SRCD LTP

The Suisun Marsh Management Program

THE SUISUN RESOURCE CONSERVATION DISTRICT'S MANAGEMENT PROGRAM TO PRESERVE, PROTECT AND ENHANCE THE PLANT AND WILDLIFE COMMUNITIES WITHIN THE PRIMARY MANAGEMENT AREA OF THE SUISUN MARSH

The cooperation and assistance of the staffs of the following agencies is gratefully acknowledged:

California Department of Fish and Game

California Department of Water Resources

San Francisco Bay Conservation and Development Commission

County of Solano

Solano County Mosquito Abatement District

U.S. Fish and Wildlife Service

U.S. Soil Conservation Service

U.S. Water and Power Resource Service

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Currently, the CDF&G is acquiring and developing the Hill Slough Wildlife Management Area in accordance with these provisions. This newly established area presently contains 1,112 acres south of Highway 12 at Grizzly Island Road and present plans envision enlargement of the area by additional acquisitions as they become available in the same general section of the Suisun Marsh.

In addition, studies are currently underway to identify non-wetland areas in the Marsh which could be converted to wetland status as mitigation for the loss of brackish marsh habitat on Ryer, Roe, Freeman and Snag Islands which is being caused by decreased Delta outflows.

These programs implement the provisions of Sections 29003(e), 29009 and 29011 of the PRC and the Recreation and Access Policies of the Suisun Marsh Protection Plan. They are also consistent with the Solano County portion of the San Francisco Bay Public Access Plan developed by the BCDC. .

III. INDIVIDUAL OWNERSHIP MANAGEMENT PROGRAMS

Section 29412.5 of the PRC requires the SRCD's component of the Local Protection Program to: "include a water management program for each managed wetland in private ownership within the primary management area and shall specify all necessary development related to such management." These programs must be reviewed by the CDF&G and certified by the BCDC. The

Individual ownership
Management Programs
(Duck Pins)

objectives and scope of these programs reflect the policies and provisions of the Suisun Marsh Protection Plan and are presented in detail in Exhibit "B".

Under a contract with the SRCD, the U.S. Soil Conservation Service (SCS) has prepared a water management program for each of the 138 individual private ownerships greater than 5 acres in size within the PMA which are managed primarily for wildlife purposes. These site specific detailed programs are the foundation of the management program. Due to funding limitations, plans have not been developed for the 16 ownerships which are managed for both wildlife and agricultural purposes or the 6 ownerships which are primarily agricultural. (Also see page 29)

In addition, the CDF&G has prepared a Marsh Management Manual as a step by step "how to" guide to assist the private landowners in implementing their individual management programs.

IV. DIKING, FLOODING, DRAINING, FILLING AND DREDGING STANDARDS

Section 29401(d) of the PRC requires the SRCD to develop "enforceable standards for diking, flooding, draining, filling and dredging of sloughs, managed wetlands and marshes" within the PMA. This task has been completed after consultation with the BCDC, the CDF&G, Solano County and the Solano County Mosquito Abatement District (SCMAD). These standards reflect the policies and provisions of the Land Use and Marsh Management Section of the Suisun Marsh Protection Plan, and are presented in detail in Exhibit "C".

V. REGULATIONS

Section 9962(a) of the PRC states; "The District shall issue regulations requiring compliance with any water management plan or program for privately owned lands within the primary management area ..." To carry out the mandate of this section, the SRCD intends to adopt the following regulations after the BCDC has certified the SRCD's component of the Local Protection Program. Implementation of the actions called for by these regulations shall become mandatory in accordance with the provisions of Section II B (pages 28-31) of the Implementation Section of this Program.

1) Each private managed wetland ownership within the Primary Management Area shall be managed in conformity with the provisions and recommendations of the individual management program for that ownership, as approved by the Suisun Resource Conservation District and certified by the California Department of Fish and Game and the San Francisco Bay Conservation and Development Commission. It is the responsibility of the landowner of record to comply with the provisions and recommendations of the certified management program. If there is a change in land ownership, the new landowner assumes this responsibility. Proposals for modifications of certified programs shall be submitted by the landowners to the SRCD. The SRCD will treat such proposals as amendments to its

EXHIBIT "A" PROPOSED

EXTERIOR LEVEE PROGRAM

The exterior levees in the Suisun Marsh present special maintenance problems. First, they are primarily levees that protect managed wetlands which provide unique brackish water habitat that is of importance to the public and the Pacific Waterfowl Flyway, and a levee failure on one ownership is likely to affect contiguous inland ownerships as well. Second, they are exposed to wind generated wave action and tidal erosion. Third, many levees are subjected to the significant wave action generated by boat traffic. Fourth, many of these areas are presently partially protected by tule berms. As increased exports of water from the Delta reduce Delta outflows, salinities in these areas will increase to a level where the tules are killed and the berms destroyed. Fifth, the cost of maintaining these levees will shortly reach a level where it is no longer within the financial capabilities of the landowners.

The District's proposed solution to this problem is a multifaceted one which is based upon the various sources of the problem. First, because of the extensive area of direct or indirect benefits, a marsh-wide entity would be most appropriate to provide levee maintenance. Specifically, an improvement district or districts which could be formed within

the Resource District would be suitable entities. That component of the levee maintenance costs attributable to normal wave or tidal action could thus be spread across the direct or indirect beneficiaries. Secondly, that component of the levee maintenance cost attributable to the Stockton/Sacramento Channel ship traffic should be funded by the Corps of Engineers as an 0 and M cost of their projects as mitigation for project effects. Thirdly, the state and federal water agencies should fund the cost of a study to: develop a salt tolerant vegetative berm (probably of cordgrass) to replace the prospective loss of tules berms. They also should fund the cost of establishing and maintaining this berm as an 0 and M cost of their Marsh water supply project.

Exhibit "C"

SUISUN RESOURCE CONSERVATION DISTRICT STANDARDS COVERING DIKING, FLOODING, DRAINING, FILLING AND DREDGING OF TIDAL WATERS, MANAGED WETLANDS AND TIDAL MARSH WITHIN THE PRIMARY MANAGEMENT AREA OF THE SUISUN MARSH AS PROVIDED FOR BY SECTION 2900 et seq, OF THE PUBLIC RESOURCES CODE

Section I - Title:

These standards shall be known as the Suisun Resource Conservation District (SRCD) Standards for diking, flooding, draining, filling and dredging of tidal waters, managed wetlands and tidal marshes within the Primary Management Area (PMA) of the Suisun Marsh (Marsh). These standards are established in accordance with the provisions of Section 29401(d) of the Public Resources Code (PRC).

Section II - Definition:

1) Tidal waters are defined as open water areas within the PMA which are subject to daily tidal action.
2) Managed wetlands are defined as leveed areas within the PMA in which water inflow and outflow is artificially controlled, or in which waterfowl food plants are cultivated, or both, to enhance habitat conditions for waterfowl and other water-associated birds and wildlife.
3) Tidal marshes are defined as vegetated areas within the PMA which are subject to daily tidal action.

Diking + Permits
Exhibit "C"

Section III - Purpose:

The purposes of these Standards covering diking, flooding, draining, filling and, dredging are to preserve, protect and enhance the plant and wildlife communities within the PMA. By doing so, they will serve to protect the public interest through the development of wiidlife habitat and prevention of mosquitoes. The improvement of the present water management practices called for by Sections 29003(b) and 29401(d) of the Suisun Marsh Preservation Act and the policies of the Land Use and Marsh Management Section of the Suisun Marsh Protection Plan will require the improvement of the water management facilities and procedures within the PMA.. The standards and requirements of this element of the SRCD's component of ,the Local Protection Program specify how such improvements shall take place. They also meet the objective of minimizing activi ties in tidal marshes and waters.

Section IV - Scope;

These standards shall apply to all private activities undertaken on privately owned land within the PMA and are intended to supplement the provisions of any Solano County Grading and Erosion Control Ordinance within the PMA.

Section V - General Principles and Standards:

Diking, flooding, draining, filling and dredging activities shall be conducted so as to minimize any adverse effects on desirable plant and wildlife communities and to minimize the

potential for erosion and sedimentation. The following basic principles and standards shall serve as the minimum guidelines for the protection of plant and wildlife communities and the control of erosion and sedimentation:

1) Stripping or burning of vegetation, or other soil disturbance shall be done in a manner which will minimize adverse impacts on desirable plant and wildlife communities and control erosion and sedimentation.

2) Existing native vegetation shall be retained, protected, and supplemented wherever practical. Development shall be accomplished so that existing trees will be preserved whenever practical.

3) Exposure of soil to erosion by removal of vegetation shall be limited to the smallest area practical and for the shortest time practical. Soil exposure shall not exceed an area in which work can be completed during a single season to insure that soil stability is estalished well in advance of the rainy season. In general, relatively large scale soil disturbance such as discing, vegetation clearing by mechanical or chemical means, or pond bottom re-shaping shall be limited to not more than 30% of the area of an individual private ownership between April 1st and June 30th of a given year. Smaller projects such as structure removal or installation,

levee repair, or emergency projects may be done at any time.

4) Permanent control structures should be installed and final vegetation established as soon as practical.

5) Facilities shall be constructed in a manner which will minimize erosion and sediment deposition in adjacent waterways and wetlands.

6) Slopes, both cut and fill, shall not be steeper than 2:1 unless a thorough geological and engineering analysis indicates that steeper slopes are safe and appropriate erosion control measures are specified.

7) Cuts and fills shall not encroach upon existing watercourses, or constructed channels in a manner so as to adversely affect adjacent properties or the carrying capability of the watercourse.

8) Disposal of cleared vegetation and excavated materials shall be done in a manner which reduces the risk of erosion and sedimentation and shall conform to the provisions of these standards.

9) Diking, filling and dredging activities shall be conducted so as to minimize interference with critical wildlife activities such as nesting and breeding.

Section VI - Specific Principles and Standards:

A. TIDAL WATERS

1) Diking - before 1900 major areas of the PMA were leveed to isolate them from tidal action and to permit

the managed application of tidal waters for agricultural purposes. Under the policies of the Suisun Marsh Protection Plan, residual areas of tidal waters will remain in their current state. To assure that this happens, no new levee shall be constructed which isolates a water area, or portion thereof, that is currently subject to daily tidal action except in accordance with the provisions of a certified individual ownership management plan, or with the permission of the appropriate permitting authorities.

2) Flooding and Draining - except as otherwise provided in this section, there shall be no action which interfers with unimpeded natural tidal action in any water area, or portion thereof,- currently subject to it.

3) Filling - no filling of a water area, or portion thereof, which is currently subject to unimpeded natural tidal action shall be undertaken except in accordance with the provisions of a certified individual ownership management plan, or with the permission of the appropriate permitting authorities.

4) Dredging - no dredging of a water area, or portion thereof, which is currently subject to unimpeded natural tidal action shall be undertaken except as a source of material for levee maintenance or to keep open access channels to water inlet and outlet structures. Any dredging shall be performed in accordance

with the provisions of a certified individual ownership management plan, or with the permission of the appropriate permitting authorities. When dredging is undertaken it shall be done as provided in Section VI B 4, and all practical measures shall be used to minimize the loss of intertidal tule berms.

B. MANAGED WETLANDS

1) Diking -

a) new levee construction shall be limited to that specified in certified individual ownership management plans and shall conform to the specifications contained in Attachment "A". Proposals for other new levee construction shall be approved by separate marsh development permits as provided for in Section 29500 et seq. of the PRC.

b) renovation, restoration, repair and maintenance of existing levees shall conform to the specifications contained in Attachment "A".

2) Flooding and Draining - flooding and draining of managed wetlands within the PMA shall be done in accordance with one or more of the five water management schedules contained in Attachment "D" and identified more specifically in each certified individual ownership management plan. Alternative or modified water management schedules may be employed if approved

by SRCD after review by the Solano County Mosquito Abatement District (SCMAD), the California Department of Fish and Game (CDF&G) and the U.S. Soil Conservation Service (SCS), except that existing agricultural practices involving modified water management practices shall be permitted to continue. Any new ditches which are constructed in accordance with the provisions of a certified individual ownership management plan shall comply with the specifications contained in Attachment "B". Any new water control structures which are constructed in accordance with the provisions of a certified individual ownership management plan shall comply with the specifications contained in Attachment "C". Renovation and improvement of existing facilities shall be performed in accordance with the same specifications.

3) Filling - filling shall be limited to low areas that are presently deeply flooded and shall only be done to allow establishment and growth of emergent vegetation. Any filling to be done shall be included as an item or an addendum in a certified individual ownership management plan.

4) Dredging -

a) Dredge spoils from the construction of new ditches:

i) Main ditches - where practical, dredge spoil material shall be used for the maintenance of existing levees. Spoil material shall be deposited either on the crown or inboard side of the levee. Where the use of spoil material for existing levee maintenance is not practical, dredge spoils shall be considered as a source of material for filling low spots. If neither of the above disposal techniques is practical, spoil materials shall be sidecast along the edge of the ditch at a distance of not less than 4 feet from the edge of the ditch. Side cast soil material shall be placed in such a manner that it does not prevent water flow into or out of the ditch from the surrounding lands. To encourage the establishment of desirable vegetation, the height of the deposits of spoil material shall not exceed the water depth when the area is flooded to its normal depth, ii) Spreader ditches - no special requirements.

b) Dredge spoils from the renovation or improvement of existing ditches:

i) Main ditches - spoil material shall be disposed of in the same manner prescribed in Section a) i above, ii) Spreader ditches - no special requirements.

C. TIDAL MARSHES;

1) Diking - the policies of the Suisun Marsh Protection Plan provide that disturbance of tidal marsh shall be minimized. Therefore, there shall be no diking of tidal marsh areas except in conformance with the findings of the Protection Plan and the provisions of a certified individual ownership management plan, or with the permission of the appropriate permitting authorities.

2) Flooding and Draining - the policies of the Suisun Marsh Protection Plan provide that disturbance of tidal marsh shall be minimized. Therefore, activities which would affect the natural daily flooding and draining of existing tidal marshes shall be undertaken only in conformance with the findings of the Protection Plan and the provisions of a certified individual ownership management plan, or with permission of the appropriate permitting authorities.

3) Filling - in accordance with the policies of the Suisun Marsh Protection Plan, disturbance of tidal marsh shall be minimized. Therefore, filling of tidal marsh areas shall not be done except in conformance with the findings of the Protection Plan and the provisions of a certified individual ownership management plan, or with the permission of the appropriate permitting agencies.

4) Dredging - in accordance with the policies of the Suisun Marsh Protection Plan, disturbance of tidal marsh shall be minimized. Therefore, dredging of tidal marsh areas shall not be done except in conformance with the findings of the Protection Plan and the provisions of a certified individual ownership management plan, or for mosquito control as authorized by the SCMAD, or with the permission of the appropriate permitting authorities. Where practical, dredge spoils shall be used for the maintenance of existing levees. In other cases, dredge spoils should be disposed of in open waters.

ATTACHMENT "A" SUISUN MARSH

LEVEE SPECIFICATIONS

SCOPE This specification covers the design, construction and maintenance of levees in the PMA of the Suisun Marsh. Levees are embankments which protect managed wildlife habitat areas in the Suisun Marsh from uncontrolled flooding.

DEFINITIONS

1. Exterior Levees - embankments which prevent uncontrolled flooding of marshland due to tidal action. The crown of these levees is normally about 9 feet above zero tide with a 12 foot top width.
2. Interior Levees - embankments which allow for management of water inside exterior levees. They are not exposed to tidal action. The crown of these levees is normally less than 4 feet above the natural ground with a top width of 10 feet.
3. Core - locally available material which is placed in a trench dug along the longitudinal axis of the levee.

PURPOSE 1. Exterior Levees - the purpose of exterior levees is to facilitate water storage and control in order to promote wildlife habitat in the Marsh. Exterior levees are used to control tidal flow onto managed wetlands and prevent their uncontrolled flooding. They are used in conjunction

with interior levees, ditches, and water control structures to supply to or drain water from the land which they surround.

2. Interior Levees - the purpose of interior levees is to isolate specific areas within exterior levees for the purpose of providing those areas with individual control of water. They contain and control water used for ponding during the duck season and for leaching afterwards.

3. Cores - the purpose of installing a core is to eradicate existing animal channels in a levee and reduce water seepage through it.

CONDITIONS WHERE THESE STANDARDS APPLY Levees are usually built from spoil excavated from the inboard side of the levee or dredged from channels. The levee standards defined in this section should be used only on sites where:

1) The normal maximum water depth against an exterior levee does not exceed 7 feet above zero tide.

2) The maximum water depth against an interior levee does not exceed 3 feet above the natural ground.

3) The damage which is likely to result from a levee failure is low.

4) The area to be protected is used for wildlife habitat or agriculture and has minimal structural improvements.

Where one or more of the above conditions is exceeded, special design levee standards are required.

DESIGN CRITERIA

A. Material - levee material shall be mineral or peat soils free of consolidated sod, roots, brush and other vegeta tive matter.

B. Placement - fill shall be placed so as to permit free drainage of surface water. The maximum fill height from the surface of the ground at start of construction for any one construction stage shall be five feet. If the designed height is greater than 5 feet, the levee shall be built in two lifts. Lumps and clods of earth shall be broken up by shaping or discing.

C. Cross Section -

1) New levees - the minimum standards for the construction of new levees shall be as follows: a) Exterior levees:

i) The foundation shall be cleared and stripped of brush, trees, roots and other vegetation and debris. In soils containing excessive amounts of organic materials, a core trench shall be excavated to a minimum depth of 2 feet, ii) The minimum top width shall be 12 feet, iii) The minimum design water height (Hw in Figure 1) shall be 9 feet at zero tide, iv) The minimum design side slope shall be 2:1 on both sides.

v) The minimum freeboard (Hf in Figure 1) shall be 2 feet; where wave action is expected, the freeboard shall be at least 3 feet.

vi) Existing tule berms on the outboard side of the levee shall be retained to the maximum extent practical.

vii) The minimum berm width between the inboard toe of the levee and the edge of any borrow ditch shall be 10 feet (See Figure 1). For levees having a design water depth of greater than 5 feet, a line drawn between the design water surface (Hw on Figure 1) and the toe of the levee shall not intersect the borrow ditch. In areas of organic soils, the minimum berm width shall be 25 feet.

viii) The minimum allowance for settlement (Hs in Figure 1) shall be 30% of the design height. If the levee must be in place and functional before natural settlement can take place, it shall be shaped or compacted by mechanical means. The levee shall be inspected to assure that the design cross section is obtained after settling.

ix) All new levees shall be constructed with a core.

x) Outboard faces shall be riprapped only in areas which are exposed to major wave action and are not protected by vegetative berms.

b) Interior levees:

i) The minimum top width shall be 10 feet,

ii) The maximum designed water height (HW in Figure 1) shall be 3 feet.

iii) The minimum design side slopes shall be 2:1 both sides.

iv) The minimum freeboard (Hf in Figure 1) shall be 1 foot. If the water depth is greater than 1 foot, the minimum freeboard shall be equal to the depth of the water.

v) The minimum allowance for settlement (Hs in Figure 1) shall be 30% of the design height. If a levee must be in place and functioning before natural settlement can take place, it must be shaped or compacted by mechanical means. The levee shall be inspected to assure that the design cross section is obtained after settling, vi) All new levees shall be constructed with a core.

vii) No interior levees shall be riprapped. 2) Existing Levees - the minimum standards for the repair and maintenance of existing levees shall be as follows:

a) Exterior levees:

i) Exterior levee contours shall be restored to match the previously existing section. If the

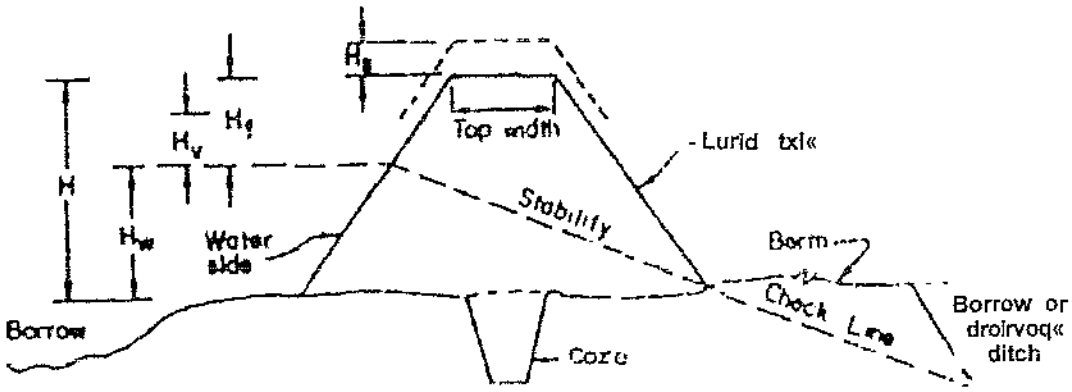
previously existing cross section is not equal to or better than that described in (1), upgrading the levee to that standard should be considered, ii) If the existing side slope is eroded beyond 1.5:1, the slope should be rebuilt to 2:1. iii) Coring should be done only where required to repair damage from animal channels or eliminate seepage. b) Interior levees:

i) Interior levee contours shall be restored to match the previously existing section. If the previously existing cross section is not equal to or better than that described in (1), upgrading the levee to that standard should be considered, ii) If the existing side slope is eroded beyond 1.5:1, the slope should be rebuilt to 2:1. iii) Coring should be done only where required to repair animal channel damage or eliminate seepage. D. Repair of Leaking Levees and Restoration of Settled Levees

1) Levee disturbance shall be held to the minimum consistent with correcting the problems - and special care shall be taken not to disturb levee footings.
2) Cores shall be a minimum of 2 feet deep, measured from the crown of the levee.
3) In areas where settling is known to be a problem, the height and width of the levee shall be minimized to reduce settling problems.

FIGURE I SECTION

THROUGH NEW LEVEES



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The design height of the levee (H) will be the sum of the design high water storage ($^{H}{}_{w}$)/ the added height ($^{H}{}_{w}$) for wave action, if any, and the freeboard (H_f). The constructed height will include an allowance for settlement (H), which will depend on the foundation and material used in construction. The actual design high water stage should be based on the water surface profile.