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APPENDIX M

LTMS General Operating Principles for a Pilot Dredged Material Management Office

Long Term Management Strategy

September 12, 1995

General Operating Principles
Pilot Dredged Material Management Office (DMMO)

Goals

To establish a cooperative permitting framework as part of LTMS implementation that reduces redundancy and unnecessary delays in permit processing and increases consensus decision-making among agency staffs, while assuring that: (1) the laws and policies of the member agencies will be fully implemented; (2) full public review and input to the decision making process will be maintained; and (3) projects will be managed in an environmentally and economically sound manner.

Objectives

- Combined application form for maintenance dredging applications.
- Coordinated staff processing of all dredging permit applications.
- Preparation of joint staff recommendations on: (1) sediment quality sampling and analysis plans; (2) suitability calls for disposal; and (3) approval or denial of permits (including disposal location, timing, and other permit conditions).
- Increased beneficial use of dredged material.
- Creation of a shared database for dredging project and disposal site monitoring information.

General Operating Principles

1. The DMMO is a cooperative activity of the participating agencies.
2. Agency staffs will coordinate processing of pilot permit applications by the agencies, subject to the applicable laws and requirements of each agency.
3. Agency staffs will make a combined decision regarding sediment quality sampling and analysis plans, and suitability for disposal of pilot applications.
4. Agency staffs will work towards a single staff recommendation on substantive aspects of pilot permit applications, including disposal locations and proposed special conditions.
5. Agency staffs will support the consensus recommendation made through the DMMO that affect projects within their permit jurisdictions, subject to final approval by agencies.
6. Agency staffs will improve and refine the joint-agency application form for maintenance dredging permits.
7. The program will accommodate the policies and laws of the participating agencies.
8. The pilot program policies will be based on agreements and policies reached as part of the LTMS whenever possible.
9. The administrative process for processing permits as part of the pilot project will be defined by mutual agreement of agency staffs and documented in a Memorandum of Understanding.
10. Full public input to the permit process as part of the pilot project will be ensured, and the pilot project itself will be subject to full public review and comment.

11. Agencies will implement the DMMO formulated through the pilot program, subject to review and approval by the decision makers at each agency after public review and comment.

12. One of the agencies will act as the "host" agency in order to provide a single point of contact for applicants and to provide necessary logistical support. That agency is presently the U.S. Army Corps of Engineers. Logistical support will include providing meeting space; preparing agendas; preparing meeting minutes; distributing information among participants, applicants, and interested parties; and maintaining files.

13. A combined database will be created to share information among the agencies, applicants, and interested parties.

14. The project will be expanded over time, as appropriate, to coordinate agency processing of all dredging and disposal permit applications, disposal site monitoring, and other important regulatory aspects of LTMS implementation.

15. This document will stay in effect until it is superseded through adoption of Memoranda of Understanding or other appropriate instruments by the member agencies.

WILL TRAVIS
San Francisco Bay Conservation & Development Commission

AMY ZIMPFER
U.S. Environmental Protection Agency

LT. COL. MICHAEL J. WALSH
U. S. Army Corps of Engineers

LARRY KOLB
Regional Water Quality Control Board
San Francisco Bay Basin

for WALT PETTIT
State Water Resources Control Board

ROBERT C. HIGHT
State Lands Commission

APPENDIX N

Capacity Estimates for Upland/Wetland Reuse Sites

To: Ms. Rebecca Tuden, U.S. EPA
Date: January 25, 1995
Subject: Economic Analysis Assumptions for LTMS ADEIS/R [1]

From: **Eric Larson**
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- Over the next 50 years, it is projected that up to 6 million cubic yards (mcy) annually would be dredged (GBA, 1994). 80% (4.8 mcy/year) of this material is assumed to be clean, and 20% (1.2 mcy/year) of the material would be considered unsuitable for unconfined aquatic disposal.
- It is assumed that: under the Low scenario, 20% of the clean material would go to upland sites; under the Medium scenario, 50% of the clean material would go to upland sites; and under the High scenario, 80% of the clean material would go to upland sites.
- The overall reuse scenario is made up of a combination of the following reuse options: wetland restoration; rehandling facility with subsequent landfill use; and levee restoration (specifically in the Delta region).
- For each volume scenario (low, medium, high) of the clean material, it is assumed that the priority reuse option is wetland restoration.
- It is assumed that discrete wetland reuse projects have site capacities of approximately 7 to 8 mcy. This figure reflects the average site capacity for the sites whose restoration potential ranked from moderate to high.
- Site capacity projections and feasibility of site use are based principally on information generated by GBA, 1994 and Dr. Josh Collins, 1994. All sites considered for wetland reuse, rehandling facilities, and levee restoration were ranked as having moderate to high restoration potential (GBA, 1994, and Collins, 1994). It should be

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[1] It should be noted that these estimates have been developed by BCDC based upon reasonable extrapolation of information generated and obtained over the course of the LTMS studies and best professional judgment; these are scenarios only and would not necessarily be used as BCDC or LTMS policies and should not be used as actual predictions.

noted that in the event that not all of the sites considered in this evaluation are actually restored, other sites not considered and whose reuse potential is considered lower than moderately feasible (GBA, 1994) could be used.

- It is assumed that maximum Delta levee reuse would be limited to 1 mcy during 1 to 5-year period, 5 mcy during 5 to 15-year period, and 20 mcy during 15 to 50-year period due to water quality (i.e. metals and salinity) concerns and levee-side barge access.
- It is assumed that the material considered unsuitable for unconfined aquatic disposal (20% of the total volume dredged over a 50-year period) would be processed at rehandling facilities and used subsequently at a landfill site. However, under the scenarios, there would be remaining throughput capacity for clean material. It is assumed that there is a landfill capacity of up to 5 mcy/year (BCDC, 1994). However, under the placement scenarios, it is assumed that only approximately half of the estimated landfill capacity would actually be available. Alternatively, although not considered within the placement scenarios, rehandling facilities could supply clean material for other reuse options (i.e., road foundation, levee repair and rehabilitation, etc.).
- Under the low scenario (20% of material for upland disposal): one small wetland restoration project (4 mcy) would occur during first 5 years; a single large project (7 mcy) would occur during years 5 to 15; and two large projects (17 mcy) would occur during years 15 to 50. Under this scenario, Delta placement during the first five years would be maximized at 1 mcy but would be limited to 3 and 17 mcy during the 5 to 15 year and 15 to 50 year periods, respectively. This limited Delta placement would be due to a limited volume of available reuse material. Under this scenario clean material would not be processed at rehandling facilities during the 50 year period, due to the limited volume of available reuse material.
- Under the medium scenario (50% of material for upland disposal): two small wetland projects (5.5 mcy each) would occur during first 5 years; two larger projects (8 mcy each) would occur during years 5 to 15; and six large projects (8 mcy each) would occur during years 15 to 50. Under this scenario, during the first five years Delta placement would be maximized at 1 mcy and increased to 5 and 20 mcy during the 5 to 15 year and 15 to 50 year periods, respectively. As stated above, Delta reuse under this scenario would be limited by water quality and barge access constraints. Under this scenario clean material would not be processed at rehandling facilities during the 1 to 5 year period but 3 mcy and 16 mcy could be processed at such facilities during the 5 to 15 year and 15 to 50 year periods, respectively.
- Under the high scenario (80% of material for upland disposal): two large wetland projects (8 mcy each) would occur during the first 5 years; four larger projects (7

mcy each) would occur during years 5 to 15; and 82 mcy would be used during years 15 to 50, representing the implementation of a restoration project every three years. Under this scenario, Delta reuse would be maximized at 1 mcy during the 1 to 5 year period, 5 mcy during the 5 to 15 year, and 20 mcy during the 15 to 50-year period. It should be noted that Delta reuse under this scenario is still limited by water quality and barge access constraints. Under this scenario 2 mcy of clean material would be processed at rehandling facilities during the 1 to 5 year period, 5 mcy during the 5 to 15 year, and 32 mcy during the 15 to 50-year period.

UPLAND AND WETLAND RESTORATION DREDGED MATERIAL REUSE OPTIONS
1-5 years; 5-15 years; and 15-50 years[1]

[1] **These estimates are highly speculative and have been prepared only for the preparation of the high side cost estimates for the LTMS Financial Scope of Work**

WETLAND HABITAT RESTORATION
Estimated Total Potential Capacity

1 - 5 Years	5 - 15 Years	15 - 50 Years
16 mcy capacity [1]	43 mcy capacity	55 mcy capacity
50-year total habitat restoration capacity: 114 mcy [2]		

[1] mcy = million cubic yards

[2] Assumption: During the 1 to 5-year period, sites of greatest reuse potential would be implemented; during the 5 to 15-year period, sites of moderately high reuse potential would be implemented; and during the 15 to 50-year period, sites of moderate reuse potential would be implemented.

REHANDLING FACILITIES
Estimated Total Potential Capacity

1 - 5 Years	5 - 15 Years	15 - 50 Years
10 mcy capacity	30 mcy capacity	278 mcy capacity
50 year total rehandling capacity/through-put: 318 mcy [1]		

[1] Assumption: Given that 60 mcy of unsuitable material would be dredged over the 50-year period (GBA, 1994), if rehandling facilities were to provide 100% through-put for unsuitable material, there would be a possible through-put capacity of 258 mcy of suitable material. WE have estimated that landfills could use up to 250 mcy of material (suitable or unsuitable) over a 50-year period (BCDC, 1994). Therefore, there would be 68 mcy of suitable rehandled material over this 50-year period for which there is no present known end-use. Although, it is likely that within the 50-year period, additional uses for rehandled suitable material would be found, for the potential capacity analysis, which follows, it was assumed that landfills would be able to utilize only 50% of the estimated total dredge material reuse capacity. Given that 60 mcy of this capacity would be unsuitable material, 65 mcy of suitable material could be placed at landfill sites. This relatively low volume of suitable dredged material placement is far below the estimated suitable dredged material rehandling capabilities.

DELTA LEVEE PLACEMENT

Estimated Total Potential Capacity

1 - 5 Years	5 - 15 Years	15 - 50 Years
1 mcy capacity	5 mcy capacity	20 mcy capacity
50-year total Delta levee restoration capacity: 26 mcy [1]		

[1] Assumption: The use of dredged material for Delta levee maintenance/seismic upgrading is presently highly constrained, primarily due to water quality issues and barge access to sites. It is assumed that as much material as there is capacity (i.e., 26 mcy) would be utilized for this purpose over the 50-year period.

Potential Capacities Under Three Placement Scenarios

Three Placement Scenarios [1]

Low Level of Placement 5-20%
Medium Level of Placement 35-50%
High Level of Placement 65-80%

[1] Assumptions: The estimated placement of material is a combination of habitat restoration, rehandling facility landfill placement, and Delta levee site uses. The breakdown of potential placement of suitable material is as follows: just under one half (47%) of the material would be placed at landfills; approximately four tenths (43%) of the material would be utilized for habitat restoration and approximately one tenth (0.97%) of the material would be used for Delta levees repairs/seismic upgrading.

It is projected over the next 50 years that up to 6 mcy per year would be dredged (GBA, 1994). It is assumed that 20% of this material would be unsuitable for unconfined aquatic disposal. Therefore, up to 4.8 mcy per year (240 mcy over the 50-year period) would be suitable for aquatic disposal; 1.2 mcy per year would be unsuitable for aquatic disposal.

DREDGED MATERIAL DISPOSAL OPTIONS - TOTALS

Disposal Option	1 - 5 Years	5 - 15 Years	15 - 50 Years
Wetland Restoration	16 mcy capacity	43 mcy capacity	55 mcy capacity
Delta Levees Repair & Stabilization	1 mcy capacity	5 mcy capacity	20 mcy capacity
Rehandling Facilities Landfills	13 mcy capacity	25 mcy capacity	88 mcy capacity
Total	**30 mcy capacity**	**73 mcy capacity**	**163 mcy capacity**
50-year total capacity upland use capacity: 266 mcy			

Potential Capacities – Three Placement Scenarios

1 - 5 Years (5-year period) (24 mcy of suitable dredged material)		
5-20% Low	**35-50% Medium**	**65-80% High**
up to 5 mcy	up to 12 mcy	up to 19 mcy

Note: Under the low and medium scenarios, site capacity for an additional 25, 18, and 11 mcy of material, respectively, remains. This remaining capacity for material is applied to the 5 to 15-year analysis, below.

5 - 15 Years (10-year period) (48 mcy of suitable dredged material)		
5-20% Low	**35-50% Medium**	**65-80% High**
up to 10 mcy	up to 24 mcy	up to 38 mcy

Note: Under the low, medium, and high scenarios, site capacity for an additional 88, 67, and 45 mcy of material, respectively, remains. This remaining capacity for material is applied to the 15 to 50-year analysis, below.

15 - 50 Years (35-year period) (168 mcy of suitable dredged material)		
5-20% Low	**35-50% Medium**	**65-80% High**
up to 34 mcy	up to 84 mcy	up to 134 mcy

Overall assumption: Wetland restoration is maximized

Low Scenario – 20% to Upland Disposal				
	Wetland Restoration	Delta Restoration	Rehandling	Total
1-5 years	4 mcy 80 %	1 mcy 20 %	0 mcy 0%	5 mcy
5-15 years	7 mcy 70%	3 mcy 30%	0 mcy 0%	10 mcy
15-50 years	17 mcy 50%	17 mcy 50%	0 mcy 0%	34 mcy
Total	**28 mcy** **57%**	**21 mcy** **43%**	**0 mcy** **0%**	**49 mcy**

Assumptions:

1) Delta placement of suitable material is maximized during 1-5 years, but due to material need for wetland restoration Delta use is limited during 5-15 and 15-50 years.
2) A discrete wetland projects has a disposal capacity of approximately 7 to 8 mcy. A small wetland project occurs during 1-5 years; a single large project occurs during 5-15 years; and two large projects occur during 15-50 years.

Medium Scenario – 50% to Upland Disposal				
	Wetland Restoration	Delta Restoration	Rehandling	Total
1-5 years	11 mcy 92 %	1 mcy 8 %	0 mcy 0%	12 mcy or 100%
5-15 years	16 mcy 67%	5 mcy 21%	3 mcy 13%	24 mcy
15-50 years	48 mcy 57%	20 mcy 24%	16 mcy 19%	84 mcy
Total	**75 mcy** **63%**	**26 mcy** **22%**	**19 mcy** **16%**	**120 mcy**

Assumptions: 5-15 years consider maximum Delta and two wetland projects
15 to 50 years consider 6 wetland projects