Magnuson-Stevens Fishery Conservation and Management Act (MSA)

Essential Fish Habitat (EFH)

Programmatic Consultation for Maintenance Dredging in San Francisco Bay

LONG TERM MANAGEMENT STRATEGY

The MSA and EFH

- The Magnuson-Stevens Fishery Conservation and Management Act (MSA), amended in 1996, governs commercial and recreational fisheries in the United States.
- The MSA established fishery management plans (FMP) for each fishery.
- The MSA identified EFH for each FMP.
- The San Francisco Bay is EFH for three FMPs – Pacific Groundfish, Pacific Salmonid, and Coastal Pelagic.

Statutory and Regulatory Info

- EFH is defined in the MSA as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" (16 U.S.C. § 1802[10]).
- The term "adverse effect" is interpreted at 50 C.F.R. § 600.810(a) as any impact that reduces quality and/or quantity of EFH.

Statutory and Regulatory Info

- Pursuant to the MSA, each federal agency is mandated to consult with NMFS (as delegated by the Secretary of Commerce) with respect to any action authorized, funded, or undertaken, or proposed to be, by such agency that may adversely affect any EFH under this Act (16 U.S.C. § 1855[b][2].)
- NMFS has an obligation to recommend to such agency measures that can be taken by such agency to conserve EFH (16 U.S.C. § 1855[4][a]).

LTMS Programmatic Consultation

- Planning began in 2004
- Formal consultation initiated in 2009
  - Included two rounds of stakeholder review
- Consultation completed in 2011
- Covers all maintenance dredging projects (new work projects will have their own consultations)
- Good for approximately 39 years
  - New information may re-open consultation

LONG TERM MANAGEMENT STRATEGY

LTMS Conservation Measures

- Soft bottom habitat
- Reduce frequency of dredging
- Turbidity
- Invasive species
- Other submerged aquatic vegetation
- Contaminants
  - Bioaccumulation trigger levels
  - Residual surface (z-layer)
- Eelgrass
  - Indirect effects (250 meters)
  - Direct effects (45 meters)
- Reporting requirements

Soft Bottom Habitat Study

- Benthic recovery study to validate assumptions in the effects analysis
- Consider non-natives in the benthic recovery study

Reduce Frequency of Dredging

- Dredge more fully, less often
- Complete dredging in a single episode, or
- Rotate dredging areas within a project to allow better recovery

Turbidity

- Further reduce in-Bay disposal
- Outfit USACE hopper dredges for offloading
- Increase use of offloaders for out-of-Bay placement

Invasive Species

- Develop work group and conduct a pilot study on enhancing native benthic invertebrates.
- Concept held in abeyance pending results of soft bottom studies.

Other Submerged Aquatic Vegetation

- NOAA is completing a survey of submerged aquatic vegetation
- LTMS agencies will assess the results of the survey when provided it and may conduct follow-up surveys

10-Minute Break

Contaminant Measures

DMMO Testing Program Changes

- Worked with San Francisco Estuary Institute (SFEI) to determine "regulatory" ambient conditions for Bay sediments
- Mercury, PCB, and PAH "ambient" will be calculated annually through the SFEI Regional Monitoring Program
- Bioaccumulation triggers for in-Bay disposal for:
  - Mercury
  - PAH
  - PCB
  - DDT
  - Chlordane
  - Dieldrin
  - Dioxins
- Inclusion of "z-layer" sampling and testing where warranted

Initial (2011) Sediment Chemistry Bioaccumulation Trigger Levels for Unconfined in-Bay Placement at Designated San Francisco Bay Disposal Sites

	Mercury (mg/kg)	Total PAHs (µg/kg)	Total PCBs (µg/kg)	Total DDTs (µg/kg)	Total Chlordane (µg/kg)	Dieldrin (µg/kg)	Dioxins/ Furans (pg/g)
Bioaccumulation Trigger (Initial)	0.33	4800	16	50	37	1.9	10
Basis	a	a	a	b	b	c	d

Notes:

a) Ambient sediment concentration for total mercury in *mg/kg* (parts per million) dry wt, and for PAHs and PCBs in *µg/kg* (parts per billion) dry wt, defined as the 90th upper CL of the 90th percentile of the most recent 10 years of data from the RMPs randomized Bay-wide sediment sampling (currently for the years 2002-2009), after removal of statistical outliers.

b) Published bioaccumulation trigger for the chemical class for Puget Sound marine sediments, in *µg/kg* (parts per billion) dry wt.

c) Published marine SL value from the Pacific Northwest Sediment Evaluation Framework, in *µg/kg* (parts per billion) dry wt.

d) Toxicity Equivalency Quotient (TEQ), in *pg/g* (parts per trillion) dry wt calculated based on WHO 1998 Toxicity Equivalency Factors (TEFs). Value is consistent with the published Puget Sound limit for unconfined aquatic disposal, and is ½ the established limit for placement at the Hamilton Wetlands Restoration Project site.

Dredger Webpage:
http://www.sfei.org/content/dmmo-ambient-sediment-conditions

PAHs Measured by Method 8270 SIM

Yellow = Previous DMMO list of 16 PAHs

Green = Additional PAHs on RMP list of 25

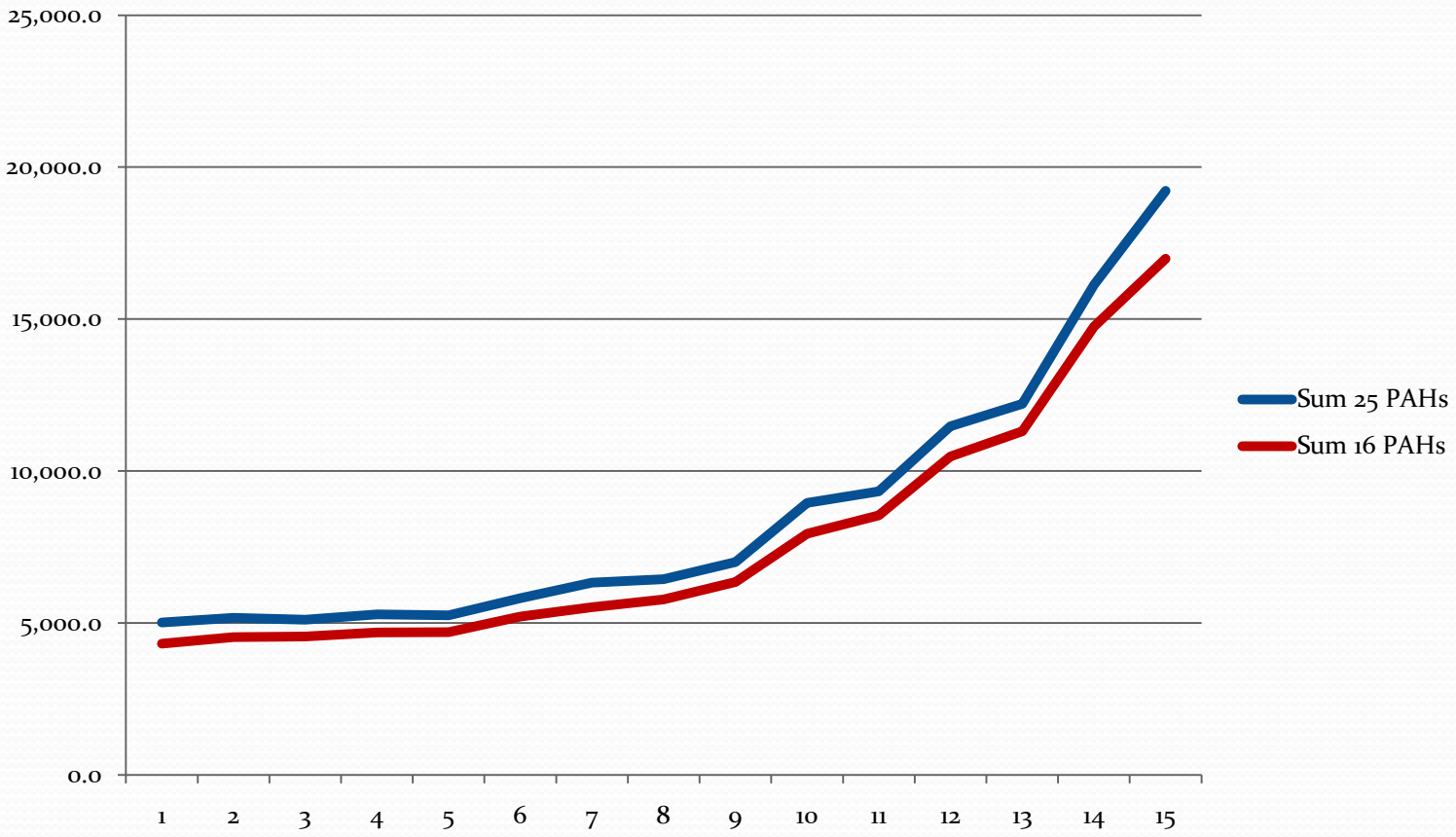
Since all the PAHs are measured by the same analytic method, there should be little or no cost increase for labs to report the RMP's 25 PAHs vs. the previous DMMO list of 16

ANALYTE	UNITS	MRL	CAS No.
1-Methylnaphthalene	ug/kg	5	90-12-0
1-Methylphenanthrene	ug/kg	5	832-69-9
2,3,5-Trimethylnaphthalene	ug/kg	5	2245-38-7
2,6-Dimethylnaphthalene	ug/kg	5	581-42-0
2-Methylnaphthalene	ug/kg	5	91-57-6
Acenaphthene	ug/kg	5	83-32-9
Acenaphthylene	ug/kg	5	208-96-8
Anthracene	ug/kg	5	120-12-7
Benz(a)anthracene	ug/kg	5	56-55-3
Benzo(a)pyrene	ug/kg	5	50-32-8
Benzo(b)fluoranthene	ug/kg	5	205-99-2
Benzo(e)pyrene	ug/kg	5	192-97-2
Benzo(g,h,i)perylene	ug/kg	5	191-24-2
Benzo(k)fluoranthene	ug/kg	5	207-08-9
Biphenyl	ug/kg	5	92-52-4
Chrysene	ug/kg	5	218-01-9
Dibenz(a,h)anthracene	ug/kg	5	53-70-3
Dibenzothiophene	ug/kg	5	132-65-0
Fluoranthene	ug/kg	5	206-44-0
Fluorene	ug/kg	5	86-73-7
Indeno(1,2,3-cd)pyrene	ug/kg	5	193-39-5
Naphthalene	ug/kg	5	91-20-3
Perylene	ug/kg	5	198-55-0
Phenanthrene	ug/kg	5	85-01-8
Pyrene	ug/kg	5	129-00-0
Benzo(b)thiophene	ug/kg	5	95-15-8
Carbazole	ug/kg	5	86-74-8
Dibenzofuran	ug/kg	5	132-64-9
Naphthobenzothiophene	ug/kg	5	239-35-0
C1, C2, C3, C4-Chrysenes	ug/Kg	5	NA
C1-Dibenzothiophenes	ug/Kg	5	NA
C1, C2, C3 -Fluoranthenes/Pyrenes	ug/Kg	5	NA
C1, C2, C3-Fluorenes	ug/Kg	5	NA
C1, C2, C3, C4-Phenanthrenes/Anthracenes	ug/Kg	5	NA
C2, C3-Dibenzothiophenes	ug/Kg	5	NA
C2, C3, C4-Naphthalenes	ug/Kg	5	NA
2,4,6-Tribromophenol (Surr.)	%	NA	118-79-6
Fluoranthene-d10 (Surr.)	%	NA	93951-69-0
Fluorene-d10 (Surr.)	%	NA	81103-79-9
Terphenyl-d14 (Surr.)	%	NA	1718-51-0

LPAHs (ug/kg)	HPAHs (ug/kg)
1-Methylnaphthalene	Benz(a)anthracene
1-Methylphenanthrene	Benzo(a)pyrene
2,3,5-Trimethylnaphthalene	Benzo(b)fluoranthene
2,6-Dimethylnaphthalene	Benzo(e)pyrene
2-Methylnaphthalene	Benzo(g,h,i)perylene
Acenaphthene	Benzo(k)fluoranthene
Acenaphthylene	Chrysene
Anthracene	Dibenz(a,h)anthracene
Biphenyl	Fluoranthene
Dibenzothiophene	Indeno(1,2,3-cd)pyrene
Fluorene	Perylene
Naphthalene	Pyrene
Phenanthrene	

Yellow = Previous DMMO list of 16 PAHs
Green = Additional PAHs on RMP list of 25

Plot of PAH Concentrations in All RMP Sediment Stations (2002-2009) Exceeding Current BT of 4800 ppb Based on Sum of 25 PAHs, Compared to Concentrations in the Same Stations Based on Sum of 16 PAHs



Evaluation of All RMP Sediment Samples from 2002-2009 (n=374) For Total PAHs Exceeding the LTMS Bioaccumulation Trigger of 4800 ppb Based on Summing 16 vs. 25 PAHs

Type	Station	Waterbody	Date Sampled	Sum 25 PAHs	Sum 16 PAHs	Difference	% Difference
SedChem	CB002S	Central Bay	07/25/2008	5,018.0	4,326.2	691.8	15.99
SedChem	BG30	Rivers	08/30/2005	5,170.5	4,536.5	634.0	13.98
SedChem	BG30	Rivers	08/02/2006	5,111.4	4,560.5	550.9	12.08
SedChem	CB034S	Central Bay	08/23/2007	5,287.7	4,694.4	593.3	12.64
SedChem	CB016S	Central Bay	07/30/2004	5,257.8	4,705.8	552.0	11.73
SedChem	CB025S	Central Bay	08/25/2005	5,813.7	5,210.4	603.2	11.58
SedChem	CB040S	Central Bay	07/25/2008	6,333.5	5,520.9	812.6	14.72
SedChem	CB077S	Central Bay	07/30/2004	6,440.3	5,773.4	666.9	11.55
SedChem	CB016S	Central Bay	09/16/2009	7,006.4	6,356.0	650.4	10.23
SedChem	SB011S	South Bay	07/25/2008	8,954.7	7,937.9	1,016.8	12.81
SedChem	CB012S	Central Bay	08/21/2003	9,331.9	8,543.6	788.3	9.23
SedChem	CB028S	Central Bay	08/07/2006	11,478.4	10,476.2	1,002.2	9.57
SedChem	CB080S	Central Bay	08/25/2005	12,210.3	11,306.9	903.4	7.99
SedChem	SB073S	South Bay	09/17/2009	16,128.8	14,749.9	1,378.9	9.35
SedChem	CB012S	Central Bay	07/28/2008	19,221.6	16,986.5	2,235.1	13.16

Yellow = Exceeded at 25 but NOT at 16

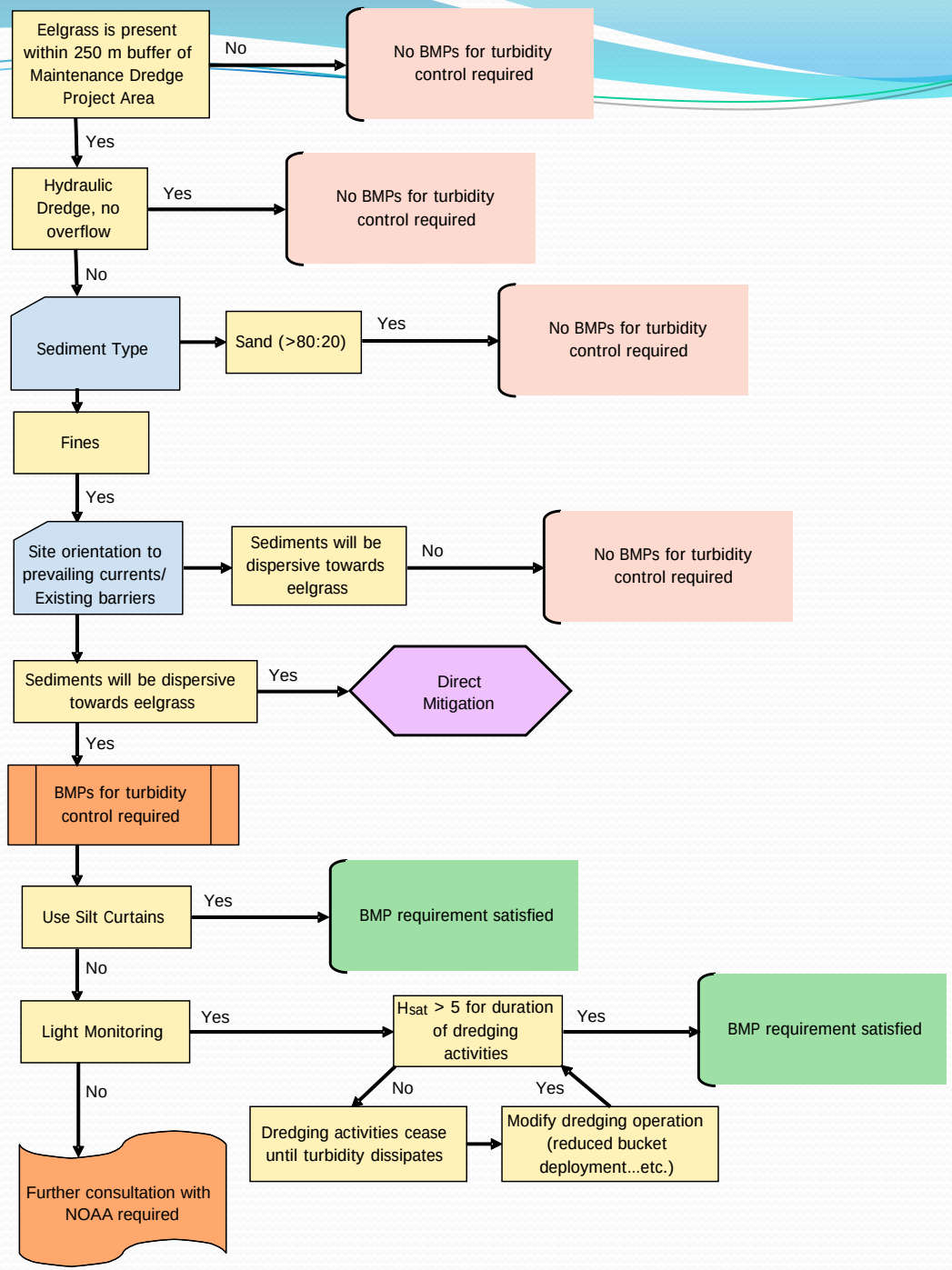
Average difference of "exceeders"	872.0	
Average % difference of "exceeders"		**11.77**

Eelgrass – Direct Effects

- Project-by-project direct mitigation requirements:
  - Pre- and post-dredge surveys for projects within 45 meters of an eelgrass bed
  - NMFS-approved mitigation plan
  - LTMS will examine potential for developing an eelgrass mitigation bank

Eelgrass – Indirect Effects

- Approximately 40 projects within 250 meter of eelgrass would require:
  - Use of silt curtains on a case-by-case basis
  - Use of light monitoring where silt curtains will not work
  - Follow-up review of all light monitoring results in three years


Eelgrass is present within 250 m buffer of Maintenance Dredge Project Area
No
No BMPs for turbidity control required
Yes
Hydraulic Dredge, no overflow
Yes
No BMPs for turbidity control required
No
Sediment Type
Sand (>80:20)
Yes
No BMPs for turbidity control required
Fines
Yes
Site orientation to prevailing currents/ Existing barriers
Sediments will be dispersive towards eelgrass
No
No BMPs for turbidity control required
Sediments will be dispersive towards eelgrass
Yes
Direct Mitigation
Yes
BMPs for turbidity control required
Use Silt Curtains
Yes
BMP requirement satisfied
No
Light Monitoring
Yes
Hsat > 5 for duration of dredging activities
Yes
BMP requirement satisfied
No
Yes
Dredging activities cease until turbidity dissipates
Modify dredging operation (reduced bucket deployment...etc.)
No
Further consultation with NOAA required

Reporting Requirements

- Annual reports are required of all activities conducted under this programmatic consultation
- NMFS must be notified when the following occur:
  - Indirect eelgrass impacts
  - Direct eelgrass impacts
  - Contaminant threshold exceedances