuphar polysepalum
Potamogeton sp.
Ruppia sp.
Ulva sp.

Table E-1 (continued)

Dunes

Abronia latifolia
Achillea borealis
Ambrosia chamissonis
Ammophila arenaria
Baccharis pilularis
Cakile spp.
Carex obnupta
Elymus mollis
Erigeron glaucus
Eriogonum latifolia
Erysimum menziesii
Fragaria chiloensis
Juncus lesueurii
Lathyrus litoralis
Lotus micranthus
Lupinus spp.
Mesembryanthemum chilense
Montia spathulata
Oenothera cheiranthifolia
Orthocarpus purpurascens
Polygonum paronychia
Potentilla egedii var. *grandis*
Salix spp.
Solidago spathulata
Trifolium spp.
Tanacetum douglasii
Vaccinium ovatum

Salt Marsh

Atriplex patula
Cordylanthus maritimus ssp. *maritimus*
Cordylanthus maritimus ssp. *palustris*
Cotula coronopifolia
Cuscuta salina
Distichlis spicata
Glaux maritima
Grindelia stricta
Grindelia stricta ssp. *Blakei*
Jaumea carnosa
Juncus lesueurii
Lileopsis occidentalis
Limonium californicum
Orthocarpus castillejoides var. *humboldtiensis*
Plantago maritima
Puccinellia sp.
Salicornia virginica

Salt Marsh (continued)

Spartina foliosa (*S. spartinae*?)
Spergularia marina
Suaeda californica
Triglochin concinnum
Triglochin maritimum

Brackish Marsh

Achillea millefolium
Agrostis sp.
Aster subspicatus
Atriplex patula
Carex lyngbyei
Carex obnupta
Deschampsia caespitosa
Distichlis spicata
Eleocharis sp.
Epilobium watsonii
Festuca rubra
Hordeum brachyantherum
Juncus balticus
Phragmites communis
Potentilla pacifica
Scirpus acutus
Scirpus robustus
Spergularia marina
Triglochin maritimum

Fresh Marsh

Alopecurus sp.
Angelica sp.
Carex obnupta
Galium sp.
Hydrocotyl sp.
Lemna minor
Lotus sp.
Oenanthe sarmentosa
Phalaris arundinacea
Polygonum spp.
Ranunculus sp.
Rorippa sp.
Scirpus microcarpus
Sparganium eurycarpum
Typha latifolia

Table E-1 (continued)

Swamp

Alnus oregana
Althyrum filix-femina
Carex obnupta
Equisetum spp.
Heracleum lanatum
Lonicera involucrata
Lysichitum americanum
Myrica californica
Oenanthë sarmentosa
Picea sitchensis
Pinus contorta
Polystichum sp.
Potentilla Egedii var. *grandis*
Pteridium aquilinum
Rubus spectabilis
Rumex crispus
Salix lasiandra
Salix hookeriana
Scirpus fluviatile
Spiraea douglasii
Stachys chamissonis
Typha latifolia
Vaccinium ovatum

Mudflats

Enteromorpha sp.
Polysiphonia sp.
Smithora naidum
Ulva sp.
Zostera marina

Jetties and Reefs

Red and Brown Algae:

Corallina sp.
Endocladia
Fucus sp.
Gigartina sp.
Laminaria sp.
Porphyra sp.

¹These are typical species of the habitat types identified in this study. This table is not intended to be a comprehensive list of all species in any habitat type. In addition to field observations made during the study, the following sources were used: Barker, 1976; Hitchcock, 1951; Hitchcock, 1973; Mason, 1957; Monroe, 1973; Munz and Keck, 1959; Parker, 1974.

Table E-2

INVERTEBRATE SPECIES OF HUERFANO BAY, CALIFORNIA¹

1. SPONGES

Sponge, Haliclona percellis (attached to rocks in well-lighted areas)
Sponge, Haliclona sp.
Yellow sponge, Cliona sp.

2. HYDROIDS

Hydroid, Acquorea sp. (open water plankton)
Hydroid, Campanularia integra
Hydroid, Obelia borealis
Hydroid, Obelia longissima (fouling species on rocks, pilings)
Hydroid, Plumularia lagenifera
Hydroid, Sertularia furcata (attached to algae)
Hydroid, Thuiaria similis
Hydroid, Tubularia crocea (forms large clusters on pilings)
Hydroid, Tubularia marina (attached to rocks in intertidal zone)
Hydroid, Vevelia lata (open water)

3. JELLYFISHES

Jellyfish, Aurellia sp.* (open water)
Jellyfish, Chrysaora sp.
Jellyfish, Pelagia sp.

4. SEA ANEMONES

Aggregated anemone, Anthopleura elegantissima (buried in substrate)
Great green anemone, Anthopleura xanthogrammica (in tide pools)
Burrowing anemone, Cerianthus sp.
Orange-striped anemone, Diaduma sp.*
White anemone, Metridium senile fibrosum (on pilings and jetties)

5. CTENOPHORES (COMB JELLIES)

Sea gooseberry, Pleurobranchia bachei (open waters; cast upon beach)

6. NEMERTEANS (RIBBON WORMS)

Ribbon worm, Amphiporous imparispinosus (on rocks and pilings)
Ribbon worm, Ceratonereis californiensis (in sand and mud flats)

* indicates that the scientific name has been changed; Table E-3.

Ribbon worm, Tubulanus pellucidus (in tubes on rocks, algae; in mud)
Ribbon worm, Tubulanus polymorphus (under boulders; among mussels; mud)

7. PHORONIDS (PLUME WORMS)

Plume worm, Phoronis sp.
Green plume worm, Phoronopsis viridis (forms beds on sand and mudflats)
Plume worm, Phoronopsis sp.

8. POLYCHAETES (BRISTLE WORMS)

lugworm, Abarenicola antebanchia
lugworm, Abarenicola humboldtensis
lugworm, Abarenicola pacifica (in sand flats)
lairy-gill worm, Amaena occidentalis (in mudflats)
bristle worm, Ampharete goesi
paddle worm, Anatides williamsi (in mixed sand and mud sediments)
paraonid worm, Aricidea suecica (in sandy mud)
bristle worm, Armandia bioculata (sandy mud and silt)
bristle worm, Armandia sp. (in sandy mud and silt)
spionid worm, Boccardia basilaris
tube worm, Capitita ambiseta
tube worm, Capitella capitata (in mudflats)
thread worm, Caulericiella hamata
lairy-gill worm, Chaetozone multioculata
lairy-gill worm, Chaetozone setosa (in silty sediments)
hermit crab worm, Cheilonereis cyclurus (commensal with hermit crabs)
paddle worm, Chone sp.
tube worm, Cistenides brevicoma
bristle worm, Disoma franciscanum (in shallow mud)
paddle worm, Eteone dilatata (in clean sand beaches)
pacific worm, Eteone pacifica (in silt and mud)
paddle worm, Eteone sp.
polychaete worm, Euclymene didineata
paddle worm, Eulalia aviculiseta (among mussels and barnacles; debris)
polychaete worm, Eumida sanguinea (among algae and bryozoans on rocks)
mussel worm, Eunereis sp. (in rock crevices)
crebellid worm, Lupolymnia crescentis (in sandy mud sediments)
polychaete worm, Eusyllis sp.
bristle worm, Euzonus mucronata (in clean sand beaches)
bristle worm, Exogone sp. (in sandy mud bottoms)
bristle worm, Glycera americana (in sandy mud sediments)
roboscis worm, Glycera tenuis (in clean sands)
bristle worm, Glycinde polygnatha (in sandy mud sediments)
bristle worm, Glycinde sp.
rhinid worm, Haploscoloplos elongatus (in sand and mud bottoms)
cale worm, Harmothoe imbricata (in rocky habitats)

Scale worm, Harmothoe lunulata (free-living or commensal on sea cucum)
 Slaty blue worm, Hemipodus borealis (in sand and mud bottoms)
 Slaty blue worm, Hemipodus imbricata
 Scale worm, Hesperone adventor (commensal in Urechis burrows)
 Capitellid worm, Heteromastus filibranchus (in sandy mud bottoms)
 Bristle worm, Lumbrineris japonica (in sandy mud sediments)
 Bristle worm, Lumbrineris zonata (in sand or mixed sand-mud sediment)
 Bristle worm, Lumbrineris sp. (in sandy mud sediments)
 Polychaete worm, Lysilla sp.
 Bristle worm, Mayelona sp. (in clean sand or sandy mud)
 Lugworm, Mediomastus californiensis (in mud bottoms)
 Polychaete worm, Mellina oculata
 Bristle worm, Mesochaetopterus taylori (in sand flats with eelgrass)
 Bristle worm, Neanthes sp. (in sand and among rocks; intertidal)
 Bristle worm, Nephtys assimilis
 Bristle worm, Nephtys californiensis (in clean sandy beaches)
 Bristle worm, Nephtys parva (in muddy sediments)
 Bristle worm, Nereis procera (in sandy to muddy sediments)
 Mussel worm, Nereis sp.
 Thin red worm, Notomastus tenuis (in sandy mud bottoms)
 Bristle worm, Ophelia magna (in sandy mud bottoms)
 Bristle worm, Ophelia sp. (in sandy beaches or sandy mud)
 Tube worm, Owenia collaris (live in tubes in sandy sediments)
 Polychaete worm, Pholoe glabra (in silt and mud bottoms)
 Tube worm, Phragmatopoma californica (constructs large colonies of
 tube honeycombs on rocks; may form massive reefs)
 Bristle worm, Pista cristata
 Bristle worm, Pista pacifica (forms tubes in sandy mud sediments)
 Bristle worm, Platynereis agassizi
 Tube worm, Platynereis bicanaliculata (among algal holdfasts on rocks)
 Spionid worm, Polydora brachycephala (in sandy mud sediments)
 Spionid worm, Polydora liani
 Spionid worm, Polydora socialis (in sandy mud and mud sediments)
 Spionid worm, Polydora websteri (bores in shells, calcareous materia
 Bristle worm, Pseudopolydora kemp (in sandy mud sediments)
 Polychaete worm, Schistomeringos longicornis
 Bristle worm, Scoloplos sp. (mud, roots of eelgrass, algal holdfasts)
 Spionid worm, Spio filicornis (in sand flats)
 Spionid worm, Spiothales anoculata
 Spionid worm, Spiothales berkeleyana
 Spionid worm, Spiothales bombyx (in sandy mud bottoms)
 Bristle worm, Sthenelais berkeleyi
 Bristle worm, Sthenelais tertius
 Bristle worm, Streblospio benedicti (in mud flats)

Bristle worm, Telepsavus costarum* (in fine sands)
Bristle worm, Tharyx monilaris (in silty mud)
Syllid worm, Typosyllis sp. (generally among rocks)

9. SIPUNCULIDS (PEANUT WORMS)

Peanut worm, Golfingia agassizi (among eelgrass on mudflats)

10. ECHIURIDS (SPOON WORMS)

Spoon worm, Listriolobus pelodes (in mud among eelgrass and sandy mud)
Cat innkeeper, Urechis caupo (forms permanent burrows in muddy sand)

11. COPEPODS

Copepod, Acartia clausi
Copepod, Acartia longiremis
Copepod, Acartia tonsa (brackish waters)
Copepod, Calanus finmarchicus (ocean waters)
Copepod, Clausidium vancouverense (commensal in burrowing shrimp holes)
Copepod, Corycaeus affinis
Copepod, Eucalanus bungii
Copepod, Eurytemora affinis (brackish waters)
Copepod, Oithona similis
Copepod, Oithona spinirostris
Copepod, Paracalanus parvus
Copepod, Pseudocalanus minutus
Copepod, Tortanus discaudatis

12. BARNACLES

Hatched barnacle, Balanus cariosus
White barnacle, Balanus crenatus curriscutum (low intertidal, subtidal)
Barnacle, Balanus eburneus
Chalky white barnacle, Balanus glandula (high intertidal; coast, in bay)
Harf and piling barnacle, Balanus nubilus (on pilings and rocks)
Gray barnacle, Chthamalus dalli (highest intertidal area; rocks)
Leaf barnacles, Lepas spp.
Loose barnacle, Pollicipes polymerus (form dense stands with mussels)

13. CUMACEANS AND CHELIFERANS

Cumacean, Cumacea sp.
Cumacean, Diastylis sp.

Cumacean, Diastyllopsis dawsoni

Cumacean, Indorella sp.

Cumacean, Leurops sp.

Cumacean, Leucon sp.

Cheliferan, Leptochelia dubia (abundant among algae in pools, mudflat)

Cheliferan, Leptochelia sp.

Cheliferan, Tamais nohmani

14. AMPHIPODS

Beach flea, Allorchestes angustus (nestles in algae or surfgrass)

Gammarid, Anisogammarus pugettensis (in marshes among algae)

Gammarid, Anisogammarus sp.

Gammarid, Apherusa sp.

Skeleton shrimp, Caprella angusta (cling to algae, eelgrass, hydroids)

Skeleton shrimp, Caprella californica (on algae, eelgrass, hydroids)

Skeleton shrimp, Caprella equilibra (on algae, eelgrass, hydroids)

Skeleton shrimp, Caprella gracilor (on algae, eelgrass, hydroids)

Skeleton shrimp, Caprella laeviuscula (on algae, eelgrass, hydroids)

Skeleton shrimp, Caprella sp. (on algae, eelgrass, hydroids, bryozoan)

Gammarid, Corophium acherusicum (tube-builder on algae and pilings)

Gammarid, Corophium sp. (tube-builder on debris on mud bottoms)

Gammarid, Cymadusa sp. (tube builder on algae)

Gammarid, Eohaustorius eous (on sand bottoms)

Gammarid, Eohaustorius washingtonianus (on sand bottoms)

Gammarid, Harpinia sp.

Gammarid, Kamake sp.

Gammarid, Megamphopus marteia (tube builder on algae)

Gammarid, Melita dentata (nestles in algae and eelgrass)

Gammarid, Melita sp. (nestles in algae and eelgrass)

Gammarid, Neopleustes sp.

Gammarid, Paraphoxus lucubrans (burrow in sand or mud bottoms)

Gammarid, Paraphoxus obtusidens (burrow in sand or mud bottoms)

Gammarid, Paraphoxus sp. (burrow in sand or mud bottoms)

Gammarid, Paroediceroides sp.

Gammarid, Photis brevipes (tube builder on algae)

Gammarid, Photis sp. (tube builder on algae)

Gammarid, Protomedea sp.

Gammarid, Synchelidium rectipalium (burrow in sand or mud bottoms)

Gammarid, Synchelidium sp. (burrow in sand or mud bottoms)

Skeleton shrimp, Tritella pilimanae

Skeleton shrimp, Tritella sp.

15. ISOPODS

Marine sowbug, Alloniscus sp. (buried in sand and among driftwood)
Marine sowbug, Cirolana hartfordi (common in mussel beds)
Isopod, Idothea stenops*
Isopod, Idothea wosnesenskii*(common on kelp)
Isopod, Ligia occidentalis
Isopod, Ligia pallasii (sea cliffs and caves, near freshwater seeps)
Isopod, Limnoria sp. (wood-borer)
Isopod, Munna sp.
Isopod, Munnogonium erratum
Isopod, Neosphaeroma oregonensis

16. DECAPODS (CRABS AND SHRIMPS)

Ghost shrimp, Callinassa californiensis (burrow in mud or sand of mid- to upper intertidal areas)
Rock crab, Cancer antennarius (on sand among rocks; may be in bay)
Yellow crab, Cancer anthonyi (under rocks; in bay)
Slender crab, Cancer gracilis (sandy bottom; in bay)
Dungeness crab, Cancer magister (generally offshore on sandy bottom; may be found in the bay during parts of the year)
Red crab, Cancer productus (under rocks; buried in sand or mud; in bay)
Black-tailed shrimp, Crango nigricauda*(among eelgrass, rocks on sand)
Black-tailed shrimp, Crango nigromaculata*(on mud and sand bottoms)
Bay shrimp, Crango stylirostris*(in surf zones; sandy rock bottoms)
Bay shrimp, Crango spp.*
Pistol shrimp, Crangon californiensis*
Common sand crab, Emerita analoga (on exposed sandy beaches)
Purple shore crab, Hemigrapsus nudus (on coarse sand, gravel substrate)
Green shore crab, Hemigrapsus oregonensis (under rocks on sand, mud)
Grass shrimp, Hippolyte sp. (common on eelgrass)
Cobble crab, Lophopanopeus bellus (under rocks along the coast)
Orcelain crab, Pachycheles rudis (under rocks; on pilings, algae)
Banded shore crab, Pachygrapsus crassipes (upper rocky areas)
Hermit crabs, Pagurus spp.
Moon stripe shrimp, Pandalus danae (sublittoral; eelgrass, channels)
Orcelain crab, Petrolisthes sp.
Commensal pea crabs, Pinnixa sp.
Clp crab, Pugettia producta (kelp beds, jetties, wharf pilings)
Roken-back shrimp, Spirontocaris paludicola*(eelgrass, algae, pilings)
Roken-back shrimp, Spirontocaris picta*(eelgrass beds, pilings)
Blue mud shrimp, Upogebia pugettensis (burrows in mud or sandy mud in mid-to lower intertidal areas of the bay)

17. ARACHNOIDS (SPIDERS, SCORPIONS AND TICKS)

Pseudoscorpion, Halobisium occidentale

18. PYCNOGONIDS (SEA SPIDERS)

Sea spider, Achelia chelata (often in mussel beds)

Sea spider, Achelia echinata

Green pycnogonid, Halosoma viridintestinale (on hydroids and eelgrass)

19. GASTROPODS (LIMPETS, NUDIBRANCHS, SNAILS AND WHELKS)

Finger limpet, Acmaea digitalis* (high intertidal on rock surfaces)

Limpet, Acmaea fenestrata* (on smooth rocks in loose sand, gravel, mud)

Common limpet, Acmaea paradigitalis* (mid- to upper intertidal on rock)

Shield limpet, Acmaea pelta* (on algae, mussels, barnacles, rocks)

Mask limpet, Acmaea persona* (high intertidal in crevices)

Rough limpet, Acmaea scabra* (high intertidal on rock surfaces)

Plate limpet, Acmaea scutum* (rocky shores)

Barrel shell, Acteon punctocaelatus (on mud and sand flats)

Gray nudibranch, Aeolidia sp. (common around sea anemones)

Sea slug, Aglaja diomedea (on mudflats)

Snail, Alvinia sp. (in gravel, sand and under rocks)

Sea lemon nudibranch, Anisodoris nobilis

Translucent assiminean, Assiminea translucens* (in marshes, mud, debris)

Snail, Buccinum sp.

Top shell, Calliostoma canaliculatum

Top shell, Calliostoma sp.

Cone snail, Conus sp. (on sand or rock bottoms)

Giant nudibranch, Dendronotus giganteus

Rough keyhole limpet, Diodora aspera

Nudibranch, Diaululu sandiegensis

Nudibranch, Dirona albolineata

Nudibranch, Hermacina smithi

Nudibranch, Hermisenda crassicornis

Blue chiton, Ischnochiton sp.

Black chiton, Katherina tunicata (intertidal rocks)

Small periwinkle, Lacuna sp. (in kelp beds, eelgrass, algae)

Newcomb's littorin, Littorina newcombiana

Flat periwinkle, Littorina planaxis (high intertidal rocks)

Checkered periwinkle, Littorina scutulata (intertidal on rocks)

Snail, Mitrella tuberosa (in sand and gravel bottoms)

Snail, Mitrella sp.

Notched chiton, Mopalia ciliata

Hairy chiton, Mopalia lymosa (intertidal and subtidal rocks)

Channelled dog whelk, Nassarius fossatus (on sand and mud bottoms)
 Lean dog whelk, Nassarius medicus (in sand or mud; on rocks)
 Snail, Nucula tenuis
 Japanese oyster drill, Ocenebra japonica* (on rocks; may be in oysters)
 Opisthobranch, Odostomia sp.
 Bactic olive, Olivella bactica
 Purple olive, Olivella biplicata (burrows in clean sand)
 San Pedro olive, Olivella pedroana
 Olive snail, Olivella pycna
 Pectibranch, Phyllaplasia taylori (on eelgrass and mudflats)
 Bristle-bearing ear shell, Phytia setifer* (marshes, mud, debris)
 Moon snail, Polinices lewisii (on mud and sand flats; in eelgrass)
 Brown top, Tegula brunnea (low intertidal on rocks, kelp)
 Black top, Tegula funebris (mid-tide levels on protected rocks)
 Pulligo top, Tegula pulligo
 Emarginate dogwinkle, Thais emarginata* (upper tide levels on rocks)
 Trilled dogwinkle, Thais lamellosa* (low tide levels on rocks)
 Snail, Tricolia sp. (in gravel, under rocks, on eelgrass)

10. PELECYPODS (CLAMS, MUSSELS, OYSTERS, AND SCALLOPS)

Lytilid, Adula diegensis (bores in soft shale or mudstone)
 Pacific shipworm, Bankia setacea (bores in wharfs, pilings, etc.)
 Basket cockle, Clinocardium nuttallii (in sand and muddy sand bottoms)
 Giant Pacific oyster, Crassostrea gigas (grown on oyster beds)
 Eastern oyster, Crassostrea virginica
 Crenella, Crenella sp.
 Gem clam, Gemma gemma (in mudflats)
 Rock scallop, Limites multirugosus* (on rocks and pilings)
 California Lyonsia, Lyonsia californica (in muddy substrates)
 Carlott macoma, Macoma carlottensis
 Inconspicuous macoma, Macoma inconspicua* (in mud bottoms of upper bay)
 Iru macoma, Macoma irus*
 Tent-nose clam, Macoma nasuta (in mud and sandy mud)
 Soft-shell clam, Mya arenaria (in mud and muddy sand bottoms)
 Elecypod, Myrcella tumida
 California sea mussel, Mytilus californianus (exposed rocks, pilings)
 Bay mussel, Mytilus edulis (on pilings, rocks, docks)
 Native oyster, Ostrea lurida (on rocks, pilings or on mud)
 Coduck, Panopeus penicillatus* (a very deep burrower in soft bottoms)
 Common piddock, Penitella penita (bores into stiff clay, concrete)
 Balanus jingle, Pododermus macrochismus* (on rocks)
 Restoration littleneck, Protothaca restorationis
 Pacific littleneck, Protothaca staminea (in sand, muddy sand bottom)

Thin-shelled littleneck, Prototheca tenerrima (in sandy mud bottom)
 Smooth Washington clam, Saxidomus giganteus (in mud or sand bottoms)
 Common Washington clam, Saxidomus nuttalli (in mud or sand bottoms)
 Northern razor clam, Siliqua patula (clean sand beaches)
 Sickie razor clam, Solen sicarius (in mud or muddy sand bottoms)
 California jackknife clam, Tageus californianus (in sand or mud bott
 Japanese littleneck, Tapes semidecussata* (in mud bottoms)
 Bodega tellin, Tellina bodegensis (in sand of exposed beaches)
 Modesta tellin, Tellina modesta (in sand or muddy sand bottoms)
 Tellin clam, Tellina nuctoides
 Tellin clam, Tellina sp.
 Little transennella, Transennella tantilla (in sand or sandy mud)
 Gaper, Tresus capax (in mud or sandy mud bottoms)
 Gaper, Tresus nuttalli (in mud or sandy mud bottoms)
 Quahog, Venus mercenaria* (in mud bottoms)
 Straight horse mussel, Vosella recta* (in mud bottoms)
 Rough piddock, Zirfaea pilsbryi (burrows in mud and clay)

21. OCTOPODS

Octopus, Octopus dofleini (lives under rocks, in crevices)

22. BRYOZOANS

Bryozoan, Bugula pacifica
 Bryozoan, Crisia occidentalis (among hydroids and sponges)
 Bryozoan, Flustrella cervicornis* (grows on algae)
 Bryozoan,
 Bryozoan, Membranipora membranacea (encrusts floating kelp)
 Bryozoan, Tricellaria occidentalis

23. ECHINODERMS (SAND DOLLARS, SEA CUCUMBERS, SEA STARS, SEA URCHINS)

Brittle star, Amphipholis sp.
 Sand dollar, Dendraster excentricus (on flat sand bottoms, offshore)
 White sea cucumber, Eupentacta quinquesemita
 Six-rayed sea star, Leptasterias pusilla (mid-intertidal zone)
 Sea cucumber, Leptosynapta sp
 Pink sea star, Pisaster brevispinus (on sand bottoms, rocks and pili
 Common sea star, Pisaster ochraceus (on mussel beds)
 Sunflower star, Pycnopodia helianthoides
 Sea urchin, Strongylocentrotus sp.

¹ Sources: From Carrin, 1973; DeWees and Gotshall, 1974; Dykhouse, 1976; Hedgpeth, et al., 1968; Lambert, 1973; McBee, 1971; Monroe, 1973; and PG&E, 1973.

Table E-3

CHANGES IN THE SCIENTIFIC NAMES OF INVERTEBRATES SINCE
THEIR INCLUSION IN THE EARLIER HUMBOLDT BAY LITERATURE¹

<u>FORMER SCIENTIFIC NAME</u>	<u>CURRENT SCIENTIFIC NAME</u>
<u>JELLYFISH</u>	
<u>Aurellia</u> sp.	<u>Aurelia</u> sp.
<u>SEA ANEMONES</u>	
<u>Diadumaene</u> sp.	<u>Haliplanella</u> sp.
<u>POLYCHAETES</u>	
<u>Armandia</u> <u>bioculata</u>	<u>Armandia</u> <u>brevis</u>
<u>Telesavus</u> <u>costarum</u>	<u>Spiochaetopterus</u> <u>costarum</u>
<u>ISOPODS</u>	
<u>Idothea</u> <u>stenops</u>	<u>Idotea</u> <u>stenops</u>
<u>Idothea</u> <u>wosnesenskii</u>	<u>Idotea</u> <u>wosnesenskii</u>
<u>DECAPODS</u>	
<u>Crago</u> <u>nigricauda</u>	<u>Crangon</u> <u>nigricauda</u>
<u>Crago</u> <u>nigromaculata</u>	<u>Crangon</u> <u>nigromaculata</u>
<u>Crago</u> <u>stylirostris</u>	<u>Crangon</u> <u>stylirostris</u>
<u>Crago</u> spp.	<u>Crangon</u> spp.
<u>Crangon</u> <u>californiensis</u>	<u>Alpheus</u> <u>californiensis</u>
<u>Spriontocaris</u> <u>paludicola</u>	<u>Heptacarpus</u> <u>paludicola</u>
<u>Spriontocaris</u> <u>picta</u>	<u>Heptacarpus</u> <u>pictus</u>
<u>GASTROPODS</u>	
<u>Acmaea</u> <u>digitalis</u>	<u>Collisella</u> <u>digitalis</u>
<u>Acmaea</u> <u>fenestrata</u>	<u>Notoacmea</u> <u>fenestrata</u>
<u>Acmaea</u> <u>paradigitalis</u>	<u>Collisella</u> <u>strigatella</u>
<u>Acmaea</u> <u>pelta</u>	<u>Collisella</u> <u>pelta</u>
<u>Acmaea</u> <u>persona</u>	<u>Notoacmea</u> <u>persona</u>
<u>Acmaea</u> <u>scabra</u>	<u>Notoacmea</u> <u>scabra</u>
<u>Acmaea</u> <u>scutum</u>	<u>Notoacmea</u> <u>scutum</u>
<u>Acteon</u> <u>punctocaelatus</u>	<u>Rictaxis</u> <u>punctocaelatus</u>
<u>Assiminea</u> <u>translucens</u>	<u>Assiminea</u> <u>californica</u>
<u>Ocenebra</u> <u>japonica</u>	<u>Ceratostoma</u> <u>inornatum</u>
<u>Phytia</u> <u>setifer</u>	<u>Ovatella</u> <u>myosotis</u>
<u>Thais</u> <u>marginata</u>	<u>Nucella</u> <u>marginata</u>
<u>Thais</u> <u>lamellosa</u>	<u>Nucella</u> <u>lamellosa</u>

OLD SCIENTIFIC NAME

CURRENT SCIENTIFIC NAME

PELECYPODS

Hinnites multirugosus
Macoma inconspicua
Macoma irus
Paropca generosa
Pododesmus macroschismus
Tapes semiducussata
Venus mercenaria
Vosella recta

Hinnites giganteus
Macoma balthica
Macoma inquinata
Paropca generosa
Pododesmus cepio
Tapes japonica
Mercenaria mercenaria
Modiolus rectus

BRYOZOANS

Flustrella cervicornis

Flustrellidra corniculata

¹Sources: Hedgepeth, et al., 1968; Smith and Carlton, 1975.

Table E-4

MAMMALS OF THE HUMBOLDT BAY AREA

Common Name	Scientific Name ²	Status ³	Data ⁴ Base	Habitat Designation ⁵																			Habitat Use ⁶		
				U	A	C	S	P	F _d	F _e	F _m	F _r	D _v	D _w	W _t	W _b	W _c	S _h	E _l	F _m	S _h	N		J	
OPPOSUMS																									
Opossum	<i>Didelphis marsupialis</i>	?	C	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
SHREWS																									
Pacific shrew	<i>Sorex pacificus pacificus</i>	U	A																						2
Vermont shrew	<i>Sorex vagrans amoenus</i>	U	A																						4
Marsh shrew	<i>Sorex bendirii bendirii</i>	U	A																						4
Trowbridge shrew	<i>Sorex trowbridgii humboldtensis</i>	U	A																						5
MOLES AND SKINK-MOLES																									
Shrew mole	<i>Neotrichicus gibbii gibbii</i>	U	A																						4
Townsend mole	<i>Scapanus townsendii</i>	C	C	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	6
Coast mole	<i>Scapanus orarius orarius</i>	A	A																						5
VESPERTILIONIDS																									
Little brown myotis	<i>Myotis lucifugus alascensis</i>	C	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	14
Fringed myotis	<i>Myotis thysanodes</i>	U?	B	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	14
California myotis	<i>Myotis c. californicus</i>	C	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	14
Long-winged myotis	<i>Myotis volans longicrus</i>	C?	B	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	14
Long-eared myotis	<i>Myotis evotis pacificus</i>	C?	B	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	9
Yuma myotis	<i>Myotis yumanensis saturatus</i>	C?	A	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	8
Red bat	<i>Lasiurus borealis</i>	C?	A	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	8
Barn bat	<i>Lasiurus cinereus cinereus</i>	C?	B	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	6
Silver-haired bat	<i>Lasiurus cinereus noctivagus</i>	C?	A	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	8
Long nosed bat	<i>Plecotus townsendii rafines-</i> <i>quei</i>	C?	B	?	+	+	+	?																	7
Big brown bat	<i>Eptesicus fuscus bernardinus</i>	C?	A	?	+	+	+	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	9
Pallid bat	<i>Antrozous pallidus</i>	C	B	?	+	+	+	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	9

Table E-4 (continued)

[illegible]

Table E-4 (continued)

Common Name	Scientific Name ²	Status ³	Data ⁴ Base	Habitat Designation ⁵																			Relative Abundance ⁶								
				U	A	G	S	F	p	F	D	F	r	S	D	V	D	W	S	d	W	V		b	W	S	D	F	S	M	D
NEW WORLD RATS AND MICE																															
CRICETIDAE																															
Western harvest mouse	<i>Reithrodontomys megalotis longicaudus</i>	C	A		?	+	?																							3	
Pinyon mouse	<i>Peromyscus truei</i>	C?	B					+																						1	
Deer mouse	<i>Peromyscus maniculatus gambelii</i>	C?	C	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	10	
" "	<i>Peromyscus m. rubidus</i>	C	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	10	
Husky-footed wood rat	<i>Neotoma fuscipes monochroua</i>	C	A					+																						4	
White-footed vole	<i>Phenacomys albipes</i>	R	A																											2	
Red tree mouse	<i>Phenacomys longicaudus</i>	U	B																											1	
Red-backed mouse	<i>Clethrionomys occidentalis</i>	C?	A																											2	
Long-tailed meadow mouse	<i>Microtus californicus californicus</i>	U	A																											1	
	<i>Microtus longicaudus angusticeps</i>	U	A																												
Oregon meadow mouse	<i>Microtus o. oregoni</i>	U	A																											4	
California meadow mouse	<i>Microtus californicus eximius</i>	C	A	+	+																									5	
Townsend meadow mouse	<i>Microtus t. townsendii</i>	U	A																											1	
OLD WORLD RATS AND MICE																															
MURIDAE																															
Norway rat	<i>Rattus norvegicus</i>	C	A	+	+																									2	
Black rat	<i>Rattus rattus</i>	C	A	+	+																									4	
House mouse	<i>Mus musculus</i>	C	A	+	+	+	+																							3	
ZAPIDIDAE																															
Pacific jumping mouse	<i>Zapus trinotatus eureka</i>	C?	A																											2	
AMERICAN PORCUPINES																															
EPTUZIORTIDAE																															
Porcupine	<i>Erethizon dorsatum</i>	C	A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	10	

Table E-4 (continued)

Common Name	Scientific Name ²	Status ³	Data Base ⁴	Habitat Designation ⁵																Habitat Use ⁶
U	A	C	S	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	J
BEAKED WHALES																				
ZIPHIDAE																				
Archbeak whale	Mesoplodon carlhubbsi	U	A																X	I
Baird beaked whale	Berardius bairdii	U	A																X	I
SPERM WHALES																				
PHYSETERIDAE																				
Sperm whale	Physeter macrocephalus	E*	A																X	I
Pygmy sperm whale	Kogia breviceps	U	B																X	I
DOLPHINS AND PORPOISES																				
DELPHINIDAE																				
Common dolphin	Delphinus delphis	U	A																X	I
P. white-sided dolphin	Lagenorhynchus obliquidens	C	A																X	I
Harbor porpoise	Phocoena phocoena	C	A																X	I
Dall Porpoise	Phocoenoides dalli	C	A																X	I
False killer whale	Pseudorca crassidens	U	A																X	I
Risso's dolphin	Grampus griseus	U	B																X	I
Northern right whale	Lissodelphis borealis	U	A																X	I
Longfin Pilot whale	Globicephala melana	C	B																X	I
GRAY WHALES																				
ESCHMUCHTIDAE																				
Gray whale	Eschrichtius robustus	R*	A																X	I
FIN-BACKED WHALES																				
BALAENOPTERIDAE																				
Sei Whale																				
Balaenoptera borealis																				
Minke whale	Balaenoptera acutorostrata	U	A																X	I
Blue whale	Sibbaldus musculus	E*	C																X	I
Blow-backed whale	Megaptera novaeangliae	E*	C																X	I
RHINCHOTRIDAE																				
WALAEINAE																				
Right whale	Eubalaena sieboldii	E*	C																X	I
SEA LIONS																				
OTARIIDAE																				
Steller sea lion	Eumetopias jubata	C	B																X	I
California sea lion	Zalophus californianus	C	B																X	I
SEALS																				
PHOCIDAE																				
Harbor seal	Phoca vitulina	A	A																X	X

Table E-4 (continued)

Common Name	Scientific Name ²	Status ³	Data ⁴ Base	Habitat Designation ⁵																				Habitat Use ⁶		
				U	A	G	S	F _p	F _d	F _e	F _m	F _r	D _s	D _v	D _m	W _s	W _d	W _r	W _b	W _o	SN	BM	FM		SW	M
FOXES & COYOTES																										
CANIDAE																										
Gray fox	<i>Urocyon cinereoargenteus</i>	U	A	?	+	+	+	+	?	?	?	?	?	?	+							?				4
Coyote	<i>Canis latrans</i>	U	B	?	+	+	+	+	+	+	+	+	+	+	+					?	?	+	+			12
WOLVES																										
URSIDAE																										
Black bear	<i>Euarctos americanus</i>	U	A					+	+	+	+	+	+													5
PROCYONIDAE																										
Raccoon	<i>Procyon lotor</i>	C	A	+	+			+	+	+	+	+	?	+	+					+	+	+	+			13
Ringtail	<i>Bassariscus astutus</i>	U	B		X			X	X	X	X	+														5
MUSTELIDAE																										
GLASSES, MINK, ETC.																										
Marten	<i>Martes americana humbold- tensis</i>	U	B					X		X	X															3
Fisher	<i>Martes pennanti</i>	R	C					X	X	X	X															4
Mink	<i>Mustela vison austuarina</i>	U	B								+												+	+		3
Long-tailed weasel	<i>Mustela frenata oregonensis</i>	U	A					?	+	+	+	+	+	+	+											7
"	<i>Mustela frenata saturata</i>	U	C					?	+	+	+	+	+	+	+											5
Ermine	<i>Mustela erminea streator</i>	U	C						+		+															2
Striped skunk	<i>Nephitis mephitis occiden- talis</i>	C	A						+	+	+	+	+	+								?				3
Spotted skunk	<i>Spilogale putorius</i>	O	A					?	+	?																1
"	<i>Spilogale p. latifrons</i>	O	C					?	+	?																1
"	<i>Spilogale P. phenax</i>	O	C					?	+	?																1
River otter	<i>Lutra canadensis brevipi- losus</i>	C	A						X	X	X	X			X	X	X	X								8
FELIDAE																										
CATS																										
Mountain lion	<i>Felis concolor californica</i>	U	B					+	+	+	+	+	+	+	+											6
Bobcat	<i>Lynx rufus fasciatus</i>	U	A					+	+	+	+	+	+	+	+											8

Common Name	Scientific Name ²	Status ³	Data ⁴ Base	Habitat Designation ⁵	Habitat Use ⁶																
U	A	G	S	F _p	F _d	F _e	F _m	F _r	D	D	W	W	W	W _h	W _c	SM	EM	FM	SN	M	J

Sources included: Hughes (1966), Natural resources of Humboldt Bay (Cal. Fish & Game, 1973), Sullivan and Houck (195), collections at the Humboldt State University Museum of Zoology and the University of California Museum of Vertebrate Zoology.

Letter designations are as follows: C=common, U=uncommon, R=rare, K=rare, E=endangered, *="endangered, protected by federal or state law"; R*=rare, E*=endangered.

in agreement of occasional reliable observations or collected specimens from localities within, or marginal to the study area, in records of collected specimens or published observations) for Humboldt County and distribution indicating probable residence in the C. No published records or voucher material found. Available distributional information is inadequate and the species is considered unlikely to occur in the study area at present.

that of the vegetation, conform to those mapped in the vegetation section with two additions and one deletion:

Number of habitats probably used by a given species.

E-21

Table E-5

BIRDS OF THE HUMBOLDT BAY AREA¹

Common Name	Scientific Name ²	Status ³ (3a) (3b)	Data ⁴ Base	Habitat Designation ⁵													Habitat Use ⁶								
				U	A	G	S	F _p	F _d	F _e	F _m	F _r	D _s	D _v	D _w	W _d		W _r	W _b	W _o	SN	EN	SW	N	J
LOONS																									
Common Loon	<i>Gavia immer</i>	NV	S	A														+	+						2
	<i>Gavia arctica</i>	M	S	A														+	+						2
	Red-throated Loon	<i>Gavia stellata</i>	NV	C	B													+	+						2
PODICEPIDAE																									
Red-necked Grebe	<i>Podiceps grisegena</i>	V	UR	A														+	+						2
Horned Grebe	<i>Podiceps auritus</i>	NV	U	A														+	+						2
Eared Grebe	<i>Podiceps nigricollis</i>	NV	C	B														+	+						2
Western Grebe	<i>Aechmophorus occidentalis</i>	NV	C	B														+	+						2
Pied-billed Grebe	<i>Podilymbus podiceps</i>	R	U	A													+	+							3
PROCELLARIIDAE																									
Booby	<i>Fulmarus glacialis</i>	V	S	A														+	+						1
PETROICIDAE																									
White Petrel	<i>Pelecanus erythrorhynchos</i>	V	R	A														+	+						2
Brown Petrel	<i>Pelecanus occidentalis</i>	V	F*	A														+	+						2
PHALACROCORACIDAE																									
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	R	C	A														+	+						2
Brandt's Cormorant	<i>Phalacrocorax penicillatus</i>	V	S	B														+	+						2
Petrel Cormorant	<i>Phalacrocorax pelagicus</i>	R	C	B														+	+						2
CICONIIFORMES																									
Great Blue Heron	<i>Ardea herodias</i>	R	C	A														+	+	+	+	+	+	+	5

Table E-5 (continued) - 2

Common Name	Scientific Name ²	Status ³ (3a) (3b)	Data ⁴ Base	Habitat Designation ⁵																								Habitat ⁶ Type ⁹																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
				U	A	G	S	F _p	F _d	F _e	F _m	F _r	D _s	D _m	D _v	W _d	W _s	W _b	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r	W _g	W _f	W _c	W _a	W _i	W _e	W _o	W _u	W _h	W _l	W _t	W _r

Table E-5 (continued) - 4

Common Name	Scientific Name ²	Status ³ (3a) (3b)	Data ⁴ Base	Habitat Designation ⁵														Habitat Code ⁶
				U	A	G	S	F	F	F	F	F	F	F	F	F	F	
Barnard's Goldeneye	<i>Bucephala islandica</i>	M	R	A														4
Bufflehead	<i>Bucephala albeola</i>	M	S	C														1
Pacific Duck	<i>Histrionicus histrionicus pacificus</i>	M	R	A														2
Pacific White-winged Scoter	<i>Melanitta fusca dixonii</i>	M	CA	A														2
Surf Scoter	<i>Melanitta perspicillata</i>	N	CA	A														2
Common Scoter	<i>Melanitta nigra americana</i>	M	U	C														2
North American Goldeneye	<i>Oxyura j. jamaicensis</i>	M	S	A														5
Red-throated Loon	<i>Mergus cecillatus</i>	M	R	A														3
Red-throated Loon	<i>Mergus mergamus americana</i>	R	C	C														2
Red-throated Loon	<i>Mergus serrator serrator</i>	M	C	B														2
CATHARTIDAE, ACCIPITRIDAE																		
Turkey Vulture	<i>Cathartes aura</i>	R	S	B														18
White-tailed Eagle	<i>Haliaeetus leucurus</i>	R	U	A														10
Red-tailed Hawk	<i>Buteo jamaicensis</i>	R	C	A														2
Red-tailed Hawk	<i>Accipiter gentilis</i>	R	R	B														3
Red-tailed Hawk	<i>Buteo lagopus</i>	M	U	B														7
Red-tailed Hawk	<i>Haliaeetus leucocephalus</i>	M	E*	B														7
Marsh Hawk	<i>Circus cyaneus</i>	M	C	A														7

Table E-5 (continued) - 5

Common Name	Scientific Name ²	Status ³ (3a) (3b)	Data ⁴ Base	Habitat Designation ⁵														Habitat ⁶ Use ⁷									
				U	A	G	S	F _p	F _d	F _e	F _n	F _r	D _s	D _v	D _m	N _s	N _d		N _t	N _b	N _o	S _t	S _n	S _e	S _m	J	
OSTRIS																											
Osprey	Pandion haliaetus	R	S	B																							5
FALCONIDAE																											
Prairie Falcon	Falco mexicanus	?	R	A																							5
Peregrine Falcon	Falco peregrinus	M	E*	A																							
Merlin	Falco columbarius	M	US	A																							5
American Kestrel	Falco sparverius	R	C	B																							
TETRAONIDAE																											
Blue Grouse	Dendragapus obscurus	R	C	C																							2
Ruffed Grouse	Bonasa umbellus	R	R	B																							1
PHASIANIDAE																											
California Quail	Lophortyx californicus	R	C	C																							6
Mountain Quail	Oreortyx pictus	R	U	B																							
Pink-necked Pheasant	Phasianus colchicus	R	R	C																							4
RALLIDAE																											
Clapper Rail	Rallus longirostris	?	F*#	A																							2
Virginia Rail	Rallus limicola	R	C	A																							3
Sora Rail	Porzana carolina	R	R	B																							3
American Coot	Fulica americana	NR	S	A																							7
CHARADRIIDAE																											
Semipalmated Plover	Charadrius semipalmatus	R	S	B																							2
Snow Plover	Charadrius alexandrinus	N	UR	A																							1
Killdeer	Charadrius vociferus	N	A	A																							3

*Probably extinct locally. Last sighting in 1966. †sandy ocean beaches and/or sand flats

Table E-5 (continued) - 6

Common Name	Scientific Name ²	Status ³ (3a) (3b)	Data ⁴ Base	Habitat Designation ⁵														Habitat Use ⁶										
				U	A	G	S	F _p	F _d	F _e	F _h	F _r	D _s	D _v	D _w	W _d	W _m	W _r	W _b	W _o	ST	ET	SA	M	J			
American Golden Plover	<i>Pluvialis dominica</i>	N	R	A	+	+																				+	+	3
Black-bellied Plover	<i>Pluvialis squatarola</i>	M	CA	B	+	+																				+	+	5
SCOLOPACIDAE																												
Ruddy Turnstone	<i>Arenaria interpres</i>	M	U	C	+	+																				+	+	5
Black Turnstone	<i>Arenaria melanocephala</i>	N	C	B																						+	+	3
Wilson's Snipe	<i>Capella gallinago</i>	M	C	A	+	+																				+	+	5
Long-billed Curlew	<i>Numenius americanus</i>	M	U	B	+	+																				+	+	3
Whimbrel	<i>Numenius phaeopus</i>	M	US	C	+	+																				+	+	4
Spotted Sandpiper	<i>Actitis macularia</i>	N	U	A																						+	+	2
Solitary Sandpiper	<i>Tringa solitaria</i>	?	R	A	?	?																					?	(beach)
Greater Yellowlegs	<i>Tringa melanoleuca</i>	M	C	A	+	+																				+	+	4
Lesser Yellowlegs	<i>Tringa flavipes</i>	M	S	A																						+	+	4
Wandering Tattler	<i>Heteroscelus incanus</i>	M	U	A																						+	(rocks)	1
Willet	<i>Catoptrophorus semipalmatus</i>	N	S	B	+	+																				+	+	4
Knot	<i>Calidris canutus</i>	M	U	A	?	?																				+	+	1
Pectoral Sandpiper	<i>Calidris melanotos</i>	M	R	A	+																					+	+	4
Baird's Sandpiper	<i>Calidris bairdii</i>	M	R	A																						+	+	4
Least Sandpiper	<i>Calidris minutilla</i>	M	C	B	+	+																				+	+	5
Dunlin	<i>Calidris alpina</i>	M	SA	A	+	+	(flooded)																			+	+	5
Western Sandpiper	<i>Calidris mauri</i>	M	SA	B	+	+																				+	+	5
Sanderling	<i>Calidris alba</i>	M	C	B																						+	+	1
Short-billed Dowitcher	<i>Limnodromus griseus</i>	M	S	A	?	?	(wet)																			+	+	1
Long-billed Dowitcher	<i>Limnodromus scolopaceus</i>	M	S	B	?	?	(wet)																			+	+	3

* sandy ocean beaches and/or sand flats

Table E-5 (continued) - 8

Common Name	Scientific Name ²	Status ³ (Ja) (Jb) Base ⁴	Habitat Distribution ⁵														Range ⁶
			U	A	G	S	F	P	F	F	D	D	D	V	U	U	
Black-legged kittiwake	Rissa tridactyla	MV S A															2
Sabine's Gull	Xema sabini	M R A															1
Forster's Tern	Sterna forsteri	MV U A															2
Common Tern	Sterna hirundo	M U A															2
Elegant Tern	Thalasseus elegans	M R A															1
Caspian Tern	Hydroprogne caspia	R C A															2
Black Tern	Chlidonias niger	M R A															3
MURRES																	
ALCIDAE																	
Common Murre	Uria aalge	R O A															1
Pigeon Guillemot	Cepphus columba	VS CS A															1
Marbled Murrelet	Brachyramphus marmoratus	VS S C															1
Ancient Murrelet	Synthliboramphus antiquus	VM R A															1
DOVES AND PIGEONS																	
COLUMBIDAE																	
Pand-tailed pigeon	Columba fasciata	MV S A															3
Rock Dove	Columba livia	R C A															2
Mourning Dove	Zenaidura macroura	MV S B															5
TYTONIDAE																	
Barn Owl	Tyto alba	R C B															3
STREPTOPIDAE																	
Screech Owl	Otus asio	R C B															6
Flammulated Owl	Otus flammeolus	? R B															4
Great Horned Owl	Bubo virginianus	R U B															4

Table E-5 (continued) - 9

Scientific Name ²	Status ³ (Ja) (3b)	Data ⁴ Base	Habitat Distribution ⁵														Total
			U	A	G	S	F	P	D	F	E	F	D	D	D	D	
Nyctea scandiaca	V	R A	+	+													6
Phony owl	R	U B															4
Butorwing owl	V	R B	+	+													2
Spotted owl	R	R C															5
Long-eared owl	V	R A	+	+	+												6
Short-eared owl	V	S A	+	+													5
Long-eared owl	?	R B															5
CAPRIMULGIDAE																	
Phalaenoptilus nuttallii	R	U B															4
Chordeiles minor	V	C A	+	+	+												4
APOIDAE																	
Cypseloides niger	M	R A	?	?	?												18
Chaetura vauxi	MV	C A	+	+	+	+	+	+	+	+	+	+	+	+	+	+	4
TROCHILIDAE																	
Anna's hummingbird	R	U B	+	+													2
Rufous hummingbird	MV	S C															5
Allen's hummingbird	MV	C B	+	+													1
Calliope hummingbird	?	R A	+														4
ALCEDIDAE																	
Belted Kingfisher	R	C B															7
Common Nighthawk	R	C B	+	+	+	+	+	+	+	+	+	+	+	+	+	+	4

Table E-5 (continued) - 10

Common Name	Scientific Name ²	Status ³ (3a) (3b) Base ⁴	Habitat Designation ⁵														Elevation ⁶
			B	A	G	S	F _p	F _d	F _e	F _h	F _i	D _g	D _m	W _s	W _d	W _t	
Pileated Woodpecker	<i>Dryocopus pileatus</i>	P							+	+	+						3
Acorn Woodpecker	<i>Melanerpes formicivorus</i>	R							+	+	+						3
Least Woodpecker	<i>Asyndesmus lewis</i>	M							+	+	+						3
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	R							+	+	+						3
Red-bellied Woodpecker	<i>Dendrocopos villosus</i>	R							+	+	+	+					5
Downy Woodpecker	<i>Dendrocopos pubescens</i>	R							+	+	+	+					3
Scott's Woodpecker	<i>Dendrocopos nuttallii</i>	?							+		+						2
White-headed Woodpecker	<i>Dendrocopos albolarvatus</i>	R							+	+	+						2
Geococcyx																	
Tropical Kingbird	<i>Trogon melanocephalus</i>	V															2
Western Kingbird	<i>Trogon verticalis</i>	M							+	+							2
Acorn Woodpecker	<i>Geothlypis trichas</i>	VS										+	+				2
Black Phoebe	<i>Sayornis nigricans</i>	R							+	+	+					+	3
Gray Phoebe	<i>Sayornis saya</i>	M							+	+							2
White-eyed Vireo	<i>Euphonia corollae</i>	SV														+	1
Blue-headed Vireo	<i>Euphonia cyathiger</i>	SV															1
Western Flycatcher	<i>Euphonia virens</i>	V							+	+	+	+					4
Western Wood Pewee	<i>Catops velox</i>	V															2
White-eyed Vireo	<i>Euphonia corollae</i>	R							+	+	+	+					
Geothlypis																	
Blue-headed Vireo	<i>Euphonia cyathiger</i>	V							+								1

¹ Data collected by the U.S. Fish and Wildlife Service, 1964-1965, in high mountain coniferous forests.

² Data collected by the U.S. Fish and Wildlife Service, 1964-1965, in high mountain coniferous forests.

Table E-5 (continued) - 11

Common Name	Scientific Name ²	Status ³ (3a) (3b)	Data ⁴ Base	Habitat Designation ⁵																Ref. #	
				U	A	G	S	F _p	F _d	F _e	F _m	F _r	D _s	D _v	D _m	W _J	W _r	W _b	W _o		
SWALLOWS																					
HIRUNDINIDAE																					
Violet-green Swallow	Tachycineta thalassina	MV	C	A	+	+							?	+	+	+	+	+	?	+	8
Tree Swallow	Iridoprocne bicolor	MV	C	A	+	+		+	+	+	+	+									7
Bank Swallow	Riparia riparia	M	U	A														+			1
Rough-winged Swallow	Stelgidopteryx ruficollis	MV	C	B	+	+												?			2
Barn Swallow	Hirundo rustica	MV	C	A	+	+	+														3
Cliff Swallow	Petrochelidon pyrrhonota	MV	C	A	+	+	+											+			4
Purple Martin	Progne subis	MV	U	A	+	+	+			?						+	+	+	+		5
CORVIDAE																					
Steller's Jay	Cyanocitta stelleri	R	C	A				+	+	+	+	+									5
Black-billed Magpie	Pica pica	T	U	A																	
Common Raven	Corvus corax	R	C		+	+	+	+	+	+	+	+	+	+	+						10
Common Crow	Corvus brachyrhynchos	R	C	A	+	+												+			3
TYPICAL CHICKADEES PARIDAE																					
Black-capped Chickadee	Parus atricapillus	R	R	A														+			1
Mountain Chickadee	Parus gambeli	R	R	A														+			1
Chestnut-backed Chickadee	Parus rufescens	R	C	A				+	+	+	+	+	+								5
Plain Titmouse	Parus inornatus	R	R	A														+			1
Common Nuthatch	Psaltiriparus minimus	R	U	A				+													1
NUTHATCHES SITTIDAE																					
White-breasted Nuthatch	Sitta carolinensis	R	U	A														+			1
Red-breasted Nuthatch	Sitta canadensis	MV	S	A				+	+	+	+	+	+								5
Pygmy Nuthatch	Sitta pygmaea	R	R	C														+			1

Table E-5 (continued) - 12

Common Name	Scientific Name ²	Status ³ (3a) (3b)	Data ⁴ Base	Habitat Designation ⁵																			Habitat Use ⁶
				U	A	G	S	F _p	F _d	F _e	F ₁₀	F _r	D _s	D _v	D _w	W _s	W _d	W _r	W _b	W _o			
WRENS																							
CERTHIIDAE																							
Wrentit	Chamaea fasciata	R	C					+															2
House Wren	Troglodytes aedon	NV	U					+															2
Winter Wren	Troglodytes troglodytes	R	C					+		+	+	+											5
Bewick's Wren	Thryomanes bewickii	R	C					+															2
Long-billed Marsh Wren	Telmatoodytes palustris	R	C																	+	+	+	3
MIMIDAE																							
Mockingbird	Mimus polyglottos	NV	R					+															1
TURDIDAE																							
Robin	Turdus migratorius	NV	C					+	+	+	+												6
Varied Thrush	Ixoreus naevius	RM	C					+															5
Hermits Thrush	Catharus guttatus	R	C																				3
Swainson's Thrush	Catharus ustulata	NV	C																				4
Townsend's Solitaire	Myadestes townsendi	WV	R					+															5
SYLVIIDAE																							
Blue-gray Gnatcatcher	Polioptila caerulea	T	U																				1
Golden-crowned Kinglet	Regulus satrapa	R	C																				1
Ruby-crowned Kinglet	Regulus calendula	NV	CR					+		+													4
PIPTIDAE & MAXILLIDAE																							
Water Pipit	Anthus spinoletta	NV	C					+		+										+	+	+	6
Bobolink Waxwing	Bombus garrulus	V	O					+		+	+	+											4
Cedar Waxwing	Bombus cedrorum	N	C					+		+	+	+											3
SIALIIDAE																							
Forsterhead Shrike	Lanius ludovicianus	WV	R					+	+	+	+									+	+		5

Table E-5 (continued) - 13

Common Name	Scientific Name ²	Status ³ (3a) (3b)	Data ⁴ Base	Habitat Designation ⁵															Habitat ⁶ Code
				U	A	G	S	F	p	d	e	m	r	s	v	d	w	w	
STARLINGS																			
European Starling	<i>Sturnus vulgaris</i>	MV	A	+	+	+	+	+	+	+	+	+	+	+	+	+			8
VIREOS																			
Hutton's Vireo	<i>Vireo huttoni</i>	R	C				+												1
Solitary Vireo	<i>Vireo solitarius</i>	MV	C												+				1
Red-eyed Vireo	<i>Vireo olivaceus</i>	T	O	A															
Warbling Vireo	<i>Vireo gilvus</i>	MV	C											+	+				2
WARBLERS																			
PARULIDAE																			
Black-and-White Warbler	<i>Mniotilta varia</i>	T	O	A															
Orange-crowned Warbler	<i>Vermivora celata</i>	MV	C	B															5
Yellow Warbler	<i>Dendroica petechia</i>	MV	C											+	+				1
Yellow-rumped Warbler	<i>Dendroica coronata</i>	MV	C	A															6
Black-throated Gray Warbler	<i>Dendroica nigrescens</i>	MV	C	C															2
Townsend's Warbler	<i>Dendroica townsendi</i>	MV	U	C															
Hermit Warbler	<i>Dendroica occidentalis</i>	V	C	B															3
Chestnut-sided Warbler	<i>Dendroica pennsylvanica</i>	T	O	A															
Black-throated Green Warbler	<i>Dendroica striata</i>	M	R																
Parula Warbler	<i>Dendroica discolor</i>	T	O	A															1
Indigo Bunting	<i>Dendroica palmarum</i>	MV	R																
Geometric Warbler	<i>Geothlypis trichas</i>	T	O	A															3
Yellow Warbler	<i>Geothlypis trichas</i>	MV	R	A															5
Orange-crowned Warbler	<i>Geothlypis pusilla</i>	SR	C																

Table E-5 (continued) - 14

[illegible]

Table E-5 (continued) - 15

[illegible]

Table E-5 (continued) - 16

Common Name	Scientific Name ²	Status ³ (3a) (3b)	Data ⁴ Base	Habitat Designation ⁵																Habitat Use ⁶						
				U	A	C	S	F _p	F _d	F _e	F _m	F _r	D _s	D _v	D _h	D _m	W _s	W _d	W _r		W _h	W _o				
FINCHES, cont.																										
Lapland Longspur	Calcarius lapponicus	S	R	A	?	+																				
Snow Bunting	Plectrophenax nivalis	S	O	A																						
Species Diversity ⁷ by Habitat:				30	71	78	41	26	42	54	57	65	11	9	4	49	41	42	70	69	34	25	42	7	29	14
¹ Based on Yocom and Harris (1975) with modifications to conform to habitat designations used in this study. Also consulted: Monroe (1973) Burton (1972), Gerstenberg (1972), Holmberg (1975).																										
² Scientific names taken from Yocom and Harris (1975).																										
³ Status: 3a--Breeding and migratory status: R=breeding resident, V=visitor with little breeding, M=migrant, T=transient (casual occurrence), S=summer, W=winter.																										
^{3b} --Abundance in the Humboldt Bay area, or if protected, protection status. A=abundant, C=common, O=occasional, U=uncommon, S=seasonal/sporadic.																										
Federal or state designation: R*="rare", EX="endangered."																										
⁴ Dependability of data available: A=actually recorded in the Humboldt Bay area or certain to occur there on the basis of habitat preference elsewhere in the county.																										
⁵ Habitat designations:																										
U	urban	F	forest-closed cone pine	D _s	dune-sparse vegetation	W _s	water-tidal creeks and sloughs	SM	salt marsh																	
A	agriculture	F _d	forest-deciduous	D _v	dune-vegetated	W _d	water-ditches, ponds, closed channels	BM	brackish marsh																	
G	grassland	F _e	forest-evergreen	D _h	dune-hollow--DELETED	W _r	water-creeks and rivers	FM	fresh marsh																	
S	shrub	F _m	forest-mixed	D _m	dune-moving sand	W _r	water-creeks and rivers	SW	swamps																	
		F _r	forest-riparian			W _h	water-Humboldt Bay--ADDED	M	moor																	
						W _o	water-open ocean--ADDED	T	tettles and reefs																	
⁶ Number of habitats (minimal) probably used by members of a given species.*																										
⁷ Number of species potentially occurring in each habitat type.*																										

*These are probably conservative estimates since Yocom and Harris do not provide exhaustive information on habitat use and emphasize areas where a species is likely to be seen by a bird watcher. More specific studies used to supplement Yocom and Harris (1975) were made on local study sites in most cases and do not identify exhaustively areas in which a species may be found.

+ Indicates habitats probably used by a given species.

? Indicates habitats which might be utilized by a given species.

Indicates habitats probably not used by a given species.

Table E-6
AMPHIBIANS AND REPTILES OF THE HUMBOLDT BAY AREA¹

Common Name	Scientific Name ²	Status ³	Data ₄ Base	Habitat Designation ⁵	Habitats ⁶
			U A G S F _p F _d F _e F _m r _s D _v D _s D _r W _m W _d W _t W _b W _o SW EM EN SU N J E _{sc} ^b		
MOLT SALAMANDERS	AMBYSTOMATIDAE				
Pacific Giant Salamander	Dicamptodon ensatus	U	A	+ ? + +	+
Olympic Salamander	Rhyacotriton olympicus variegatus	U	A	+ ? + +	+
Northwestern Salamander	Ambystoma gracile gracile	C?	A	+ + + +	+
Tongue-footed Salamander	Ambystoma macrodactylum sigillatum	C?	C	+ + + + +	+
SALAMANDRIDAE					
Rough-skinned newt	Taricha granulosa granulosa	C	A	+ + + + +	+
California newt	Taricha torosa	?	E		
Red bellied newt	Taricha rivularis	C	B	+ + + + +	+
PLETHODON SALAMANDERS	PLETHODONTIDAE				
Great Basin salamander	Plethodina excelscholtzi oregonensis	C?	B	+ + + + +	+
Painted frog-salamander	Plethodina excelscholtzi picta	C?	A	+ + + + +	+
Del Norte Salamander	Plethodon elongatus	C?	B	? + + + +	+
Giant's salamander	Plethodon dunni	C?	C	+ + + + +	+
Yellow-bellied Salamander	Plethodoseps attenuatus	C	A	+ + + + + + +	?
Smooth-backed salamander	Anelides lubugatis	O	B	+ + + ?	?
Wood-frog-like salamander	Anelides ferreus	O	A	+ + + + +	+
Black Salamander	Anelides flavipunctatus flavipunctatus	O	B	? + + + ?	?

Table E-6 (continued) - 3

Common Name	Scientific Name ²	Status ³	Data ⁴ Base	Habitat Designation ⁵																								Relative Use ⁶				
				U	A	G	S	F _p	F _d	F _e	F _m	F _r	D _s	D _v	D _w	D _x	W _d	W _r	W _b	W _o	S _n	E _m	S _m	J								
ALLIGATOR LIZARDS																																
Northern Alligator Lizard	<i>Gerrhonotus coeruleus</i>	C	A					?	+	+	+	+	+	+	+																	6
"	<i>Gerrhonotus c. principis</i>	C	A					?	+	+	+	+	+	+	+																	6
Southern Alligator Lizard	<i>Gerrhonotus c. shastensis</i>	?	B					?	+	+	+	+	+	+	+																	6
Southern Alligator Lizard	<i>Gerrhonotus multicarinatus</i>	O	B					+	+	+	+	+	+	+	+																	7
Oregon Alligator Lizard	<i>Gerrhonotus m. scincicauda</i>	O	B					+	+	+	+	+	+	+	+																	7
BOB																																
BOBIDAE																																
Bobcat	<i>Charina bottae bottae</i>	U	B					+	+	+	+	+	+	+	+																	7
COLUMBIDAE																																
Northwestern Kingneck Snake	<i>Diadophis punctatus</i>	O	B					+	+	+	+	+	+	+	+																	6
Western Yellow-bellied Racer	<i>Coluber constrictor</i>	C	B					+	+	+	+																					3
Pacific Gopher Snake	<i>Pituophis melanoleucus</i>	C	A					+	+	+	+	+	+	+	+	+																10
California Kingsnake	<i>Lampropeltis getulus boylii</i>	O	B					+	+	+	+	+	+	+	+	+																10
"	<i>Lampropeltis g. californianae</i>	O	B					+	+	+	+	+	+	+	+	+																10
California Red-bellied Garter Snake	<i>Thamnophis sirtalis sirtalis</i>	C	A					+	+							+	+															7
Valley Garter Snake	<i>Thamnophis s. fitchii</i>	C	A					+	+							+	+															7
Grand Garter Snake	<i>Thamnophis elegans terrestris</i>	C	A					+	+	+	+	+	+	+	+	+																8
Oregon Garter Snake	<i>Thamnophis couchii hydropila</i>	C	A													+	+															6

Table E-6 (continued) - 4

Common Name	Scientific Name ²	Status ³	Data ⁴ Base	Habitat Designation ⁵																Habitat Use ⁶																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
				U	A	G	S	F	p	d	e	m	r	s	v	w	t	b	o																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										

¹Source: Stebbins (1966, 1972), Collections at the Humboldt State University Museum of Zoology.

²Scientific names from Stebbins (1966).

³Designations summarizing population status: C=common, U=uncommon, O=occasional.

⁴Designations indicating reliability of information on occurrence and habitat utilization in the study area:
A--Frequent or occasional reliable observations or collected specimens from localities within the study area
or from similar habitats in nearby areas.

B--Records (collected specimens or published observations) for Humboldt County and distribution indicating probable residence in the study area.

C--Distributional information inadequate in detail to assure presence of species in the study area; published records or voucher material not available to this study.

Habitat designations conform to those mapped in the vegetation section with two additions and one deletion:

C	urban	Fp	forest-closed cone pine	Ds	dune-sparse vegetation	Ws	water-tidal creeks and sloughs
A	agriculture	Fd	forest-deciduous	Dv	dune-vegetated	Wd	water-ditches, ponds, closed channels
G	grassland	Fe	forest-evergreen	Dh	dune-hollow--DELETED	Wr	water-creeks and rivers
S	shrub	Fm	forest-mixed	Dm	dune-moving sand	Wb	water-Humboldt Bay--ADDED
		Ft	forest-riparian			Wo	water-open ocean--ADDED

Number of habitats probably used by a given species (probably an underestimate).

Number of species potentially occurring in each habitat type (probably an underestimate).

SM	salt marsh
BM	brackish marsh
FM	fresh marsh
SW	swamps
M	moor
T	tettles and reefs

* Indicates habitats probably used by a given species

? Indicates habitats which might be used by a given species.

Indicates habitats probably not used by a given species.

Appendix E-7

METHODOLOGY FOR EVALUATION OF LAND USE
FROM AERIAL PHOTOS

As a means of identifying the rates and causes of wetland alteration in Humboldt Bay, it was determined that historical trends of land use in the area should be analyzed. This required location of historical maps and aerial photographs which might be useful in delineating the types and extent of land use within the bay. Access to many of these was provided by Mr. Don Tuttle of Humboldt County Department of Public Works. Table E-7 identifies the dates, scale, and characteristics of the maps and photographs which were acquired.

After the material was located, it was inspected to determine the most appropriate approach for land use interpretation. The approach included identification of the area to be analyzed and selection of 17 land use categories which could be readily identified. The study area used in the analysis is described in Section VI.A, Volume II. For the purposes of this analysis, the study area was divided into 12 subareas, which are identified on Plate 1. The land use categories are described in Table VII-1, Section VII.A, Volume II.

The 17 categories were most easily identified on the 1978 photo series, due to both the large scale and color infrared format of those photographs. In addition, verification of present land use in the bay area was possible. In the older photographs identification of the 17 categories was somewhat more difficult. However, the familiarity with land use in the bay area gained while interpreting the 1978 photographs provided considerable help in interpretation. In addition, invaluable assistance was provided by Mr. Tuttle.

In order to determine the areal extent of the various land uses, a mosaic of the photographs was made and then overlain with a sheet of transparent mylar. The boundaries of the various use categories were then transferred to the mylar. With the reduction of the mylar to a scale of 1:24000 a set of land use maps for different years, all at the same scale, was generated. These maps could then be planimeted to determine the extent of each land use category for each year.

Although this method allows a reasonable degree of accuracy, there are several problems which might cause errors in measurement. These problems are:

- . Inconsistent scale of photographs
- . Inherent planimetry errors
- . Time when photographs were taken
- . Shoreline changes
- . Difficulties in land use identification
- . Inaccuracy of old maps

* Formulated by SAI for this project.

Table E-7

Maps, Charts, and Photographs of Humboldt Bay

<u>Date</u>	<u>Type</u>	<u>Scale</u>	<u>Source</u>	<u>Comments</u>
1870	Coast Survey Map	1:24000	U.S. Coast Survey	Graphic depiction of land use, land cover
1886	U.S. Coast & Geodetic Survey Maps	1:30000	U.S. Archives	Incomplete coverage
1903	U.S. Coast & Geodetic Survey Maps	1:30000	U.S. Archives	Incomplete coverage
1927	U.S. Coast & Geodetic Survey Maps	1:30000	U.S. Archives	Incomplete coverage
1930	U.S. Coast & Geodetic Survey Maps	1:30000	U.S. Archives	Incomplete coverage
1935	U.S. Coast & Geodetic Survey Maps	1:30000	U.S. Archives	Incomplete coverage
1939	B/W photos	1:10000	Corps of Engineers	Incomplete coverage
1944	U.S. Coast & Geodetic Survey Maps	1:30000	U.S. Archives	
1948	B/W photos	1:20000	Humboldt County Department of Public Works	Incomplete coverage
1958	B/W photos	1:12000	Humboldt County Timber Assessor's Office	
1962	B/W photos	1:12000	Humboldt County Department of Public Works	Base map for habitat map
1969	Mid-Humboldt County topographic mapping	1:6000	Humboldt County Department of Public Works	

Table E-7 (continued)

<u>Date</u>	<u>Type</u>	<u>Scale</u>	<u>Source</u>	<u>Comments</u>
1969	B/W photos	1:24000	Humboldt County Department of Public Works	
1953, 1959, Photoreview 1972	7.5' Quad Sheets	1:24000	USGS Western Mapping Center, Menlo Park, CA	As base map, contains only culture, drainage, land network, and photo-revision composite
1976	Color photo	1:12000	California Department of Navigation and Ocean Development	
1978	Color IR photos	1:6000	Corps of Engineers	November
1978	Color IR photos	1:24000	Corps of Engineers	December

In addition, old maps are subject to the interpretation errors of those who prepared them. Each of these problems, as well as the mitigating measures used to minimize the effect of the problem, are discussed below.

Inconsistent scale of photographs

This relates not to the fact that aerial photographs taken in different years are at different scales, but rather to the fact that the scale of a photograph will vary from center to edges, and also from photograph to photograph within a series. The degree of this variation in a single photograph is a product of the quality of the equipment used, in both original photography and in reproduction. Although the center of a photograph is generally considered to have the most accurate reproduction, it is not possible to limit interpretation to that area without damaging the print through folding or cutting. A photo mosaic involves overlaying photographs and, thus, using the less accurate outer edges of some photographs.

The variation in scale between photographs is primarily a product of changes in the distance between the airplane and the ground. These changes may occur due to fluctuations in the airplane's altitude. They may also be attributed to topographic changes. In a photograph, the scale at the top of a mountain will be different than that at the bottom of a valley.

Inherent planimetry errors

Planimetry techniques are known to contain errors. Inaccurate tracing, irregular surface friction, and slight misadjustments of the planimeter all contribute to possible errors. Very small or long narrow shapes are particularly susceptible to the possible errors of planimetry. In order to minimize these errors, each measurement was repeated until three values within 5% of each other were achieved. The mean of these three values was then reported as the area of the unit being measured.

Upon completion of planimetry, several comparisons were made to determine the accuracy of the measurements. The total of all the land use categories in subarea was compared to the total area of the subarea. When the discrepancy was greater than 5%, the area was replanimetered. Subarea extent was also measured on the most recent USGS topographic quadrangle map (quads).

Time when photographs were taken

The area of land exposed in a tidal estuary will vary depending on the height of the tide. The tidal height in turn will

vary with both time and location within the estuary (see Section VI.G, Volume II). Most of the bay has been diked, thus forming steep shores. Where there are no dikes, natural scarps or vegetation delineate the boundary of wetland areas. With these conditions, it was felt that the tidal height would have little effect on the areal extent of land exposed, and in the study area that effect would probably cause considerably less than the error created by other factors.

Shoreline changes

There have been numerous shoreline changes in the bay between 1871 and 1978. Most of these have been at least induced by human activities, if not a direct result. All of these changes have had an impact on the calculations of areal extent. Examples of shoreline changes include:

- . Enlargement of the distal ends of both North and South Spits, indirectly a result of jetty construction.
- . Formation of Elk River Spit.
- . Erosion at Buhne Point.
- . Accretion at the mouth of Jacoby Creek.
- . Reorientation of channels at the mouth of Salmon Creek.

Difficulties in land use identification

Accurate identification and delineation of land use categories from aerial photographs is a task which requires both patience and practice. This is particularly true of small scale photographs. Swamps and deciduous forest uplands are often difficult to distinguish. Roads and dikes which are long and narrow, but account for considerable acreage, are not easily planimetered. Log storage facilities may not have been in use at the time the photographs were taken. Pasture land may revert to wetland and then later be reclaimed again. As a result of these difficulties, there may be variation in the area reported for some classifications even where there has been no increase.

Inaccuracies of the old maps

The accuracy of the old maps for land use interpretation is dependent on the accuracy of interpretations made by the original survey teams. There are several items on the navigation charts which are of questionable accuracy. In particular, the dates of dike and railroad construction cannot be accurately determined from these charts. This probably relates to the time between construction and when the construction was reported to the map makers. Thus, a railroad completed in 1917 might not appear on a 1919 chart, but would appear on a 1925 chart.

Thus, it is apparent that old maps can have inconsistencies, and proper interpretation of these maps requires resolution of these inconsistencies. A knowledge of the area and a variety of historical sources are useful aids in resolving these problems.

DATA COMPARISON

It is apparent there is a great potential for error in land use trend analysis. To determine the degree of error within each series of photographs, comparisons were made between the total area of each subarea for a given year and the area as determined from the USGS Quads of the bay. From this comparison it was discovered that the range of variation between area on the photographs and the area on the map was generally less than $\pm 5\%$. For example, in Table E-8 the total area of each subarea, as planimetered, is presented. In addition, the extent of each subarea as planimetered from the Quads is shown. The latter figure is the base against which all other measurements were compared. The range of quad area $\pm 5\%$ is also shown. From the table it can be seen that of the 100 different total areas developed, only 15 exceeded the $\pm 5\%$ range. It was felt that this range of error was not great enough to discount the trends identified in the land use analysis.

In order to compare land use data from various years and identify trends, subareas were normalized and the area of each land use category was appropriately adjusted. The areal data obtained from the quads was chosen as the standard, and data from all other sources was normalized to that standard. An example of this process is shown below:

<u>Year</u>	<u>Subarea</u>	<u>Land Use Area</u>				<u>TOTAL</u>
		<u>OS</u>	<u>W</u>	<u>WW</u>	<u>AG</u>	
Before normalization:						
1958	Beatrice Flats	183	120	113	1,587	2,003
1977	Beatrice Flats	79	108	113	1,785	2,085
After normalization:						
1958	Beatrice Flats	189	124	117	1,641	2,081
1977	Beatrice Flats	79	108	113	1,781	2,081

In this way, all subareas and the entire bay could be analyzed for trends in land use and wetlands alteration.

It should be noted that although the areal extent was determined for habitat types mapped at 1:6000, those values were not normalized. It was felt that the increased detail available might add some increased area. From Table E-8 it is apparent, however, that the areal extent of subareas matched closely to those figures developed for land use analysis.

Table E-8

Areal Extent of Each Subarea for Each Year of Land Use Analysis

Subarea ¹	1871	1903	1926	1948	1958	1969	1978	1978 vegeta- tion	USGS Quad	Range Quad $\pm 5\%$
Beatrice Flats	2,137	2,064	2,011	2,130	2,013	2,087	2,085	2,111	2,081	1,977 - 2,185
Table Bluff	742	687	723	708	724	692	722	744	716	680 - 752
South Spit	909	874	875	974	988	987	1,030	959	961	913 - 1,009
Elk River	5,328	5,165	5,224	5,443	5,399	5,669	5,610	5,444	5,418	5,147 - 5,689
Eureka	2,713	2,664	2,671	2,872	2,528	2,654	2,823	2,769	2,790	2,651 - 2,930
Eureka Slough	4,340	4,075	4,134	4,135	3,800	4,100	4,314	4,407	4,277	4,063 - 4,491
Woodley Island	89	93	93	93	89	97	94	88	93	88 - 98
Indian Island	257	251	251	268	299	263	285	267	259	246 - 272
Bayside Bottoms	1,320	1,330	1,399	1,386	1,258	1,306	1,425	1,495	1,350	1,283 - 1,418
North Spit	3,345	3,294	3,217	3,397	3,518	3,333	3,424	3,289	3,389	3,220 - 3,558
Arcata Bottoms	9,130	9,070	9,077	9,119	9,660	9,180	9,820	9,769	9,208	8,748 - 9,668
Mad River	1,537	--	--	--	--	1,532	1,696	1,590	1,533	1,456 - 1,610

¹ In order to compensate for potential erosion/accretion changes in areal extent, most subareas were partitioned into land and water units such that the land area remained constant over the 1871-1978 period. For purposes of this illustration, only the land areas are considered.

Appendix E-8

DETAILS OF PHYSICAL MODEL CONSTRUCTION *

The model of Humboldt Bay is approximately 3 feet by 1½ feet with the maximum depth of 5 inches. A mold was constructed by building an inverse model of the bathymetry and casting it with fiberglass. The model is attached to a headbox containing the tidal plunger.

It is understood that a reduced-scale model cannot provide completely exact representation of all the physical processes in the bay, however, a properly constructed model can provide information not otherwise obtainable. Accurate representation of the flow and physical processes by a model is largely dependent on the scale selection. The scales were chosen so that at least ¼ inch of water would cover the tidal flats at high water and so that turbulent flow would exist in the channels. The model scales selected as being the best are listed in the table below. Two tidal constituents are used to represent a typical tide that repeats itself every 40 seconds (25 hours for prototype). Rivers are also added at four locations in Humboldt Bay (Salmon Creek, Elk River, Freshwater Creek, and Jacoby Creek) with discharges in proportion to their relative drainage basins.

Scaling Factors for the Humboldt Bay Model

Length:	L	1:25,000	1 km = 4.0 cm
Depth:	D	1:120	1 foot = .254 cm
Time:	$T = L/D^{1/2}$	1:2,282	1 hr. = 1.58 sec
Speed:	$S = D^{1/2}$	1:10.95	1 kt. = 4.7 cm/sec
Volume:	$V = L^2D$	$1:7.5 \times 10^{10}$	$1 \text{ km}^3 = 13.33 \text{ l.}$

*The model was built by the firm of Evans-Hamilton, Inc.; it was in addition to the scope of work for which Evans-Hamilton subcontracted to Shapiro and Associates, Inc.

Appendix F

SUMMARY OF PUBLIC INPUT

SUMMARY OF PUBLIC INPUT

1. During the preparation of the Humboldt Bay Wetlands Review and Baylands Analysis (HBWR), public and agency participation and input were sought. The public/agency participation process is summarized below.

- . During preparation of the Outline Report and Work Program for the study in October-November 1978, federal, state, and local agencies were contacted for input to and comments on the study approach and scope. Articles on the study appeared in local newspapers and in the newsletter of the Humboldt County Local Coastal Program, "Coastlines." During the course of the study, Shapiro and Associates, Inc. (SAI) maintained a local representative and telephone.
- . Volume II of the study, which contains the principal part of the data base, was completed in preliminary draft in the spring of 1979 and was sent to local, state, and federal agencies for technical review and comment. It was also made available to the general public in the offices of the Humboldt Bay Harbor, Recreation, and Conservation District (Harbor District) in Eureka and in the Eureka, Arcata, and Humboldt State University libraries. Its availability was made known by newspaper notice and by publication in "Coastlines."
- . The preliminary draft of the HBWR was issued in August 1979, and the revised draft was completed and issued for review in December 1979. In all, three public/agency workshops on the preliminary and revised drafts were held; these are summarized below. Each workshop was publicized by public notice in local newspapers and by letters of notification to agency representatives. In addition, the last two workshops were announced on local radio and television stations and were covered in the late afternoon and evening television news.

2. The following discussion summarizes all comments received from agencies (other than the Corps) and the public on both the preliminary and revised drafts of the HBWR. Either changes and revisions were made in the study in response to these comments or, where changes were judged not necessary, the comment was discussed and resolved with the reviewer.

PRELIMINARY DRAFT, FIRST WORKSHOP

3. The preliminary draft of the HBWR was issued in August 1979 for review by agencies and the public, after it had been reviewed by personnel of the San Francisco District Corps of Engineers. A workshop for staff of local, state, and federal agencies and interested citizens was held in Eureka on 16 October 1979 for SAI to receive comments on the preliminary draft; 13 people, representing 9 agencies and the public, attended besides Corps and SAI personnel.

4. In addition to comments made at the workshop, 9 agencies sent review comments. The comments are summarized below:

Workshop Comments. The following points were discussed:

- . Format of the report.
- . Significance of Areas of Importance (AOI) and Areas of Environmental Concern (AEC).
- . Rare and endangered species.
- . Whether the maps showed legal boundaries.
- . Possible addition of a criterion on wetlands restoration.
- . Delineation of a "recommended line of Corps 404 jurisdiction."
- . Discussion of wet agricultural lands as part of the habitat classification scheme.
- . Suggestions for map improvements and corrections and some word changes in the text.

U.S. Fish and Wildlife Service (FWS). A two-page letter, with a general comment that the report was well written and the biological content exceptionally accurate. Specific comments on the use and value of the Service's Habitat Evaluation Procedures.

California Coastal Commission, North Coast Region. Ten pages of comments and some supplemental information on definitions, power plant siting, wetlands restoration, and land donated to Humboldt State University (HSU). General comment that it was a good job. Specific comments on Volume I, Section V, are as follows:

- . More discussion of wetlands restoration under Importance of Wetlands.
- . Clarification of designation of AOI's and AEC's and addition of wetlands restoration potential as a criterion for designation. Additional discussion of Corps evaluation of the public interest.
- . Format and recommended changes in the description of designated areas. Comments on many of the specific areas involving suggested boundary changes (both expansion and contraction), combination of certain areas, additional history of the areas, additions or corrections to the descriptions of natural functional and ancillary characteristics, changes in development pressure, and numerous suggestions for addition or deletion of certain activities in particular areas. In

total, 41 specific area comments were made; all were discussed with the reviewer and appropriate changes were made.

- Suggestions for additional or different policies and guidelines for Activity Standards and Criteria. Comments to modify or clarify definitions, impacts, legal authorities, and guidelines for various of the specific activities.
- Discussion of small corrections in Development Pressure.

5. In addition to the Volume I comments, some small changes and corrections in Volumes II and III were noted.

California Department of Fish and Game. A three-page letter. Specific comments on various AOI's and AEC's, mostly additions and changes to history and natural functional characteristics. No boundary or designation changes suggested.

California Department of Boating and Waterways. A one-page memorandum and some margin annotations. Comments on inclusion of shoreline erosion as a hazard, specific areas where erosion problems occur (Buhne Point and North Spit), and changes in guidelines for dredging, shore protection, breakwaters, and marinas.

Humboldt County Department of Public Works. Ten pages of specific comments and suggested text changes plus seismic and public safety policies of Humboldt County. Volume I comments were as follows:

- Thirteen comments on the AOI's and AEC's, mostly specific changes or corrections in history, natural functional importance, and development pressure. No suggestions for boundary or designation changes.
- Twenty suggested changes in Activity Standards and Criteria. These included addition of archaeological, seismic, and public safety policies in the General Policy section, three additional dredging guidelines, and specific changes in activity descriptions, impacts, or legal/administrative processes for dredged material disposal, marinas, shore stabilization, aquaculture, and outfall structures.

6. Volume II comments included text additions or corrections in Climatology, Hydrology, Water Quality, Habitats, Mammals, Fish, and Appendix E.

Humboldt County Planning Department (LCP and CEIP). A one-page letter with two pages of attached comments, and telephone conversations. Volume I comments were general in nature and included a request for clarification of the significance of AOI/AEC designations in permit applications, suggested changes in the AOI/AEC template format involving development pressure, habitat breakout and status (degraded, etc.), and the use of small area maps, and a

comment on urban development activities to include separate discussion of industrial, commercial, residential. No specific AOI/AEC changes or activity guidelines were suggested. Volume II comments involved water quality (discussion of point discharges and surface runoff) and natural gas estimates. Volume III comments involved wetland definitions of Corps and other agencies, distinctions between dry/wet pastures and seasonal wetlands, and wetlands outside Corps jurisdictions. Map comments included indexing, sources, area enlargements, jurisdiction boundaries, revisions in ownership and power plant siting maps, and a suggested map of permit activities. This agency also sent information on oil and gas pipeline impacts for use in development of pipeline guidelines and a preliminary draft of onshore support requirements for OCS oil and gas development.

City of Eureka, Department of Community Development. Telephone conversation. The agency questioned the designations of Schmidbauer Pond (North Broadway Pocket Marshes), Eureka Waterfront, and Eureka Gulches; they felt these areas should be designated for development, since the surrounding areas are already developed. The agency representative asked whether the FWS or Coastal Commission definition of wetlands was used.

City of Arcata, Planning Department. A four-page letter with references. General comment that the report was well done, providing a well documented review of physical, biological, and social characteristics of the Humboldt Bay region and reflecting in the recommended policies a sensitivity to local issues and needs. Specific comments were made on Volumes I and II. Volume I comments were as follows:

- . Emphasized the importance of nutrient input to preservation of the Bay's beneficial uses.
- . Specific comments on designated AOI's and AEC's, in particular Elk River Spit Wetlands, King Salmon Wetlands, South Bay, Arcata Bottoms, Arcata Marsh, and North Bay; the comments included additions or changes in development pressure, natural functional importance, and suitable activities.
- . Comments on outfall structures, including potential beneficial effects of treated wastewater, marsh reclamation, and flushing.

7. Volume II comments included the following:

- . Continued objection to the use of such a preliminary model for oceanography and circulation in the Bay (also discussed in the City's letter of comment on the first draft of Volume II, dated 5 July 1979). Recommended that additional information and an adequate model be developed; this recommendation is specifically included in Volume I, Section V.E.

- . Other specific comments dealt with sediments, eelgrass, littoral drift and its effects on sediments, water quality (in particular fecal coliform contamination), and corrections in format and names in the Government Profile.

Humboldt Bay Harbor, Recreation, and Conservation District. A one-page letter and margin annotations in the report. General comment that Harbor District reviewers felt the study was very good. Specific Volume I comments were as follows:

- . Correction in Section IV on navigation improvements completion date.
- . Corrections, questions, or changes in history, natural functional importance, development pressures, and activities in 21 of the AOI/AEC's. The most significant comments were on the AOI called Woodley/Daby Islands. These comments dealt with the sensitivity of the Islands' habitats, the history of proposed development of Woodley Island, and the exact area of the Woodley Island Habitat Reserve. The comments were discussed with a Harbor District representative.
- . Comments on Activity Standards and Guidelines, including questions, changes, or additions to general policies and on specific activities, in particular on dredging, dredged material disposal and fill, piers and pilings, breakwaters, marinas, aquaculture, and submerged cables and pipelines. The comments included suggested changes in definitions and guidelines.
- . Suggested word changes and additions or deletions in the sections on development pressure and compensation.

8. Specific Volume II comments included:

- . The need for sources on all tables.
- . Suggested changes and corrections in the Government Profile, including a complete revision and update of the discussion on the Humboldt Bay Wastewater Authority.
- . Slight corrections in the cultural and economic sections.

In addition to all the above comments, SAI discussed details of currents, circulation, oceanography, and sediments with Steve Costa of HSU.

REVISED DRAFT, SECOND WORKSHOP

10. The revised draft of the HBWR was issued in December 1979. After review by the Corps of Engineers, San Francisco District and South

Pacific Division, a review meeting with the Humboldt Bay Advisory Committee and a public workshop were held in Eureka on 21 February 1980.

11. In addition to comments made by the Advisory Committee and at the workshop, six agencies sent comments. All comments received are summarized below.

Humboldt Bay Advisory Committee. Fourteen persons representing nine agencies or groups attended in addition to SAI staff. Comments included:

- . A discussion of differences between the definitions of wetlands used by the Corps and Executive Order (EO) 11990 and those used by the U.S. Fish and Wildlife Service (FWS), the California Coastal Commission, and California Department of Fish and Game. Wet pastures are classified as wetlands by the latter three agencies but not by EO 11990 or the Corps. In consequence, the National Wetlands Inventory mapping by FWS shows a much greater acreage of wetlands in the Humboldt Bay area than does the HBWR. This point should be discussed more thoroughly in Volume III of the study.
- . A reiterated request by the California Coastal Commission that "restoration potential" be made a criterion for designation of AOI/AEC's. (This point was discussed extensively with Commission representatives after the meeting.)
- . A question on location of closed ditches in agricultural areas; they can be relocated if necessary.
- . Questions on fill in agricultural areas and minimum parcel sizes in agricultural areas. There was concern about the general recommendation against fill and most activities in the AOI's.
- . Map corrections to show more extensive salt marsh around Fields Landing.

Public Workshop. Fourteen people representing agencies and the general public attended. Comments were as follows:

- . A question about the possible state park that was at one time mentioned for South Bay by the California Department of Parks and Recreation.
- . Questions about the significance of boundary lines on the maps (they have no legal significance and are only for planning purposes).
- . Questions about County plans and policies (not part of the HBWR).

- Comments that the activity suitability lists in the AOI/AFC's are judgmental and are neither necessary nor appropriate for inclusion in the study.
- Questions about the general purpose of the study and the significance of the area designations.
- Comments that the study is already being used by agencies as "the Gospel."

U.S. Fish and Wildlife Service. A five-page letter. General comments that the study is well thought out and logical and that the habitat maps and area designations will be useful to agencies and the public in decision making. Specific comments included:

- A recommendation to emphasize by capitals and underlining the normal permit review process (Volume I, page 46).
- Clarification of exact study area boundary on North and South Spits.
- Recommendations against pipelines and public facilities in North Broadway Wetlands and against gravel mining in Mad River.
- A recommendation for a 100-foot riparian buffer zone along Jacoby Creek.
- Slight corrections to EO 11990 text and Corps permit text.
- Additional information on endangered/threatened species.
- Recommendation for further studies as follows:
 - support for all those listed
 - emphasis on development and coordination of wetland mitigation/ restoration policies and further investigation of the land bank idea
 - a careful jurisdictional boundary survey (Mean High Water (MHW) and Mean Higher High Water (MHHW))
 - a determination of the historic extent of wetlands
 - studies of wetland type relationships (succession, freshwater/saltwater)
 - an invertebrate study
 - additional study of the mudflat habitat, including mapping of eelgrass beds, monitoring changes in distribution of the beds, and determining causes of eelgrass decline
 - further study of the impacts of gravel mining in the delta of the Mad River

California Coastal Commission, North Coast Region. Telephone conversation. Specific comments as follows:

- Comment that the upland/wetland boundary was not consistent with the Section 404 boundary (as interpreted by the Los Angeles District) in the South Broadway and King Salmon areas. Felt that some additional wetlands in those areas would be inside Corps jurisdiction.
- A suggestion that the area between Bayside Wetlands and Pay-side Cutoff and portions of the north half of Bracut Hill could be potential restoration sites.

Humboldt County Department of Public Works. Three pages of page-specific comments and maps showing lease areas for Coast Oyster Company and Pigeon Point Oyster Company. Specific Volume I comments involved word changes or slight corrections in various AOI/AEC descriptions for history and natural functional importance and an addition to the activity description of aquaculture. Specific Volume II comments involved text additions on offshore and Bay currents and circulation and in the Fisheries section on oyster leases.

Humboldt County Planning Department, LCP and CEIP. Personal interview. Specific comments included:

- In Volume I, the need to add more discussion of public interest factors and a statement on alternatives to the discussion of AOI significance.
- The need to discuss the functional characteristics of Aq/W and Agw designations and to clarify the difference between these.
- Information on the County's Unclassified Zone.
- Discussion of the status of the County's LCP and of the User's Guide for the study. The discussion included consideration of appropriate types and locations of development to serve as an example of how to use the report.

City of Arcata Department of Public Works. One page with two specific comments, as follows:

- Comment that McDaniel Slough should be considered a wetland, a fisheries habitat, and a part of the storm drain management system for Arcata. All three characteristics should be given equal weight.
- Emphasis on the need for a verified state-of-the-art numerical model of Humboldt Bay to be prepared as soon as possible.

George H. Allen, Professor of Fisheries, Humboldt State University. A five-page letter with specific comments on Volume I as follows:

- . Question on data sources for statement on residence times of out-migrant juvenile salmonids in Humboldt Bay and their distribution with tide levels.
- . Support for channel improvements to enhance salmon and steelhead propagation and to restore fish runs to small urban creeks.
- . Suggested inclusion of the concept of constructive use of treated domestic wastewaters in the lower reaches of the Mad River (Area #19) for agricultural irrigation, estuarine flow maintenance and nutrient enrichment during summer low-flow periods, marshland development, and possibly aquaculture.
- . Corrections and update on the status of Arcata's marsh reclamation project.
- . Corrections and additions on spawning in Mad River and on activities including aquaculture, outrill structures, and agriculture.

The letter also includes general comments on aquaculture, as follows:

- . Characteristics of high-priority types of aquaculture in the coastal zone.
- . The need for cooperation and coordination between agriculture and aquaculture, including possible aquacultural use of periodically flooded pasture land, existing diked low-lying areas (e.g., abandoned log ponds), and the existing oxidation ponds and adjacent area at King Salmon Wetlands.

The letter concluded by commenting that the document was useful and thorough.

REVISED DRAFT, THIRD WORKSHOP

12. A third public workshop was held in Eureka on 13 May 1980. Approximately 100 people representing agencies and the general public attended. Four agencies contributed comments, including the Humboldt Bay Harbor, Recreation, and Conservation District; the California Coastal Commission, North Coast Region; the Eureka Department of Community Development; and the U.S. Fish and Wildlife Service. Their comments are summarized below:

- . The Harbor District requested that a disclaimer be included in the report, to the effect that the recommendations in the study represent the views of the consultant and that any proposed permit activity or project should be considered individually.

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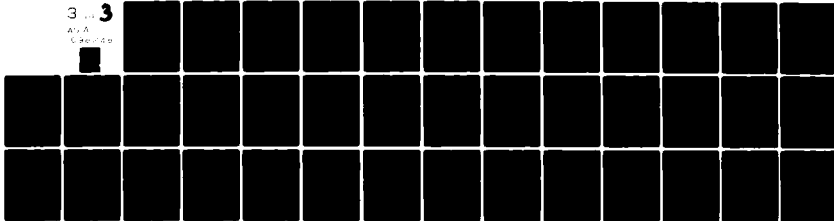
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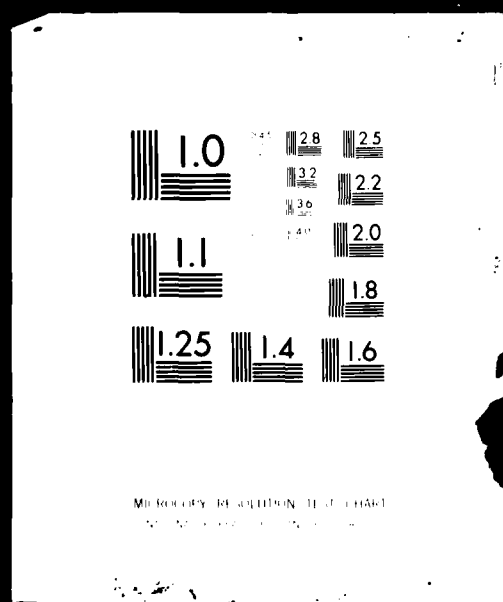
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- . The Coastal Commission, North Coast Region, stated that the report would be very useful because of the wetlands mapping, but that the agency would make decisions based on its own policies.
- . The Eureka Department of Community Development stated that the report should not be a land use planning document, that the activity suitability recommendations constitute land use planning without the necessary base data on economic and social issues, and that interagency interactions, permit processes, and the public interest should be better defined. This agency felt that not enough emphasis or recognition was given to local governmental policy in the report.
- . The U.S. Fish and Wildlife Service endorsed the report as a comprehensive data base and indicated that additional data on black brant use of agricultural lands was available in a report by the agency.

13. Numerous comments were made by members of the general public during the course of the workshop. These comments are summarized below:

- . Members of the general public expressed opposition to the inclusion of recommendations on activity suitability in the AOI's and AEC's and on activity standards and guidelines. Such recommendations were described as "land use planning" and were felt by several persons to be inappropriate as part of the HBWR. Other public concerns involved inverse condemnation and curtailment of the rights of property owners to make their own land use and development decisions.
- . Significant public concerns were expressed about agriculture as an ongoing viable land use in the Humboldt Bay study area. Several specific comments on the agricultural suitability and agriculture standards and guidelines were made.
- . Questions about the various definitions of wetlands used by local, state, and federal agencies were raised. Discrepancies in the definitions and the resulting effects on mapping of wetlands in the study area were discussed by representatives of SAI.
- . Several persons felt that there had been inadequate notice to the public about the study and the workshops.
- . Some members of the public spoke in favor of preservation of the natural resource values of the Humboldt Bay area.
- . Some members of the public stated that an economic study of the Humboldt Bay area should be done to provide a more comprehensive data base for land use planning by the various responsible agencies.

14. A representative of the Corps of Engineers, San Francisco District, discussed with the workshop attendees whether certain portions should be removed from the HBWR documents. These portions included the recommendations for activity suitability in each AOI or AEC, the general policies on activities, and the specific activity standards and guidelines. There was considerable support from members of the general public for deleting these portions of the report.

REVISED DRAFT, ADDITIONAL COMMENTS

15. Subsequent to the third workshop, and at least partly as a result of issues raised at that workshop, the California Coastal Commission, North Coast Region, and the City of Arcata Planning Department made additional comments on the study. Both agencies supported the completion of the study including the activity suitability recommendations and the activity standards and guidelines. Both agencies felt that the activity recommendations, standards, and guidelines were valuable and essential parts of the document. The Coastal Commission pointed out that these sections were included in accord with the contract scope of work which was developed after extensive input from local agencies and the public. The Coastal Commission further commented that the agricultural standards and guidelines in the draft report should be revised to reflect more comprehensive local policies, notably those of the City of Arcata's Local Coastal Program. Both agencies recommended a disclaimer such as that described by the Harbor District at the third workshop.

Appendix G

BIBLIOGRAPHY AND REFERENCES

Appendix G

BIBLIOGRAPHY AND REFERENCES

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PERSONAL COMMUNICATIONS

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