Transportation & Storm Water Department

Famosa Slough Eutrophication Restoration

San Diego Regional Water Quality Control Board December 13, 2017

The City of SAN DIEGO

Background

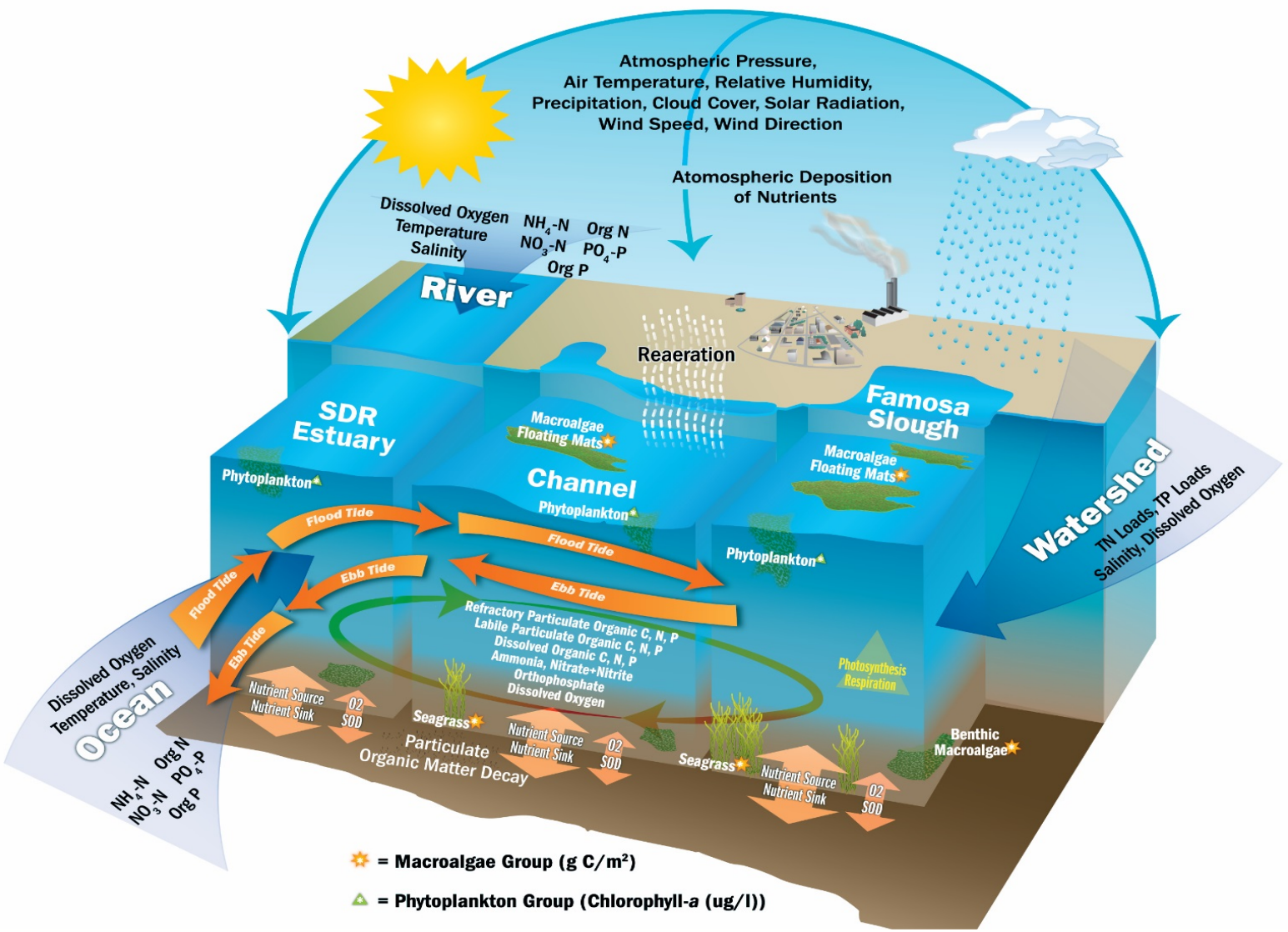
- 2006: Investigative Order (R9-2006-0058) to monitor slough
- 2008: Required report submitted
- 2010: Initiated 3rd Party TMDL development
- 2014: San Diego Water Board requested update
- 2015: Targeted implementation:
  - Increased residential patrols
  - Green infrastructure planning
- 2016: Monitoring and observational study
- 2016: Regular collaboration with Friends of Famosa Slough (FOFS)
- 2017: Drafting detailed Monitoring Plan and QAPP

Famosa Slough and Channel

Famosa Slough Watershed Map

Famosa Slough Model

Famosa Slough Model



Precise Model Target

Load reduction	2x/yr Harvest?	Season	DO_{min} (mg/L)	MAC (g dw/m^2)
0%	No	Wet/Dry	3.47	135
28%	No	Wet/Dry	4.66	98
28%	Yes	Wet/Dry	**5.07**	69
35%	Yes	Wet/Dry	**5.22**	62
37%	Yes	Wet/Dry	**5.27**	**58**
40%	Yes	Wet/Dry	**5.32**	**55**
50%	Yes	Dry (0.1)	**5.20**	**54**
60%	Yes	Dry (0.1)	**5.35**	**46**
70%	Yes	Dry (0.1)	**5.49**	**40**
70%	Yes	Dry (0.2)	**5.58**	**36**
70%	Yes	Wet (0.1)	4.99	82
70%	Yes	Wet (0.2)	4.85	86

Note: MAC = floating/benthic macroalgae.
Green Bold indicates meets targets.

WQIP Targets

- Slough Targets
  - > 5.0 mg/L (Dissoloved Oxygen)
  - < 60 g dw/m^2 (biomass)
- Target based on overall nutrient reduction of 37%
  - Slough: 50% reduction in dry weather is similar to an overall 37% reduction (considering wet & dry loading)
  - Channel: Dry weather reductions in watershed inputs also improve conditions in the Channel

Compliance Schedule

- 2018: Begins January 2018
  - 40% attainment of the load reduction goal (37%) by 2022 or progress toward attaining the macroalgae and Dissolved Oxygen targets.
  - 80% attainment of the load reduction goal (37%) by 2026 or progress toward attaining the macroalgae and Dissolved Oxygen targets.
  - 100% by 2028 at end of 10-yr compliance schedule or attainment of the macroalgae and Dissolved Oxygen targets.

Monitoring

- Submitting Monitoring Plan and QAPP by December 31, 2017
- Compliance monitoring
  - Baseline study in 2018
    - Water quality (wet and dry weather)
    - Sediment
    - Algal monitoring to determine harvesting (as needed)
  - Annual compliance monitoring beginning in 2019

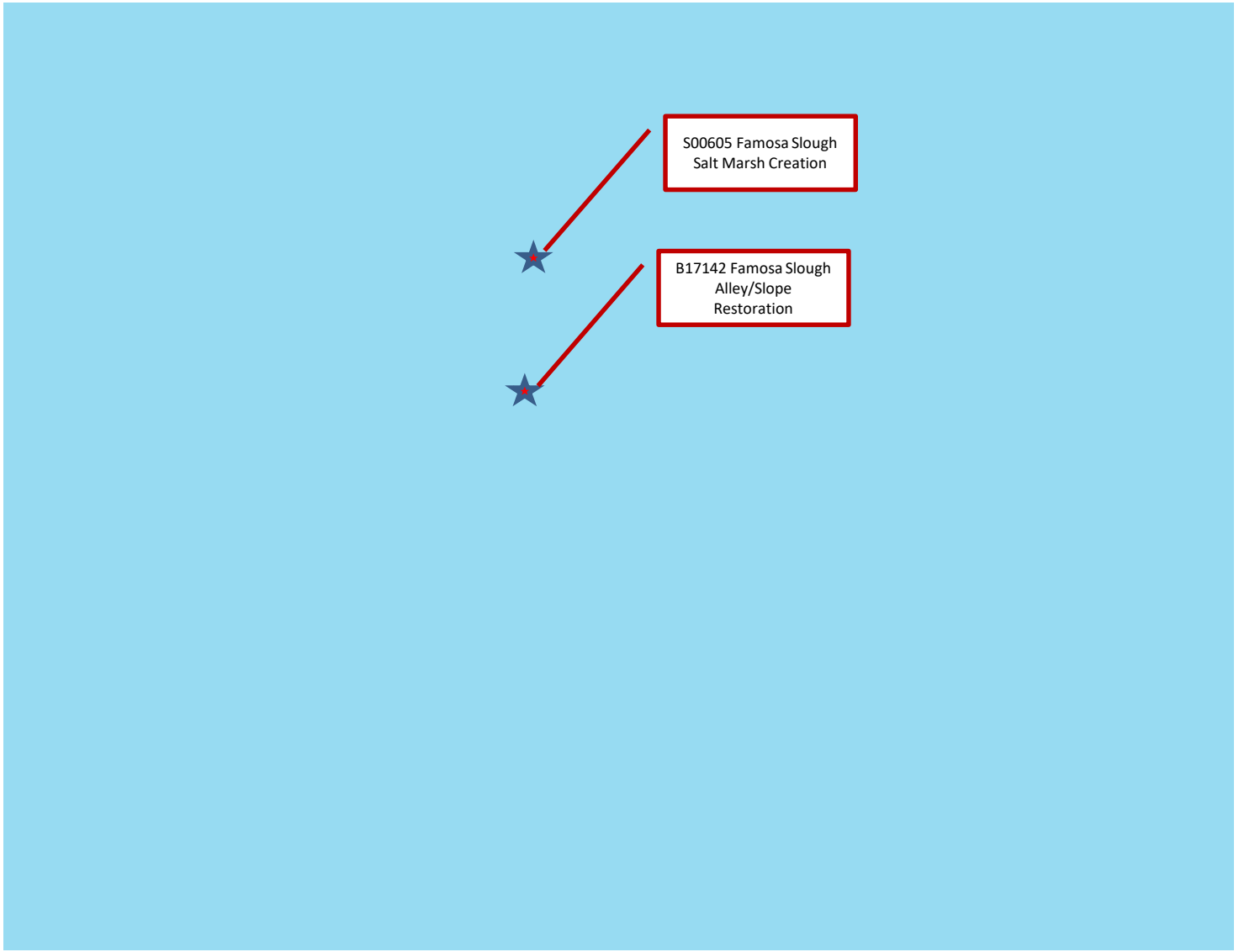
Implementation Approach

- Initiated increased efforts in 2015
- Adaptive management strategy
- Focus on source controls/dry weather reduction initially
  - Education
  - Enforcement patrols
  - Algae removal
- Enhanced street sweeping
- Treatment Pond Maintenance
- Green infrastructure where needed

Source Controls

- Focus on dry weather reductions associated with nutrient loading
  - Enhanced weekly residential patrols (FY18)
    - Patrols: 23
    - Letters: 1
    - Notice of Violations: 24
    - Citations: 16
  - Algae removal twice during the summer, as needed
  - Enhanced street sweeping
  - Targeted public outreach

Potential Green Infrastructure Locations



Green Infrastructure

- Famosa Salt Marsh Creation (2022)
- Mentone Alley Part 1: direct sheet flow into pipe down slope to slough (2022)
- Mentone Alley Part 2: Consider redirecting storm flows to treatment ponds with permitting assistance from FOFS
- Coordinate with FOFS to maintain treatment ponds and assistance with obtaining permits

Questions