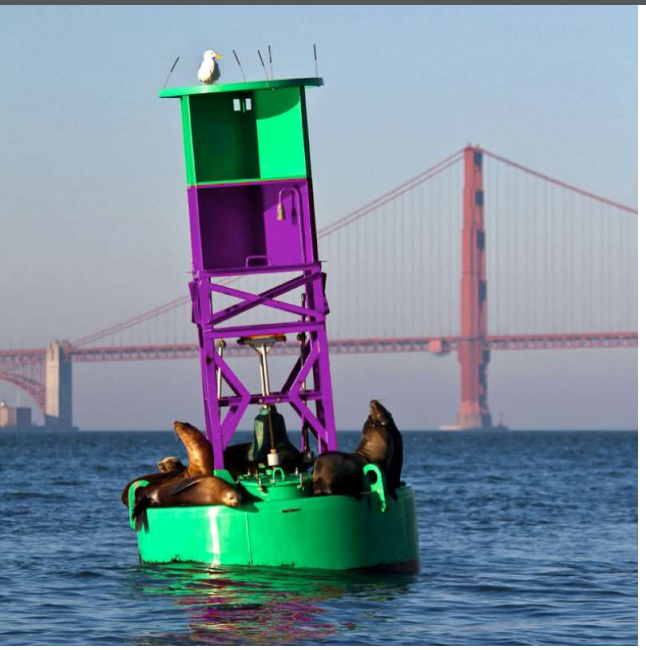


BACWA Annual Meeting: Group Annual Report and 2nd Watershed Permit Recycled Water Updates

February 19, 2021

HDR

WOODARD &CURRAN

BACWA BAY AREA CLEAN WATER AGENCIES

Group Annual Report Update

Group Annual Report: Submitted to the Water Board on 2/1/2021

- Includes Influent Flows and Loads:
  - 5 Quarters worth of data
  - Limited to Plants >10 mgd permitted capacity
- Discharge Flows and Loads:
  - 2019/2020 was relatively dry
  - 2019/2020 dataset captures 6-months of COVID19 data (March 2020 – September 2020)
    - Flows: average annual values lowest since testing began in 2012
    - Nutrient Loads: lower than previous 3-years for all nutrients (except dry season TP)
- Future is unclear with impacts from COVID19
- Desire to include Recycled Water Volumes into the effort

Group Annual Report Discharge Flows: 2019/2020 Dataset Overview

Averaging Period	Constituent	10/2012 – 9/2013	10/2013 – 09/2014	10/2014 – 09/2015	10/2015 – 09/2016	10/2016 – 09/2017	10/2017 – 09/2018	10/2018 – 09/2019	10/2019 – 09/2020	8-Year Average
Ave Annual	Flow, mgd	451	428	415	430	515	433	480	408	445
Dry Season	Flow, mgd	393	374	351	372	396	383	394	363	378

Flows:

- Ave Annual flows dropped ~15% since last year (similar to peak drought in 2014/2015)
- Dry Season flows reflect those seen during drought (~8% reduction since 2019)
- Both Ave Annual and Dry Season are lower than the 8-year average
- 2020/2021 has been relatively dry thus far

Group Annual Report Ammonia Discharge: 2019/2020 Dataset Overview

Averaging Period	Constituent	10/2012 – 9/2013	10/2013 – 09/2014	10/2014 – 09/2015	10/2015 – 09/2016	10/2016 – 09/2017	10/2017 – 09/2018	10/2018 – 09/2019	10/2019 – 09/2020	8-Year Average
Ave Annual	Flow, mgd	451	428	415	430	515	433	480	408	445
Dry Season	Flow, mgd	393	374	351	372	396	383	394	363	378
Ave Annual	Ammonia, kg N/d	34,300	37,000	36,700	37,500	40,600	40,800	39,800	38,000	38,100
Dry Season	Ammonia, kg N/d	34,000	36,300	36,200	37,300	38,900	38,900	38,200	35,400	36,900

Ammonia:

- Ave Annual loads dropped ~4% since 2019 (not as pronounced as flow reduction)
- Dry Season load reduction similar to dry season flow reduction (~7% reduction since 2019); loads 2nd lowest since sampling began
- Both Ave Annual and Dry Season are lower than the 8-year average
- 2020/2021 has been relatively dry thus far

Group Annual Report Total Inorganic Nitrogen (TIN) Discharge: 2019/2020 Dataset Overview

Averaging Period	Constituent	10/2012 – 9/2013	10/2013 – 09/2014	10/2014 – 09/2015	10/2015 – 09/2016	10/2016 – 09/2017	10/2017 – 09/2018	10/2018 – 09/2019	10/2019 – 09/2020	8-Year Average
Ave Annual	Flow, mgd	451	428	415	430	515	433	480	408	445
Dry Season	Flow, mgd	393	374	351	372	396	383	394	363	378
Ave Annual	Ammonia, kg N/d	34,300	37,000	36,700	37,500	40,600	40,800	39,800	38,000	38,100
Dry Season	Ammonia, kg N/d	34,000	36,300	36,200	37,300	38,900	38,900	38,200	35,400	36,900
Ave Annual	TIN, kg N/d	49,300	51,300	50,900	51,100	55,000	53,200	53,100	49,900	51,700
Dry Season	TIN, kg N/d	47,300	48,100	48,700	48,400	50,600	50,000	49,200	45,700	48,500

TIN:

- Ave Annual loads reduction ~6% since 2019 (not as pronounced as flow reduction)
- Dry Season load reduction similar to ammonia (~7% reduction since 2019) and lowest loads seen since sampling began in 2012
- Both Ave Annual and Dry Season are lower than the 8-year average
- 2020/2021 has been relatively dry thus far

Group Annual Report Total Phosphorus (TP) Discharge: 2019/2020 Dataset Overview

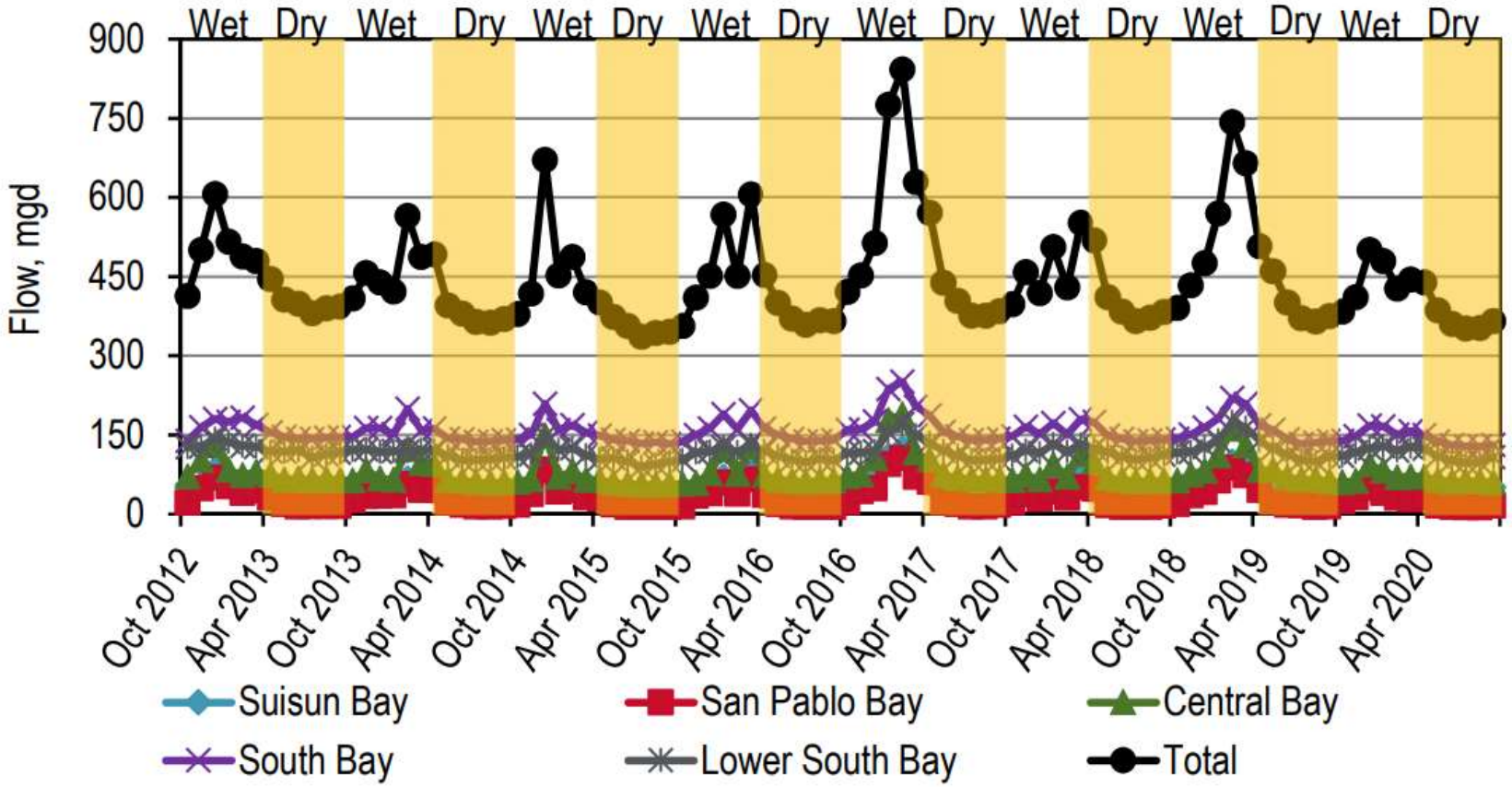
Averaging Period	Constituent	10/2012 – 9/2013	10/2013 – 09/2014	10/2014 – 09/2015	10/2015 – 09/2016	10/2016 – 09/2017	10/2017 – 09/2018	10/2018 – 09/2019	10/2019 – 09/2020	8-Year Average
Ave Annual	Flow, mgd	451	428	415	430	515	433	480	408	445
Dry Season	Flow, mgd	393	374	351	372	396	383	394	363	378
Ave Annual	Ammonia, kg N/d	34,300	37,000	36,700	37,500	40,600	40,800	39,800	38,000	38,100
Dry Season	Ammonia, kg N/d	34,000	36,300	36,200	37,300	38,900	38,900	38,200	35,400	36,900
Ave Annual	TIN, kg N/d	49,300	51,300	50,900	51,100	55,000	53,200	53,100	49,900	51,700
Dry Season	TIN, kg N/d	47,300	48,100	48,700	48,400	50,600	50,000	49,200	45,700	48,500
Ave Annual	TP, kg P/d	3,860	3,750	3,770	4,070	4,020	4,190	4,210	4,010	3,990
Dry Season	TP, kg P/d	3,400	3,320	3,570	3,960	3,660	4,000	4,010	3,790	3,710

TP:

- Ave Annual and Dry Season loads reduction ~5% since 2019
- Both Ave Annual and Dry Season are higher than the 8-year average (albeit marginally higher)
- 2020/2021 has been relatively dry thus far

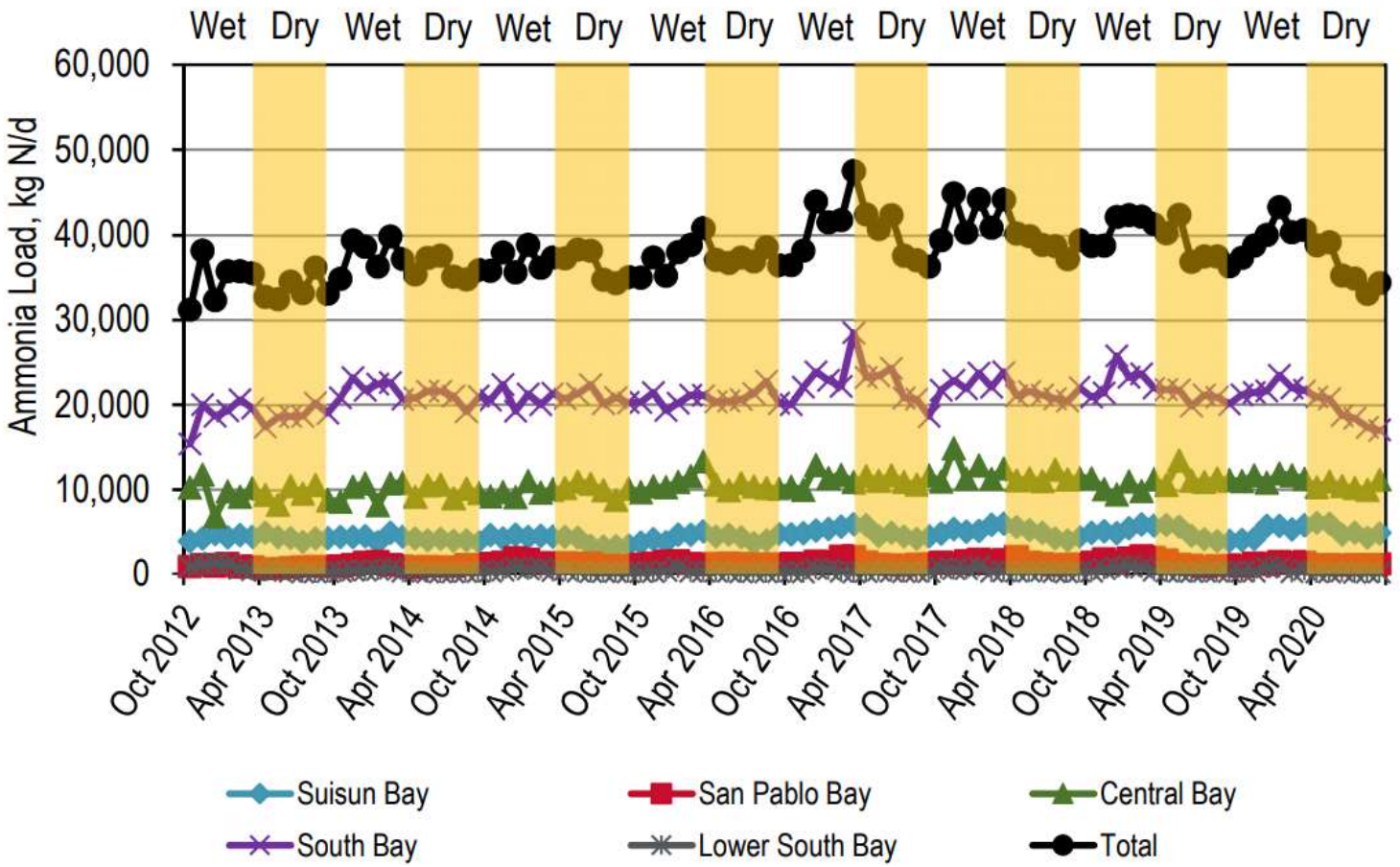
Group Annual Report Discharge Flows: Overall and by Subembayment

- 2019/2020 had the lowest peaks since sampling began (maximum month = 501 mgd versus 842 mgd (2/2017)
- The minimum monthly average flows (ADWF) are on par with those seen during the peak drought (2014/2015)



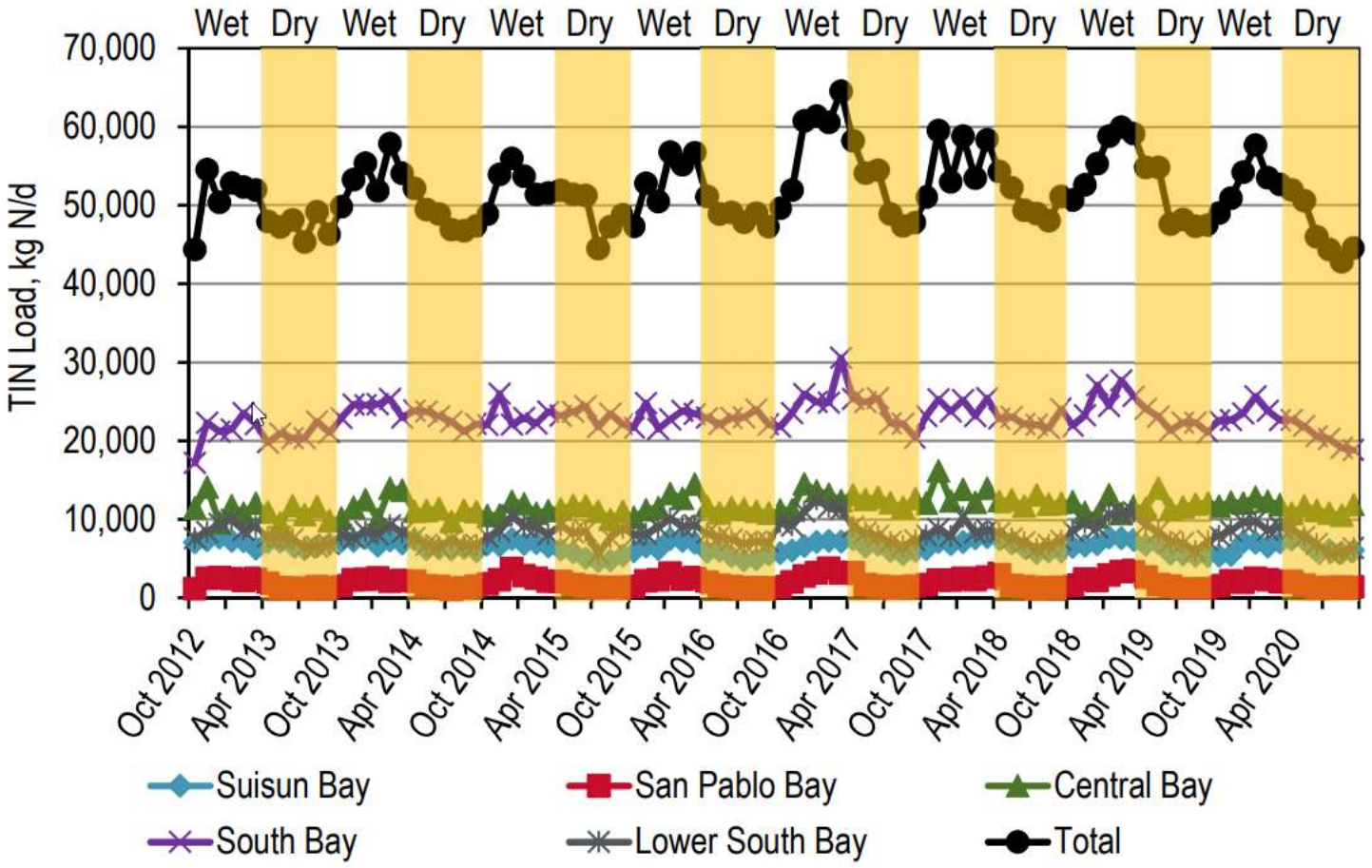
Discharge Ammonia: Overall and by Subembayment

- 2019/2020 had similar peaks as the 2018/2019 (maximum month = 43,300 kg N/d for 01/2020)
- The minimum monthly average loads (ADWF) are comparable to when sampling began and during the drought



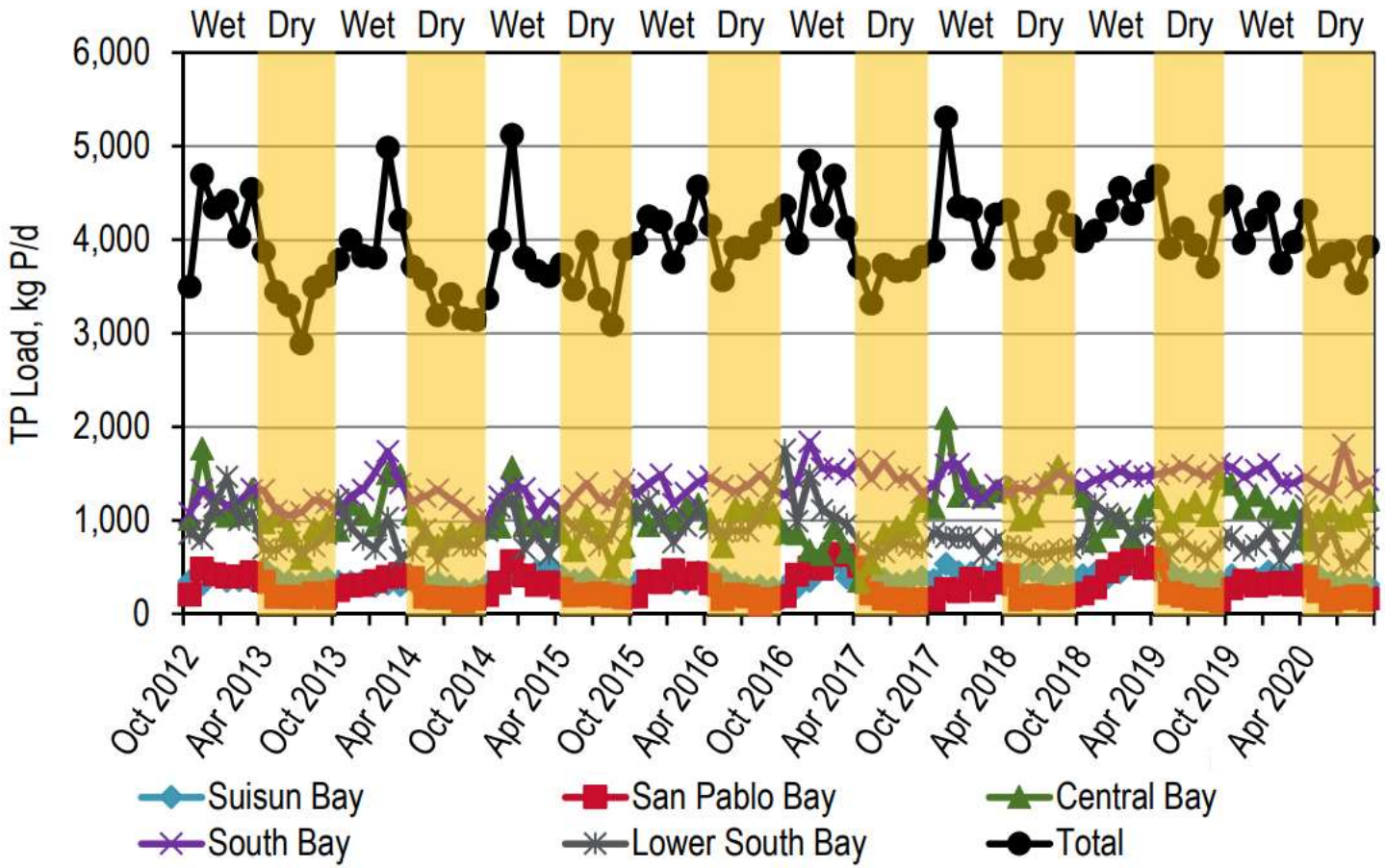
Discharge TIN: Overall and by Subembayment

- 2019/2020 had similar peaking as the 2018/2019 (albeit lower; max month = 57,700 kg N/d)
- The minimum monthly average loads (ADWF) are lowest since sampling began



Discharge TP: Overall and by Subembayment

- 2019/2020 had similar peaking as the 2018/2019 (albeit lower; max month = 4,460 kg P/d)
- The minimum monthly average loads (ADWF) are similar to the last few years



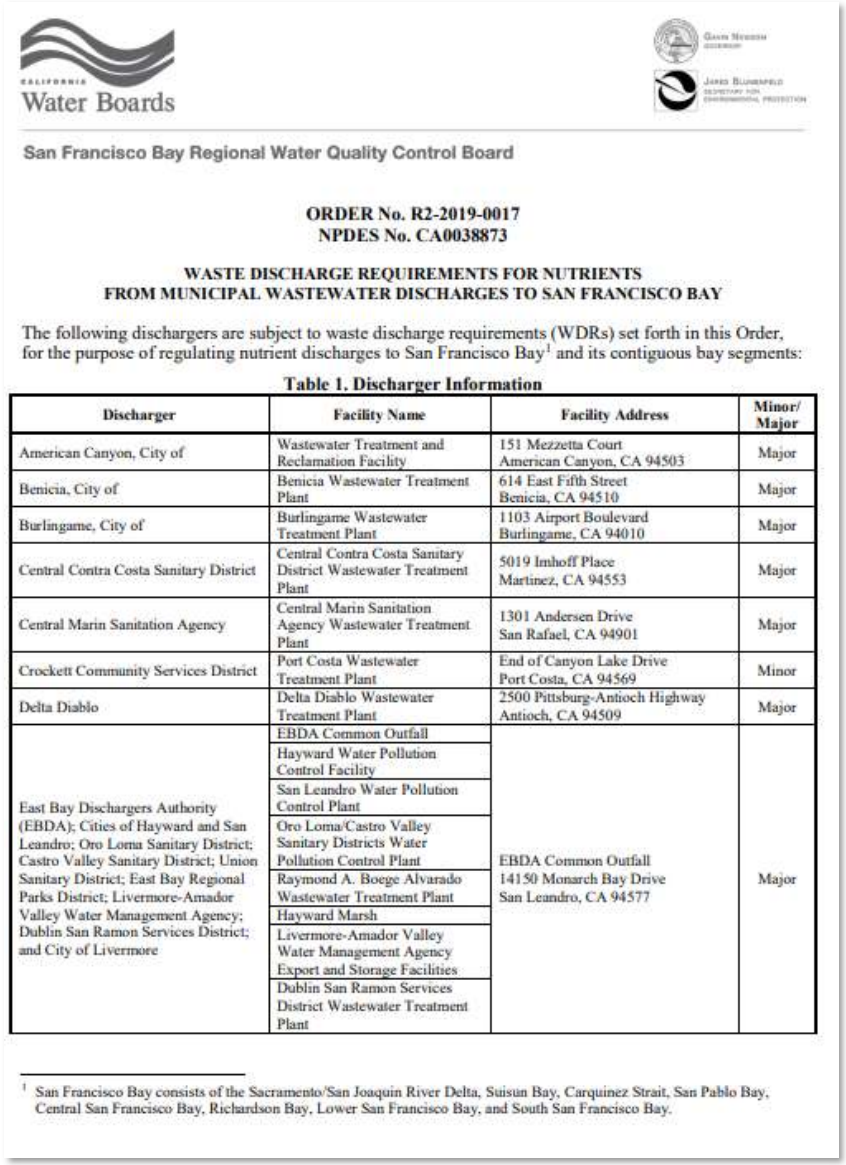
Group Annual Report: Next Year's

- Continue to understand flow and loading impacts from the global pandemic and another relatively dry year (thus far)
- Influent:
  - Dataset will continue to grow (n = 9 vs currently 5)
  - Ability to compare against discharge
  - Plan to initiate use of statistics
- Goal of including recycled water to better understand that contribution

Recycled Water Update

2nd Watershed Permit: Recycled Water Task

- Scoping and Evaluation Plan: Completed and Approved (on BACWA website)
- Report (due on July 1, 2023):
  - Overall Report: summarize the overall findings for individual plant reports
  - Individual Plant Reports (each will serve as an Appendix to the Overall Report):
    - Description of treatment facilities and service area
    - Estimate of nutrient load reduction
    - Ancillary and adverse impacts
    - Assessment of the feasibility, efficacy, reliability, and cost-effectiveness of each opportunity
    - Identification of potential challenges (e.g., regulatory barrier)
- Steps and Status for Individual Reports



Water Boards

San Francisco Bay Regional Water Quality Control Board

ORDER No. R2-2019-0017
NPDES No. CA0038873

WASTE DISCHARGE REQUIREMENTS FOR NUTRIENTS FROM MUNICIPAL WASTEWATER DISCHARGES TO SAN FRANCISCO BAY

The following dischargers are subject to waste discharge requirements (WDRs) set forth in this Order, for the purpose of regulating nutrient discharges to San Francisco Bay[1] and its contiguous bay segments:

Table 1. Discharger Information

Discharger	Facility Name	Facility Address	Minor/ Major
American Canyon, City of	Wastewater Treatment and Reclamation Facility	151 Mezzetta Court American Canyon, CA 94503	Major
Benicia, City of	Benicia Wastewater Treatment Plant	614 East Fifth Street Benicia, CA 94510	Major
Burlingame, City of	Burlingame Wastewater Treatment Plant	1103 Airport Boulevard Burlingame, CA 94010	Major
Central Contra Costa Sanitary District	Central Contra Costa Sanitary District Wastewater Treatment Plant	5019 Imhoff Place Martinez, CA 94553	Major
Central Marin Sanitation Agency	Central Marin Sanitation Agency Wastewater Treatment Plant	1301 Andersen Drive San Rafael, CA 94901	Major
Crockett Community Services District	Port Costa Wastewater Treatment Plant	End of Canyon Lake Drive Port Costa, CA 94569	Minor
Delta Diablo	Delta Diablo Wastewater Treatment Plant	2500 Pittsburg-Antioch Highway Antioch, CA 94509	Major
East Bay Dischargers Authority (EBDA); Cities of Hayward and San Leandro; Oro Loma Sanitary District; Castro Valley Sanitary District; Union Sanitary District; East Bay Regional Parks District; Livermore-Amador Valley Water Management Agency; Dublin San Ramon Services District; and City of Livermore	EBDA Common Outfall Hayward Water Pollution Control Facility San Leandro Water Pollution Control Plant Oro Loma/Castro Valley Sanitary Districts Water Pollution Control Plant Raymond A. Boege Alvarado Wastewater Treatment Plant Hayward Marsh Livermore-Amador Valley Water Management Agency Export and Storage Facilities Dublin San Ramon Services District Wastewater Treatment Plant	EBDA Common Outfall 14150 Monarch Bay Drive San Leandro, CA 94577	Major

[1] San Francisco Bay consists of the Sacramento/San Joaquin River Delta, Suisun Bay, Carquinez Strait, San Pablo Bay, Central San Francisco Bay, Richardson Bay, Lower San Francisco Bay, and South San Francisco Bay.

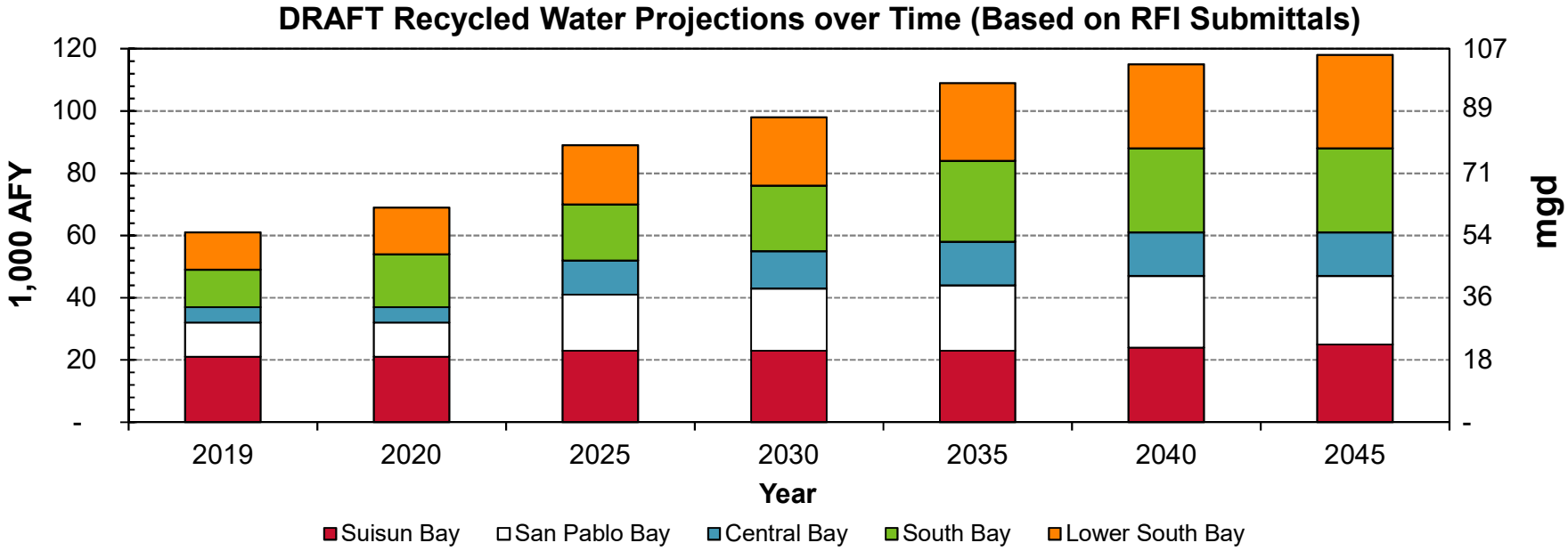
Recycled Water Represents an Opportunity to Divert Flows/Loads from the Bay

Discharge Flow to the Bay:

- Average Annual over the Last 8-Years: 498,000 AFY (445 mgd)
- Average Annual from 10/19 – 09/20: 457,000 AFY (408 mgd)

Recycled Water Diverted from the Bay:

- 2019 draft data: 61,000 AFY (54 mgd)
  - 5-15% diversion from the Bay
  - ~50% occurs in the dry season (May 1 – Sept 30)
  - Anticipate increased Recycled Water demands that exceed influent flow projections for the Bay
- Recycled Water Flows do not Necessarily = Load Diversions



Recycled Water: Individual Plant Report Steps

01

01: INITIAL RFI & 1ST WATERSHED PERMIT REPORT

- The 1st Watershed Permit Plant Reports: used for Plant Specific Background
- RFI: starting point for Results/Discussion

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02

02: Second RFI (RW PROJECT WRITE-UPS & COST)

- Write-Ups: agency to provide additional project descriptions
- Cost: agency to provide

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03: DRAFT REPORT

- Consultant team to update the Results/Discussion with details
- Agency: period to review and provide comments

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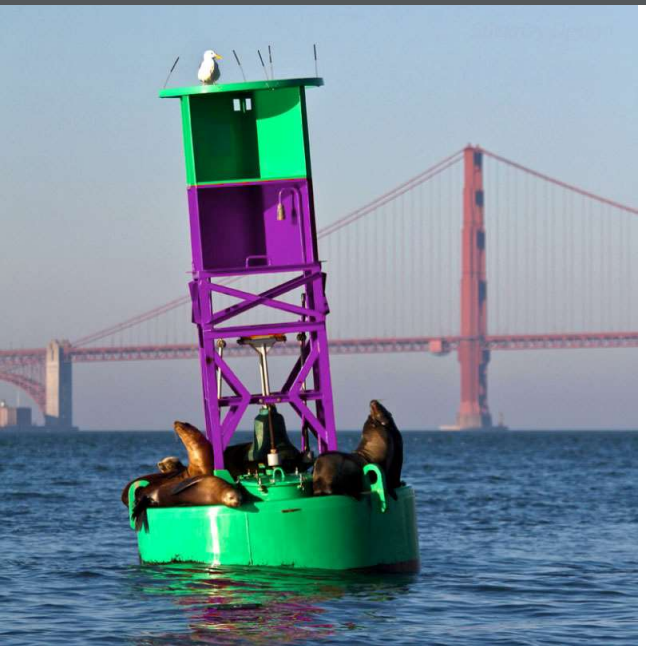
- Consultant team to update the Results/Discussion with details
- Agency: period to review and provide comments

04

04: COMMENTS, REVIEW CALL, AND FINALIZE/SIGN

- Agency Comments: agency to review and provide consultant
- Review Call: Consultant to update report and lead a call with client
- Finalize/Sign: Consultant to finalize and Agency to Sign-Off



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