NEWPORT BAY IMPAIRMENT ASSESSMENT: WHAT FACTORS MOST AFFECT THE OUTCOME?

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BACKGROUND

- **This committee began discussing how to assess TMDL attainment at our last meeting**
- **The conversation focused on which indicator to use**
  - Bacterial indicators
  - Pathogens
  - Human health responses
- **However, the Committee also recognized that there are design factors that go into the attainment decision**

DESIGN FACTORS

- **Indicator/threshold**
  - Enterococcus vs. fecal coliform
  - Daily vs. monthly thresholds
- **Geography**
  - Whole bay
  - Upper vs. lower bay
  - Individual sites
- **Season**
  - Full year
  - Summer only
  - Wet vs. dry
- **Period**
  - Individual years vs. multi-year average

GOAL OF THIS PRESENTATION

- **Use existing data to make a preliminary assessment**
  - How far are we from attainment?
- **How do design factors affect the attainment decision?**
  - Is this a Bay wide problem or limited to a few locations?
  - Is this a winter problem or a year-round problem?
- **The preliminary assessment will inform discussion about whether we should look at other indicators**

STARTED WITH A BASE CASE

- **Geography**
  - Upper and Lower Bay
- **Season**
  - Summer (April 1 – October 31)
- **Period**
  - Multi-year average (2010-2016 , to include both wet and dry years)
- **Indicator**
  - Fecal coliform
- **Threshold**
  - Monthly geomean of 200

BASE CASE
(SUMMER 2010-2016)

Location	Indicator	Threshold	Number of 30 day geomean periods	Percent above threshold
Upper Bay	Fecal coliform	30 day geomean >200	223	0.9
Lower Bay	Fecal coliform	30 day geomean >200	294	0

EFFECT OF INDICATOR
(SUMMER 2010-2016)

Location	Indicator	Threshold	Percent above threshold
Upper Bay	Fecal coliform	30 day geomean >200	0.9
Upper Bay	Enterococcus	30 day geomean >35	3.6
Lower Bay	Fecal coliform	30 day geomean >200	0
Lower Bay	Enterococcus	30 day geomean >35	0

EFFECT OF THRESHOLD
(SUMMER 2010-2016)

Location	Indicator	Threshold	Percent above threshold
Upper Bay	Fecal coliform	30 day geomean >200	0.9
Upper Bay	Fecal coliform	>10% of samples exceed 400 for 30-day period	15.6
Lower Bay	Fecal coliform	30 day geomean >200	0
Lower Bay	Fecal coliform	>10% of samples exceed 400 for 30-day period	5.4

EFFECT OF THRESHOLD
(SUMMER 2010-2016)

Location	Indicator	Threshold	Percent above threshold
Upper Bay	Enterococcus	30 day geomean >35	3.6
Upper Bay	Enterococcus	Samples > 104 CFU/100 mL	4.7
Lower Bay	Enterococcus	30 day geomean >35	0
Lower Bay	Enterococcus	Samples > 104 CFU/100 mL	4.0

EFFECT OF SEASON
(FECAL COLIFORM 2010-2016)

Location	Indicator	Threshold	Percent above threshold
Upper Bay	Summer	>10% of samples exceed 400 for 30-day period	15.6
Upper Bay	Full year	>10% of samples exceed 400 for 30-day period	30.6
Upper Bay	Wet only	>10% of samples exceed 400 for 30-day period	72.1
Lower Bay	Summer	>10% of samples exceed 400 for 30-day period	5.4
Lower Bay	Full year	>10% of samples exceed 400 for 30-day period	10.9
Lower Bay	Wet only	>10% of samples exceed 400 for 30-day period	25.4

EFFECT OF SEASON
(ENTEROCOCCUS 2010-2016)

Location	Indicator	Threshold	Percent above threshold
Upper Bay	Summer	Samples > 104 CFU/100 mL	4.7
Upper Bay	Full year	Samples > 104 CFU/100 mL	8.6
Upper Bay	Wet only	Samples > 104 CFU/100 mL	36.2
Lower Bay	Summer	Samples > 104 CFU/100 mL	4.0
Lower Bay	Full year	Samples > 104 CFU/100 mL	5.8
Lower Bay	Wet only	Samples > 104 CFU/100 mL	14.5

EFFECT OF STATION (LOWER BAY)

(FECAL COLIFORM, 2010-2016, FULL YEAR >10% OF SAMPLES EXCEED 400 FOR 30-DAY PERIOD)

Station	Percent above threshold	Station	Percent above threshold	Station	Percent above threshold
Rocky Point Beach	5.8	Sapphire Avenue Beach	14.2	15th Street Beach	11.0
N Street Beach	4.9	Abalone Avenue Beach	8.5	43rd Street Beach	21.5
Bayside Drive Beach	18.1	Grand Canal	15.7	38th Street Beach	15.4
Ruby Avenue Beach	15.4	Lido Yacht Club Beach	15.6	33rd Street Beach	22.8
Promontory Point Channel	1.6	10th Street Beach	10.9	Newport Blvd Bridge	54.4
Onyx Avenue Beach	5.1	Alvarado/Bay Isle Beach	17.8	Via Genoa Beach	13.9
Park Avenue Beach	11.7	Rhine Channel	13.9	Bayshore Beach	13.2
Garnet Avenue Beach	21.9	19th Street Beach	9.0		

EFFECT OF STATION (UPPER BAY)

(FECAL COLIFORM, 2010-2016, FULL YEAR >10% OF SAMPLES ABOVE 400 FOR 30-DAY PERIOD)

Station	Percent above threshold
De Anza Launch	14.8
Newport Dunes West	34.5
Newport Dunes Middle	33.9
Newport Dunes East	36.1
Newport Dunes North	37.8
North Star Beach	28.4
Vaughns Launch	20.8
Ski Zone	35.3

EFFECT OF STATION (LOWER BAY)

(FECAL COLIFORM, 2010-2016; FULL YEAR DRY WEATHER ONLY >10% OF SAMPLES EXCEED 400 FOR 30-DAY PERIOD)

Station	Percent above threshold
Rocky Point Beach	3.5
N Street Beach	0.0
Bayside Drive Beach	13.7
Ruby Avenue Beach	7.2
Promontory Point Channel	0.0
Onyx Avenue Beach	0.0
Park Avenue Beach	2.4
Garnet Avenue Beach	15.6

Station	Percent above threshold
Sapphire Avenue Beach	6.9
Abalone Avenue Beach	4.6
Grand Canal	9.3
Lido Yacht Club Beach	4.6
10th Street Beach	1.6
Alvarado/Bay Isle Beach	10.9
Rhine Channel	5.1
19th Street Beach	1.6

Station	Percent above threshold
15th Street Beach	1.2
43rd Street Beach	12.5
38th Street Beach	5.3
33rd Street Beach	17.5
Newport Blvd Bridge	44.0
Via Genoa Beach	5.7
Bayshore Beach	0.0

EFFECT OF STATION (UPPER BAY)

(FECAL COLIFORM, 2010-2016 FULL YEAR DRY WEATHER ONLY >10% OF SAMPLES ABOVE 400 FOR 30-DAY PERIOD)

Station	Percent above threshold
De Anza Launch	1.6
Newport Dunes West	9.4
Newport Dunes Middle	5.8
Newport Dunes East	13.6
Newport Dunes North	15.7
North Star Beach	7.2
Vaughns Launch	9.5
Ski Zone	14.8

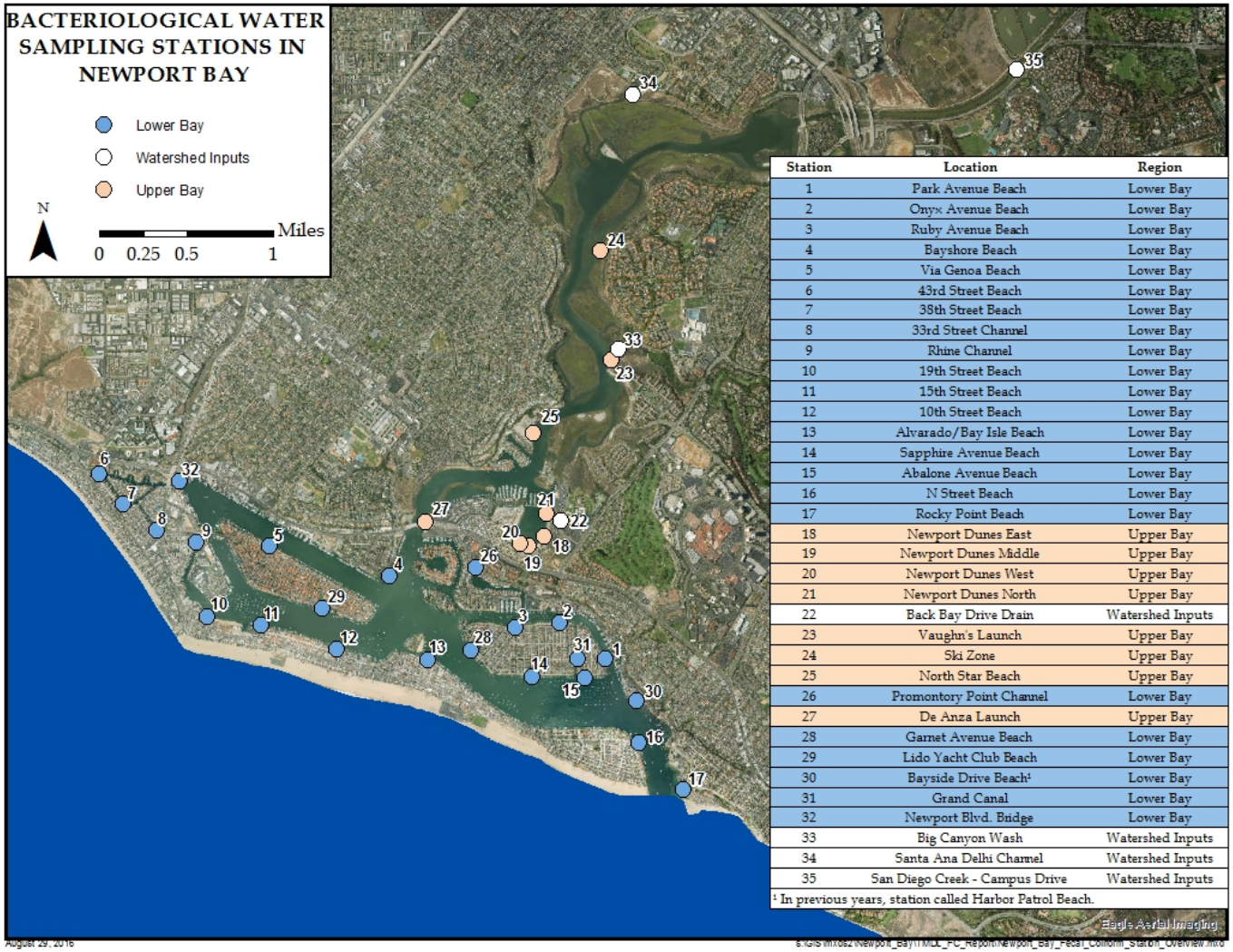
EFFECT OF YEAR
(FULL YEAR)

Location	Indicator	Threshold	Year	Percent above threshold
Upper Bay	Fecal coliform	>10% of samples exceed 400 for 30-day period	2010-11	29.8
Upper Bay	Fecal coliform	>10% of samples exceed 400 for 30-day period	2011-12	34.3
Upper Bay	Fecal coliform	>10% of samples exceed 400 for 30-day period	2012-13	38.1
Upper Bay	Fecal coliform	>10% of samples exceed 400 for 30-day period	2013-14	10.6
Upper Bay	Fecal coliform	>10% of samples exceed 400 for 30-day period	2014-15	39.4
Upper Bay	Fecal coliform	>10% of samples exceed 400 for 30-day period	2015-16	31.1

NEXT STEPS

- **You need to continue defining attainment**
  - Hopefully this presentation helps that discussion
- **Design factors are clearly part of that definition**
  - Daily thresholds are more challenging than monthly ones
  - Wet is more challenging than annual (or dry)
  - Both of these have a larger effect than indicator selection
- **Defining attainment also requires identifying allowable deviation from zero**
  - Part of that might be found in the listing policy
  - Part of that might be defining reference condition

MAP OF SAMPLING STATIONS



Station	Location	Region
1	Park Avenue Beach	Lower Bay
2	Onyx Avenue Beach	Lower Bay
3	Ruby Avenue Beach	Lower Bay
4	Bayshore Beach	Lower Bay
5	Via Genoa Beach	Lower Bay
6	43rd Street Beach	Lower Bay
7	38th Street Beach	Lower Bay
8	33rd Street Channel	Lower Bay
9	Rhine Channel	Lower Bay
10	19th Street Beach	Lower Bay
11	15th Street Beach	Lower Bay
12	10th Street Beach	Lower Bay
13	Alvarado/Bay Isle Beach	Lower Bay
14	Sapphire Avenue Beach	Lower Bay
15	Abalone Avenue Beach	Lower Bay
16	N Street Beach	Lower Bay
17	Rocky Point Beach	Lower Bay
18	Newport Dunes East	Upper Bay
19	Newport Dunes Middle	Upper Bay
20	Newport Dunes West	Upper Bay
21	Newport Dunes North	Upper Bay
22	Back Bay Drive Drain	Watershed Inputs
23	Vaughn's Launch	Upper Bay
24	Ski Zone	Upper Bay
25	North Star Beach	Upper Bay
26	Promontory Point Channel	Lower Bay
27	De Anza Launch	Upper Bay
28	Garnet Avenue Beach	Lower Bay
29	Lido Yacht Club Beach	Lower Bay
30	Bayside Drive Beach[1]	Lower Bay
31	Grand Canal	Lower Bay
32	Newport Blvd. Bridge	Lower Bay
33	Big Canyon Wash	Watershed Inputs
34	Santa Ana Delhi Channel	Watershed Inputs
35	San Diego Creek - Campus Drive	Watershed Inputs

[1] In previous years, station called Harbor Patrol Beach.

August 29, 2016