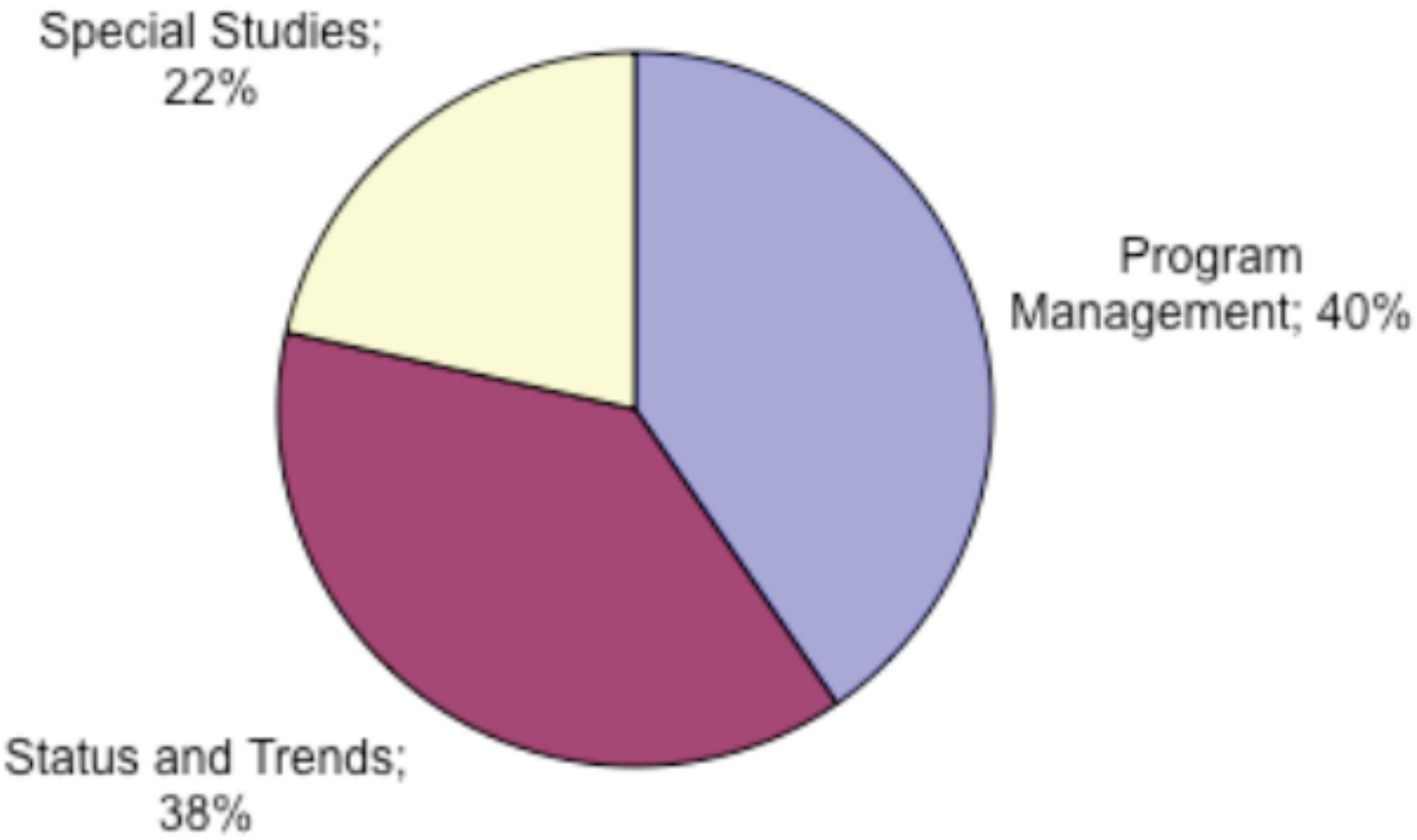
CURRENT AND ANTICIPATED WATER QUALITY MANAGEMENT DECISIONS, POLICIES, AND ACTIONS

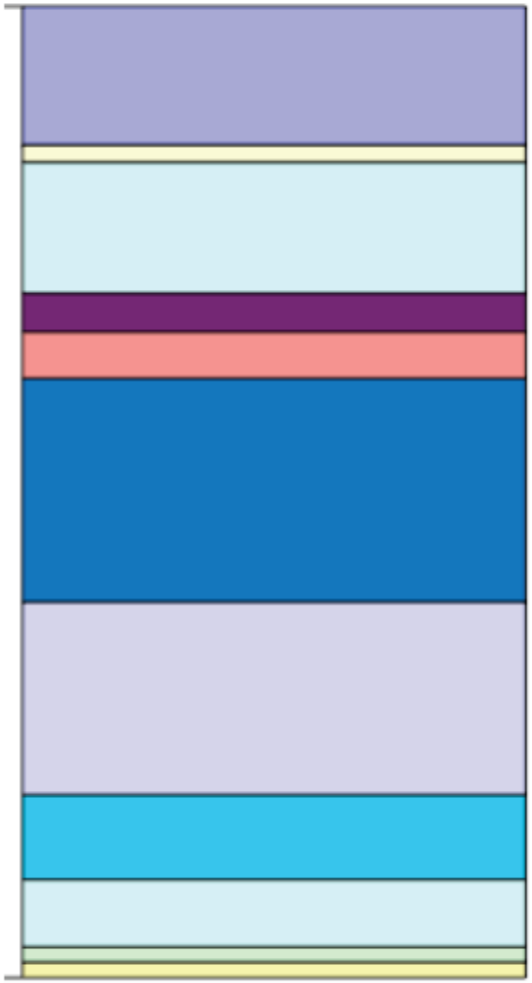
Decisions, Policies, and Actions	Timing
Determination of Permit Limits	Ongoing
Biennial 303(d) List and 305(b) Report	2010-11 2012-13 2014-15
Mercury Review the existing TMDL and establish plan to revise it Revised mercury TMDL	 2011-13 2016-18
PCBs Review the existing TMDL and establish plan to revise it Revised PCBs TMDL	 2014-15 2019-20
Copper Compare levels to site specific objectives triggers Reevaluation of the site-specific objectives	 Annual Triennial (2012)
Cyanide Antidegradation policy Ambient levels below CTR threshold	 Triennial (2012)
Selenium North Bay Selenium TMDL South Bay Selenium TMDL	 2012-14 > 2015
Legacy Pesticides (DDT, Dieldrin, Chlordane) Development of "Simple" TMDL	 2012-13
Dioxins Review/reissue permit requirements TMDL project plan TMDL	 2013-14 2017-19

Decisions, Policies, and Actions	Timing
Sediment Quality Objectives 303(d) listings Determination of reasonable potential and permit requirements	 2010-11 2010-11
Nutrients New estuarine numerical endpoints Assessment of ammonia toxicity	 2012-15
Municipal Regional Stormwater Permit (MRP)	2010 and beyond
Pathogens *XX*	 XX
Pyrethroids *XX*	 XX
PBDEs *XX*	 XX
LTMS-DMMP-Regional Sediment Management	2010 and beyond
Dredging Permits	2010 and beyond
Chemicals of Emerging Concern Regional Water Board considering a policy	 XX

The RMP contributes to effective management by providing scientific support for current policies and by anticipating and addressing information needs related to future policies and actions.


Special Studies; 22%
Program Management; 40%
Status and Trends; 38%

Status and Trends Elements



Water Chemistry
$180,000
14%

Bivalves
$22,500
2%

Sediment Chemistry
$170,000
13%

Sediment Toxicity
$50,000
4%

Sediment Benthos
$60,000
5%

Fieldwork and Logistics
$290,000
23%

Suspended Sediment in SF Bay
$250,000
20%

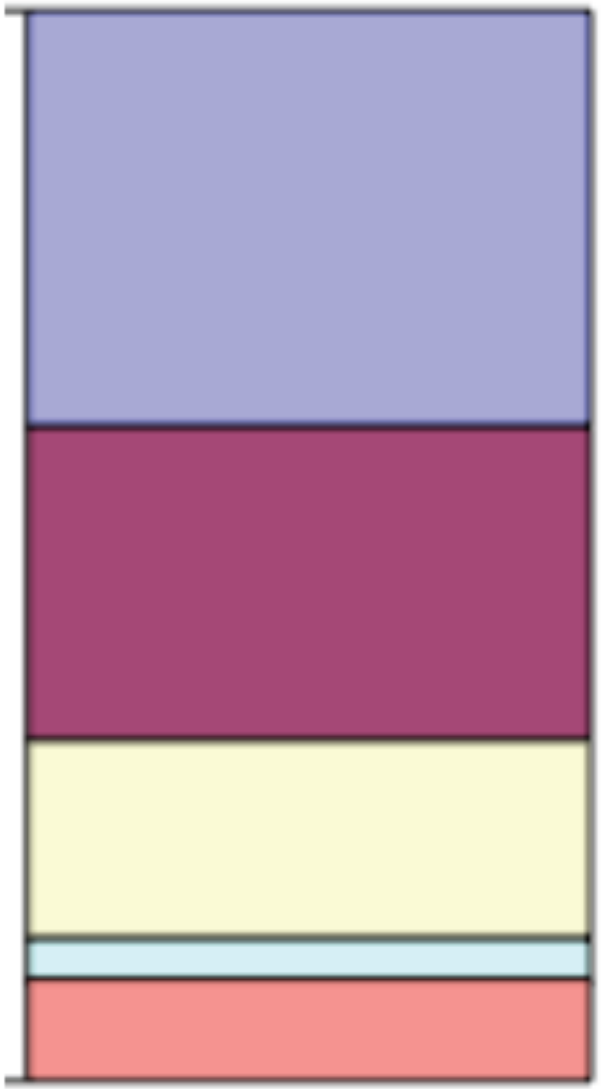
Hydrography and Phytoplankton
$110,000
9%

Sport Fish
$87,000
7%

Cormorant Eggs
$20,000
1%

Forster's Tern Eggs
$20,000
2%

Matrix	Analyte	Frequency
Sediment	Inorganics	Annual 47 sites (wet)/ 27 (dry)
	PCBs, PAHs, PBDEs, Pest, Pyrethroids	
	Grainsize, N, TOC	
Sediment toxicity		Annual 27
Sediment -benthos		Annual 27
Water	PBDEs, Inorganics, CN, ancilliary	Annual 22 sites
	PAHs, PCBs, pesticides	Biennial 22 sites
Bivalves	PCBs, PAHs, PBDEs, pesticides	Biennial
	Inorganics	Every five years
Sport Fish	Hg, Se, PBDEs, Pest, PFCs, Dioxin	Triennial
Cormorant eggs	PCBs, PBDEs, Pesticides, PFCs, Hg, Se	Triennial
Tern eggs	Hg, Se, PBDEs	Triennial



Program Management
$520,600
39%

Data Management and QA
$392,080
29%

Communications
$248,360
18%

Contingency
$50,000
4%

Direct Costs (Program only)
$128,000
10%

MERCURY

The Mercury Strategy began with a multi-year suite of studies in 2008. These studies are now being completed. A synthesis in 2011 will set the stage for a new multi-year plan for 2012 and beyond.

Mercury and methylmercury studies and monitoring in the RMP from 2008 to 2015. Numbers indicate budget allocations in $1000s.

General Area	Element	Mercury Questions Addressed	2008	2009	2010	2011	2012	2013	2014	2015
Mercury-specific Studies										
Mercury Strategy	Methylmercury Synthesis	1,2,3,4,5				75	TBD	TBD	TBD	TBD
	Food Web Uptake (Small Fish) (Status and Trends)	1,4	150	150	150	20	TBD	TBD	TBD	TBD
	High Leverage Pathways (DGTs)	2	58	58			TBD	TBD	TBD	TBD
	High Leverage Pathways (Isotopes)	2,5	40	40			TBD	TBD	TBD	TBD
	Methylmercury Fate Model	3,4		25			TBD	TBD	TBD	TBD
Effects	Effects on Birds		70	54						

Possible next steps:

- methylmercury model
- more isotopes
- more small fish

PCBS

Studies under the PCB Strategy began in 2010. A synthesis in 2011 will set the stage for a multi-year study plan for 2012 and beyond.

PCB studies and monitoring in the RMP from 2010 to 2015. Numbers indicate budget allocations in $1000s.

General Area	Element	PCB Questions Addressed	2010	2011	2012	2013	2014	2015
PCB-specific Studies								
PCB Strategy	Food Web Uptake (Small Fish)	1,7	50		TBD	TBD	TBD	TBD
	PCB Conceptual Model Update	1,2,3,4,5,6,7, 8,9		53	TBD	TBD	TBD	TBD

Possible next steps:

- more small fish
- margin studies to support modeling

DIOXINS

Dioxin studies and monitoring in the RMP from 2008 to 2015. Numbers indicate budget allocations in $1000s. Unlike the other contaminants, dioxin costs have generally been itemized explicitly as add-ons to RMP studies.

Dioxin Strategy studies began in 2008, with a multi-year plan extending through 2012. Synthesis activities are planned for 2013 and 2014 after the data from the earlier studies are available.

General Area	Element	Dioxin Questions Addressed	2008	2009	2010	2011	2012	2013	2014	2015
Dioxin-Specific Elements										
Dioxin Strategy	QUALITY ASSURANCE	1,2,3,4,5,6		20						TBD
	Synthesis Report	1,2,3,4,5,6								TBD
Status and Trends	Sport Fish	1,2,4		22			22			TBD
	Avian Eggs	1,2,4					10			TBD
	Surface Sediments	2,3	57	57			57	TBD	TBD	TBD
	Water	2,3		20		28		TBD	TBD	TBD
Loads	Small Tributary Loading	4,5,6		34	34		68	TBD	TBD	TBD
	River Loading (THg)	4,5,6			34			TBD	TBD	TBD
Forecast	Sediment Cores	3,4,6			67			TBD	TBD	TBD
	Synthesis: One-Box Model	3,4,5,6						20	TBD	TBD
	Synthesis: Food Web Model	5,6							20	TBD

Possible next steps:

- synthesis

EMERGING CONTAMINANTS

Emerging contaminant studies in the RMP have been augmented substantially by pro bono work and matching funds. RMP expenditures on this topic from 2008 to 2011 add up to $380,000. Matching funds for this period were approximately $xx. A synthesis in 2011 and 2012 will set the stage for a multi-year plan for 2013 and beyond.

Emerging contaminant studies and monitoring in the RMP from 2008 to 2014. Numbers indicate budget allocations in $1000s. Matching funds indicated in parentheses.

Element	Emerging Contaminant Questions Addressed	2008	2009	2010	2011	2012	2013	2014	2015
PFCs in Biota	1	35				TBD	TBD	TBD	TBD
Alternative Flame Retardants (brominated, Dechlorane Plus, phosphate-based)	1	48				TBD	TBD	TBD	TBD
Chlorinated Paraffins in Biota	1	0 (xx)				TBD	TBD	TBD	TBD
Triclosan in Sediment	1	0 (xx)				TBD	TBD	TBD	TBD
White Paper on ECs in Wastewater	1		30			TBD	TBD	TBD	TBD
PFC Sources	1		52			TBD	TBD	TBD	TBD
Nonylphenol in Small Fish	1		0 (xx)			TBD	TBD	TBD	TBD
Broadscan Screening of Biota for EC	1			55 (xx)	70 (xx)	TBD	TBD	TBD	TBD
AXYS Mussel Study	1			27 (xx)		TBD	TBD	TBD	TBD
AXYS Brominated Dioxins in Sediments and Biota	1			0 (xx)		TBD	TBD	TBD	TBD
NOAA Mussel Pilot Study	1			33 (xx)		TBD	TBD	TBD	TBD
EC Synthesis Report	1				30	15	TBD	TBD	TBD
Nanoparticles	1			0 (xx)		TBD	TBD	TBD	TBD

SMALL TRIBUTARY LOADING STRATEGY

Small Tributary Loading Strategy studies began in 2008. Monitoring loads from representative watersheds will be the major emphasis for the next several years. Monitoring of representative source characterization sites in 2012 and beyond will provide data needed for model development in subsequent years. This work will be closely coordinated with and substantially augmented by MRP monitoring.

Small tributary loading studies in the RMP from 2008 to 2015.
Numbers indicate budget allocations in $1000s.

General Area	Element	STLS Questions Addressed	2008	2009	2010	2011	2012	2013	2014	2015
Synthesis	Develop Multi-year Watershed Loading Sampling Plan	1,2,3,4,5		80						
	Regional Loadings Estimates	1,2,3,4,5	40		35	20	20	20	20	TBD
Monitoring	Zone 4 Small Tributary Loading Study	1,2,3	100	100	151					
	POC Load Monitoring in Representative Watersheds	1,2,3			89	300	300	300	300	TBD
	Monitoring at Representative Source Characterization Sites	1,2,3,4,5				20	80	100	100	TBD
Modeling	Guadalupe River Model	4,5	75	75						
	Dynamic Modeling in a 2nd Selected Representative Watershed	4,5					150	TBD	TBD	TBD
	Additional Watershed Model	4,5						75	TBD	TBD
	Large Scale Watershed Model	4,5							TBD	TBD

EXPOSURE AND EFFECTS

Exposure and effects effort on Benthos and Fish in 2011 will focus on completion of studies from prior years and development of long-term plans for 2012 and beyond. For Birds, significant progress has been made in answering the priority questions, and further effects work is not needed at this time.

Exposure and effects studies and monitoring in the RMP from 2008 to 2014. Numbers indicate budget allocations in $1000s.

	Element	Effects Questions Addressed	2008	2009	2010	2011	2012	2013	2014	2015
Benthos	Spatial and Temporal Patterns of Benthic Impacts (Triad Monitoring)	1,2	275	275	231	280	263	271	279	287
	Understanding and Improving Benthic Assessment Tools	3	20	25	30					
	Causes of Sediment Toxicity: TIEs and LC50 Work	2	10	80						
	Causes of Sediment Toxicity: Molecular TIEs	2			60					
	USEPA Water Quality Synthesis	1,2,3				(50)				
	Hotspot Sediment Quality Followup Study	1,2				60	30			
	Synthesis on SQO Drivers	2					50			
Fish	Endocrine Disruption in San Francisco Bay Fish	4,6	35							
	Effects of PAHs on Flatfish	4,5,6	40	50						
	Effects of Copper on Salmon	4,5				37				
Birds	Mercury and Selenium Effects on Terns	1,2,3,4	74	54						
	PBDEs: Relative Sensitivity in Terns	1,3			48					

FORECASTING (MODELING)

The Forecasting Strategy outlines a long-term plan of studies with the ultimate goal of developing a three-dimensional model, beginning with the South Bay, to predict recovery of contaminated Bay regions and sites under different management scenarios.

Forecasting studies in the RMP from 2009 to 2016. Numbers indicate budget allocations in $1000s.

General Area	Element	Forecasting Questions Addressed	2009	2010	2011	2012	2013	2014	2015	2016
Bay and Margins Modeling	Margins Conceptual Model		40							
	South Bay Water and Sediment Model	1,2		100						
	Bioaccumulation Conceptual Model	1,2		40						
	Bay Modeling	1,2				TBD	TBD	TBD	TBD	TBD

Possible next steps:

- mechanistic model for Bay and margins - ~ $100K per year for three years

Nutrients

- Nutrient strategy to be developed this year
- USGS funding will disappear in four years
- Significant concerns
  - North Bay
  - South Bay
- Another draw on the special study pool

RMP SPECIAL STUDIES: 2011-2015

	2011	2012	2013	2014	2015	2016	2012-2015
TOPIC	**$713,000**	**$822,000**	**$510,000**	**$435,000**	**$5,000**	**$0**	
Mercury	$95,000	$0	$0	$0	$0	$0	**$95,000**
PCBs	$53,000	$0	$0	$0	$0	$0	**$53,000**
Dioxins	$28,000	$158,000	$20,000	$20,000	$0	$0	**$226,000**
Emerging Contaminants	$100,000	$15,000	$0	$0	$0	$0	**$115,000**
Small Tributaries	$340,000	$540,000	$485,000	$410,000	$0	$0	**$1,775,000**
Other SPL	$0	$0	$0	$0	$0	$0	**$0**
Exposure and Effects	$97,000	$80,000	$0	$0	$0	$0	**$177,000**
Forecasting	$0	$0	$0	$0	$0	$0	**$0**
Other	$0	$29,000	$5,000	$5,000	$5,000	$0	**$44,000**
TOTALS	**$713,000**	**$822,000**	**$510,000**	**$435,000**	**$5,000**	**$0**	
TOTAL AVAILABLE FOR SPECIAL STUDIES	$713,194	$678,688	$667,046	$648,103	$627,992	$606,667	
REMAINING FOR SPECIAL STUDIES	**$194**	**-$143,312**	**$157,046**	**$213,103**	**$622,992**	**$606,667**	

Questions for 2012

- How do we fit desired special studies within the existing budget?
- Do we want to use any funds from the reserve?
- What collaborations can we identify to help answer RMP management questions?

Questions for 2013 and Beyond

- Can we fit desired special studies within the existing budget?
- Should we plan fee increases?
- Can we reduce elements of Status and Trends or Program Management?
- How do we fit desired special studies within the planned budget?
- What collaborations can we identify to help answer RMP management questions?