



**Central Marin Sanitation Agency**

**COMMISSION REGULAR MEETING AGENDA  
Tuesday, April 11, 2017  
at the Agency Office  
7:00 p.m.**

Members of the public may directly address the Board on any item appearing on the Agenda. They may address the Board when the item is called by the Board Chair and he/she indicates it is the time for the public to speak to the agenda item. Audio and video recordings will be made of this meeting and will be posted to the Agency website.

**1. 7:00 p.m.: Call Meeting to Order/Pledge of Allegiance**

**2. Roll Call**

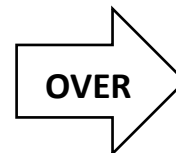
**3. Open Period for Public Participation**

*Open time for public expression, up to two minutes per speaker, on items within CMSA's jurisdiction and not on the Board of Commissioners' agenda. The Board will not discuss or take action during open time.*

**4. Consent Calendar**

*Matters listed under this item are considered routine and will be enacted by one motion. The consent calendar may include resolutions; therefore, the motion, second, and vote will also be applicable to the resolution and recorded accordingly. There will be no separate discussion of these items unless requested by a member of the Board or the public prior to the time the Board votes on the motion to adopt.*

- a) Minutes—Special Board Meeting—March 16, 2017
- b) Treasurer's Report—Operating Account—March 2017
- c) Schedule of Investments—March 2017
- d) NPDES, Process, and Maintenance Report—March 2017
- e) Performance Metric Report—March 2017
- f) FY 2017 Asset Management Program – Third Quarter Report
- g) FY18 Natural Gas Procurement Structure



5. **California Water Environment Association – 2016 State Level Awards**  
*Recommendation: Informational; provide comments or direction to the General Manager as appropriate.*
  
6. **Organic Waste Receiving Program Report**  
*Recommendation: Informational; provide comments or direction to the General Manager as appropriate.*
  
7. **FY 2017 Third Quarter Budget Report**  
*Recommendation: Accept the Third Quarter Budget Report for Fiscal Year 2016-17.*
  
8. **Recycled Water Program Status Report**  
*Recommendation: Discuss the use and delivery of recycled water, and provide direction to staff, as appropriate.*
  
9. **Denmark Wastewater Fact-Finding Trip Presentation**  
*Recommendation: Informational; provide comments or direction to the General Manager as appropriate.*
  
10. **North Bay Watershed Association (NBWA) Report\***
  
11. **Oral Reports by Commissioners/General Manager\***
  
12. **Next Scheduled Meeting**  
*Tuesday, May 9, 2017 at 7:00 pm at the Agency office.*

\*Information not furnished with Agenda

In compliance with the Americans with Disabilities Act, if you need special assistance to participate in this meeting, please contact Central Marin Sanitation Agency at 415-459-1455. For auxiliary aids or services or other reasonable accommodations to be provided by the Agency at or before the meeting, please notify the Agency at least 3 business days in advance of the meeting date (meeting is the second Tuesday of each month). If the Agency does not receive timely notification of your reasonable request, the Agency may not be able to make the necessary arrangements by the time of the meeting.



**Central Marin Sanitation Agency**

**COMMISSION SPECIAL MEETING MINUTES  
Thursday, March 16, 2017  
at the Agency Office**

**Note:** The minutes are an official record of the Board meeting.  
There are also official audio and video recordings available on the Agency's website at [www.cmsa.us](http://www.cmsa.us).  
The time stamps on these minutes refer to the items' start times on the video recording of the meeting.  
Please contact CMSA at 415-459-1455 for information about receiving a copy of these records.

1. **Call Meeting to Order/Pledge of Allegiance** **00:00**  
Chair Hartzell called the meeting to order at 4:05 p.m. A quorum was present.
  
2. **Roll Call** **00:35**  
 Present: Chair Kathy Hartzell; Vice-Chair Diane Furst; Commissioners Maribeth Bushey, Tom Gaffney, and Michael Boorstein; alternate Commissioner Dean DiGiovanni (for Al Boro)  
 Absent: Secretary Al Boro  
 Staff present: Jason Dow, General Manager; Mark Koekemoer, Laboratory Director; Katy Thelen, Health & Safety Manager; and Kate Brouillet, Recording Secretary  
 Public present: Felicia Newhouse, Ross Valley Sanitary District
  
3. **Open Period for Public Participation** **00:45**  
 There were no comments from the public.  
 GM Dow introduced CMSA's two newly hired employees: Mark Koekemoer, Laboratory Director, and Katy Thelen, Health & Safety Manager, and stated that Ken Spray will be joining the Agency on Monday, March 20, as the new Administrative Services Manager.
  
4. **Consent Calendar** **02:54**
  - a) Minutes—Regular Board Meeting—January 10, 2017
  - b) Treasurer's Report—Operating Account—January 2017
  - c) Treasurer's Report—Operating Account—February 2017
  - d) Schedule of Investments—January 2017
  - e) Schedule of Investments—February 2017
  - f) NPDES, Process, and Maintenance Report—January 2017
  - g) NPDES, Process, and Maintenance Report—February 2017

- h) Performance Metric Report—January and February 2017
- i) CMSA Investment Policy
- j) Agency Internship Program Guidelines
- k) Amendment #1 to the Commercial Food Waste Processing and Disposal Services Agreement

Chair Hartzell removed item #4a, the January Minutes, to be considered separately since two Board members were not in attendance at the meeting.

**ACTION:** Commissioner Furst moved to approve Consent Calendar item 4a; second, Commissioner Bushey.

Ayes: BOORSTEIN, BUSHEY, FURST, HARTZELL

Nays: NONE

Abstentions: DiGIOVANNI, GAFFNEY

Commissioner Gaffney asked to pull Item #4i, the Investment Policy, for discussion. He stated that he believes that there are some categories of investments listed in the policy under the heading "Authorized Investments" that should be removed, and asked if this item could be tabled until the new Administrative Services Manager (ASM) has had time to review.

GM Dow stated that government code states the Board needs to approve the Agency's finance policy each year if the investment authority is delegated to staff, and it is normally brought to the Board in the March meeting for consideration of approval. He recommended that it be approved tonight and then brought back to the Board at a later date for further review. The Board concurred.

The Board discussed reviews by the new ASM, Agency counsel, and the Finance Committee in the near future.

Comments from the Public:

There were no comments from the public.

**ACTION:** Commissioner Furst moved to approve Consent Calendar items 4b through 4k; second, Commissioner Gaffney.

Ayes: BOORSTEIN, BUSHEY, DiGIOVANNI, FURST, GAFFNEY, HARTZELL

Nays: NONE

Abstentions: NONE

**DIRECTION:** GM Dow to present Commissioner Gaffney's comments and any comments from the new ASM to the Finance Committee at their April meeting, and bring back recommendations to the Board in May.

**5. Maintenance Facility Modifications Project – Construction Contract Award 08:15  
(CMSA Contract No. 17-06)**

GM Dow described the project and the scope of work, and stated that the Notice Inviting Bids was issued on January 27, 2017, and bids were opened on March 3. He stated that six bids were received, opened, and reviewed by staff. He stated that the lowest, responsive, responsible bidder was Buhler Commercial, and their low bid of \$1,015,000 exceeded the revised engineer's estimate of \$925,000.

GM Dow stated that the total project cost is estimated to be \$1,274,870, and staff will re-allocate funds during the FY 18 CIP budget development process to provide adequate funds for the Buhler construction contract work, potential construction change orders, engineering services during construction, construction management support services, temporary office building rental, and other miscellaneous expenses.

GM Dow recommended that the Board award the construction contract for the Maintenance Facility Modifications Project to Buhler Commercial, and authorize him to execute the contract agreement.

The Board asked a few questions regarding the scope of work and the bidding firms. GM Dow responded to the Board's questions.

**Comments from the Public:**

There were no comments from the public.

**ACTION:** Commissioner Gaffney moved to award the construction contract for the Maintenance Facility Modifications Project to Buhler Commercial, and authorize him to execute the contract agreement; second, Commissioner Furst.

Ayes: BOORSTEIN, BUSHEY, DIGIOVANNI, FURST,  
GAFFNEY, HARTZELL

Nays: NONE

Abstentions: NONE

**6. Construction Management Services Task Order with Dee Consultants 00:17:03**

GM Dow stated that at the June 2014 meeting, the Board approved a task order based Professional Services Agreement with Dee Consultants to provide construction management services for various Capital Improvement Program projects. He stated that the intent of the agreement was to provide the Agency with a resource to perform specialty construction management and inspection services and act as an extension of staff during on-site construction activities. GM Dow reviewed the consultant's background, and stated that he has the necessary skill set and technical experience to manage and inspect building construction, and will give Agency Engineering staff an opportunity to learn from his expertise.

GM Dow stated the estimated fee allowance of \$88,780 assumes the consultant will work three days per week for the project duration of 225 calendar days. He stated Agency staff will conduct daily construction inspections and other project management activities with consultant oversight.

GM Dow recommends that the Board approve Task Order #4 with Dee Consultants for construction management services for the Maintenance Facility Modifications Project, and authorize the General Manager to execute the Task Order.

The Board asked a few questions regarding the consultant and the Task Order. GM Dow answered the Board's questions.

Comments from the Public:

There were no comments from the public.

**ACTION:** Commissioner Furst moved to approve Task Order #4 with Dee Consultants for construction management services for the Maintenance Facility Modifications Project, and authorize the General Manager to execute the Task Order; second, Commissioner Boorstein.

Ayes: BOORSTEIN, BUSHEY, DiGIOVANNI, FURST,  
GAFFNEY, HARTZELL

Nays: NONE

Abstentions: NONE

**7. PG&E Interconnection Agreement Modification Project Update 22:43**

GM Dow stated that periodically staff prepares an informational update on the progress of the PG&E Interconnection Agreement Modification Project, and summarized the developments to date.

GM Dow stated that CMSA is now a WREGIS account holder (an independent tracking system for renewable energy generation units) which is sufficient status for the California Energy Commission (CEC) to process CMSA's Renewable Energy Certification application.

GM Dow reported that the CEC has accepted CMSA's application for Renewable Energy Certification and staff has been told that the certification will not be issued until the end of the power sale agreement negotiation process with either Marin Clean Energy (MCE) or PG&E.

GM Dow stated that staff submitted the Feed-in Tariff (FIT) application to MCE on March 8, 2017, and MCE is currently offering their standard pricing of \$0.10 per kWh for a term of 20 years. He then described various power sale options and stated each will require further analysis and economic modeling to determine the most cost effective alternative.

GM Dow reported that the PG&E E-BioMAT Feed-In-Tariff application was submitted on March 10, 2017, is now under review by PG&E, and currently offers the best power sale rate at \$0.128 per kWh. He then described the purchase process through PG&E.

GM Dow reviewed the Clean Water State Revolving Fund (CWSRF) Planning Grant Application and stated that the next step will be for the CWSRF staff to proceed with approval of the financing. GM Dow stated that CWSRF staff has not indicated if CMSA can seek reimbursement for Plan of Study costs that are incurred before the Green Project Reserve (GPR) application is approved, and as a result CMSA has delayed several activities in the Plan of Study that are part of the 2017 Agency Facilities Master Plan project.

GM Dow stated that PG&E is currently preparing the final draft version of the Interconnection Agreement, and staff expects to bring the agreement to the Board for consideration at the April meeting.

The Board discussed the project and asked various questions, including ownership of the CWSRF Renewable Energy Credits, and the Green Project Reserve funding. GM Dow answered the Board's questions.

This item was informational and no action was taken by the Board.

**DIRECTION:** GM Dow to determine if any CWSRF funds have been awarded, if any of the funds were retroactive, and report back to the Board.

**8. North Bay Watershed Association (NBWA) Report 35:50**

Commissioner Boorstein reported he attended the both the February 3 and March 3, 2017 meetings of the NBWA Board. He stated that the February meeting included a presentation on groundwater management in Sonoma County, and described the presentation on the Coyote Creek to Bothin Marsh Feasibility Study by Roger Leventhal, a Marin County engineer, at the March meeting.

**9. Oral Reports by Commissioners/General Manager 41:43**

Commissioner Boorstein introduced Felicia Newhouse, the new RVSD Business Manager, who was in attendance.

GM Dow referred to his handout and reported:

- The Wastewater Fact-Finding Trip to Denmark that he and Chris Finton, Treatment Plant Manager, attended last week was very informative, and he will make a presentation to the Board at the April meeting.
- The Agency did not meet its 85% BOD removal requirement in January and February, resulting in NPDES permit exceedances; due to the major rain events that required extended periods of blending; is not a serious offense and there is no financial penalty involved.

- CMSA won several state-level CWEA awards, and GM Dow will report them at the April meeting.
- San Rafael Sanitation District appointed three alternates to the CMSA Board: Kate Colin, Dean DiGiovanni, and Katie Rice; Commissioner Bushey was appointed to a CMSA JPA Review Committee.

Commissioner Bushey introduced Dean DiGiovanni, SRSD Alternate.

**10. Next Scheduled Meeting**

**55:10**

Tuesday, April 11, 2017 at 7:00 p.m. at the Agency office.

Commissioner Bushey moved to adjourn the meeting; Commissioner Gaffney seconded; Chair Hartzell adjourned the meeting at 5:00 p.m.

Respectfully submitted,

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Kate Brouillet, Recording Secretary

Diane Furst, Vice-Chair



Central Marin Sanitation Agency  
Treasurer's Report - Operating Account  
For the Month of March 2017

**I. Accounts Summary: Bank & Investment Accounts**

Summary of Bank & Money Market Accounts

Westamerica Bank - Account Activity shown below	\$ 197,646.76
Local Agency Investment Fund (LAIF) - Refer to Schedule of Investments	14,528,479.99
California Asset Management Program (CAMP) - Refer to Schedule of Investments	359,279.30
<b>Total Bank &amp; Investment Accounts: Ending Balance on March 31, 2017</b>	<b>\$ 15,085,406.05</b>

**II. Account Activity for Westamerica Bank**

Beginning Balance on March 1, 2017 675,419.03


Cash Receipts (Deposits into Westamerica):

Transfers from LAIF	700,000.00
Permit and Inspection Fees	400.00
SRSD - FOG Program (FY17 2Q: Oct-Dec)	4,561.36
SD#2 FOG Program (FY17 2Q: Oct-Dec)	1,153.02
Almonte FOG Program (FY17 2Q: Oct-Dec)	645.75
Revenue from Haulers & RVs	5,122.38
Revenue from Organic Waste Programs	10,488.40
SQSP Wastewater Services Contract (FY17: January)	108,237.75
SQSP: Reimbursed GHD Engineering additional work	1,917.14
SQ Village Operations & Maintenance Contract (FY17: January)	7,241.61
Misc Revenue: MetLife Dividend	38.00
Miscellaneous Reimbursements: Alliant Insurance refund for cancellation of Public Official Bond	370.00
<b>Total Cash Receipts</b>	<b>\$ 840,175.41</b>

Cash Disbursements (Withdrawals from WestAmerica):

March 2017 Operating account disbursements register (see attached)	\$854,925.80
Regular Payroll paid 03/03/17	130,880.69
Regular Payroll paid 03/17/17	123,920.39
Regular Payroll paid 03/31/17	130,875.33
Transfers to EFTPS Federal Payroll Taxes (03/08, 03/22)	67,153.94
Merit Pay (3)	10,162.38
Bank Fee	29.15
<b>Total Cash Disbursements</b>	<b>\$1,317,947.68</b>
<b>Ending Balance on March 31, 2017</b>	<b>\$ 197,646.76</b>

Prepared by:   
Kenneth Spray, Administrative Services Manager

Reviewed by:   
Jason Dow, General Manager

Central Marin Sanitation Agency  
 Operating Account Disbursements Register  
 For the Month of March 2017

Check Number	Date	Vendor/Payee	Amount	Description
14774				Last check # from prior month's register
14775	03/02/17	Jason Dow	367.00	Employee per diem advance: Denmark WW Fact-Finding Trip
14776	03/02/17	Chris Finton	367.00	Employee per diem advance: Denmark WW Fact-Finding Trip
14777	03/02/17	Cal Public Employee Retirement	59,807.89	Medical Insurance, March 2017
14778	03/02/17	Delta Dental Plan of Calif.	7,888.21	Dental Insurance, March 2017
14779	03/02/17	Lincoln Financial Group	1,863.04	Life Insurance, March 2017
14780	03/02/17	Vision Service Plan -(CA)	927.50	Vision Insurance, March 2017
14781	03/02/17	Phillip Frye	225.63	Reimbursement for retiree health benefits by check
14782	03/02/17	James L. Johnson	172.48	Reimbursement for retiree health benefits by check
14783	03/07/17	American Sentry Systems, Inc.	105.00	Alarm service, March 2017
14784	03/07/17	Buckles-Smith	1,676.22	Digester PLC replacement circuit board
14785	03/07/17	CSMFO	110.00	Membership renewal fee (1 employee)
14786	03/07/17	Dealers Industrial Equipment	1,496.04	Drive motor for carrier water pump
14787	03/07/17	Fee Munson Ebert Inc.	3,812.07	Prof Svcs-Design: Maintenance Building Modification Project, December 2016
14788	03/07/17	IEDA, Inc.	755.00	Labor relations consulting, March 2017
14789	03/07/17	Maggiora & Ghilotti, Inc	32,042.30	Prof Svcs: Emergency Andersen Hillside slide clean-up and stabilization
14790	03/07/17	Marin County Tax Collector	586.25	Legal services: General Counsel, October-December 2016
14791	03/07/17	Marin Municipal Water District	1,351.30	Water service, 4 invoices, 12/08/2016-02/08/2017
14792	03/07/17	P.G.& E.	62,218.23	Electricity service, 01/13-02/13/2017 (2 invoices)
14793	03/07/17	William Ray Consulting LLC	7,162.50	Prof. Svcs.: Interim Lab Director, February 2017
14794	03/07/17	SHAPE Incorporated	19,941.55	SD2 PS Maint: Pumps for 3 pump stations (Note B)
14795	03/07/17	SPURR	107.39	Natural Gas, January 2017
14796	03/07/17	Total Waste Systems, Inc.	6,225.13	Biosolids hauling fee, February 2017
14797	03/07/17	Univar USA Inc	44,556.62	Sodium Bisulfite (7 deliveries); Sodium Hypochlorite (7 deliveries)
14798	03/07/17	CalPERS	39,433.66	Retirement Pension Contribution: Agency and EPMC, PPE 02/25/2017 (Note C)
14799	03/07/17	California Public Employee	4,479.04	Contribution to Retiree Health Benefits Trust Fund, PPE 02/25/2017 (Note C)
14800	03/07/17	California State Disbursement	314.76	EE Garnishment, PPE 02/25/2017 (Note A)
14801	03/07/17	ICMA Retirement Trust-457	8,733.00	Deferred compensation contributions, PPE 02/25/2017 (Note A)
14802	03/07/17	Navia Benefit Solutions	640.19	Flexible spending account, PPE 02/25/2017
14803	03/07/17	Nationwide Retirement	3,930.60	Deferred compensation contributions, PPE 02/25/2017 (Note A)
14804	03/07/17	Operating Engineers Public & M	1,112.22	MARA contributions, PPE 02/25/2017
14805	03/07/17	SEIU Local 1021	1,098.34	Union dues, PPE 02/25/2017
14806	03/10/17	AireSpring	699.94	Telephone service, February 2017
14807	03/10/17	Aramark Uniform Services	1,195.68	Uniform service, February 2017
14808	03/10/17	GHD Inc	2,341.00	Prof Svcs-Design: SQPS machine guarding, 01/25-02/19/2017
14809	03/10/17	IDEXX Distribution Inc	330.30	Lab supplies
14810	03/10/17	Marin Independent Journal	154.75	Public Notice: Bid notice for Maintenance Building Modifications Project
14811	03/10/17	Marin Office Supply	674.89	Office supplies, February 2017
14812	03/10/17	Marin Resource Recovery Center	210.00	Yardwaste disposal, January 2017
14813	03/10/17	Platt	400.23	Maintenance parts & supplies
14814	03/10/17	Rafael Lumber	933.61	Maintenance parts & supplies, January 2017
14815	03/10/17	Ricoh USA Inc	259.35	Lab copier lease, 02/09-03/08/2017
14816	03/10/17	Rock Steady Juggling	500.00	Public Education Program: Outreach at 1 school (Note B)
14817	03/10/17	Roy's Sewer Service, Inc.	4,062.50	SQVSMD PS Maint: Emergency vector services (Note B)
14818	03/10/17	Safety-kleen Systems, Inc	613.07	Hazardous waste disposal
14819	03/10/17	Thomas Fish Company	139.50	Lab supplies

Central Marin Sanitation Agency  
 Operating Account Disbursements Register  
 For the Month of March 2017

Check Number	Date	Vendor/Payee	Amount	Description
14820	03/10/17	Valley Power Systems-North	108,631.13	FY17 Cogeneration System Maintenance contract (1 invoice); SD2 PS generator rental and repair (2 invoices) (Note B)
14821	03/10/17	Water Environment Federation	312.00	Membership fee (1 employee)
14822	03/10/17	Western Exterminator Co. Inc.	163.50	Pest control, January 2017
14823	03/10/17	Woodland Center Auto Supply	281.27	Auto parts, January 2017
14824	03/14/17	Flyers Energy LLC	4,192.31	Cogeneration engine oil and lubricants (3 invoices)
14825	03/14/17	Hagel Supply Co.	193.69	Utility supplies, February 2017
14826	03/14/17	Harrington Industrial Plastics	3,100.09	SBS distribution line components; air handler filters (2 invoices)
14827	03/14/17	Home Depot Credit Services	228.38	Groundskeeping/maintenance parts & supplies, February 2017
14828	03/14/17	International Fire Inc.	2,162.10	Fire extinguishers-annual inspection
14829	03/14/17	Jackson's Hardware	298.56	Maintenance parts & supplies, February 2017 (2 invoices); SD2 PS Maint: wet well cleaning supplies (1 invoice) (Note B)
14830	03/14/17	Marin Sanitary Service	1,564.47	Yardwaste and grit disposal service, February 2017
14831	03/14/17	Marin Resource Recovery Center	210.00	Green waste
14832	03/14/17	Marin Municipal Water District	42.65	Water service, SD2 meter vault, 10/08-12/07/2016 (Note B)
14833	03/14/17	State Board of Equalization	71.91	Underground Storage Tank use tax
14834	03/14/17	Thatcher Company of	4,513.33	Ferric Chloride (1 delivery)
14835	03/14/17	Univar USA Inc	24,094.89	Sodium Bisulfite (4 deliveries); Sodium Hypochlorite ( 4 deliveries)
14836	03/14/17	USP Technologies	20,465.59	Hydrogen Peroxide (1 delivery)
14837	03/14/17	Van Bebber Bros., Inc.	1,519.18	Cogeneration engine air intake/exhaust fan repair equipment
14838	03/17/17	CalPERS	35,565.58	Retirement Pension Contribution: Agency and EPMC, PPE 03/11/2017 (Note C)
14839	03/17/17	California Public Employee	4,479.04	Contribution to Retiree Health Benefits Trust Fund, PPE 03/11/2017 (Note C)
14840	03/17/17	California State Disbursement	314.76	EE Garnishment, PPE 03/11/2017 (Note A)
14841	03/17/17	ICMA Retirement Trust-457	8,733.00	Deferred compensation contributions, PPE 03/11/2017 (Note A)
14842	03/17/17	Navia Benefit Solutions	640.19	Flexible spending account, PPE 03/11/2017
14843	03/17/17	Nationwide Retirement	3,930.60	Deferred compensation contributions, PPE 03/11/2017 (Note A)
14844	03/17/17	Operating Engineers Public & M	1,186.73	MARA contributions, PPE 03/11/2017
14845	03/17/17	SEIU Local 1021	1,098.34	Union dues, PPE 03/11/2017
14846	03/17/17	Allied Fluid Products Corp	86.23	Maintenance parts & supplies
14847	03/17/17	Christopher J Wilson	463.25	Printing supplies: Employee business cards & Agency envelopes
14848	03/17/17	BWS Distributors, Inc.	1,062.81	Calibration gases (2 invoices)
14849	03/17/17	James Clark	259.18	Employee Expense Reimb: PPE (waders)
14850	03/17/17	Comcast	182.53	Internet service, 03/04-04/03/2017
14851	03/17/17	Cresco	2,334.69	SD2 PS Maint: Replacement generator controller (2 invoices) (Note B)
14852	03/17/17	CWEA TCP	516.00	Membership renewal fee (3 employees)
14853	03/17/17	Fastenal Company	1,064.77	Maintenance parts & supplies
14854	03/17/17	Foster Flow Control	10,344.10	Flow meter isolation valves for the Return Activated Sludge pipeline
14855	03/17/17	Frontier Analytical Lab.	900.00	NPDES Permit: Mercury and PCB sampling and analysis
14856	03/17/17	Harrington Industrial Plastics	1,514.73	Digester ferric pump rebuild kit
14857	03/17/17	Koff & Associates, Inc.	10,750.00	Prof Svcs: H&S Manager and Administrative Services Manager recruitments
14858	03/17/17	Kone Inc	126.35	Elevator maintenance, March 2017
14859	03/17/17	Marin Sanitary Service	6,791.10	Rag box disposal service, February 2017
14860	03/17/17	Monica Oakley	2,480.25	Prof Svcs: Regulatory consulting, 01/28-02/24/2017
14861	03/17/17	Navia Benefit Solutions	50.00	Monthly fee
14862	03/17/17	NorthBay Petroleum	93.02	SD2 PS Maint: Auger grease and oil (Note B)
14863	03/17/17	Orchard Business/SYNCB	367.11	Maintenance parts & supplies, February 2017
14864	03/17/17	Pace Supply Corp.	1,137.12	Piping supports
14865	03/17/17	Regional Government Svcs	3,030.00	Prof. Svcs.: Interim Lab Director, February 2017

Central Marin Sanitation Agency  
 Operating Account Disbursements Register  
 For the Month of March 2017

Check Number	Date	Vendor/Payee	Amount	Description
14866	03/17/17	Ricoh USA Inc	317.99	Admin copier lease, 02/23-03/22/2017
14867	03/17/17	Univar USA Inc	4,527.47	Sodium Bisulfite (1 delivery)
14868	03/17/17	Waste Management	15,436.87	Redwood Landfill biosolids reuse fee, February 2017
14869	03/17/17	Western Exterminator Co. Inc.	163.50	Pest control, February 2017
14870	03/17/17	Wiley Price & Radulovich	1,402.00	Prof Svcs: Employment Law services, February 2017
14871	03/21/17	AT&T Dataplan	422.48	Wireless service; 02/02-03/01/2017
14872	03/21/17	Katherine Brouillet	197.74	Employee Expense Reimb: Agency tour supplies
14873	03/21/17	CAL-CARD	7,104.42	State of California Purchase Card, January-February 2017
14874	03/21/17	Federal Express	1,424.88	Maintenance Building Modifications Project bid document delivery
14875	03/21/17	Fisher Scientific	544.95	Lab supplies (6 invoices)
14876	03/21/17	Fee Munson Ebert Inc.	8,695.00	Prof Svcs-Design: Maintenance Building Modification Project, January 2017 (2 invoices)
14877	03/21/17	Horizon Dist. Inc	194.74	Groundskeeping supplies (2 invoices)
14878	03/21/17	Kaman Industrial Technologies	9,564.72	Chlorine pipeline expansion joints
14879	03/21/17	Platt	498.04	Electrical supplies (2 invoices)
14880	03/21/17	Regional Government Svcs	4,020.00	Prof. Svcs.: Interim Lab Director, January 2017
14881	03/21/17	Ryan Herco Flow Solutions	277.91	Lab supplies (2 invoices)
14882	03/21/17	Safety-kleen Systems, Inc	269.00	Service for parts washer
14883	03/21/17	Shamrock Materials, Inc.	158.23	Propane (2 invoices)
14884	03/21/17	Kathryn Thelen	117.35	Employee Expense Reimb: Travel to pre-employment physical
14885	03/21/17	Water Environment Federation	312.00	Membership fee (1 employee)
14886	03/27/17	AT&T	294.11	Fax and emergency phone service, 03/07-04/06/2017
14887	03/27/17	Cal Steam	27.04	Maintenance parts & supplies
14888	03/27/17	Caltest Analytical Laboratory	2,013.87	Lab analyses (6 invoices)
14889	03/27/17	City Electric Supply	38.81	Electrical supplies
14890	03/27/17	Evoqua Water Tech LLC	574.00	Lab tank rental
14891	03/27/17	Grainger	1,270.51	Maintenance parts & supplies (7 invoices)
14892	03/27/17	Hach Company	204.20	Lab supplies
14893	03/27/17	Hazen and Sawyer	2,189.30	Prof. Svcs.: Lab analyses, January 2017
14894	03/27/17	Lystek International LTD	10,025.92	Biosolids beneficial reuse fee, February 2017
14895	03/27/17	McMaster-Carr Supply Co.	2,498.71	Maintenance parts & supplies (9 invoices)
14896	03/27/17	Praxair Distribution, Inc.	98.13	Acetylene cylinder rental
14897	03/27/17	Ryan Herco Flow Solutions	228.54	Lab supplies
14898	03/27/17	Anthony Smith	638.00	Employee expenses eligible for Agency dental reimbursement
14899	03/27/17	Kenneth R Spray	115.42	Employee Expense Reimb: Travel to pre-employment physical
14900	03/27/17	State Water Resources Ctrl Brd	300.00	Membership fee (1 employee)
14901	03/27/17	Univar USA Inc	2,243.11	Sodium Hypochlorite (1 delivery)
14902	03/27/17	VWR International	273.07	Lab supplies
14903	03/27/17	Water Components & Bldg. Supp.	1,691.37	Maintenance parts & supplies (8 invoices)
14904	03/27/17	Western Textile & Mfg. Co. Inc	6,659.00	Public Education Program: Promotional items (Note B)
14905	03/29/17	Amazon	3,341.57	Computer supplies, February-March
14906	03/29/17	Alan Burleigh	700.00	Employee Expense Reimb: Grade V certification exam training
14907	03/29/17	Carollo Engineers, Inc.	11,765.05	Prof Svcs: 2017 Facilities Master Plan Project, February 2017
14908	03/29/17	Frontier Analytical Lab.	900.00	NPDES Permit: PCB analysis
14909	03/29/17	Jose Gutierrez	155.83	Employee Expense Reimb: CWEA P3S Conference
14910	03/29/17	Medical Center of Marin	70.00	Safety: Hearing tests (2 employees)
14911	03/29/17	National Meter & Automation	7,178.08	SBS and carrier water flow meters (3)
14912	03/29/17	Platt	435.80	Maintenance parts & supplies
14913	03/29/17	Mary Jo Ramey	125.83	Employee Expense Reimb: CWEA P3S Conference
14914	03/29/17	Red Wing Brands of America Inc	1,316.04	Safety shoes (6 employees)
14915	03/29/17	SPURR	1,717.45	Natural gas, February 2017
14916	03/29/17	State Water Resources Ctrl Brd	170.00	Membership fee (1 employee)

Central Marin Sanitation Agency  
 Operating Account Disbursements Register  
 For the Month of March 2017

Check Number	Date	Vendor/Payee	Amount	Description
14917	03/29/17	Ahn Ta	937.70	Employee expenses eligible for Agency dental reimbursement
14918	03/29/17	Univar USA Inc	4,486.68	Sodium Hypochlorite (2 deliveries)
14919	03/29/17	USP Technologies	10,227.80	Hydrogen Peroxide (1 delivery)
14920	03/29/17	VWR International	9,620.77	Lab supplies (2 invoices)
14921	03/30/17	CASA	6,500.00	2017 BAB2E Coalition membership
14922	03/30/17	CWEA TCP	172.00	Membership fee (1 employee)
14923	03/30/17	Fisher Scientific	945.47	Lab supplies (5 invoices)
14924	03/30/17	Five Thousand Forms Inc	4,316.43	Public Education Program: Promotional items (Note B)
14925	03/30/17	Grainger	585.91	Safety & maintenance supplies (4 invoices)
14926	03/30/17	P.G.& E.	12,224.33	Electricity service, 02/14-03/15/2017
14927	03/30/17	Ryan Herco Flow Solutions	244.75	Lab supplies (2 invoices)
14928	03/30/17	Ricoh USA Inc	259.35	Admin copier lease, 03/09-04/08/17
14929	03/30/17	State Water Resources Ctrl Brd	300.00	Membership fee (1 employee)
14930	03/30/17	Univar USA Inc	4,571.98	Sodium Bisulfite (1 delivery)
14931	03/30/17	CalPERS	36,317.81	Retirement Pension Contribution: Agency and EPMC, PPE 03/25/2017 (Note C)
14932	03/30/17	California Public Employee	4,479.04	Contribution to Retiree Health Benefits Trust Fund, PPE 03/25/2017 (Note C)
14933	03/30/17	California State Disbursement	314.76	EE Garnishment, PPE 03/25/2017 (Note A)
14934	03/30/17	ICMA Retirement Trust-457	7,083.00	Deferred compensation contributions, PPE 03/25/2017 (Note A)
14935	03/30/17	Navia Benefit Solutions	640.19	Flexible spending account, PPE 03/25/2017
14936	03/30/17	Nationwide Retirement	4,238.30	Deferred compensation contributions, PPE 03/25/2017 (Note A)
14937	03/30/17	Operating Engineers Public & M	1,247.96	MARA contributions, PPE 03/25/2017
14938	03/30/17	SEIU Local 1021	1,098.34	Union dues, PPE 03/25/2017
				<u>Payments by Automatic Clearing House:</u>
301023	03/02/17	Payments to 23 retirees	6,517.06	Reimbursement for retiree health benefits
30032017	03/08/17	EDD	13,158.93	State & SDI Taxes, PPE 02/25/2017
30112017	03/20/17	EDD	11,001.68	State & SDI Taxes, PPE 03/11/2017
316201	03/16/17	PG&E	260.00	PG&E Interconnection Agreement Project, Interconnection request fee
322201	03/22/17	Michael Owen Boorstein	200.00	Stipend for 03/16/17 Board Meeting & 03/03/2017 NBWA Meeting
322202	03/22/17	Maribeth Bushey	100.00	Stipend for 03/16/2017 Board Meeting
322203	03/22/17	Doan DiGiovanni	100.00	Stipend for 03/16/2017 Board Meeting
322204	03/22/17	Diane L. Furst	100.00	Stipend for 03/16/2017 Board Meeting
322205	03/22/17	Thomas E Gaffney	100.00	Stipend for 03/16/2017 Board Meeting
322206	03/22/17	Kathleen Ohlson Hartzell	100.00	Stipend for 03/16/2017 Board Meeting
<b>Grand Total</b>			<b>854,925.80</b>	

Notes:

- A: Not an Agency Expense. Expense funded through Payroll deduction.
- B: Not an Agency Expense. CMSA will be reimbursed for this expense.
- C: CMSA is partially reimbursed for this expense per Employee Labor Agreements.

Central Marin Sanitation Agency  
 Schedule of Investments  
 As of Month Ending March 31, 2017

Description (1)	Book Value (2)	Market Value (3)	Agency Reserve Target for June 30, 2017
<b>I. Investments managed by California Asset Management Program (CAMP)</b>			
<u>Money Market Funds (&lt; 1 year in maturity)</u>			
CAMP Cash Reserve Pool, 0.89%			
b1. Agency Unrestricted Reserve: Operating	\$ 9,279.30	\$ 9,279.30	See LAIF
b2. Agency Unrestricted Reserve: Emergency	\$ 250,000.00	\$ 250,000.00	\$ 250,000
b3. Agency Unrestricted Reserve: Insurance	\$ 100,000.00	\$ 100,000.00	\$ 100,000
<b>Total with CAMP</b>	<b>\$ 359,279.30</b>	<b>\$ 359,279.30</b>	
<b>II. Investments managed by Local Agency Investment Fund (LAIF)</b>			
<u>Money Market Funds (&lt; 1 year in maturity)</u>			
Local Agency Investment Fund (LAIF), 0.55% (estimate)			
a. Current Year Operating	\$ 2,302,569.14	\$ 2,302,569.14	
b1. Agency Unrestricted Reserve: Operating	\$ 2,755,022.70	\$ 2,755,022.70	\$ 2,764,302
c1. Capital Reserves (Restricted)	\$ 992,023.00	\$ 992,023.00	\$ 992,023
c1. Capital Reserves (Restricted-Capacity/Connection Fees)	\$ -	\$ -	
c2. Capital Reserves (Unrestricted)	\$ 8,478,865.15	\$ 8,478,865.15	\$ 6,128,566
<b>Total with LAIF</b>	<b>\$ 14,528,479.99</b>	<b>\$ 14,528,479.99</b>	
<b>TOTAL INVESTMENTS</b>	<b>\$ 14,887,759.29</b>	<b>\$ 14,887,759.29</b>	
<u>Amount designated for Capital Reserves</u>			
1. CAMP	\$ -	\$ -	
2. LAIF	\$ 9,470,888.15	\$ 9,470,888.15	\$ 7,120,589
<b>Total</b>	<b>\$ 9,470,888.15</b>	<b>\$ 9,470,888.15</b>	<b>\$ 7,120,589</b>

**COLUMN DEFINITIONS:**

- (1) Description - the issuer, type of security and interest rate
- (2) Book Value - The sum of Original Cost and Accumulated Amortization
- (3) Market Value - An estimate of the value at which the principal would be sold from a willing seller to a willing buyer as-of the close of the last business day or Market values are per the fiscal agent's respective monthly statements.

**NOTES:**

Capacity connection fees collected each fiscal year are the initial source of funding for capital projects. Capital reserve restricted and unrestricted balances reflect amounts remaining after expenditures for CIP to date, including \$183,865.53 in capacity charges collected to date. Beginning balances for both reserves were determined by the FY 16-17 Adopted Budget.

Statement of Compliance

The above portfolio of investments is in compliance with the Agency's investment policy, adopted at the July 22, 2015 Commission meeting, and California Gov Section 53600. In addition, the Agency does have the financial ability to meet its cash flow requirements for the next six months.



**BOARD MEMORANDUM**

April 6, 2017

To: CMSA Commissioners and Alternates  
From: Chris Finton, Treatment Plant Manager *CF*  
Approved: Jason Dow, General Manager  
Subject: **March 2017 NPDES Permit Compliance, Treatment Process, and Maintenance Activities Report**

**Recommendation:** Accept the March 2017 NPDES Permit Compliance, Treatment Process, and Maintenance Activities Report.

**I. NPDES Permit Compliance**

Our NPDES permit testing for March showed that the CMSA treatment plant effluent was in compliance with all permit limits. The Monthly Compliance Summary Table shows the results by permitted parameter, the sample's frequency, the sample results, and the permit limit. We successfully passed the March 96-hour flow through bioassay test.

Enterococcus samples were collected during two blend events in March. CMSA's NPDES permit specifies monitoring for enterococcus bacteria during dry weather months and for each wet weather blend event, to verify compliance with established effluent limits. The enterococcus geometric mean for March was 1.4 MPN, well below our monthly limit of 35 MPN.

CMSA's annual effluent Mercury limit is 0.11 kg/yr, and the Agency's effluent limitations and discharge specifications for Mercury are detailed out in Regional Board Order No. R2-2012-0096, the Mercury Watershed Permit. Compliance is determined annually for each wastewater agency listed in the permit, and is attained if the sum of all individual agencies' mercury mass emissions is not greater than the Aggregate Mass Emission Limit of 11 kg/yr. If the sum of all individual agency's mercury mass emissions are greater than 11 kg/yr, and CMSA exceeds its 0.11 kg/yr effluent limit, then CMSA shall be deemed to be in violation of its mercury mass limitation. CMSA's annual Mercury loading as noted in this report's Monthly Compliance Summary Table is 0.1072 kg/yr, and is primarily the result of large quantities of sediment in the collection system washing into the facility during unusually large storm events in January and February. Staff will continue to monitor its annual mercury loading to determine annual mercury loading compliance with the watershed permit.

**II. Influent Flow**

In March, central Marin County experienced some relief from heavy storm events, and welcomed spring. Two rain events produced a total of 2.4 inches of rain as recorded by the Agency's rain gauge, and the resulting influent flows exceeded the treatment plant's maximum secondary capacity of 30 MGD on two occasions during the month. Two blend events were posted on the Agency's website. The facility's average daily influent flow was 15.6 MGD.

The CMSA treatment plant and each satellite collection agency's daily average and total monthly influent flows are shown in the table below:

<b>March Monthly Influent Flows</b>	<b>San Rafael (SRSD)</b>	<b>Ross Valley (SD#1)</b>	<b>San Quentin (SQSP)</b>	<b>Corte Madera (SD#2)</b>	<b>CMSA Plant Total</b>
Average Daily (MGD)	5.7 MGD	8.1 MGD	0.40 MGD	1.4 MGD	15.6 MGD
Total for Month (MG)	176.2 MG	251.5 MG	11.8 MG	44.4 MG	483.9 MG
Percent of Flow	36.1 %	53.6 %	1.7 %	8.6 %	100 %

### **III. Treatment Process**

Lighter rain events and warming weather has kept staff busy transitioning treatment processes and equipment between dry and wet weather modes of operation. The influent temperature has remained below 22.0°C (71.6°F), and at this temperature range sulfide generation in the collection systems is negligible. Agency staff has completed annual preventative maintenance at four collection system nitrate and two Agency hydrogen peroxide odor control facilities in preparation for warming temperatures. The Mixed Liquor Suspended Solids (MLSS) inventory averaged 1,317 mg/l, a 20.8% decrease in biomass from last month. The decrease in biomass aligned with the process control decision to carry between 1,200 and 1,400 mg/L to manage our biomass during this transitional period to drier weather conditions, and we anticipate removing an aeration basin from service in April.

Graph #3 shows the Total Suspended Solids (TSS), which is a good indicator of the effluent quality. The TSS monthly average in March was 3.9 mg/l, which is 26.0% of our Key Performance Indicator (KPI) of 15 mg/l, and is 13.0% of our permit's monthly average limit of 30 mg/l.

Graph #4 shows the coliform most probable number (MPN), which represents the effectiveness of the disinfection process. All thirteen coliform samples collected in March were below our KPI target of 30, and well below our daily limit of 10,000 MPN.

### **IV. Maintenance Activities**

The cogeneration system produced 97.8% of the Agency's power in March, and Marin Clean Energy (MCE) supplied the balance. The generator, as indicated on Graph #8, was in service and produced green power for the entire month. There was one occasion on March 26 when the cogeneration system was temporarily removed from service to replace one fouled spark plug.

In addition to cogeneration maintenance, staff was also able to complete scheduled project work and monthly preventative maintenance tasks. Work included replacing a failed base plate on a gate actuator; replacing metering pump calibration columns; fabricating and replacing a broken primary scum collector; and repairing the slurry tank hatch lift supports at the Organic Waste Receiving Station.

### **Attachment**

- March 2017 NPDES Permit Compliance, Treatment Process, and Maintenance Activities Report



# NPDES Permit Compliance, Treatment Process, and Maintenance Activities Report

March 2017



Landscaped area behind the Administration Building



Hillside near the treatment plant headworks

**“Spring has Sprung” here at the Agency!**

# Monthly Compliance Summary Table

Central Marin Sanitation Agency

March 2017

## Final Effluent Monitoring

Parameter	Frequency	Units	Results	Limit
Carbonaceous BOD Highest Weekly Average	Weekly	mg/L	8	Maximum 40
Carbonaceous BOD Monthly Average	Monthly	mg/L	6.40	Maximum 25
Carbonaceous BOD Monthly Removal Rate	Monthly	%	96.30	Minimum 85
Total Suspended Solids Highest Weekly Average	Weekly	mg/L	6.2	Maximum 45
Total Suspended Solids Monthly Average	Monthly	mg/L	3.9	Maximum 30
Total Suspended Solids Monthly Removal Rate	Monthly	%	97.9	Minimum 85
Chlorine Residual Instant Limit	Instant	mg/L	<0.1	Maximum 0.0
Ammonia Monthly Average	Monthly	mg/L	19.5	Maximum 60
Ammonia Maximum Daily	Daily	mg/L	19.5	Maximum 120
pH Lower Limit	Continuous		6.8	Minimum 6
pH Upper Limit	Continuous		7.5	Maximum 9
<b>Bacteriological Analysis</b>				
Total Coliform Monthly Geometric Mean	3 X Week	MPN/100mL	3.3	Maximum 240
Total Coliform Daily Maximum	3 X Week	MPN/100mL	22.0	Maximum 10,000
Enterococcus Monthly Geometric Mean	Monthly	MPN/100mL	1.4	Maximum 35
<b>Flow Through Bioassay</b>				
Acute Toxicity 11 Sample 90th Percentile	Monthly	% survival	100	Minimum 70
Acute Toxicity 11 Sample Median	Monthly	% survival	100	Minimum 90
<b>Metals Analysis</b>				
Copper Daily Limit	Monthly	ug/L	3.6	Maximum 85
Copper Monthly Average	Monthly	ug/L	3.6	Maximum 49
Cyanide Daily Limit	Monthly	ug/L	1.20	Maximum 41
Cyanide Monthly Average	Monthly	ug/L	1.20	Maximum 21
Mercury Weekly Average	Weekly	ug/L	0.0051	Maximum 0.072
Mercury Monthly Average	Monthly	ug/L	0.0051	Maximum 0.066
Mercury Monthly Loading	Monthly	kg/mo	0.0053	
Mercury Annual Loading (watershed permit)	Jan-Dec	kg/yr	0.1072	Maximum 0.11
<b>Semi-Annual Analysis</b>				
Dioxin - Total Equivalents (TEQ) Daily Maximum	every 6 mos	ug/L	*	Maximum 2.8E-08
Dioxin - Total Equivalents (TEQ) Monthly Average	every 6 mos	ug/L	*	Maximum 1.4E-08
Chronic Bioassay Toxicity	every 3 mos	toxicity units	*	Maximum 20
Chronic Bioassay Toxicity (3 sample median)	every 3 mos	toxicity units	*	Maximum 10
Polychlorinated Biphenyls (PCBs) Daily Limit	every 6 mos	ug/L	*	Maximum 0.017
Polychlorinated Biphenyls (PCBs) Monthly Limit	every 6 mos	ug/L	*	Maximum 0.012
<b>Quarterly Analysis</b>				
Oil and Grease Daily Limit	Quarterly	mg/L	*	Maximum 20
Oil and Grease Monthly Average	Quarterly	mg/L	*	Maximum 10
<b>Flow Analysis</b>				
	Daily Max	Hourly Max	5 minute Max	Monthly Average
Effluent Flow	31.7	54.7	56.9	15.8
Influent Flow	31.7	55.0	60.3	15.6
# Days Blended				2

\* Monitoring Not Required This Month  
 X Data not available at report time

ND = None Detected  
 DNQ = Detected but Not Quantified

**Glossary of Terms**  
**NPDES Permit Compliance Summary Table**

- **Ammonia:** CMSA's NPDES permit requires that we analyze the final effluent for ammonia due to its toxicity to aquatic organisms and potential for providing nutrients for algae in the San Francisco Bay. The permit has a maximum daily limit of 60 mg/L and a monthly average limit of 120 mg/L. The maximum daily limit is the number that cannot be exceeded on any sample and the monthly average applies to all samples collected in any month (although usually we only are required to take one sample).
- **Biochemical Oxygen Demand (BOD):** The amount of dissolved oxygen needed by microorganisms (biomass) to stabilize organic material in the effluent. The permit limits for our effluent require that removal of 85% influent BOD, and meet a weekly average of less than 40 mg/L and a monthly average of less than 25 mg/L BOD.
- **Chlorine Residual:** The secondary effluent is disinfected with hypochlorite (chlorine "bleach"), and then the residual chlorine is neutralized with sodium bisulfite to protect the Bay environment. The final effluent chlorine residual limit is 0.0 mg/l, which is monitored continuously.
- **Bacteria:** Coliform and enterococcus bacteria are the indicator organisms for the determination of the effectiveness of the disinfection process.
- **Dioxin - Total Equivalents** - These are 17 dioxin-like compounds that we analyze for twice per year which have permit limits.
- **Fats, Oil and Grease** - Quarterly we are required to monitor our effluent for Fats, Oils, and Grease.
- **Flow Through Bioassay:** A 96-hour test in which we test the toxicity of our effluent to young rainbow trout (15-30 days old) in a flow-through tank to determine their survivability under continuous exposure to CMSA effluent. The permit requires that we maintain a 90<sup>th</sup> percentile survival of at least 70% and an 11-sample median survival of at least 90%. In layman's terms, this means that out of the last 11 samples, only one bioassay may fall below 70% survival, and the middle value—when all 11 samples are placed in numerical order—must be at least 90%.

**Metals Analysis:** Our permit requires that we analyze our effluent for many different metals on a monthly basis. We have permit limits for three of the metals. The limits are stated as a maximum daily limit and a monthly average limit.

- **pH:** pH is a measurement of acidity, with pH 7.0 being neutral and higher pH values being basic and lower pH values being acidic. Our permit effluent pH must stay within the range of 6.0 to 9.0, which we monitor continuously.
- **Total Suspended Solids (TSS):** Measurement of suspended solids in the effluent. Our permit requires that we remove at least 85% of the influent TSS and that the effluent limit is less than 45 mg/L as a weekly average and less than 30 mg/L as a monthly average.

**Executive Summary Process Performance Data**

**March 2017**

The removal efficiencies shown are based on the monthly average of the following treatment processes that were in service.

**Primary Clarifier Performance**

Average Total Suspended Solids (TSS) in:	<u>197</u>	mg/l
Average TSS out:	<u>165</u>	mg/l
Average Percent Removal Achieved:	<u>17.1*</u>	%
Average Total Biochemical Oxygen Demand (BOD) in:	<u>183</u>	mg/l
Average BOD out:	<u>102</u>	mg/l
Average Percent Removal Achieved:	<u>39.3</u>	%
Average Plant Influent Flows:	<u>15.6</u>	MGD

Expected removal efficiencies as outlined in Metcalf & Eddy Wastewater Engineering Manual
---

Design 50-70% Removal
-----------------------

Design 25-40% Removal
-----------------------

**Biotower Performance**

Average TSS out:	<u>96</u>	mg/l
Average BOD out:	<u>95.5</u>	mg/l
Average Percent BOD Removal Achieved:	unavailable**	%

Design 25-30% Removal
-----------------------

**Aeration Tanks/Activated sludge**

Dissolved Oxygen set point:	<u>2.0</u>	mg/l
Average MLSS	<u>1,317</u>	mg/l
Average MCRT	<u>3.1</u>	Days
Average SVI	<u>178</u>	

**Secondary Clarifiers**

Average WAS concentration: 9,470 mg/l

**Final Effluent**

Average Effluent TSS for the month was:	<u>3.9</u>	mg/l	(Maximum Limit: 30mg/l)
Week #1 weekly average	<u>3.9</u>		(Maximum Limit: 45mg/l)
Week #2 weekly average	<u>3.1</u>		"
Week #3 weekly average	<u>3.2</u>		"
Week #4 weekly average	<u>6.2</u>		"
Average TSS removal efficiency through the plant was:	<u>97.9</u>	%	(Minimum Limit: 85%)
 Average Effluent BOD was:	<u>6.4</u>	mg/l	(Maximum Limit: 25mg/l)
Week #1 weekly average	<u>5</u>		(Maximum Limit: 40mg/l)
Week #2 weekly average	<u>3.9</u>		"
Week #3 weekly average	<u>5.4</u>		"
Week #4 weekly average	<u>8</u>		"
Average BOD removal efficiency through the plant was:	<u>96.3</u>	%	(Minimum Limit: 85%)
 Disinfection Dosing Rate:	<u>4.5</u>	mg/l	monthly average
Total Coliform Monthly Geometric Mean:	<u>3.3</u>	MPN	(Maximum 240)
The Daily Maximum Total Coliform Count for the month was:	<u>22</u>	MPN	(Maximum 10,000)
Enterococcus Monthly Geometric Mean:	<u>1.4</u>	MPN	(Maximum, 35 MPN)
Effluent pH for the month was:			(Min 6.0)
Min	<u>6.8</u>		
Max	<u>7.5</u>		(Max 9.0)

**Digester Treatment**

Average Thickened Waste Concentration from the RDT was:	<u>5.9</u>	%	
Average percent of Volatile Solids destroyed was:	<u>76.8</u>	%	
Cubic feet of biogas produced was:	<u>9,804,818</u>	(Total)	<u>316,284</u> (Daily Average)
Average temperature of the digester was:	<u>100</u>	degrees Fahrenheit	

\*TSS removal efficiency for March is low due to a partially plugged sample line skewing the sample results. The necessary repairs have been made and the unit is operating as normal.

\*\*The biotower % BOD removal efficiency in March is unavailable due to a sampling unit failure. The necessary repairs have been made and the sampler is operating as normal.

## Executive Summary Process Performance Data

March 2017

### Dewatering

Average Centrifuge Feed concentration was:	2.3	%
Average Biosolids concentration was:	26.4	%
Average TSS of the Centrate was:	0.016	%
Solids capture of the Centrifuge was:	99.3	%
Polymer use per Dry ton of biosolids was:	18.23	#/dry ton
Average polymer feed rate per run was:	3.96	gpm
Average concentration of the polymer batches was:	0.328	%
Average sludge feed rate per run was:	63.9	gpm

### Comments:

The treatment plant has been running well with final effluent being of very good quality.

#### **Graph #1:**

Depicts the total influent flow (from all collection agencies) entering the treatment plant.

The red graph line represents total influent flows; and the blue graph line depicts the CMSA rain gauge recordings for the month.

#### **Graph #2:**

Depicts individual collection member agency flows.

The Y-axis

#### **Graph #3:**

Depicts the total suspended solids in the effluent.

Our monthly average was 3.9 mg/l vs our KPI of 15 mg/l and permit monthly average limit of 30 mg/l.

#### **Graph #4:**

Depicts the coliform most probable number (MPN) results which are an indication of the performance of the disinfection system.

The monthly Total Coliform Geometric Mean was 3.3 MPN through March, which is less than our KPI median of 30 MPN and permit limit of 240 MPN.

#### **Graph #5:**

Depicts the effluent BOD which is measuring the oxygen demand of the wastewater.

The March effluent BOD average was 6.4 mg/l, well below our NPDES limits of 40 mg/l weekly and 25 mg/l for the month.

#### **Graph #6:**

Depicts the degree to which the biosolids have been dewatered.

Dewatering operations did not take place on March 12th and 16th, and the lower than expected % solids capture value on March 22nd was due to a maintenance issue with the unit's hydraulic backdrive which required a repair and testing.

#### **Graph #7:**

Depicts the amount of biogas that is produced in the digesters, and then used to produce electricity.

Biogas production in March averaged 316,284 cubic feet per day, which exceeded our monthly KPI of 230,000 cubic feet per day.

#### **Graph #8:**

This graph depicts the amount of energy produced through cogeneration versus the energy purchased from MCE for Agency operations.

The cogeneration system produced 97.8% of the Agency's power in March. The cogeneration system was temporarily removed from service on March 26, as depicted on graph 8.

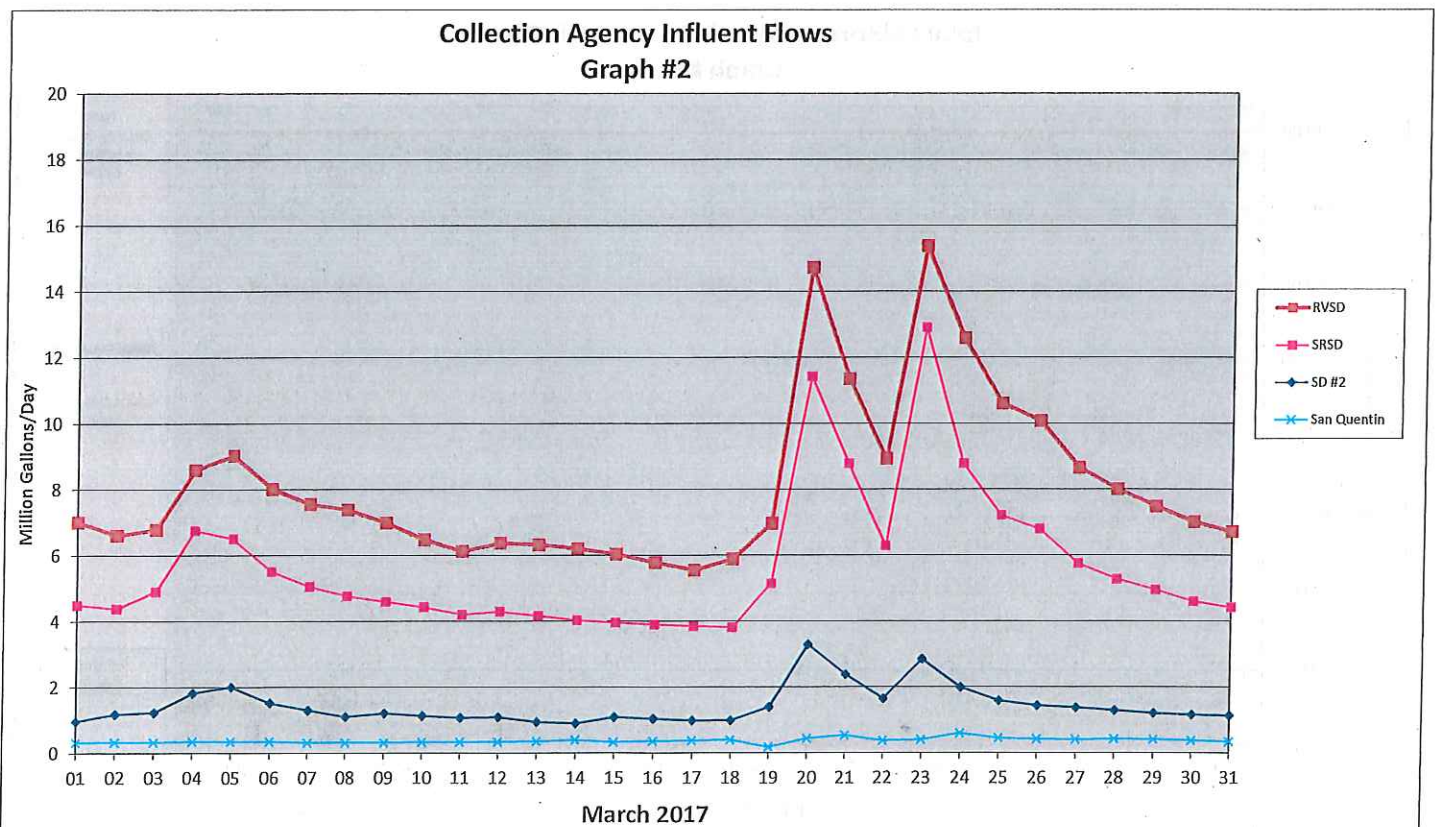
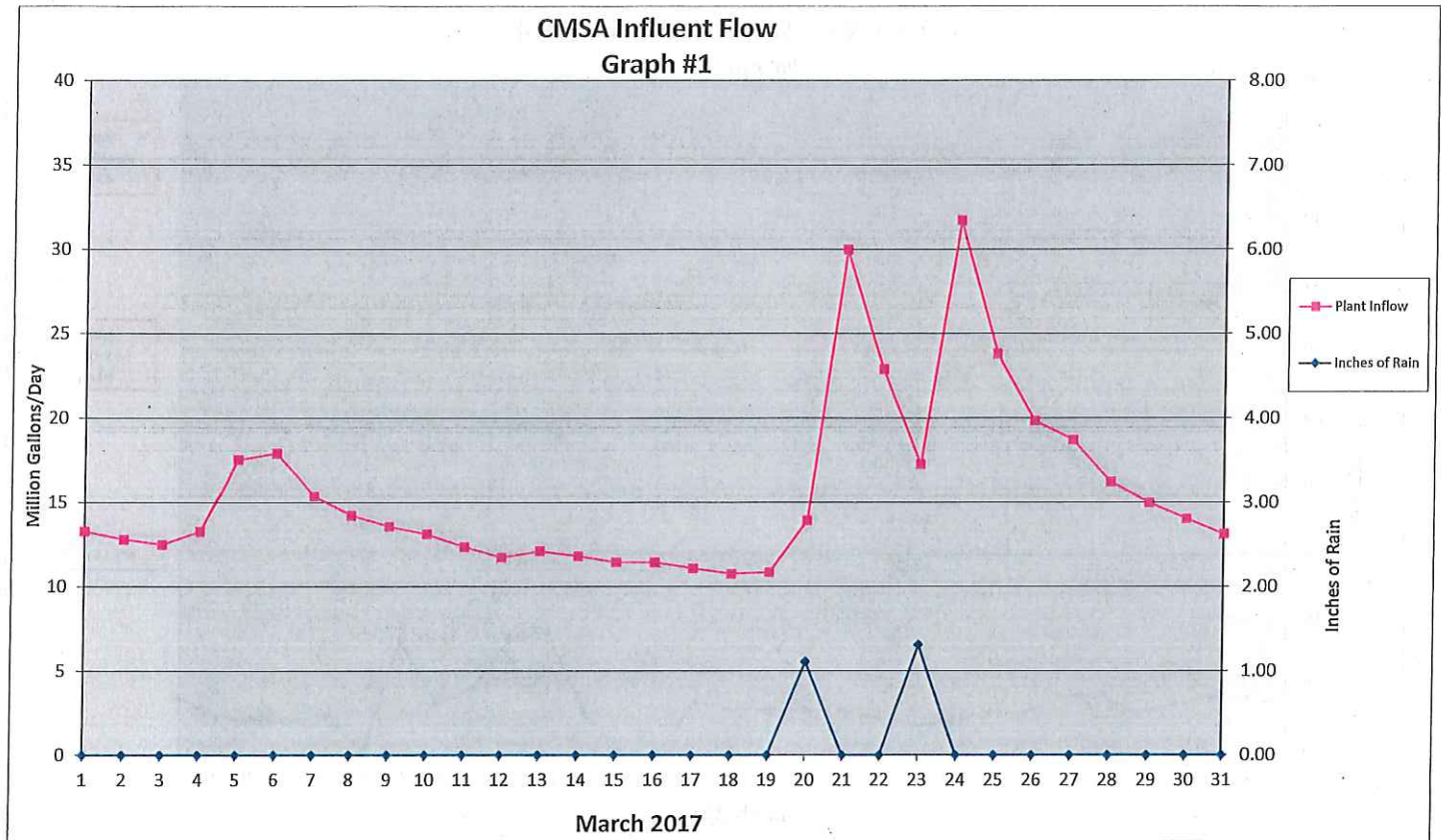
**Glossary of Terms**  
**Process Performance Data Sheet**

- **Aeration Tanks:** A biological process that takes place after the biotowers, where biomass (microorganisms) is mixed with the wastewater to feed on dissolved and suspended organic material. High speed blowers are used to provide compressed air to mix the tank contents.
- **Anaerobic Digesters:** In the anaerobic digestion process, organic material removed in the primary and secondary clarifiers is digested by anaerobic bacteria. The end products are methane, carbon dioxide, water, stabilized organic matter, and some inorganic material.
- **Biosolids:** Anaerobically digested solids that are removed from the two digesters, dewatered, and then beneficially reused. Beneficial reuse may include landfill alternate daily cover (ADC), land application in the summer as a soil amendment and fertilizer, or converted into a liquid fertilizer for agricultural applications.
- **Biotower:** A biological treatment process, occurring after the primary clarifiers and before the aeration tanks, in which the wastewater trickles over a biomass-covered media. The biomass feeds on the dissolved and suspended solids in the wastewater.
- **Centrifuge:** Process equipment used to dewater biosolids prior to beneficial reuse.
- **Cogeneration System:** A system comprised of a dual-fuel engine coupled to an electric generator that is used to produce energy to power the Agency facilities. Fuels the system uses are methane biogas produced in the anaerobic digesters and, when biogas is not available, purchased natural gas. As well as generating electricity, the system supplies heat for plant processes and building heating.
- **Chlorine Contact Tanks (CCTs):** The final treatment process is disinfection and de-chlorination. The CCTs allow contact time for injected chlorine solution to disinfect the wastewater. Sodium bisulfite, the de-chlorination chemical, is introduced at the end of the CCTs to neutralize any residual chlorine to protect the San Francisco Bay environment.
- **Rotary Drum Thickener (RDT):** Waste activated sludge removed from the secondary clarifiers is thickened in rotary drum thickeners before being transported to the anaerobic digesters. Thickening removes some of the sludge's water content, to decrease hydraulic loading to the digesters.
- **Final Effluent:** After all the treatment processes are completed, the final effluent is discharged into to central San Francisco Bay through a 10,000-foot-long deep-water outfall.
- **Mean Cell Residence Time (MCRT):** An expression of the average time that a microorganism will spend in the secondary treatment system.
- **Mixed Liquor Suspended Solids (MLSS):** The liquid in the aeration tanks is called MLSS and is a combination of water, solids, and microbes. Suspended solids in the MLSS measured in milligrams per liter (mg/l).

- **Most Probable Number (MPN):** Concentrations, or number of colonies, of total coliform bacteria are reported as the “most probable number.” The MPN is not the absolute count of the bacteria but a statistical estimate of their concentration.
- **Polymer:** Polymer is added to digested sludge prior to dewatering to improve solids coagulation and water separation.
- **Primary Clarifier:** A physical (as opposed to biological) treatment process where solids that settle or float are removed and sent to the digesters for further processing.
- **Return Activated Sludge (RAS):** The purpose of returning activated sludge (biomass) to the aeration tanks is to maintain a sufficient concentration of microbes to consume the wastewater’s dissolved solids.
- **Secondary Clarifiers:** Provides settling for the biomass after aeration. Most of the settled biomass is returned to the aeration tank as return activated sludge (RAS) and some is sent to the RDT unit as waste activated sludge.
- **Sludge Volume Index (SVI):** This is a calculation used to indicate the settling ability of the biomass in the secondary clarifiers.
- **Thickened Waste Activated Sludge (TWAS):** Waste activated sludge is thickened in the RDTs, and then the TWAS product is pumped to the digester for processing.
- **Volatile Solids:** Organic content of the wastewater suspended solids.
- **Waste Activated Sludge (WAS):** Biomass that is removed from the secondary clarifiers pumped to the RDTs for thickening.

### Units of Measurement

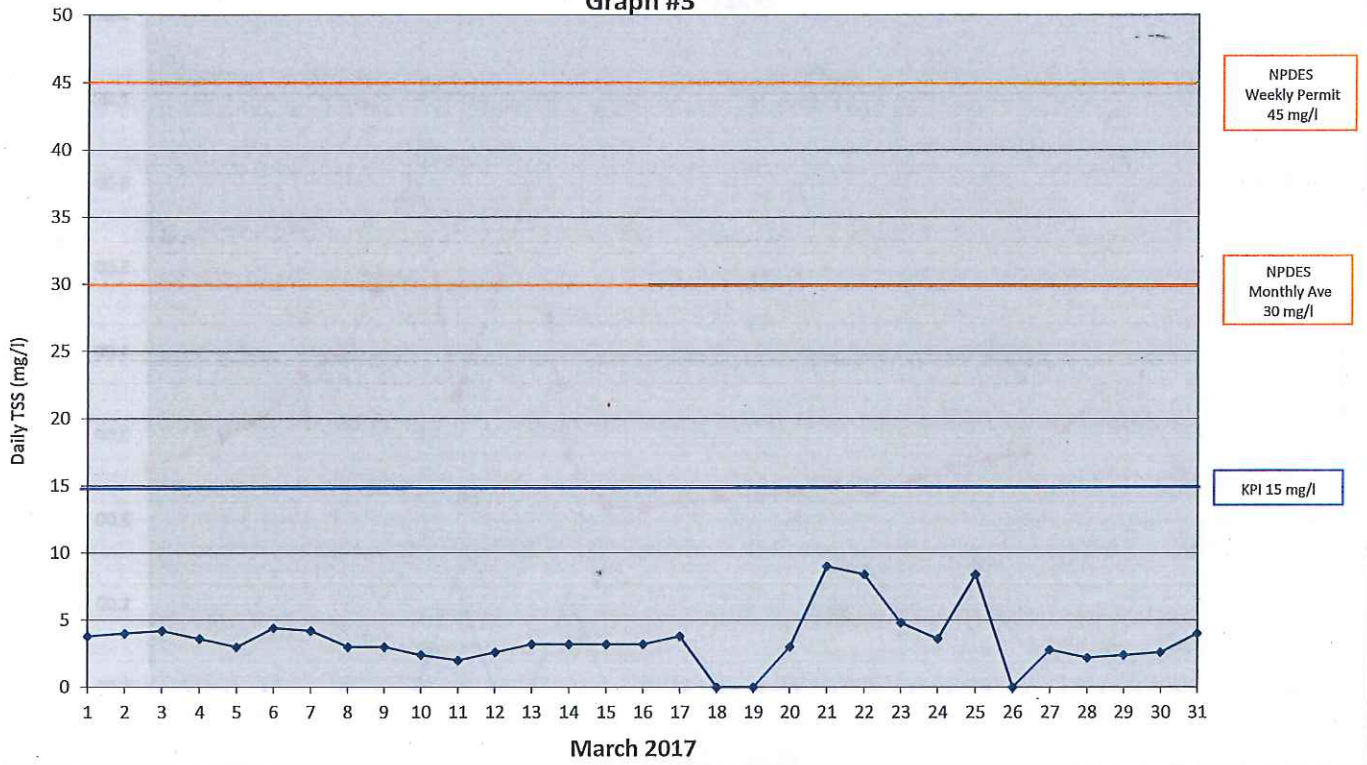
- kg/month (Kilograms per Month): 1 kilogram = 2.205 lbs.
- KPI (Key Performance Indicators): The Agency’s process performance goals.
- Kwh (Kilowatt Hours): A unit of electric power equal to using 1 Kw for 1 hour.
- Milligrams per Liter (mg/L ): A measure of the concentration by weight of a substance per unit volume. For practical purposes, one mg/L is equal to one part per million (ppm).
- MPN/100mL (Most Probable Number per 100 milliliters): Statistical estimate of a number per 100 milliliters of a given solution.
- Percent by Mass (% by mass): A measure of the combined mass of a solute + solvent.
- Percent by Volume (% by vol): A measure of the volume of a solution.
- ug/L (Micrograms per Liter of Solution): Mass per unit volume.





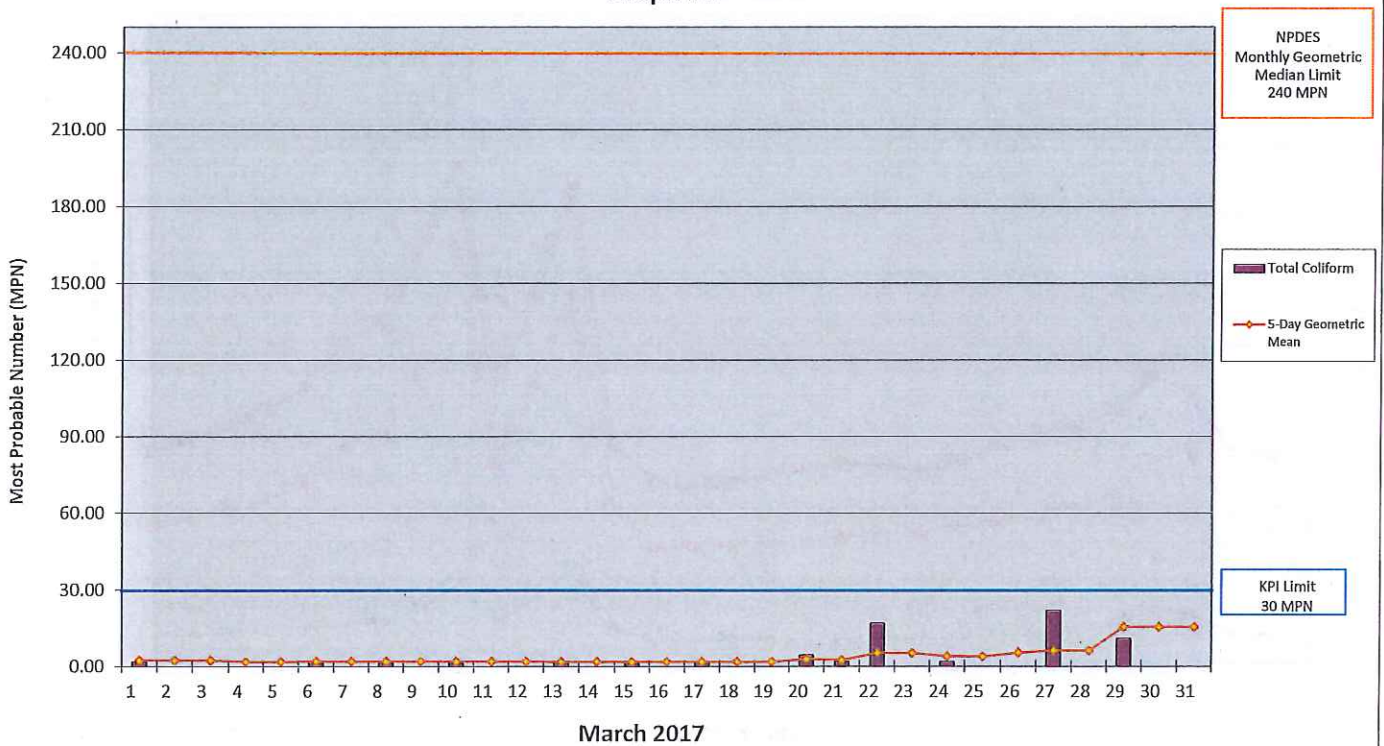
### Effluent Total Suspended Solids (TSS)

Graph #3

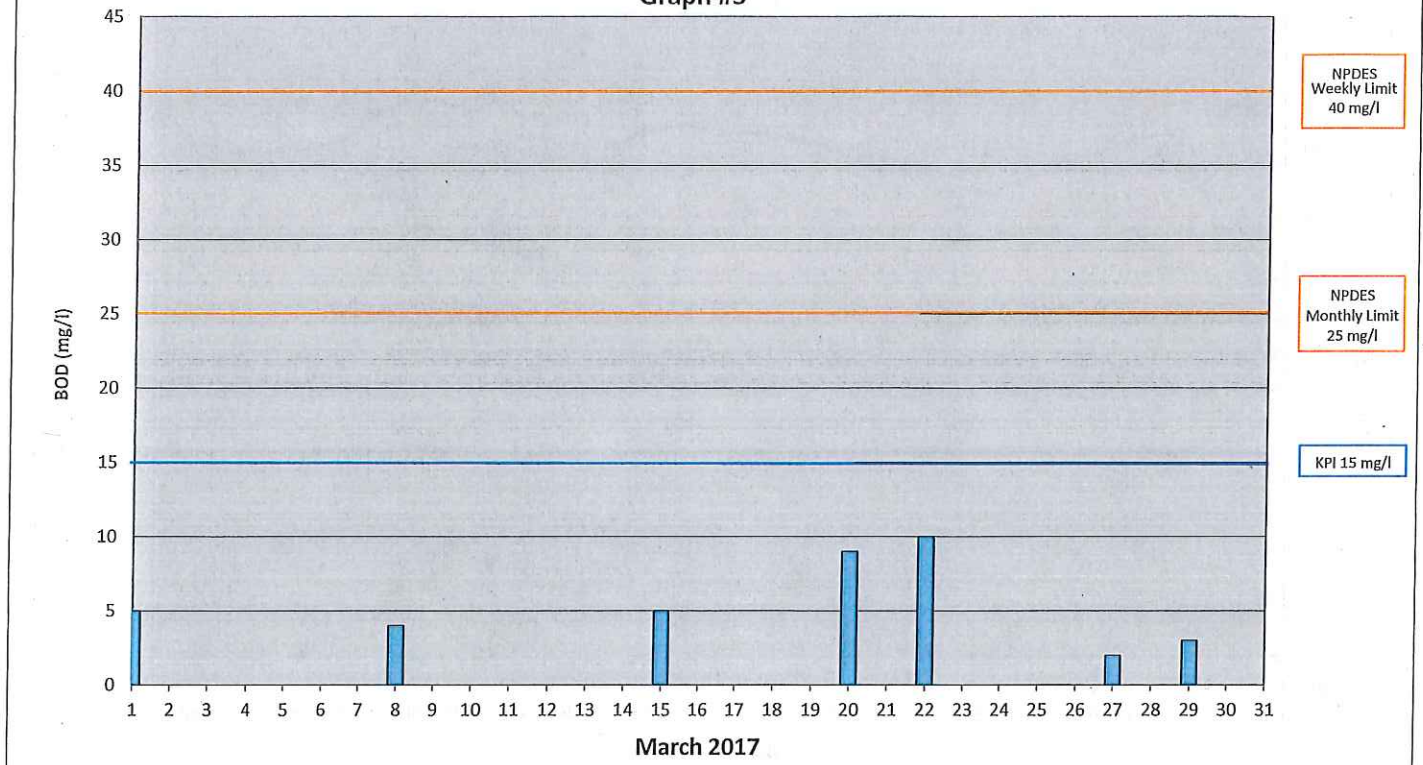


### Total Coliform & Monthly Geometric Mean

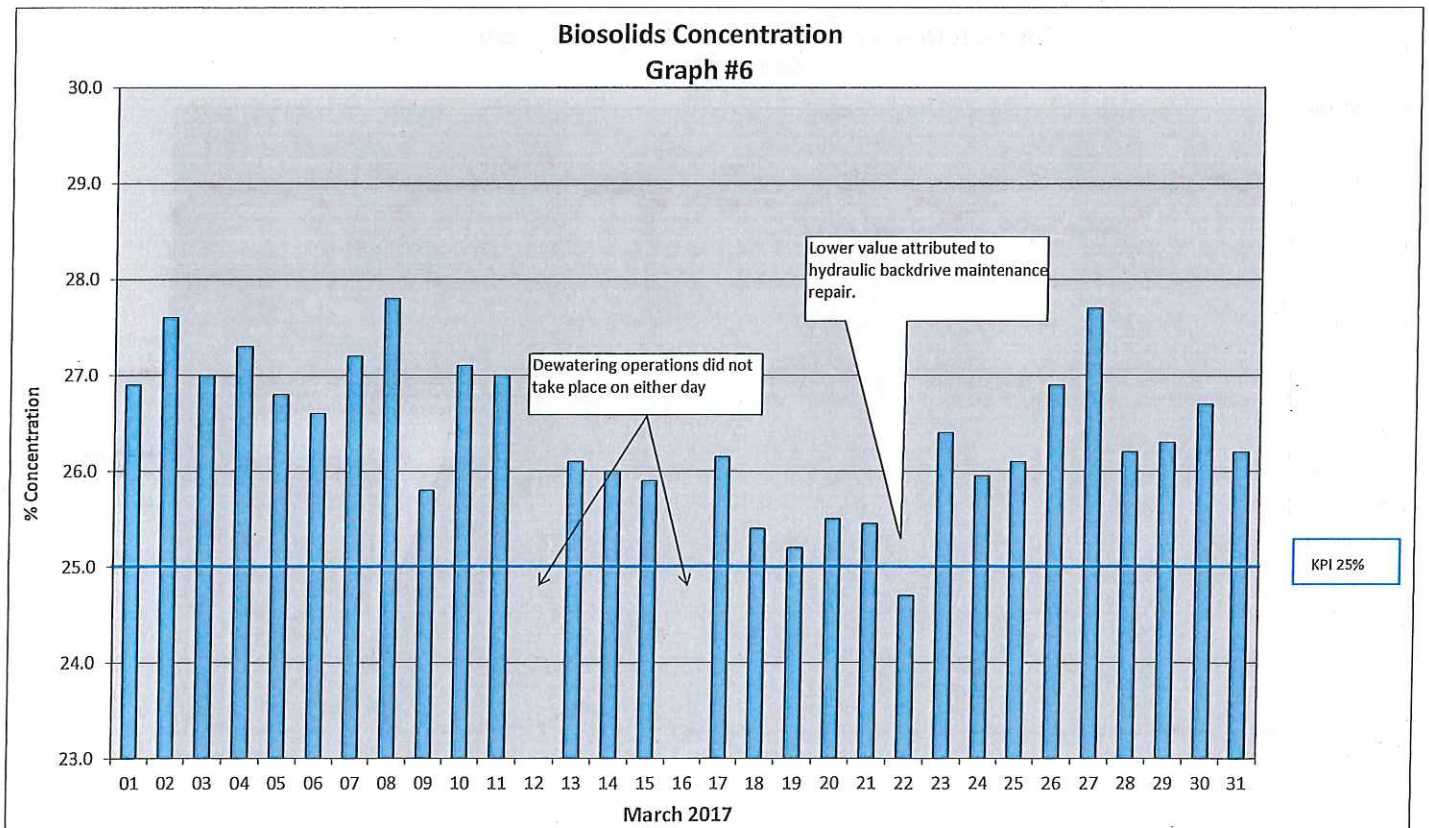
Graph #4

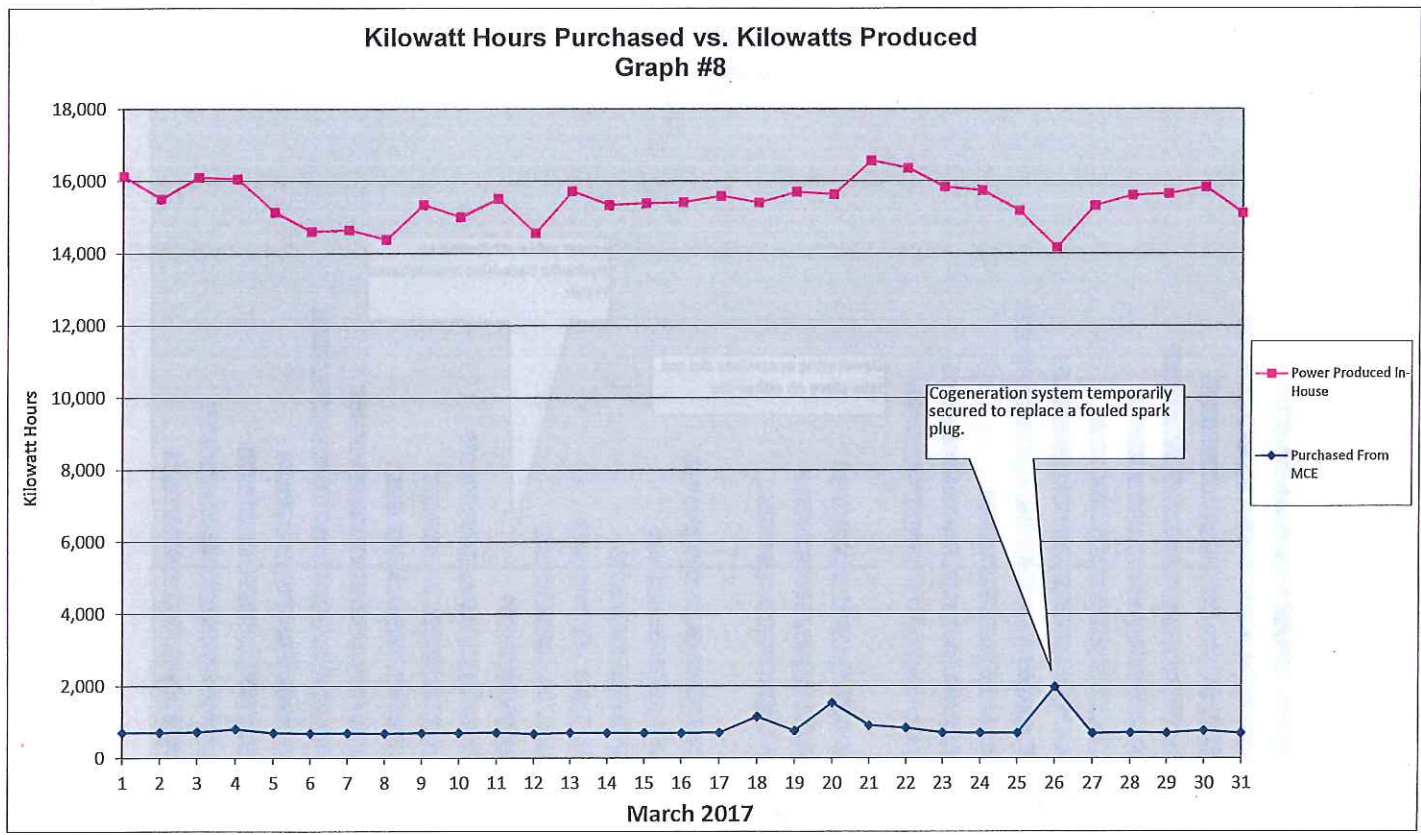
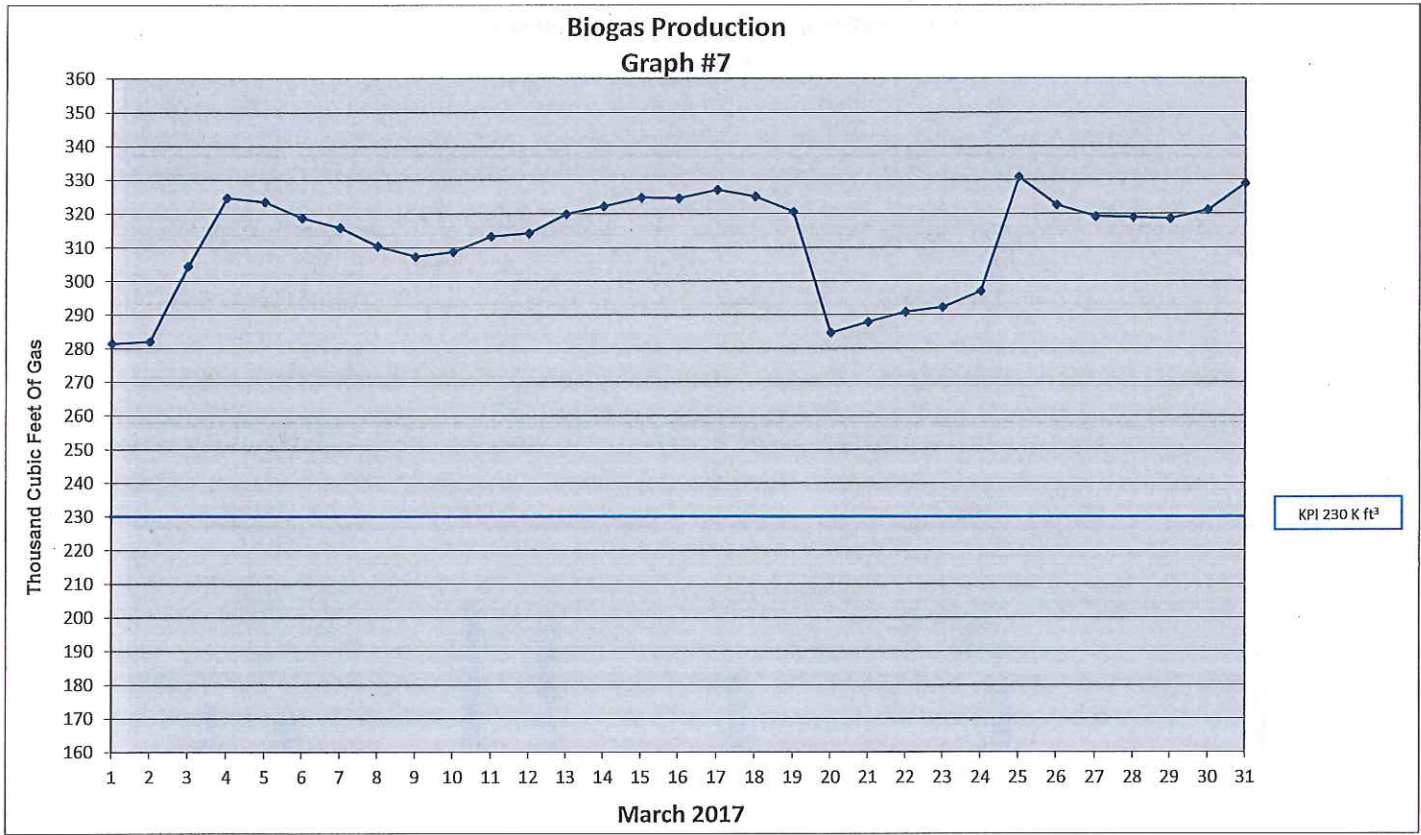


**Effluent Biological Oxygen Demand (BOD)**  
Graph #5



**Biosolids Concentration**  
Graph #6







**BOARD MEMORANDUM**

April 6, 2017

To: CMSA Commissioners and Alternates

From: Jason Dow, General Manager *JD*

**Subject: Performance Metric Report – March 2017**

**Recommendation:** Accept the March 2017 Performance Metric report.

**Performance Summary:** The Agency’s performance in operations and maintenance activities, regulatory and environmental compliance, and public education and outreach met or exceeded our metric goals/targets. Noteworthy metrics or variances are described below.

Table I – Treatment/Process Metrics

Process metrics were within normal ranges, and the treatment facility’s processes are transitioning from wet weather to the dry weather operations. Biogas (Item 5) and Energy Production (Item 6) both exceeded their respective target ranges due to an increased amount of organic material deliveries. With the additional biogas production, the cogeneration engine runtime on biogas was for 98% of the month.

Table II – Employee Metrics

Employee metrics are all within reasonable parameters, with overtime remaining below target and work orders exceeding targets. Training highlights include the General Manager and Treatment Plant Manager attending a wastewater fact-finding trip to Denmark, several employees attending Liebert Cassidy Whitmore employment law training, CalPERS payroll training for accounting staff, and hazardous energy control safety training for operations and maintenance staff members.

Table III - Environmental and Regulatory Compliance Metrics

There weren’t any NPDES permit exceedances in March, and laboratory and pollution prevention activities were performed as scheduled. In early 2017, staff reviewed the manner in which the NPDES (Item 2), Process (Item 3), and QA/QC (Item 4) analyses were determined and revised their target ranges. The Agency’s new Lab Director, Mark Koekemoer, began employment in mid-January and is evaluating many of the Agency’s laboratory activities and practices, and has reported that the Process and QA/QC analysis ranges may need further adjustment in the future.

#### Table IV - Public Outreach

There were eight odor alerts posted to the Agency website in March, and the Agency did not receive any odor complaints. Alerts were posted as primary clarifiers were taken in and out of service to accommodate wet weather flows, taking chlorine contact tanks out of service for preventative maintenance work, and for a secondary flow diversion to accommodate the installation of a replacement Return Activated Sludge flow meter.

Public education events over the past month included Agency tours to four groups of Science, Technology, Engineering, and Math (STEM) students from San Marin High School (120 students) and drama class students from Redwood High School (22 students), and the "Go With The Flow" juggler shows were presented at the following schools:

3/24/17 – Brandeis Marin School in San Rafael to 60 students

3/22/17 – Hidden Elementary in San Rafael to 175 students

3/9/17 – Marin Academy in San Rafael to 40 students

#### **Attachment:**

- March 2017 Performance Metric Report

## CMSA CY17 PERFORMANCE METRICS – March 2017

**TABLE I - TREATMENT/PROCESS METRICS**

Metric	Definition	Measurement	Range/Target/Goal
1) Wastewater Treated	Volume of wastewater influent treated and disposed, in million gallons (Mg)	483.91 Mg	165 – 820 Mg
2) Biosolids Reuse	Alternate Daily Cover (ADC) at the Redwood Landfill, in wet tons (wt) Fertilizer and soil amendment at land application sites, in wet tons (wt) Bio-Fertilizer production at the Lystek facility, in wet tons (wt)	490.7 wt  144.3 wt	360 – 665 wt
3) Conventional Pollutant Removal	Removal of the conventional NPDES pollutants - Total Suspended Solids (TSS) and Biological Oxygen Demand (BOD) a. tons of TSS removed; % TSS removal b. tons of organics removed (BOD); % BOD removal	497; 94.3% 403; 91.5%	> 85% > 85%
4) Priority Pollutants Removal	Diversion of priority NPDES metals from discharge to the S.F. Bay: a. % Mercury b. % Copper	92.0% 85.7%	88 – 99% 84 – 98%
5) Biogas Production	Biogas generated in our anaerobic digesters, in million cubic feet (Mft <sup>3</sup> ) Natural gas (methane) equivalent of the biogas, in million cubic feet (Mft <sup>3</sup> )	9.80 Mft <sup>3</sup> 6.28 Mft <sup>3</sup>	6.0 to 9.5 Mft <sup>3</sup> 3.8 to 6.1 Mft <sup>3</sup>
6) Energy Produced	Energy produced from cogeneration of generated biogas and purchased natural gas - in kilowatt hours Cogeneration system runtime on biogas, in hours (hrs.); % time during month Biogas value (natural gas cost equivalent)	478,766 kWh  726 hrs; 97.8% \$30,351	380 to 480,000 kWh  540 hrs.; 75% \$7,000 to \$24,000
7) Efficiency	The cost to operate and maintain the treatment plant per million gallons of wastewater treated, in dollars per million gallons  Energy used, kilowatt hours, per million gallons treated	\$743 /Mg  816 kWh/Mg	\$451-\$1,830/Mg (wet - dry)  670 - 2,400 kWh/Mg

**Table II – EMPLOYEE METRICS**

Metric	Definition	Measurement	Target/Goal
1) Employee Training	Hours of internal training – safety, web-based, project, vendor, etc. Hours of external training – employment law, technical, regulatory, etc.	Internal = 79.5 External = 273	variable
2) Work Orders	Preventative maintenance (PM) labor hours Planned corrective maintenance (CM) labor hours; % of CM+UCM hrs. Unplanned corrective maintenance (UCM) labor hours; % of CM+PM hrs. Ratio of PM to total corrective maintenance (CM + UCM);	401 hrs 400 hrs (86.2%) 64 hrs (13.8%) 0.86	300 – 500 hrs ≥ 70% total CM hrs ≤ 30% total hours ≥ 0.45
3) Overtime Worked	Monthly hours of OT worked; <i>Year to date hours of OT (YTD)</i> % of normal hours worked; % <i>Year to date (YTD)</i>	1.0%; (2.2%)	< 5%

## CMSA CY17 PERFORMANCE METRICS – March 2017

**Table III - ENVIRONMENTAL AND REGULATORY COMPLIANCE METRICS**

Metric	Definition	Measurement	Range/Target/Goal
1) Permit Exceedances	# of NPDES permit exceedances	0	0
2) NPDES Analyses	# samples analyzed by the CMSA laboratory for NPDES compliance monitoring	91	40 - 100
3) Process Analyses	# samples analyzed by the CMSA laboratory for process control reporting and monitoring	536	120 - 250
4) Quality Control Testing	# of CMSA performed laboratory analyses for QA/QC purposes Accuracy of QA/QC tests	109 92.6%	10 - 40 > 90%
5) Water Quality Sample Analyses	# of ammonia, coliform (total and fecal), enterococcus, and/or sulfide analyses performed for the CMSA member agencies (SSOs, etc.)	0	as-needed
6) Pollution Prevention Inspections	Inspections of industrial and commercial businesses in the Agency's pretreatment and pollution prevention programs and Novato Sanitary District's Mercury Reduction Program – 277 businesses regulated	0	variable
7) FOG Program Inspections	Inspections of food service establishments (FSEs) in the Almonte, TCSD, SD2, RVSD, SRSD, and LGVSD service areas – approx. 500 FSEs are in programs; 310 are regulated – either permitted or have waivers.	27	20 – 50
8) Permits Issued/Renewed	Permits issued for the pretreatment, pollution prevention, and FOG source control programs, and for groundwater discharge	7	variable

**Table IV- PUBLIC OUTREACH**

Metric	Definition	Measurement	Target/Goal
1) Public Education Events	Attendance at public education outreach events; # of booth visitors; (YTD)	0; (92)	3,000/year
2) School Events	Participation or sponsorship in school outreach events; attendees; (YTD)	275; (670)	variable
3) Agency Tours	Tours given to students and the public; # of people, (YTD)	142; (149)	variable
4) Odor Notifications	Number of odor alerts posted to the Agency website due to process or operational changes	8	1-10
5) Odor Complaints	Number of odor complaints received from the public	0	0



**BOARD MEMORANDUM**

April 6, 2017

To: CMSA Commissioners and Alternates  
From: Kevin Lewis, Assistant Maintenance Supervisor  
Chris Finton, Treatment Plant Manager *CF*  
Approved: Jason Dow, General Manager  
Subject: **FY 2017 Asset Management Program – Third Quarter Report**

**Recommendation:** Informational, provide comments or direction to the General Manager, as appropriate.

**Summary:** Staff prepares quarterly Asset Management (AM) reports to highlight the progress made on implementing the Agency’s Asset Management Program (Program) in October, January, and April, and the annual report is presented in July.

**Third Quarter Project Highlights**

1. Reclaimed Water Sump Drain Valve – This sump contains the reclaimed water (RW) system’s primary intake piping and requires regularly scheduled cleaning to prevent accumulated sediment from building up and ultimately being drawn back into the facility’s RW system. This isolation valve is actually a six-inch sluice gate and was installed in 1985 during the treatment plant’s construction. Over the past several years this valve has required additional maintenance to sustain operability, and this past year, it was determined to have reached the end of its lifecycle. Staff performed several confined space entries into the sump to verify its measurements and mounting characteristics prior to ordering a replacement, perform the valve removal and sump clean-up, and install the new replacement valve. The entire original assembly was cast iron and staff specified stainless steel for the replacement equipment.
2. Sample Sink Cabinets – Sample sink cabinets are positioned in process areas throughout the facility, and are used by staff to perform sampling and analysis, and to store various reagents and equipment associated with that specific area. Last fiscal year the Agency embarked on a multi-year project to systematically replace the facility’s sink cabinets which were deteriorating from heavy use and corrosion from continuous moisture exposure. This past quarter, staff worked with a contractor to install new sink cabinets at the Headworks and two units in the disinfection process



areas. The contractor performed the installations and Agency technicians connected the water supply and waste piping. These were the final two sample sink cabinets to install and this project is now complete.

3. Aeration Gallery "L" Coating Work – With the completion of a small project to replace piping and valves in Gallery L, the gallery immediately below the Aeration tanks, utility workers began a coating project. They painted the recently installed equipment, repainted existing piping, and painted the gallery walls. Work included preparing the walls for painting, masking and taping off equipment at various times during the project, and ensuring pipes and valves were painted according to the Agency color code scheme.

**Asset Inventory**

The Asset Parts Inventory is comprised of critical spare parts for Agency equipment, and consumable items designated for CMSA’s contract collection agencies—Sanitary District #2 (Corte Madera), San Quentin State Prison, and San Quentin Village Sewer Maintenance District. Spare parts for CMSA and San Quentin Village are kept at CMSA site-specific parts rooms, Sanitary District #2 parts and equipment are stored at Paradise pump station, and San Quentin State Prison parts and equipment are stored at the San Quentin pump station.

Staff conducted a comprehensive review of Agency assets tracked within the computerized maintenance management systems (CMMS). This quarterly exercise is performed to verify active assets within the system. As projects, scheduled and non-scheduled maintenance, and emergency work tasks are completed, both new and old assets must be accounted for in an asset inventory count. Along with entering new and removing obsolete assets from the asset tree, staff removed improperly grouped or classified assets, and removed additional non-critical assets valued under \$5,000, the Agency’s established tracking limit for assets within the CMMS system. In all, a total of 71 items were entered, reclassified, or removed from the CMMS asset tree this past quarter.

<b>Asset Locations</b>	<b>Total Assets</b>
CMSA	2,378
Sanitary District #2	241
San Quentin Prison	27
San Quentin Village	4

<b>Parts Inventory</b>	<b>Parts Quantity</b>	<b>Total Value</b>
CMSA	20,661	\$1,768,259
Sanitary District #2	1,447	\$135,873
San Quentin Prison	21	\$25,029
San Quentin Village	2	\$1,214

## Asset Improvements, Repairs, and Refurbishment Work

### 1) CMSA Capital Improvement Project Work

Projects in the table below are capital projects that were completed or were in progress over the past quarter.

Project Name	CMSA Staff Cost	Total Cost	Status
Cogeneration "In-Frame" Overhaul	\$6,826	\$114,737	Complete
Reclaimed Water Sump Drain Valve	\$6,211	\$15,382	Complete
Sample Sinks	\$1,975	\$11,954	Complete
Galley L Coating Project	\$9,002	\$11,310	Complete
Centrifuge #1 Feed Pump	\$943	\$11,179	Complete

### 2) CMSA Asset Management Improvements

Projects in the table below are considered routine, recurring, and usual maintenance work for the preservation and protection of Agency assets. CMSA labor and material costs are included to determine the overall cost to perform a specific task.

Area	Equipment	Improvement	Total Cost	Comments
Primary Clarifiers	Primary 1 Scum Collector	Drive shaft repair	\$4,779	Fabricated/machined new part. Reinstalled repaired scum collector.
Aeration	Fine Bubble Diffusers	Membrane replacement	\$9,842	Replaced EPDM diffusers socks and clamps.
Return Activated Sludge (RAS) Pump Room	RAS Pump 6	Refurbish piping	\$5,387	Welded up new flanges and reducer spool pieces to replace failed parts.
Organic Waste Receiving Station	Mixing Pumps	Six-month maintenance procedure	\$4,225	Replaced impellor, cutter nut, and cutting bar plate. Refreshed lubricants.
Dechlorination	Sodium Bisulfite (SBS) Distribution Line	New SBS neat solution line	\$3,930	Routed SBS line from bulk storage room to Gallery C and pressure tested. Plumbing is double contained.
Solids Handling	Rotary Drum Thickeners	Installed a sample sink	\$4,900	Installed lab sample sink, and plumbed in TWAS/WAS/RW lines to sink.
Solids Handling	Ferric Chloride Pumps	Feed pump replacement	\$4,379	Installed a new style gear pump.

**3) CMSA Maintained Assets (San Quentin Prison, Sanitary District #2, San Quentin Village)**

Maintenance work performed over the quarter on collection agency assets by CMSA staff, an approved contractor, or service provider.

Asset Owner	Asset	Improvement	Total Cost	Comments
Sanitary District No. 2	Lakeside Pump Station	Generator repair	\$12,282	Repair of the voltage regulating system and annual preventative maintenance.
Sanitary District No. 2	Air Relief Valves (ARV)	Replacement & standardization	\$7,707	Installed new standard ARVs and fittings.

**Work Orders – Third Quarter FY 2017**

A work order is a written request that a preventive, planned corrective, or unplanned corrective maintenance task or project be performed. Work orders are typically generated and sent internally from one department to another. Shown in the table below are the types of work orders prepared by staff, the work orders completed, and the total labor hours, by type, to complete the work orders.

Work Order Type	No. of WO's	% of Total WO's	Labor Hrs.	% of Total Hrs.
Preventative Maintenance	225	43.95%	973.50	11.24%
Corrective Planned	154	30.08%	1493.75	17.25%
Corrective Unplanned	53	10.35%	343.75	3.97%
Improvement Project Work	6	1.17%	142.25	1.64%
Safety	9	1.76%	80.50	0.93%
Staff Professional Development/ Meetings	6	2.93%	172.75	1.99%
Facilities Administration/ Housekeeping	4	5.08%	970.50	11.21%
Process Control and Facility Operations	24	4.69%	4,484.25	51.77%
<b>Total</b>	<b>512</b>	<b>100%</b>	<b>8,661.25</b>	<b>100%</b>



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**BOARD MEMORANDUM**

April 6, 2017

To: CMSA Commissioners and Alternates

From: Brian Thomas, Technical Services Manager

Approved: Jason Dow, General Manager

**Subject: FY18 Natural Gas Procurement Structure**

**Recommendation:** Approve the recommended FY18 natural gas procurement structure.

**Summary:** At the June 2014 Board meeting, the Board approved a 5-year Natural Gas Procurement Agreement with the School Project for Utility Rate Reduction (SPURR), and authorized the General Manager to make appropriate purchasing arrangements to best serve the Agency's interests. SPURR has several natural gas pricing structures. For FY18, due to the projected low volume of purchases and suppliers limited interest in low volume fixed price contracts, staff recommends purchasing natural gas on the spot market only.

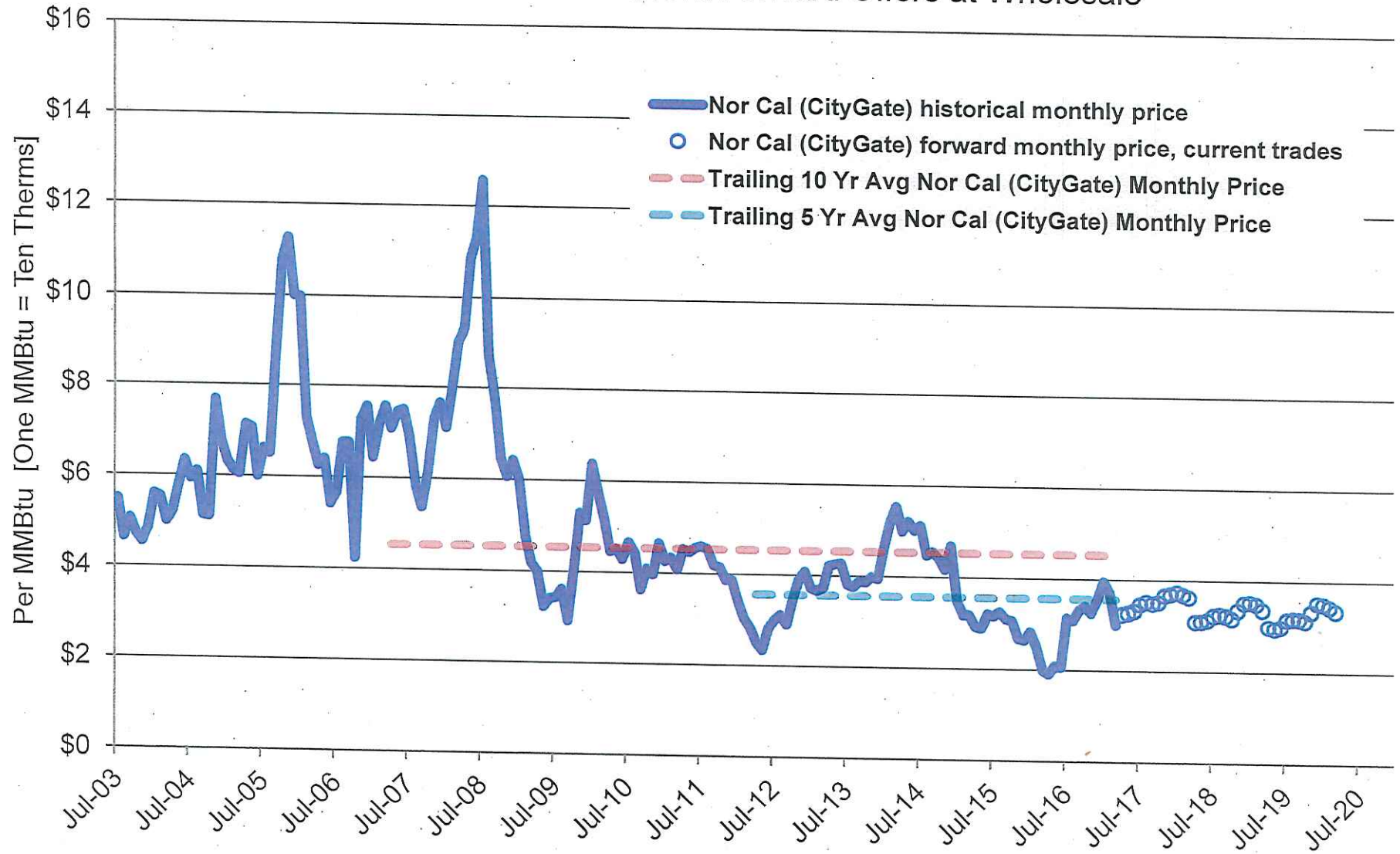
**Discussion:** The Agency operates a 1,049 hp reciprocating internal combustion cogeneration engine to provide up to 750kW of electricity and hot water. The engine is a dual-fuel engine that runs on either biogas or natural gas. The engine runs continuously except for scheduled maintenance shutdowns. From March 2016 through February 2017, CMSA purchased an average of 4,975 therms per month. The maximum gas volume purchased in that period was 8,010 therms in March 2016 and the minimum was 1,910 therms in July 2016. The cogeneration engine operation was very consistent in that time period with one month of downtime due to planned major preventative maintenance. Natural gas procurement volume has and is projected to decline as the Agency produces additional biogas from its organic waste program.

Last year, the Board approved a procurement structure for the Agency to purchase 7,000 therms per month for 10 months at a fixed price and purchase any additional natural gas at the spot market price. However, natural gas sellers were not interested in a fixed price contract for what they consider a low volume of natural gas. Therefore, all of the Agency's natural gas was purchased on the spot market. The average monthly natural gas purchase volume for this fiscal year is 4,500 therms and is anticipated to decrease through FY18. Over the past 24 months, natural gas prices on the spot market have stabilized. SPURR's current projection is that natural gas prices will remain relatively consistent for the upcoming year.

**Attachment:**

- Historical Monthly Natural Gas Contracts (northern California)

# Monthly Natural Gas Contracts -- Historical Prices and Current Forward Offers at Wholesale





**BOARD MEMORANDUM**

April 6, 2017

To: CMSA Commissioners and Alternates

From: Jason Dow, General Manager *JD*

**Subject: California Water Environment Association – 2016 State Level Awards**

**Recommendation:** Informational, provide comments or direction to the General Manager, as appropriate.

**Summary:** CMSA's award recipients from the California Water Environment Association's (CWEA) Redwood Empire Section competed with the award recipients from the CWEA's seventeen other sections in the recent state level award competition. Staff is proud to announce that the Agency and two staff members received the following state level awards.

1<sup>st</sup> Place - Community Engagement and Outreach: *Wastewater Treatment Agencies of Marin for the cooperative public education program*

1<sup>st</sup> Place - Safety Program of the Year (25-75 employees)

1<sup>st</sup> Place - Electrical/Instrumentation Person of the Year – *John Farr*

2<sup>nd</sup> Place - Community Engagement and Outreach Person of the Year: *Gretchen Mueller*

2<sup>nd</sup> Place - Research Achievement of the Year: *Biogas Study by Cal State Fullerton*

3<sup>rd</sup> Place - Treatment Plant of the Year (Medium size)

3<sup>rd</sup> Place - Newsletter of the Year

**Background:** The CWEA is the State's water and wastewater industry association. CWEA provides training programs, conferences and seminars, technical publications, and certification for maintenance, collection system, electrical/instrumentation, laboratory, and environmental compliance staff. CMSA is a member of the Redwood Empire Section of the CWEA, which includes the wastewater agencies in Marin, Sonoma, Napa, and parts of Mendocino and Solano counties.

Each CWEA section administers a competitive award program for individual members to nominate their respective agencies for organizational awards and/or fellow employees for

position specific awards, such as Maintenance Technician of the Year. In 2016, CMSA received eleven Redwood Empire Section awards in the individual, regional, and organizational categories, and the award recipients progressed to the state level competition between the award winners in the other seventeen CWEA sections. Staff presented the awards at the December 2016 Board meeting, and the Board adopted a Resolution of Appreciation for the employee award winners.

Pursuant to the Board adopted Administrative Policy #60 - Employee Award Recognition, each individual first place award recipient will receive a \$250 monetary award, all Agency employees will receive \$250 for the Safety Program award, and specific employees that participated in the county-wide public education program will receive an additional \$250.

**Attachments:**

- CWEA award letters



California  
Water  
Environment  
Association  
7677 Oakport Street, Suite 600  
Oakland, CA 94621-1935

March 15, 2017

Central Marin Sanitation Agency  
Robert Cole  
1301 Andersen Drive  
San Rafael, CA 94901

Dear Robert:

Congratulations! Wastewater Treatment Agencies of Marin County has been selected as CWEA's 2016 recipient of the Community Engagement & Outreach: Project of the Year Large Budget (Over \$20K) Award. Preparations are under way to honor your organization at CWEA's Annual Conference, which will be held at the Palm Springs Convention Center, April 25-28, 2017. We will be honoring your organization's accomplishment at the following CWEA Annual Conference event(s):

**CWEA Awards Luncheon**  
**Friday, April 28**  
**11:00 a.m. - 1:30 p.m.**

*Please verify rooms and times on the AC17 onsite guide.*

You can register for the Annual Conference at [AC17.cwea.org](http://AC17.cwea.org). The early bird registration has been extended to March 24.

Congratulations again! I hope to see you in Palm Springs.

Sincerely,

A handwritten signature in black ink, appearing to read "Ian Mackenzie".

Ian Mackenzie  
CWEA Membership & External Relations Committee Chair





California  
Water  
Environment  
Association  
7677 Oakport Street, Suite 600  
Oakland, CA 94621-1935

March 16, 2017

Central Marin Sanitation Agency  
Dale Thrasher  
1301 Andersen Drive  
San Rafael, CA 94945

Dear Dale:

Congratulations! Central Marin Sanitation Agency has been selected as CWEA's 2016 recipient of the Safety: Plant of the Year Medium Award. Preparations are under way to honor your organization at CWEA's Annual Conference, which will be held at the Palm Springs Convention Center, April 25-28, 2017. We will be honoring your organization's accomplishment at the following CWEA Annual Conference event(s):

**CWEA Awards Luncheon (You will receive a plaque)**

**Friday, April 28**

**11:00 a.m. - 1:30 p.m.**

**Safety Committee Breakfast**

**Friday, April 28**

**7:00 a.m. – 8:30 a.m.**

*Please verify rooms and times on the AC17 onsite guide.*

You can register for the Annual Conference at [AC17.cwea.org](http://AC17.cwea.org). The early bird registration has been extended to March 24.

Congratulations again! I hope to see you in Palm Springs.

Sincerely,

A handwritten signature in cursive script, appearing to read "Ian Mackenzie".

Ian Mackenzie  
CWEA Membership & External Relations Committee Chair



California  
Water  
Environment  
Association  
7677 Oakport Street, Suite 600  
Oakland, CA 94621-1935

March 15, 2017

Jon Farr  
Central Marin Sanitation Agency  
1301 Andersen Drive  
San Rafael, CA 94901

Dear Jon:

Congratulations! You have been selected as CWEA's 2016 recipient of the **Electrical/Instrumentation: Person of the Year Award**. Preparations are underway to honor you at CWEA's Annual Conference being held at the Palm Springs Convention Center, April 25-28, 2017. We will be honoring your accomplishment at the following CWEA Annual Conference event(s):

Operations & Maintenance Committee Breakfast Meeting  
Your win will be celebrated with your committee.  
Thursday, April 27  
7:00 a.m. - 8:30 a.m.

CWEA Awards Luncheon  
You will receive a plaque for your win!  
Friday, April 28  
11:00 a.m. - 1:30 p.m.

*Please verify rooms and times on the AC17 onsite guide.*

You can register for the Annual Conference at [AC17.cwea.org](http://AC17.cwea.org). The early bird registration has been extended to March 24.

Congratulations again! I hope to see you in Palm Springs.

Sincerely,

A handwritten signature in black ink, appearing to read "Ian Mackenzie".

Ian Mackenzie  
CWEA Membership & External Relations Committee Chair

Protecting our water environment through education and certification.  
Member Association of the Water Environment Federation



California  
Water  
Environment  
Association  
7677 Oakport Street, Suite 600  
Oakland, CA 94621-1935

March 15, 2017

Gretchen Mueller  
Central Marin Sanitation Agency  
1301 Andersen Drive  
San Rafael, CA 94901

Dear Gretchen:

The 2016 CWEA State Community Engagement & Outreach Committee has completed their review of the state level finalists for Community Engagement & Outreach: Person of the Year. Unfortunately, you were not selected as the winner of the award. However, you will be honored for receiving 2nd Place for the Community Engagement & Outreach: Person of the Year by your committee. Your name will also be mentioned during the Awards Luncheon on Friday, April 28.

*(Please verify rooms and times on the AC17 onsite guide.)*

CWEA thanks you for your participation in our awards program. Your selection as a finalist at the state level demonstrates the respect that your peers have for your achievements. We encourage you to continue to participate in our awards program and look forward to recognizing your future success at the state level.

We hope to see you in Palm Springs. You can register online at [AC17.cwea.org](http://AC17.cwea.org). The deadline for early bird registration has been extended to March 24.

Sincerely,

A handwritten signature in black ink, appearing to read 'Ian Mackenzie'.

Ian Mackenzie

CWEA Membership & External Relations Committee Chair



California  
Water  
Environment  
Association  
7677 Oakport Street, Suite 600  
Oakland, CA 94621-1935

March 16, 2017

Central Marin Sanitation Agency  
1301 Andersen Drive  
San Rafael, CA 94901

Dear Robert Cole:

The 2016 CWEA State Engineering & Research Committee has completed their review of the state level finalists for E&R: Research Achievement of the Year. Unfortunately, your nomination was not selected as the winner of the award. However, you will be honored for receiving 2nd Place for the E&R: Research Achievement of the Year during the CWEA Biosolids and E&R Committee Lunch Meeting at the CWEA Annual Conference in Palm Springs, Wednesday, April 26, 11:50 a.m. - 1:20 p.m. Your name will also be mentioned during the Awards Luncheon on Friday, April 28. *(Please verify rooms and times on the AC17 onsite guide.)*

CWEA appreciates the time and effort you have taken to show your organization's achievements. Your selection as a finalist at the state level demonstrates the respect that your peers have for your achievements. We encourage you to continue to participate in our awards program and look forward to recognizing your future success at the state level.

Meanwhile, we hope to see representatives from Central Marin Sanitation Agency in Palm Springs. Please make sure this message is forwarded to individuals at Central Marin Sanitation Agency who have been involved with this nomination. Registration can be completed online at [AC17.cwea.org](http://AC17.cwea.org). The early bird registration has been extended to March 24.

Sincerely,

A handwritten signature in cursive script, appearing to read "Ian Mackenzie".

Ian Mackenzie  
CWEA Membership & External Relations Committee Chair

Protecting our water environment through education and certification.  
Member Association of the Water Environment Federation



California  
Water  
Environment  
Association  
7677 Oakport Street, Suite 600  
Oakland, CA 94621-1935

March 15, 2017

Central Marin Sanitation Agency  
1301 Andersen Drive  
San Rafael, CA 94901

Dear Chris Finton:

The 2016 CWEA State Leadership Development Committee has completed their review of the state level finalists for Plant of the Year Medium. Unfortunately, your nomination was not selected as the winner of the award. However, you will be honored for receiving 3rd Place for the Plant of the Year Medium during the CWEA Leadership Committee Breakfast Meeting at the CWEA Annual Conference in Palm Springs, Friday, April 28, 7:00 a.m. - 8:30 a.m. Your name will also be mentioned during the Awards Luncheon on Friday, April 28. *(Please verify rooms and times on the AC17 onsite guide.)*

CWEA appreciates the time and effort you have taken to show your organization's achievements. Your selection as a finalist at the state level demonstrates the respect that your peers have for your achievements. We encourage you to continue to participate in our awards program and look forward to recognizing your future success at the state level.

Meanwhile, we hope to see representatives from Central Marin Sanitation Agency in Palm Springs. Please make sure this message is forwarded to individuals at Central Marin Sanitation Agency who have been involved with this nomination. Registration can be completed online at [AC17.cwea.org](http://AC17.cwea.org). The early bird registration has been extended to March 24.

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Ian Mackenzie  
CWEA Membership & External Relations Committee Chair

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California  
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7677 Oakport Street, Suite 600  
Oakland, CA 94621-1935

March 15, 2017

Central Marin Sanitation Agency  
1301 Andersen Drive  
San Rafael, CA 94901

Dear Rob Cole:

The 2016 CWEA State Community Engagement & Outreach Committee has completed their review of the state level finalists for Community Engagement & Outreach: Newsletter of the Year. Unfortunately, your nomination was not selected as the winner of the award. However, you will be honored for receiving 3rd Place for the Community Engagement & Outreach: Newsletter of the Year by your committee. Your name will also be mentioned during the Awards Luncheon on Friday, April 28.

CWEA appreciates the time and effort you have taken to show your organization's achievements. Your selection as a finalist at the state level demonstrates the respect that your peers have for your achievements. We encourage you to continue to participate in our awards program and look forward to recognizing your future success at the state level.

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Ian Mackenzie  
CWEA Membership & External Relations Committee Chair

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## BOARD MEMORANDUM

April 6, 2017

To: CMSA Commissioners and Alternates

From: Jason Dow, General Manager *JD*

**Subject: Organic Waste Receiving Program Report**

**Recommendation:** Informational, provide comments or direction to the General Manager, as appropriate.

**Summary:** In November 2013, the Agency's Organic Waste Receiving Facility (OWRF) began receiving Fats, Oils, and Grease (FOG), and in January 2014, Marin Sanitary Service began delivering pre-processed food waste under the cooperative Food-to-Energy Program. In March 2014, staff began preparing a weekly Organic Waste Program and Digester Report (Report) to summarize the amount of organic wastes received and contaminants removed, and present key digester operational metrics to identify and track the health and any impacts to the Agency's two anaerobic digesters. Over the past three years, this Report has been expanded to include other useful information such as the number of restaurants participating in the F2E Program, the amount of wastewater and organic waste loading to the digesters, program revenues and expenses, biogas production and cogeneration system runtime, and planned maintenance work. Attached is the March 26 – April 1 weekly report that staff will present and briefly review at the Board meeting.

**Discussion:** As mentioned above, the weekly Report has evolved since the OWRF began operation to include useful programmatic and operational information. Each section of the Report is briefly summarized below.

FOG Delivery Information (Table 1): Delivery information from private FOG haulers, primarily the Sacramento Rendering Company, is shown in this table for the current week, month, and year, as well as cumulative figures since the first load was delivered on November 12, 2013. To date, the Agency has received approximately 10.3 million gallons of FOG.

Food Waste Delivery Information (Table 2): Marin Sanitary Service (MSS) delivers the food waste slurry six days per week, with two loads on Tuesdays. Deliveries are not scheduled on Sundays when the OWRF is cleaned and its equipment maintained. In early 2013, the delivery volume averaged 3.5 tons per load, and as the F2E program has expanded, load volumes have increased to about 8 tons. Since January 10, 2014, Marin Sanitary Service has delivered 5,390 pounds of food waste.

Photo 1 below shows an aerial view of the organic waste receiving facility, with the FOG and food waste delivery locations.

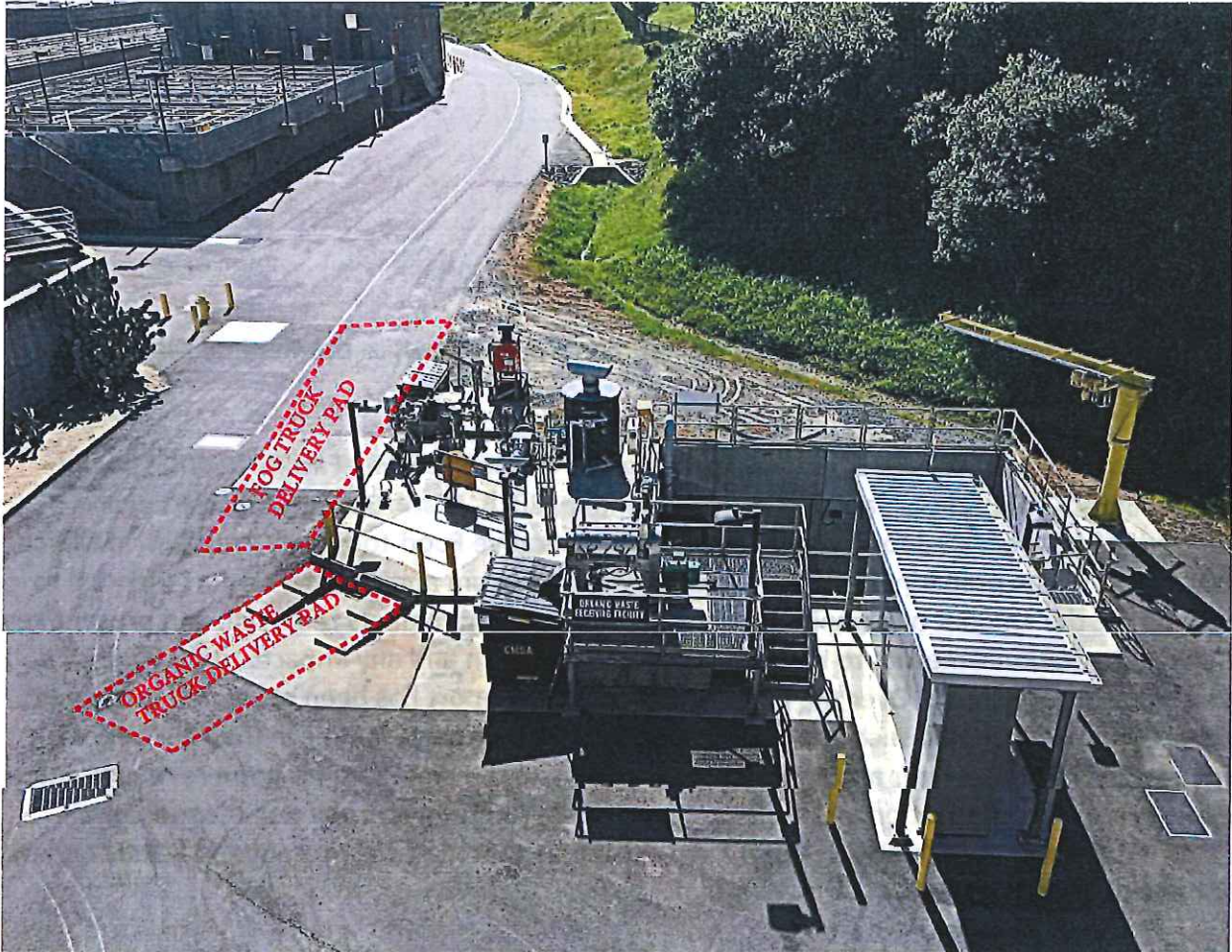


Photo 1 - Organic Waste Receiving Facility

Pomace Bin Pick-Up (Table 3): FOG deliveries are filtered through a screening system to remove contaminants before the FOG is received in the OWRf storage tank, and the screenings are off-hauled by MSS. In the storage tank, the filtered FOG, food waste, and other organic liquids are mixed for a couple hours then pumped through separate screening equipment, a paddle finisher, shown in Photo 2 on the following page. The product from the paddle finisher is an organic liquid slurry that is ready to be pumped to the digesters, while its reject material is called pomace.

Prior to start-up of the OWRf, staff learned that EBMUD's reject material could be up to 40% of the weight of the delivered food waste. At CMSA, due to MSS's restaurant staff training and subsequent food waste sorting work, the reject amount at CMSA has averaged just 6%. This material is primarily organic, such as fruit rind and corn cob husk pieces, that MSS collects for inclusion in its domestic food/green waste composting program.





Paddle finisher and pomace receiving bin

Participants in the MSS Food Waste Program (Table 4): At the end of 2013, MSS was collecting pre-consumer food waste from 13 restaurants in downtown San Rafael, and used the material in an on-site pilot composting program. With initiation of F2E, those restaurants became the first program participants, and today, there are 183 restaurants and markets in the MSS service area and a few from the Mill Valley Refuse service area that participate in the F2E Programs.

Digester Feed Information (Table 5): CMSA's two anaerobic digesters are fed sludge from the primary clarifiers, thickened waste activated sludge (TWAS) from the secondary clarifiers, and the organic waste slurry from the OWRP. Table 5 shows the amount, in pounds, of each material delivered to the digester for the current week and the month, and its contribution relative to the other sources. Currently, the organic waste is approximately 31% of the digester's volatile loading, where volatility is a measure of the organic material in each feed source. Most of the volatile material is converted to biogas through the anaerobic digestion process.

Digester Monitoring Results (Table 6): Laboratory staff regularly sample and analyze the contents of the digesters for alkalinity, volatile solids, and pH, and calculate the volatile solids destruction level in each digester. These measurements are used to monitor the operational health of the internal digester environment. The results shown in the Table are normal for a healthy digester, and the detention time represents the average amount of time the biosolids stay in the digester prior to dewatering and reuse. EPA regulations for biosolids land application require a minimum 15 day digester solids retention time.

Digester Gas Production and Generator Run Time (Table 7): Before the Agency began receiving organic wastes for co-digestion with the wastewater solids, our 5-year average biogas production amount was approximately 125,000 cubic feet/day and the cogenerator runtime using that fuel source averaged about 8 hours/day. With the organic wastes, biogas production is now averaging well over 300,000 cubic feet/day, and the cogeneration system regularly runs 24 hours per day on biogas. Once the PG&E interconnection agreement is approved and executed, the Agency can start a process to identify other organic waste generators and offer to receive their waste materials, to achieve regular energy self-sufficiency and deliver power to the local utility grid; selling power to either Marin Clean Energy or Pacific Gas and Electric.

Organic Waste Program Expenses (Table 8): Staff tracks nearly all expenses on the organic waste program, from energy costs to run the OWRF equipment to staff costs to operate and maintain the facilities. Table 8 shows the current monthly and annual expenses by category. In 2017, the Agency has spent approximately \$46,096 to run the program.

Organic Waste Program Revenue (Table 9): CMSA receives a tipping fee from each organic waste load delivered to the OWRF. Liquid organic waste haulers, such as FOG, brewery wastewater, and soy whey haulers, pay a per gallon fee based on the volumetric fee schedule in the Agency's Fee Ordinance. MSS pays a per ton fee according to the provisions in the CMSA/MSS Food Waste Disposal Agreement. Through the beginning of April, the Agency has received revenues, tipping fees and avoided natural gas purchases, of approximately \$57,528.

A highlight of the Agency's organic waste program is that it's nearly self-supporting, with revenues almost covering operating expenses. For 2016, revenues were \$277,793 while expenses were \$268,453. When the Agency reaches energy self-sufficiency and begins to deliver power, the program will be revenue positive.

**Attachment:**

- March 26 to April 1 Organic Waste Program and Digester Report



**ENVIRONMENTAL SERVICES MEMORANDUM**

April 4, 2017

To: CMSA Staff

From: Mary Jo Ramey, Environmental Services Analyst

**SUBJECT: Organic Waste Program and Digester Report for the Week:  
March 26 – April 1, 2017**

**Organic Waste Program Activities:**

- 19 Fats, Oil and Grease (FOG) and 6 Food Waste deliveries were received this week.
- Samples are collected from each delivered load to determine the total and volatile solids concentrations to assist in estimating the amount of biogas generation in the digesters
- Summary of the Organic Waste Program information for this week is shown in the following table:

**TABLE 1: FOG Delivery Information – (Sun. thru Sat. Calendar Week)**

	# of FOG loads	Avg Size of Load (gallons)	Total Gallons
Weekly	19 (week total)	5,024	95,450 (Increased 21,550 gal)
March Total	77	4,807	370,150
Annual YTD 2017	195	4,905	956,540
Cumulative (11/12/13 to present day)	2,104	4,876 Daily Avg. – 11,304	10.30 MG

**TABLE 2: Food Waste Delivery Information – (Sun. thru Sat. Calendar Week)**

	# of Food Waste Loads	Avg Size of Load (tons)	Total Tons
Weekly	*6	8.0	47.93
March Total	29	7.7	224.5
April Total	1	9.1	9.11
Annual YTD 2017	87	7.5	649.14
Cumulative (1/10/14 to present)	958	5.6 Daily Avg. – 5.6	5,389.82

\*MSS delivered only 1 FW on Tuesday instead of the usual 2 deliveries

**TABLE 3: Food Waste Pomace Bin Pick Up and % Reject Material – (M,W,F p-u)**

	# of Pomace Bins picked up	# of FW Deliveries	Wt. of FW Delivery (Tons)	Wt. of Pomace Bin (Tons)	Wt. of FW Delivery Minus Pomace Bin (Tons)	% of Reject Material per Bin
Weekly	3	2 2 2	13.21-Bin 1 16.88-Bin 2 16.14-Bin 3	0.87-Bin 1 1.05-Bin 2 0.70-Bin 3	12.34-Bin 1 15.83-Bin 2 15.44-Bin 3	6.6 %-Bin 1 6.2 %-Bin 2 4.3 %-Bin 3
March Total	13	28	218.70	14.40	204.30	6.6 %
Annual YTD 2017	38	86	643.33	41.90	601.43	6.6 %
Cumulative (1/24/14 to present day)	281	932	5,256.31	305.97	4,950.34	6.0 %

**TABLE 4: Participants in the Food to Energy (F2E) Program**

Date	Number of Participants
4/3/17 (Last update)	183

**TABLE 5: Digester Feed Information**

	Total Digester Loading (lbs.)	Primary Sludge		TWAS		Organic Slurry	
		Lb. per week to Digester	% of Total Digester Loading	Lb. per week to Digester	% of Total Digester Loading	Lb. per week to Digester	% of Total Digester Loading
TS (weekly)	267,200	92,075	35 %	96,861	36 %	78,264	29 %
VS (weekly)	230,913	77,141	33 %	78,739	34 %	75,033	33 %
*TS (March) Cumulative	1,067,885	358,016	33 %	402,051	38 %	307,818	29 %
*VS (March) Cumulative	933,048	308,157	33 %	332,724	36 %	292,167	31 %

\*Cumulative data will be reported as monthly totals. (April 1<sup>st</sup> data included in March totals)

\*\*Feed material includes: primary sludge, thickened activated waste (TWAS), and organic waste slurry

**Digester Process Control Results:**

- Digester health is monitored daily for total alkalinity, volatile acids, total and volatile solids, and pH, which indicate the performance of the digester and maintaining optimum conditions for the anaerobic bacteria that live in the digester.
- The digesters have remained healthy and stable with little or no change since we have been receiving the organic waste materials.
- Volatile solids destruction and detention time in the digesters are monitored to ensure the material is being properly digested. (15 days minimum required for land application)

**TABLE 6: Digester Laboratory Monitoring Results**

	Alkalinity (mg/L)	Volatile Acids (mg/L)	pH	Detention Time (days)	% Volatile Solids Destruction
Dig #1 Weekly Avg	4900	119	7.4	26	59
Dig #2 Weekly Avg	4900	110	7.4	26	58
Dig #1 Monthly Avg	4900	119	7.3	27	67
Dig #2 Monthly Avg	4900	113	7.3	27	67

**Digester Gas Generation:**

- Current digester gas generation has been increasing since the addition of the organic materials.
- The following table shows the biogas production, cogeneration system run time and natural gas purchased.

**TABLE 7: Digester Gas Production and Generator Run Time**

	Biogas Gas (avg. cubic feet/day)	Cogeneration Run Time (Biogas - Hours - avg)	Natural Gas Purchased (avg. cubic feet/day)
Daily Avg (week)	325,339 (Increased 23,464 from last week)	*23 hrs. (Increased 1 hr. from last week)	0 (Decreased 15 from last week)
Monthly Avg (March)	316,283	*23 hrs	3

\*The Waukesha engine operated on biogas (24 hrs.) on 3/27<sup>th</sup>, 28<sup>th</sup>, 29<sup>th</sup>, 30<sup>th</sup>, 31<sup>st</sup> and 22hrs. on 3/26<sup>th</sup> and 4/1<sup>st</sup>

**\*TABLE 8: Organic Waste Program Expenses**

	Equipment Power Usage (kWh)	Energy Costs (\$)**	Maintenance Costs (Labor \$ /Parts \$)	Operation Costs (\$)	Admin. Costs (\$)	Supplies/ Other Costs (\$)	Total (\$)
Monthly (March)	20,304	\$899 Cost at NG rate	\$1,159	\$6,525	\$3,704	\$0	\$12,287
From: Annual Value CY17	54,958	\$2,433	\$12,303	\$19,088	\$9,772	\$2,500	\$46,096

\*This table will be updated at the end of each month. Maintenance, operations, and administrative costs use weighted labor rates

\*\*Energy costs are calculated based on the avoided natural gas procurement costs

**\*TABLE 9: FOG/F2E Station Revenue**

	FOG Revenue	FOOD Waste Revenue (\$21.61/Ton)	Biogas Energy Value**	Total (\$)
Monthly (March)	\$7,867	\$4,851	\$12,945	\$25,663
From: Annual Value CY17	\$21,387	\$13,831	\$22,310	\$57,528

\*This table will be updated @ the end of each month. \*\*Energy costs are calculated based on the avoided natural gas procurement costs

\*\*Energy costs are calculated based on the avoided natural gas procurement costs

**Activities at the Organic Waste Receiving Facility for the week of 3/26/17 – 4/1/17**

- Ops is performing weekly PM's on Sunday's, cleaning RTG, PF, replacing paper filter and cleaning metal mesh screen on Odor Scrubber.



BOARD MEMORANDUM

April 06, 2017

To: CMSA Commissioners and Alternates
From: Kenneth Spray, Administrative Services Manager
Heidi Lang, Financial Analyst
Approved: Jason Dow, General Manager
Subject: FY 2017 Third Quarter Budget Report

Recommendation: Accept the Third Quarter Budget Report for Fiscal Year 2016-17.

Summary: We are pleased to present the Agency's Third Quarter Budget Status Report for fiscal year 2016-17. As of March 31, 2017, the Agency received 74.1% of budgeted operating revenues (Table I) and incurred 72.2% of budgeted operating expenses (Tables III & IV). Revenues and expenditures were in line with expected 75% straight line year-to-date performance for the third quarter. Expenditures are measured by actual expenses and encumbrances for goods and services received or in the process of being procured.

Summarized Financial Performance Highlights

Table with 7 columns: Revenues, FY 17 Budget, YTD Actual Received, Outstanding, Total Revenue, Total Received as % of Budget, Total Revenue Billed as % of Budget. Rows include Agency Revenues and Debt Service.

Table with 6 columns: Expenditures, FY 17 Budget, YTD Actual Expenditures, Encumbrances/Pending Payments, Total Expenditures, % Spent. Rows include Operating Expenses and Capital Improvement Program.

- JPA Member Agencies paid their third quarter regional charge and second debt service payments in January.
The Agency retired \$2.195M in outstanding debt and paid \$900.2K interest for the Refunding Revenue Bonds Series 2015 that was due on September 1, 2016. An \$872.8K

interest only payment was paid to US Bank on February 24, 2017.

- Total capital program expenditures and encumbrances were \$3.2M. This included \$1.1M spent and \$2.1M encumbered year to date for the Maintenance Facility Modification project, Agency Facilities Master Plan, Gates Rehabilitation project, the RVSD & SRSD Interceptor Condition Assessment project, the Organic Waste Receiving Facility Vault Relining project, the PG&E Interconnection Modification project, and for other capital improvement activities. Actual spent included \$39.9K for staff salary and benefits.

**Table I – Agency Revenues**

Description	FY 17 Budget	YTD Actual Received	Outstanding Receivables (Invoices)	Total Revenue	Budget Remaining	Total Received as % of Budget	Total Actual & Outstanding as % Budget
Sewer Service Charges	10,395,358	7,796,519	-	7,796,519	2,598,840	75.0%	75.0%
Contract Services	1,425,138	805,946	272,072	1,078,018	347,120	56.6%	75.6%
Capacity Charges	-	183,866	-	183,866	-	No Budget	-
Program Revenues	128,990	83,427	382	83,809	45,181	64.7%	65.0%
Haulers, Permits & Inspection Fees	211,250	146,200	28,802	175,002	36,248	69.2%	82.8%
Other Non-Operating Revenues	20,000	3,072	-	3,072	16,928	15.4%	15.4%
Interest Income	56,500	49,789	-	49,789	6,711	88.1%	88.1%
<b>Total Agency Revenues</b>	<b>12,237,236</b>	<b>9,068,818</b>	<b>301,256</b>	<b>9,370,074</b>	<b>3,051,028</b>	<b>74.1%</b>	<b>76.6%</b>
<b>Contributions for Debt Service</b>	<b>4,960,117</b>	<b>4,802,020</b>	<b>63,239</b>	<b>4,865,259</b>	<b>94,858</b>	<b>96.8%</b>	<b>98.1%</b>
<b>TOTAL REVENUE</b>	<b>17,197,353</b>	<b>13,870,837</b>	<b>364,495</b>	<b>14,235,332</b>	<b>3,145,886</b>	<b>80.7%</b>	<b>82.8%</b>

The Agency received 74.1% of total budgeted revenues and budget performance was at 76.6% of budget when outstanding receivables were included. Table 1 - Agency Revenues identifies the source of revenue received. Agency Revenues and Contributions for Debt Service received year-to-date total \$13.87M. Of this amount, \$7.79M represents service charges through March and \$4.8M debt service payments received from all JPA members and San Quentin Prison (SQP), as well as \$63.2K debt service outstanding from SQP.

The remaining \$1.27M in operating receipts and \$301.2K in operating revenues outstanding represents the following:

**Contract Services:** Receipts totaled \$805.9K and outstanding receivables totaled \$272K for services provided by the Agency under contract to sanitary districts and other government entities for pump station and collection system operations and maintenance, and for source control program services. Budget performance for revenues received was 56.6% and 75.6% when receivables are included. In April, staff will prepare and send out March's contract



services and third quarter source control program invoices.

**Capacity Charges:** CMSA received \$183.8K in capacity charges through January 2017 for a total of 32 residential connections (9 from SRSD, 4 from RVSD and 19 from SD#2).

**Program Revenues:** There was \$83.4K in receipts with \$382 in outstanding receivables. CMSA administers the Safety Director and Countywide Education programs. Services performed and costs incurred by CMSA are allocated and invoiced quarterly to districts that participate and invoiced in accordance with each program agreement. Budget performance was at 64.7% and was less than straight line year-to-date as the Agency invoices the Countywide Education participants for actual services and expenses the month following each quarter. Invoices through March will be sent out for the both programs in April.

Safety Director: The Agency invoices Novato Sanitary District (NSD) for its share of the safety director salary and benefit costs at the beginning of each quarter and invoices incidental program expenses and outside safety training costs at the end of each quarter.

Countywide Education: Program participants are invoiced the month following the end of each quarter for program expenses incurred during that quarter. The frequency and amount of expenditures are a function of the events that are scheduled throughout the year. For example, promotional items are purchased in the third and fourth quarter of the prior fiscal year for the upcoming fiscal year's program events.

**Haulers, Permits and Inspection Fees:** There were \$146.2K in receipts and \$28.8K in outstanding invoiced revenues. Revenues are for septic receiving facility use charges, organic waste disposal, industrial waste discharge permit fees, reimbursement of costs for pollution prevention program inspections, and other services through March 2017.

**Other Non-Operating Revenue:** The Agency received a total of \$3K from sources that included CSRMA for a workers' comp dividend payment (\$337), a Metropolitan Life dividend payment (\$114), a CalCARD prompt payment incentive rebate (\$1,307), and proceeds from the sale of disposed assets (\$352) and recycled metal (\$962). Other types of non-operating revenues can include pooled liability dividends, SDI disability reimbursements, and funds from other miscellaneous revenue sources.

**Interest Income:** The Agency budgeted interest earnings assuming a 0.4% rate on \$13.75M deposited at LAIF and a 0.42% interest rate on \$357.4K deposited at CAMP. Year-to-date interest income totals \$49.7K. Interest rates earned on the Agency's short term investments with CAMP was 0.89% on March 31st. The third quarter does not include LAIF earnings as the State Treasurer posts LAIF interest earned 15 days after the end of each quarter.

**Debt Service:** Debt service contributions were received from member agencies in the first and third quarters of FY 17 for payment on the CMSA Refunding Revenue Bonds Series 2015. SQP is invoiced \$108.2K each month for wastewater services. Of this amount, \$31.6K is for debt

service, the remaining \$76.6K is for SQP wastewater treatment and pump station maintenance contract services. There was \$63.2K outstanding receivable for debt service on March 31st. Principal and interest debt service was paid for the obligation due September 1st (principal \$2.195M, interest \$900.2K). An \$872.8K interest only payment was paid February 24, 2017.

**Table II – Revenues & Expenditures for Contracted Agency Services**

Table II shows the revenue and expenditure status for services CMSA provides under contract to other local agencies. The presentation of the information is similar to the revenue information in Table I. The actual expense incurred by CMSA excludes the contract administration overhead charge that ranges from 5%-22% depending on each specific contract. The SQP wastewater service contract's treatment fee does not include an overhead charge as it is based on wastewater flow and strength; however, the SQP pump station maintenance operations fee does include an overhead charge. Invoices for services during the third quarter and the month of March will be prepared and mailed in April.

Service Contract	FY 17 Budgeted Revenue	Actual Revenue Received	Invoiced Outstanding	Total Revenue	Actual CMSA Expenses	Frequency of Invoicing
SQSP Wastewater Services	813,946	491,163	135,658	626,821	617,971	Monthly through March
SQSP Pump Station Maintenance	105,473	63,443	21,170	84,613	75,972	Monthly through February
SD#2 Pump Stations	394,063	201,299	107,194	308,492	272,340	Monthly through February
SQ Village Wastewater Services	33,056	15,739	5,475	21,214	18,607	Monthly through February
Revenue for Safety Director	85,000	65,301	-	65,301	60,229	Quarterly through March
Countywide Education Program	43,990	18,126	382	18,508	16,094	Quarterly through December
LGVSD - FOG & Pollution Prevention	20,000	11,701	-	11,701	9,656	Quarterly through December
RVSD - FOG	19,000	7,924	-	7,924	7,221	Quarterly through December
SRSD - FOG	23,000	9,278	-	9,278	8,447	Quarterly through December
TCSD - FOG	2,100	1,587	-	1,587	1,312	Quarterly through December
SD #2 - FOG	9,500	2,541	-	2,541	2,315	Quarterly through December
NSD - Dental Amalgam	3,500	-	2,576	2,576	2,124	YTD through February
Almonte SD-FOG	1,500	1,270	-	1,270	1,046	Quarterly through December
<b>TOTAL SERVICE CONTRACT REVENUE</b>	<b>1,554,128</b>	<b>889,373</b>	<b>272,454</b>	<b>1,161,827</b>	<b>1,093,333</b>	

**Table III – Operating Expenditures by Category**

Description	FY 17 Budget	3rd	Year- to-Date Actual Expenditures	PO	Total Expenditures*	Budget Remaining	% Spent
		Quarter Budget (75%)		Encumbrances & Pending Payments			
Salaries & Wages	5,283,600	3,962,700	3,836,361	-	3,836,361	1,447,239	72.6%
Benefits	2,575,700	1,931,775	1,876,276	2,408	1,878,684	697,016	72.9%
Chemicals & Fuel	1,146,800	860,100	847,813	52,804	900,616	246,184	78.5%
Biosolids Management	373,920	280,440	227,731	31,160	258,891	115,029	69.2%
Permit Testing & Monitoring	168,800	126,600	79,276	6,048	85,324	83,476	50.5%
Repairs & Maintenance	382,500	286,875	215,670	35,928	251,598	130,902	65.8%
Insurance	275,900	206,925	203,353	-	203,353	72,547	73.7%
Utilities	372,600	279,450	196,416	18,924	215,340	157,260	57.8%
General & Administrative	1,000,660	750,495	569,693	163,531	733,224	267,436	73.3%
<b>TOTAL OPERATING EXPENSES</b>	<b>11,580,480</b>	<b>8,685,360</b>	<b>8,052,588</b>	<b>310,803</b>	<b>8,363,391</b>	<b>3,217,089</b>	<b>72.2%</b>

\* Actual and Encumbered

**Table IV – Operating Expenses by Department**

Description	FY 17 Budget	3rd	Year- to- Date Actual Expenditures	PO	Total Expenditures*	Budget Remaining	% Spent
		Quarter Budget (75%)		Encumbrances & Pending Payments			
Administration**	4,484,300	3,363,225	3,194,014	119,849	3,313,863	1,170,437	73.9%
Environmental Services	1,408,880	1,056,660	814,479	44,141	858,620	550,260	60.9%
Maintenance	1,881,100	1,410,825	1,315,630	42,200	1,357,829	523,271	72.2%
Operations	3,173,800	2,380,350	2,281,822	76,489	2,358,311	815,489	74.3%
Engineering	632,400	474,300	446,642	28,124	474,767	157,633	75.1%
<b>TOTAL OPERATING EXPENSES</b>	<b>11,580,480</b>	<b>8,685,360</b>	<b>8,052,588</b>	<b>310,803</b>	<b>8,363,391</b>	<b>3,217,089</b>	<b>72.2%</b>

\* Actual and Encumbered

\*\* Fringe benefits for CMSA staff and the Agency's insurance expense are reflected in this department

Total operating expenditures were 72.2% of budget at the end of March 2017. This included approximately \$8M for actual expenses and \$310.8K outstanding purchase orders, contracts, and other obligations. With the exception of Chemicals & Fuel, year-to-date expenditures for the other categories of expense were less than the straight-line projected budget performance target of 75% at the end of March. Budget performance for each department was less than or equal to the 75% performance target.

**Salary & Wages and Benefits:** Total salary and benefit expenses were 72.6% and 72.9% of budget, and represented expenditures through the pay period ending March 25, 2017 (20 of 26 payrolls or 76.9%).

**Chemicals & Fuel:** Expenditures were 78.5% of budget with \$847.8K of actual and \$52.8K in pending payments for chemicals delivered through March 31, 2017. Ferric chloride, sodium bisulfite, and sodium hypochlorite usage has been significantly higher due to numerous significant wet weather events in January and February. Nitrate usage for collection system odor control had decreased with the onset of wet weather conditions beginning last October, and will increase throughout the spring.

<u>Chemicals</u>	<u>Expenditures as % of Budget</u>	<u>Comments</u>
Ferric Chloride	93%	12 deliveries through March 2017
Polymer-Cationic	54%	3 deliveries through March 2017
Odor Control	42%	3 deliveries through December 2016
Nitrate	60%	23 deliveries through October 2016
Hydrogen Peroxide	65%	15 deliveries through March 2017
Sodium Hypochlorite	101%	60 deliveries through March 2017
Sodium Bisulfite	152%	56 deliveries through March 2017

**Biosolids Management:** Expenditures were 69.2% of budget and included \$227.7K actual expenditures and \$31.1K in estimated encumbrances for hauling services to and tipping fees at beneficial reuse sites through March 2017. Biosolids management expenses vary, and are primarily dependent upon seasonal weather-related circumstances: 1) land application during the months of April to late October results in lower reuse tipping fee costs when compared to alternate daily cover at the Redwood Landfill and biofertilizer production at Lystek, and 2) the volume for disposal is lower during the warmer weather spring and summer months.

**Permit Testing & Monitoring:** Expenditures were 50.5% of budget and included \$79.2K in actual expenditures and \$6K in encumbrances for NPDES permit sampling and other contract laboratory analysis costs. Expenditures for this category vary; sampling costs can range widely from \$150 to \$3,000 each based on the type and frequency of analyses performed. Billing delays often occur during the wet weather season when it takes longer to receive test analyses due to a work back-log at the contracting labs. When the outside laboratory does not provide test analyses in the timeframe specified in the contract, a fee reduction is received for the tests performed.

**Repairs & Maintenance:** Expenditures were 65.8% of budget and included \$215.6K in actual expenditures and \$35.9K in outstanding PO encumbrances. Expenditures alone are not necessarily a good indicator of the repair and maintenance activities that are taking place. For example, periods of high expenditures reflect the purchasing of materials and supplies to prepare for upcoming planned maintenance, while periods of low expenditures can relate to staff performing planned maintenance utilizing available parts inventory.

**Insurance:** This category was at 73.7%. The Agency's insurance premiums are paid early in the fiscal year. The below schedule provides the payment status for insurance coverage. Insurance premiums are paid when policies are renewed and the expenses are prorated between fiscal years based on the policy's coverage time period.

Description	FY 17 Budget	Status
Property Insurance	55,600	FY 17 paid in full
General Liability & Auto	46,300	FY 17 paid in full (FY18 Pre-paid through 12/31/17)
Pollution Liability	1000	FY 17 paid through April 2017
Employee/Commissioners Bond	2,200	FY 17 paid in full
Workers Compensation	170,000	FY 17 paid in full

**Utilities:** Expenditures were 57.8% of budget with \$196.4K in actual payments and \$18.9K of prorated estimates for electricity (purchased from Marin Clean Energy through PG&E), natural gas, and water procurement, and solid waste disposal through March 2017.

**General & Administrative (G&A):** Expenditures were 73.3% of budget and included \$569.6K actual expenses and \$163.5K in PO encumbrances. Year-to date includes unanticipated recruitments for three positions. The G&A expense category includes professional services (legal, financial, regulatory, etc.), operating permits, memberships in local, state and national wastewater organizations, employee certifications, training, telephone, internet and office expenses.

**Table V – Capital Improvement Program**

Description	FY 17 Adopted Budget	Budget Transfers	FY 17 Adjusted Budget	Actual	PO Encum- brances	Total Expenditures	Budget Remaining	% Spent*
Salaries & Benefits	181,800	-	181,800	39,962	-	39,962	141,838	22.0%
Facility Improvements	1,335,500	115,000	1,450,500	238,980	1,458,283	1,697,262	(246,762)	117.0%
General Equipment	368,400	-	368,400	141,965	39,073	181,038	187,362	49.1%
Liquids Treatment Equipment & Systems	1,283,800	(42,890)	1,240,910	372,920	516,731	889,651	351,259	71.7%
Solids Treatment & Energy Generation Equipment & Systems	1,023,500	(72,110)	951,390	317,933	102,366	420,299	531,091	44.2%
<b>TOTAL</b>	<b>4,193,000</b>	<b>-</b>	<b>4,193,000</b>	<b>1,111,761</b>	<b>2,116,453</b>	<b>3,228,213</b>	<b>964,787</b>	<b>77.0%</b>

\*Actual and Encumbered

CIP expenditures were 77% of budget and comprised actual expenditures of \$1.1M and encumbrances totaling \$2.1 for executed purchase orders and contracts for the following activities: Agency Facilities Master Plan, Maintenance Facility Modification project, Agency Vehicle Replacement, Plant Lighting, Process Instrumentation, Aeration System Rehabilitation, Gates Rehabilitation, Odor Control Improvement, Critical Buried Pipe Inspection, PG&E Interconnection Modification Project, Organic Waste Receiving Facility Vault Relining, and various other capital improvement program activities.

There were multiple mudslides on the Andersen Drive hillside during the February rain storms, two of which required emergency repairs not included in the FY 17 Budget. A budget transfer from Facility Paving to the Hillside Slope Stabilization account covered the cost for the mudslide cleanup and slope stabilization.

The attached third quarter Capital Improvement Program report includes project expenditures, encumbrances, and activity status.





**BOARD MEMORANDUM**

April 6, 2017

To: CMSA Commissioners and Alternates

From: Jason Dow, General Manager

**Subject: Recycled Water Program Status Report**

**Recommendation:** Discuss the use and delivery of recycled water, and provide direction to staff, as appropriate.

**Summary:** At the May 2016 Board meeting, staff informed the Board that the recycled water truck fill station was constructed and ready to deliver recycled water, and briefed the Board on the recycled water rights opinion from special legal counsel Alan Lilly. At the conclusion of those discussions, the Board directed staff to include on a future Board meeting agenda a discussion on the use and delivery of recycled water. During the summer of 2016, CMSA's JPA member agencies had not received recycled water use permits from MMWD, and as of the date of this report, CMSA has not delivered any recycled water using the truck fill facility. With the wet weather season ending, staff believes it is an appropriate time to begin the Board level discussions on the use and delivery of recycled water within the Agency's service area.

**Discussion:** Through 2014 and 2015, the Marin Municipal Water District (MMWD) and CMSA collaborated on the development of a Recycled Water Feasibility Study (Study) and a Recycled Water Title 22 Engineering Report for a truck filling program, to use CMSA recycled water in the central Marin service area. Presented below are summaries of the Study's recommended project, truck fill station project, and Recycled Water Rights opinion.

Recycled Water Feasibility Study Recommended Project: Carollo Engineers developed and evaluated 17 recycled water project alternatives, and in concurrence with the CMSA and MMWD project team, determined the most currently feasible and cost effective alternative is to deliver 152 acre-feet per year (0.2 MGD) of tertiary treated recycled water to San Quentin State Prison. On the San Quentin property, the recycled water would be used for landscape irrigation, vehicle washing, boiler make-up water, and toilet flushing in the inmate housing units and cells. To produce and deliver tertiary recycled water, a microfiltration facility and pump station would be built on CMSA property adjacent to the existing chlorine contact tanks; two of CMSA's existing chlorine contact tanks would be used to meet the higher level recycled water disinfection requirements; and a pipeline would be constructed to San Quentin's West Gate. From there, the main pipeline would enter the San Quentin property and split into smaller pipelines routed to each use area. Included in the project is retrofitting plumbing at the inmate housing units to deliver the recycled water to individual toilets.



Summary cost information for the recommended project is:

Total Project Cost (engineering, construction, legal, and administration):	\$ 8,530,000
Annual Cost (capital recover, operations, and maintenance):	\$ 447,000
Cost per acre-foot of water delivered:	\$ 2,920

Carollo Engineers attended the January 2016 Board meeting, and gave a presentation on the Study's scope, findings, and recommended project. Due to the high unit cost of the recommended project and the lower cost for other potable water supply alternatives, MMWD decided to not pursue it. The recommended project was included in the MMWD 2040 Master Supply Masterplan.

Title 22 Truck Fill Program: In May 2015, Kennedy/Jenks submitted the Title 22 Engineering Report for the MMWD-CMSA Recycled Water Truck Program. On August 20, 2015, the State Water Resources Control Board (SWRCB) sent MMWD and CMSA the official letter accepting the proposal for a recycled water truck program and approving the truck fill station design drawings. Construction of the truck fill station commenced in early October 2015, and was completed in December 2015. The total cost to implement the truck filling program was approximately \$73,400, and included CMSA's share of the Title 22 report and facility design, the staff expenses associated with implementing the recycled water testing program to demonstrate it meets Title 22 – Secondary 23 requirements, and various CMSA engineering and administrative costs. See Attachment #3 for the authorized uses of Tertiary, Secondary 2.2, Secondary 23, and undisinfected secondary wastewater. A photo of the truck filling station is below.



CMSA Recycled Water Truck Filling Station

Recycled Water Rights: During Board discussions on the Study and truck filling project, Board members asked if CMSA can establish the selling price for recycled water and distribute it to users and businesses in the service area. Staff noted the Board questions and subsequently engaged a water rights attorney, Mr. Alan Lilly, to answer the Board's and related water rights questions. Mr. Lilly prepared an opinion letter that was shared with the Board and its key findings were presented at the June 2016 Board meeting.

Mr. Lilly's opinion was based on the Los Angeles County Superior Court final judgement in a case between the Los Angeles County Sanitation District and the San Gabriel Water Company. In short, CMSA is the owner and has water rights to its influent wastewater, the treatment plant's final effluent, and recycled water produced by the Agency. However, MMWD, as the water supplier for the CMSA service area, has the right and authority to distribute the recycled water. If CMSA were to distribute the recycled water without MMWD's approval, the Agency would violate the Service Duplication Act and be liable to MMWD for the value of the potable water it didn't sell due to CMSA's distribution of recycled water and other potential costs.

In a letter dated May 26, 2016, Krishna Kumar, MMWD's General Manager approved CMSA delivering recycled water from the truck fill station to trucks permitted to use Secondary 23 recycled water in the MMWD service area.

**Background:** Historically, CMSA treats approximately 11 million gallons of wastewater per day, with the majority of it being discharged into San Francisco Bay. In FY 15-16, the Agency treated 2.85 billion gallons of wastewater to secondary treatment standards, and recycled approximately 416.6 million gallons (14.6%) for internal and limited external uses. Internal uses include landscape irrigation, cogeneration engine cooling, facility washdown, and chemical mixing and transport. Externally, the Agency provides advanced secondary treated water (Title 22 -Secondary 23) to the Remillard Pond in Larkspur several weeks during the summer months, to maintain the water elevation in the pond to protect an endangered turtle species.

From the late 1980s through the mid-1990s, MMWD and CMSA discussed using CMSA's treated effluent several times, with the conclusions being either: 1) the recycled water was "too salty" for most uses in the MMWD service area, or 2) installing the recycled water transport and delivery infrastructure was cost prohibitive, as compared to MMWD procuring additional potable water from the Sonoma County Water Agency or desalting S.F. Bay water. Recycled water discussions were reinitiated in 2013 during the major drought in California and after the Governor's executive order for a voluntary then later a mandatory 25% water conservation requirement throughout the state.

In April 2014, MMWD and CMSA executed a Memorandum of Understanding to jointly share the costs to prepare a Recycled Water Feasibility Study and a Recycled Water Title 22 Engineering Report for a truck filling program, to determine the feasibility of providing recycled water from CMSA to properties within the MMWD service area. MMWD was the lead agency for both recycled water projects, and in collaboration with CMSA, selected and hired Carollo Engineers to prepare the Study and Kennedy/Jenks Consultants to prepare the Title 22

Engineering Report. MMWD applied for and received a State Water Resources Control Board Water Recycling Funding Program grant for the Study in November 2014, which provided a 50% matching grant for the Study's cost. The cost of the Study was \$150,000.

The photo below shows the Agency's existing recycled water facilities, which includes pumps, strainers, flow meters, surge tanks, disinfection feed lines and flow meters.



CMSA Recycled Water Facility

**Attachments:**

- 1) Secondary 23 Recycled Water Truck Program letter from the State Water Resources Control Board, Dated August 20, 2015
- 2) Recycled Water Truck Filling Station letter from the Marin Municipal Water District, dated May 26, 2016
- 3) Recycled Water Uses in California from the Title 22: California Code of Regulations, Chapter 3, Water Recycling Criteria

EDUARDO G. BROWN JR.  
GOVERNORMATTHEW RODRIGUEZ  
SECRETARY FOR  
ENVIRONMENTAL PROTECTION**State Water Resources Control Board**

Division of Drinking Water

20 August 2015

Paul Sellier, P.E.  
Marin Municipal Water District  
220 Nellen Avenue  
Corte Madera, CA 94925

**MARIN MUNICIPAL WATER DISTRICT - CENTRAL MARIN SANITATION AGENCY  
SECONDARY-23 RECYCLED WATER TRUCK PROGRAM – REVIEW OF RECYCLED WATER  
TRUCK FILL STATION DRAWING (2190002-732)**

Dear Mr. Sellier,

This letter transmits Division of Drinking Water's (DDW) acceptance for Marin Municipal Water District (MMWD) Central Marin Sanitation Agency (CMSA) proposal to expand its Recycled Water Truck Program (RWTP) for the delivery of disinfected secondary-23 recycled water via tanker trucks for non-potable uses, including sewer flushing, street cleaning, and dust control.

MMWD submitted Title 22 Engineering Report for MMWD-CMSA Recycled Water Truck Program (Report) dated May 2015. MMWD has addressed and incorporated DDW review comments for the Report as of June 23, 2015. DDW complete review and acceptance of the Report was contingent on submittal and acceptance of truck fill station drawings. MMWD-CMSA Recycled Water Truck Fill Station Drawings (Drawings) was submitted August 5, 2015. DDW has reviewed the Drawings and found the submittals for the RWTP acceptable.

1. DDW recommends MMWD User Guidelines for the RWTP described in Report section 5.3.2 Distributor requires tanker trucks to be equipped with an air gap to prevent backflow into its recycled water system.
2. MMWD shall incorporate changes described below to MMWD's truck fill station drawings and/or specifications prior to starting the Program:
  - a) Recycled water piping installed above and below ground shall be colored purple or distinctively wrapped with purple tape or pipe marker.
  - b) Provide signage at the recycled water truck fill station per Title 22 section 60310 (g) visible to the public, in a size no less than 4 inches high by 8 inches wide, that include the following wording "RECYCLED WATER – DO NOT DRINK." Each sign shall also display an international symbol similar to that shown in Title 22 figure 60310-A.

If you have any questions regarding this letter, please contact me at (619) 525-4022 or [Randy.Barnard@waterboards.ca.gov](mailto:Randy.Barnard@waterboards.ca.gov) or Sherly Rosilela at (916) 341-5578 or [Sherly.Rosilela@waterboards.ca.gov](mailto:Sherly.Rosilela@waterboards.ca.gov).

FELICIA MARCUS, CHAIR | THOMAS HOWARD, EXECUTIVE DIRECTOR

1350 Front Street, Room 2050, San Diego, CA 92101 | [www.waterboards.ca.gov](http://www.waterboards.ca.gov)

Paul Sellier, P.E.  
Marin Municipal Water District

- 2 -

20 August 2015

Sincerely,

A handwritten signature in black ink, appearing to read "Randy Barnard", written over a horizontal line.

Randy Barnard, P.E.  
Recycled Water Unit Chief  
Recycled Water Unit  
Division of Drinking Water  
State Water Resources Control Board  
1350 Front St., Rm. 2050  
San Diego, CA 92101

Cc: Blair Allen, San Francisco Bay RWQCB  
Janice Thomas, DDW – Sonoma  
Recycled Water Unit Project File



# MARIN MUNICIPAL WATER DISTRICT

220 Nellen Avenue Corte Madera CA 94925-1169  
www.marinwater.org

May 26, 2016  
MA 5280

Jason Dow  
General Manager  
Central Marin Sanitation Agency  
1301 Anderson Drive  
San Rafael, CA 94901

RE: Central Marin Sanitation Agency's (CMSA) Recycled Water Truck Filling Station

Dear Mr. Dow:

Our recent collaboration has resulted in the construction of a fully permitted secondary 23 recycled water truck fill station that can serve as a source of recycled water for sewer main flushing, dust control and other permitted uses in MMWD's service area. As you know, recycled water provided in support of this program will be provided under MMWD's Master Water Recycling permit. Further, trucks that receive recycled water at CMSA under this program must be individually permitted by MMWD. As part of this permitting process, MMWD will train drivers on acceptable uses of the water and inspect the trucks for regulatory compliance. MMWD may also inspect the areas where the recycled water is used.

This letter serves as your approval to provide recycled water from your truck fill station to trucks permitted by MMWD to use recycled water under this program. We greatly appreciate CMSA's cooperation and collaboration on this program.

Sincerely,

A handwritten signature in black ink, appearing to read "Krishna Kumar".

Krishna Kumar  
General Manager

PS:mp

## Recycled Water Uses Allowed<sup>1</sup> in California

Use of Recycled Water	Treatment Level			
	Disinfected Tertiary Recycled Water	Disinfected Secondary – 2.2 Recycled Water	Disinfected Secondary – 23 Recycled Water	Undisinfected Secondary Recycled Water
<i>Irrigation of:</i>				
Food crops where recycled water contacts the edible portion of the crop, including all root crops	Allowed	Not Allowed	Not Allowed	Not Allowed
Parks and playgrounds	Allowed	Not Allowed	Not Allowed	Not Allowed
School yards	Allowed	Not Allowed	Not Allowed	Not Allowed
Residential landscaping	Allowed	Not Allowed	Not Allowed	Not Allowed
Unrestricted-access golf courses	Allowed	Not Allowed	Not Allowed	Not Allowed
Any other irrigation uses not prohibited by other provisions of the California Code of Regulations	Allowed	Not Allowed	Not Allowed	Not Allowed
Food crops, surface-irrigated, above-ground edible portion, and not contacted by recycled water	Allowed	Allowed	Not Allowed	Not Allowed
Cemeteries	Allowed	Allowed	Allowed	Not Allowed
Freeway landscaping	Allowed	Allowed	Allowed	Not Allowed
Restricted-access golf courses	Allowed	Allowed	Allowed	Not Allowed
Ornamental nursery stock and sod farms with unrestricted public access	Allowed	Allowed	Allowed	Not Allowed
Pasture for milk animals for human consumption	Allowed	Allowed	Allowed	Not Allowed
Non-edible vegetation with access control to prevent use as a park, playground or school yard	Allowed	Allowed	Allowed	Not Allowed
Orchards with no contact between edible portion and recycled water	Allowed	Allowed	Not Allowed <sup>2</sup>	Not Allowed <sup>2</sup>
Vineyards with no contact between edible portion and recycled water	Allowed	Allowed	Not Allowed <sup>2</sup>	Not Allowed <sup>2</sup>
Non food-bearing trees, including Christmas trees not irrigated less than 14 days before harvest	Allowed	Allowed	Allowed	Allowed
Fodder and fiber crops and pasture for animals not producing milk for human consumption	Allowed	Allowed	Allowed	Allowed
Seed crops not eaten by humans	Allowed	Allowed	Allowed	Allowed
Food crops undergoing commercial pathogen-destroying processing before consumption by humans	Allowed	Allowed	Allowed	Allowed
Ornamental nursery stock, sod farms not irrigated less than 14 day before harvest	Allowed	Allowed	Allowed	Allowed
<i>Supply for Impoundment:</i>				
Non-restricted recreational impoundments, with supplemental monitoring for pathogenic organisms	Allowed <sup>3</sup>	Not Allowed	Not Allowed	Not Allowed
Restricted recreational impoundments and publicly-accessible fish hatcheries	Allowed	Allowed	Not Allowed	Not Allowed
Landscape impoundments without decorative fountains	Allowed	Allowed	Allowed	Not Allowed
<i>Supply for cooling or air conditioning:</i>				
Industrial or commercial cooling or air conditioning involving cooling tower, evaporative condenser, or spraying that creates a mist	Allowed <sup>4</sup>	Not Allowed	Not Allowed	Not Allowed
Industrial or commercial cooling or air conditioning not involving cooling tower, evaporative condenser, or spraying that creates a mist	Allowed	Allowed	Allowed	Not Allowed

## Recycled Water Uses Allowed<sup>1</sup> in California (continued)

Use of Recycled Water	Treatment Level			
	Disinfected Tertiary Recycled Water	Disinfected Secondary – 2.2 Recycled Water	Disinfected Secondary – 2.3 Recycled Water	Undisinfected Secondary Recycled Water
<i>Other uses:</i>				
Groundwater recharge	<b>Allowed</b> under special case-by-case permits by RWQCBs <sup>5</sup>			
Flushing toilets and urinals	<b>Allowed</b>	<b>Not Allowed</b>	<b>Not Allowed</b>	<b>Not Allowed</b>
Priming drain-traps	<b>Allowed</b>	<b>Not Allowed</b>	<b>Not Allowed</b>	<b>Not Allowed</b>
Industrial process water that may contact workers	<b>Allowed</b>	<b>Not Allowed</b>	<b>Not Allowed</b>	<b>Not Allowed</b>
Structural fire fighting	<b>Allowed</b>	<b>Not Allowed</b>	<b>Not Allowed</b>	<b>Not Allowed</b>
Decorative fountains	<b>Allowed</b>	<b>Not Allowed</b>	<b>Not Allowed</b>	<b>Not Allowed</b>
Commercial laundries	<b>Allowed</b>	<b>Not Allowed</b>	<b>Not Allowed</b>	<b>Not Allowed</b>
Consolidation of backfill material around potable water pipelines	<b>Allowed</b>	<b>Not Allowed</b>	<b>Not Allowed</b>	<b>Not Allowed</b>
Artificial snow making for commercial outdoor uses	<b>Allowed</b>	<b>Not Allowed</b>	<b>Not Allowed</b>	<b>Not Allowed</b>
Commercial car washes, not heating the water, excluding the general public from washing process	<b>Allowed</b>	<b>Not Allowed</b>	<b>Not Allowed</b>	<b>Not Allowed</b>
Industrial process water that will not come into contact with workers	<b>Allowed</b>	<b>Allowed</b>	<b>Allowed</b>	<b>Not Allowed</b>
Industrial boiler feedwater	<b>Allowed</b>	<b>Allowed</b>	<b>Allowed</b>	<b>Not Allowed</b>
Non-structural fire fighting	<b>Allowed</b>	<b>Allowed</b>	<b>Allowed</b>	<b>Not Allowed</b>
Backfill consolidation around non-potable piping	<b>Allowed</b>	<b>Allowed</b>	<b>Allowed</b>	<b>Not Allowed</b>
Soil compaction	<b>Allowed</b>	<b>Allowed</b>	<b>Allowed</b>	<b>Not Allowed</b>
Mixing concrete	<b>Allowed</b>	<b>Allowed</b>	<b>Allowed</b>	<b>Not Allowed</b>
Dust control on roads and streets	<b>Allowed</b>	<b>Allowed</b>	<b>Allowed</b>	<b>Not Allowed</b>
Cleaning roads, sidewalks, and outdoor work areas	<b>Allowed</b>	<b>Allowed</b>	<b>Allowed</b>	<b>Not Allowed</b>
Flushing sanitary sewers	<b>Allowed</b>	<b>Allowed</b>	<b>Allowed</b>	<b>Allowed</b>

This summary is prepared from the December 2, 2000-adopted Title 22 Water Recycling Criteria and supersedes all earlier versions. Prepared by Bahman Sheikh and edited by EBMUD Office of Water Recycling, who acknowledge this is a summary and not the formal version of the regulations referenced above.

<sup>1</sup> Refer to the full text of the December 2, 2000 version of Title 22: California Code of Regulations, Chapter 3 Water Recycling Criteria. This chart is only an informal summary of the uses allowed in this version, with the exception of orchards and vineyards noted as "Not Allowed<sup>2</sup>" on page 1 and explained below.

<sup>2</sup> Per California Department of Public Health letter of January 8, 2003 to California Regional Water Quality Control Boards.

<sup>3</sup> Allowed with "conventional tertiary treatment." Additional monitoring for two years or more is necessary with direct filtration.

<sup>4</sup> Drift eliminators and/or biocides are required if public or employees can be exposed to mist.

<sup>5</sup> Refer to Groundwater Recharge Guidelines, available from the California Department of Public Health.





**BOARD MEMORANDUM**

April 6, 2017

**To:** CMSA Commissioners and Alternates  
**From:** Jason Dow, General Manager *JD*  
**Subject:** **Denmark Wastewater Fact-Finding Trip Presentation**

**Recommendation:** Informational, provide comments or direction to the General Manager, as appropriate.

**Summary:** Last year I attended a presentation in San Francisco by the Danish Water Technology Alliance (WTA) and the San Francisco Public Utilities Commission (SFPUC), where both organizations gave presentations of their respective water and wastewater businesses, regulations, projects, and challenges. Subsequent to that event, two WTA representatives, Pia Jacobsen and Flemming Moller, visited CMSA to tour our facilities, discuss Agency operations, and present several innovative programs used at their water/wastewater utilities in Denmark. During that meeting, they explained that the WTA is a partnership of the Danish government, municipal utilities, and private corporations who are sponsoring a multi-year Danish fact-finding and information sharing program in the United States. WTA's program began in Illinois, where their representatives spent two years visiting utilities and sharing information, and have now moved to Palo Alto where they will spend two years.

In late January, Ms. Jacobsen sent me an invitation to a wastewater fact-finding trip to Denmark, with nearly all expenses paid by the WTA. Chris Finton, the Agency's Treatment Plant Manager, and I joined a group of fourteen wastewater professionals from Illinois, Indiana, and California on the trip, which was from March 4 – March 10. From California, there were representatives from CASA, East Bay MUD, SFPUC, Central Contra Costa Sanitary District, Inland Empire Utilities Agency, Victor Valley Wastewater Authority, and RMC Engineering.

For five days, the fact-finding group visited wastewater treatment plants, toured water and wastewater equipment manufacturing facilities, met with representatives from the Danish Water & Wastewater Association and Environmental Protection Agency, and received presentations on many interesting topics such as Denmark's environmental programs, utility energy efficiency initiatives, and wastewater operations and process control. Chris and I were very impressed by the Danish focus on environmental protection and their hospitality. At the April Board meeting, we will give a brief presentation of the trip highlights.

**Attachments:**

- Program for Fact Finding Tour
- Attendee List and Profiles



## Program for Fact Finding Tour US Wastewater Delegation March 6th – 10th, 2017

-- Subject to changes --

### Saturday, March 4th

- **Departure from the US**  
Delegation consists of Illinois, Indiana & California based water professionals.

### Sunday, March 5th

**Pick-up Airport**      **Arrival at Billund Airport**

**2:15 p.m.** (Denmark is 7 hours ahead of Chicago, 9 hours ahead of California)  
Flemming

+1 312-208-2980  
+45 2920 8722

**Check-in at Scandic Hotel in Aarhus City**

Scandic Aarhus City,  
Østergade 10, 8000 Aarhus C  
Tel: 89 31 81 00

**4:15 p.m.**

Pia  
+1 650-720-2588

**6:00 p.m.**

**Meet in hotel lobby**  
Dinner at Café Faust at 6:30 p.m.

Åboulevarden 38, 8000 Aarhus C  
Tel: 86 19 07 06  
<http://cafefaust.dk>

### Monday, March 6th

**7:50 a.m.**

**Meet in hotel lobby**  
Departure from hotel, transportation to Marselisborg WWTP

**8:15 a.m.**

**Welcome to Aarhus Water**  
Flemming Bomholt Møller

**State of Green**  
Join the Future. Think Denmark

**8:30 a.m.**

**Presentation of the Danish transition to a green economy** by Ditte Lyng Rosenquist, State of Green



**10:15 a.m.**

**Marselisborg the Energy producing WWTP** by Flemming Husum  
- Energy Savings and Better Utilization of the Plant  
- Energy production, Carbon Footprint & Sustainability  
- Annamox process

Marselisborg WWTP  
Sumatravej 4  
8000 Aarhus C

**11:00 a.m.**

Lunch at Marselisborg

**11:45 a.m.**

**Tour of Marselisborg WWTP**  
by Flemming Husum

- owned and operated by Aarhus Water. The plant is optimized to deliver 200% plus of energy used back to the grid. The Plant Operator will discuss measurements taken to reach this result.

1:30 p.m. **Presentations of DHI solutions**  
by Mikkel Holmen Andersen DHI

**Optimization of the treatment processes and energy consumption at Marselisborg WWTP through the use of advanced controls**

- Biological processes
- Return Sludge Control
- Fall-back strategy
- Data Validation

3:30 p.m. Departure for hotel

5:30 p.m. **Meet in hotel lobby**  
Dinner at **Teater Bodegaen** at 6:00 p.m.

Teater Bodega, Skolegade 7, 8000  
Aarhus C - Tel. 86 12 19 17  
<http://teaterbodega.dk/>

**Tuesday, March 7th**

7:20 a.m. **Meet in hotel lobby**  
Departure from Hotel transportation to Vandcenter Syd,  
Odense

9:30 a.m. **Visit to Vandcenter Syd.**  
Presentation of VCS, present and future projects  
Presentations on  
- CO2 Reductions  
- Annamox



Vandcenter Syd  
Sct. Jørgens Gade 213  
5000 Odense C

10:30 a.m. Tour of Ejby Mølle WWTP

12:00 p.m. Lunch

1:00 p.m. **Regulatory drivers and framework for the Danish WWTPs** by Mikkel Hall, The Danish Environmental Protection Agency

2:00 p.m. Roundtable discussions on international co-operation, VCS sustainable utility, CO2 Reductions

4:00 p.m. Departure for Hotel

6:30 p.m. **Meet in hotel lobby**  
Dinner at **Spiselaugget** at 7:00 p.m.

Skovgaardsgade 3, 8000 Aarhus C  
Tel: 31 41 20 22  
<http://www.spiselaugget.dk/>

**Wednesday, March 8th**

7:30 a.m. **Meet in hotel lobby (Track 1)**  
Departure from Hotel

7:50 a.m. **Meet in hotel lobby (Track 2)**  
Departure from Hotel

**How Danish technology providers push the limits on energy neutrality in wastewater treatment**

- Energy Efficiency measures
- Accelerating the Danish Water sector in partnerships

**Track 1:** Site visits Danfoss, Applied Biomimetic, LINAK visits

**Track 2:** Site visits Landia & Grundfos

3:30 p.m. Departure for Hotel ( Track 1 )  
 4:30 p.m. Departure for Hotel ( Track 2 )  
 5:30 p.m. **Meet in hotel lobby**  
 Dinner at **Restaurant Pihlkjær** at 6:00 p.m.

Mejlgade 28, Baghuset, 8000 Aarhus C  
 Tlf: 86 18 23 30  
[www.Pihlkjaer-restaurant.dk](http://www.Pihlkjaer-restaurant.dk)

**Thursday, March 9th**

07:45 a.m. **Meet in hotel lobby**  
 Departure from hotel, transportation to DANVA (Danish Water & Wastewater Association)

08:30 a.m. **Welcome to DANVA** by Helle Katrine Andersen, Head of Department

**Presentation of Aarhus Water's journey towards carbon and energy neutrality.**  
 Claus Homann, COO

9:30 p.m. **Presentation by US participants**  
 - Presentation of your plant  
 - What are the challenges you face?  
 - Your visions for the future

12:00 p.m. **Lunch**

12:45 p.m. **Presentation of results achieved in the US with Glenbard Wastewater Authority**  
 Torben Ottosen/ Peter Andreasen, DHI

**Group work** - Brainstorming on potentials and solutions for the American WWTPs in collaboration with the WTA partners

*WTA technology alliance members will participate throughout the day*

3.30 p.m. Visit Nissen Energiteknik - Efficient Energy Production

4.30 p.m. Departure for hotel

6:00 p.m. **Meet in hotel lobby**  
 Dinner at **Flammen** at 18:30 p.m.



DANVA  
 Godthåbsvej 83  
 8660 Skanderborg



aarhusvand



Nissen Energiteknik, Godthåbsvej 1  
 8660 Skanderborg

Toldbodgade 8, 8000 Aarhus C  
 Tel:35 26 63 64  
[Restaurant-flammen.dk](http://Restaurant-flammen.dk)

**Friday, March 10th**

7:30 a.m. Check-out of hotel and departure from the hotel

8:00 a.m. **Wrap-up at DHI in Aarhus**  
 - Main conclusions from the week  
 - WTA / Utilities Collaboration Next Steps  
 - Farewell

DHI Group Aarhus  
 Finlandsgade 10  
 8200 Aarhus N

10:30 a.m. **Transportation to Billund airport**  
 Departure from Billund  
 SK2498 13.15 - KL1346 14.10- AF1265 15.00



## Delegation Participants

### Water Technology Alliance, Trade Council of Denmark

- Flemming B. Møller, Senior Technical Advisor [flemol@um.dk](mailto:flemol@um.dk), US Cell +1 312-208-2980, DK Cell: +45 2920 8722
- Pia Jacobsen, Senior Technical Advisor [piajac@um.dk](mailto:piajac@um.dk) +1 650-720-2588

### US Attendees

- See previous forwarded list for overview

### Please note:

- Dress code is business casual. And, don't forget to bring your safety shoes for visiting the WWTPs
- You will need to check with your credit card company and secure a 4-digit security code for your credit card.
- Your passport must have an expiration date no earlier than 6 months after returning to the US

## Facts about Denmark

### Geography

- Geographic region: Scandinavia
- Time zone: European (GMT + 1)
- Climate: Temperate, humid and overcast, mild, windy winters and cool summers
- Area: 42.916 square kilometres
- Capital, population: Copenhagen 731.187 (2014)
- Other major cities: Aarhus 256.018, Odense 170.327, Aalborg 106.916 (2013)

### Demography

- Population: 5.627.235 (2014)
- Population density: 130,5 pr. square kilometre (2014)
- Ethnic distribution: 5.026.561 Danes. Immigrants and their descendants constitute 600.674 (2014)
- Life expectancy: Women 81,9 years, men 78,0 (2013)
- Language: Danish

- Religion: Evangelical Lutheran (95%), other Christian – includes Protestant and Roman Catholic (3%), Muslim (2%)

### **Economy**

- Currency: Danish Kroner, DKK. 1 Krone = 100 Ører (6,7 DKK = 1 USD, 2016), (7.46 DKK = 1 Euro, 2016)
- Gross domestic product: DKK 1,921.5 billion (2014)
- GDP pr. inhabitant: 340,500 DKK (2014)

### **Government**

- Since 28 June 2015, the present Government has consisted of the Liberal Party of Denmark (minority government)
- Prime Minister: Lars Løkke Rasmussen from the Liberal Party of Denmark (Venstre)
- Member of: UN, OECD, EU, Nato, Schengen, OSCE, IMF, WTO and others
- Form of state: Constitutional monarchy
- Head of state: Queen Margrethe II (since 14 January 1972)

More information on Denmark and the Danish energy story can be found at

<http://stateofgreen.com/en/pages/facts-about-denmark>



## List of Attendees

Name	Organization	Title	Contact
Alexandre Moit	San Francisco Public Utility Commission (SFPUC)	Associate Process Engineer	<a href="mailto:AMiot@sfwater.org">AMiot@sfwater.org</a>
Karri Ving	San Francisco Public Utility Commission (SFPUC)	Resource Recovery and Pollution Prevention Manager	<a href="mailto:KVing@sfwater.org">KVing@sfwater.org</a> +1 415 676 1890 +1 415 235 6049
Bobbi Larson	CASA	Executive Director	<a href="mailto:blarson@casaweb.org">blarson@casaweb.org</a>
Logan Olds	Victor Valley Wastewater	General Manager	<a href="mailto:lolds@vwwra.com">lolds@vwwra.com</a>
Vince De Lange	EBMUD	Manager of Wastewater Engineering	<a href="mailto:vincent.delange@ebmud.com">vincent.delange@ebmud.com</a> +1 510 551 8346
Tom Glendenning	City of Freeport	Executive Director of Utility Operations	<a href="mailto:tglendenning@cityoffreeport.org">tglendenning@cityoffreeport.org</a>
Jason Dow	Central Marin Sanitation Agency	General Manager	<a href="mailto:jdow@cmsa.us">jdow@cmsa.us</a> +1 415 246 2268
Chris Finton	Central Marin Sanitation Agency	Treatment Plant Manager	<a href="mailto:cfinton@cmsa.us">cfinton@cmsa.us</a>
Scott Goldman	RMC, a Woodard & Curran Company	Senior Environmental Engineer	<a href="mailto:sgoldman@woodardcurran.com">sgoldman@woodardcurran.com</a> +1 714 292 6488
Sandy Bernard	American Bottoms	Process Engineer	<a href="mailto:SandyB@americanbottoms.com">SandyB@americanbottoms.com</a>
Chris Berch	Inland Empire Utilities Agency	Executive Manager of Engineering and Planning	<a href="mailto:cberch@ieua.org">cberch@ieua.org</a> +1 909-732-1844
Randy Lee	Inland Empire Utilities Agency	Executive Manager of Operations and Maintenance	<a href="mailto:rlee@ieua.org">rlee@ieua.org</a>
Gary Ruston	Wessler Engineering, Inc.	P.E., BCEE   Senior Project Manager	<a href="mailto:GaryR@wesslerengineering.com">GaryR@wesslerengineering.com</a>
David Henderson	West Lafayette Wastewater Treatment Plant	Utility Director	<a href="mailto:dhenderson@westlafayette.in.gov">dhenderson@westlafayette.in.gov</a>
Jean Marc Petit	Central Contra Costa Sanitary District	Director of Engineering and Technical Services	<a href="mailto:jmpetit@centralsan.org">jmpetit@centralsan.org</a>
Ed McCormick	Ed McCormick Consulting, LLC	Consultant	<a href="mailto:edmccormick1@icloud.com">edmccormick1@icloud.com</a>



Name:  
**Alexandre Miot**

Utility/Agency name:  
**San Francisco Public Utility Commission (SFPUC)**  
<http://www.sfwater.org/>

Title:  
**Associate Process Engineer**

What are my main interests and desired take away(s) of the trip?

- To learn how Danes have been able to successfully transition wastewater treatment plants into efficient resource recovery facilities.
- To learn how innovative process monitoring and control methods are contributing to a successful transition.
- To observe and learn about equipment and processes that have been implemented to maximize system efficiency.
- To visit Danish facilities and observe how systems are designed, operated and maintained.
- To taste Danish cuisine and bring some home 😊





Name:  
**Karri Ving**

Utility/Agency name:  
**San Francisco Public Utility Commission (SFPUC)**  
<http://www.sfwater.org/>

Title:  
**Resource Recovery and Pollution Prevention Manager**

What are my main interests and desired take away(s) of the trip?

- To learn how Danes define and describe the role of government
- To better understand how Danish cities and towns set GHG reduction goals and are accountable to them
- To learn how Danish cities manage their urban organics including food, water, yard material and biosolids. Specifically:
  - Food and green waste value chain
  - Recycling biosolids to soil
  - Direct potable reuse
- To learn of successful strategies developed to import less energy, fuel, and materials, and export less waste
- To embrace hygge



Name:  
**Bobbi Larson**

Utility/Agency name:  
**CASA**  
<http://casaweb.org/>

Title:  
**Executive Director**

What are my main interests and desired take away(s) of the trip?

I am very interested to learn about how Denmark utilities and companies are advancing the utility of the future and addressing climate change. I hope to see innovative technologies and practices that can inform our efforts in California.

I would like to learn more about the Danish regulatory system and whether it is viewed as a barrier or facilitator of innovation, and also how economic growth and environmental protection are balanced and integrated.

I also hope to meet some colleagues with whom I can continue dialogue and information sharing.



Name:  
**Logan Olds**

Utility/Agency name:  
**Victor Valley Wastewater Reclamation Authority**  
<http://vwwra.com/>

Title:  
**General Manager**

What are my main interests and desired take away(s) of the trip?

1. The economic analysis of monetizing the waste conversion process to maximize return on investment.
2. An understanding of the technologies used to produce electrical power.
3. A review of the programs used to generate beneficial uses from wastewater treatment.
4. An understanding of the motivating factors which lead to monetizing the by products of waste treatment in Denmark.



Name:  
**Vince De Lange**

Utility/Agency name:  
**Easy Bay Municipal Utility District**  
[www.ebmud.com](http://www.ebmud.com)

Title:  
**Manager of Wastewater Engineering**

What are my main interests and desired take away(s) of the trip?

- Biogas utilization – alternatives considered, main criteria driving decisions to pursue co-generation, gas pipeline injection, CNG production
- Sidestream treatment: Anammox – key challenges, O&M reliability issues; understanding of emerging technologies and timing for future implementation
- Innovative energy conservation methods at wastewater facilities
- Understanding of regulatory environment alignment for water, air, and land regulation (e.g., are process upgrades and energy demands at odds with CO<sub>2</sub>/GHG emissions limits); approaches to achieving alignment when dealing with regulatory silos and administrative burden/government bureaucracy
- Key financial and regulatory drivers (and relationship to technological innovation)
- Public-private partnership models and fair allocation of financial, technology risks



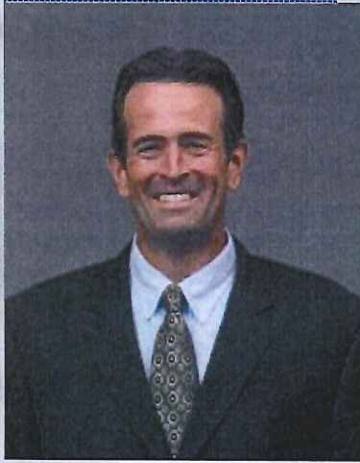
Name:  
**Tom Glendenning**

Utility/Agency name:  
**City of Freeport Water & Sewer Commission**  
[http://www.ci.freeport.il.us/departments/water\\_sewer.htm](http://www.ci.freeport.il.us/departments/water_sewer.htm)

Title:  
**Executive Director of Utility Operations**

**What are my main interests and desired take away(s) of the trip?**

- Intrigued with Process Control and Operations of all unit processes while obtaining such high energy savings.
- Long term and short capital maintenance and replacement of specific equipment used in all unit processes.
- **Operations** – Who & How and the technical abilities of personnel in Denmark's WWTP Operations.
- What are the supporting revenues of the Wastewater Utility other than energy savings.
- *To get away from my Depreciated Disaster of a Utility and see one that is Efficiently Operated and Maintained!*



Name:  
**Jason Dow**

Utility/Agency name:  
**Central Marin Sanitation Agency**  
<https://www.cmsa.us/>

Title:  
**General Manager**

What are my main interests and desired take away(s) of the trip?

- 1) Gain an understanding of Denmark's wastewater systems from collection to treatment and reuse/discharge.
- 2) Learn about how renewable resources are captured and reused: recycled water production, hot water distribution, nutrient removal, biogas utilization, energy generation, biosolids management, etc.
- 3) Visit facilities to see their equipment and operations.
- 4) Discuss wastewater challenges and opportunities in the US and Denmark – wet weather flow management, new regulations, asset and improvement funding, etc.
- 5) Enjoy the networking, seeing the sites around Aarhus, and trying new foods and drinks.



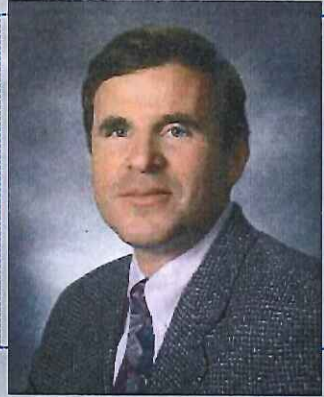
Name:  
**Chris Finton**

Utility/Agency name:  
**Central Marin Sanitation Agency**  
<https://www.cmsa.us/>

Title:  
**Treatment Plant Manager**

What are my main interests and desired take away(s) of the trip?

- Energy Consumption and Optimization
- Energy Production and Delivery Back to the Grid
- Nutrient Resource Recovery
- Marketing Nonpotable Recycled Water
- Making New Friends



Name:  
**Scott Goldman**

Utility/Agency name:  
**RMC, a Woodard & Curran Company**  
<http://www.woodardcurran.com/about>

Also

**South Orange County Wastewater Authority (Board)**  
<https://www.socwa.com/>

Title:  
**Senior Environmental Engineer**

What are my main interests and desired take away(s) of the trip?

- Energy/resource recovery at Wastewater Treatment Plants (WWTPs), especially at smaller facilities
- Automation and controls of WWTPs, reduction in labor requirements
- Air emission requirements and approach to biogas treatment
- Learning about issues or problems with high strength wastewaters due to water conservation
- How is innovation encouraged?





Name:  
**Sandy Bernard**

Utility/Agency name:  
**American Bottoms**

<http://www.americanbottoms.com/about-us/american-bottoms-plant.aspx>

Title:  
**Process Engineer**

What are my main interests and desired take away(s) of the trip?

- Learn more about the Annamox process & see it in action
- Learn more about real time control methods being used
- See DIMS.CORE in use
- Learn more about producing energy



Name:  
**Chris Berch**

Utility/Agency name:  
**Inland Empire Utilities Agency**  
<https://www.ieua.org/>

Title:  
**Executive Manager of Engineering and Planning**

What are my main interests and desired take away(s) of the trip?

1. Understanding of Danish WWTP technologies and program goals
2. Energy management – ability to achieve/target self sustainability
3. Regulatory framework – how it supports/integrates WWTP goals/programs
4. Understand the integration of Danish WWTP and water supplies
5. How IEUA can incorporate Danish thoughts/processes into large upcoming capital program
6. Share IEUA experiences ... both good and bad



Name:  
**Randy Lee**

Utility/Agency name:  
**Inland Empire Utilities Agency**  
<https://www.ieua.org/>

Title:  
**Executive Manager of Operations and Maintenance**

What are my main interests and desired take away(s) of the trip?

My main interests are to understand how Denmark achieved wastewater treatment facility energy neutrality and how Denmark design, operate, and maintain its treatment facilities.



Name:  
**Gary Ruston**

Utility/Agency name:  
**Wessler Engineering, Inc. Indianapolis, Indiana**  
<https://www.wesslerengineering.com/>

Title:  
**P.E., BCEE | Senior Project Manager and WWTP Strategist**

What are my main interests and desired take away(s) of the trip?

- 1) Learn the various methods of process and control being utilized in Denmark to optimize existing WWTP facilities.
- 2) Learn the means and methods being utilized to reduce energy usage.
- 3) Utilize the knowledge gained on this trip to apply to projects for our clients.



Name:  
**David Henderson**

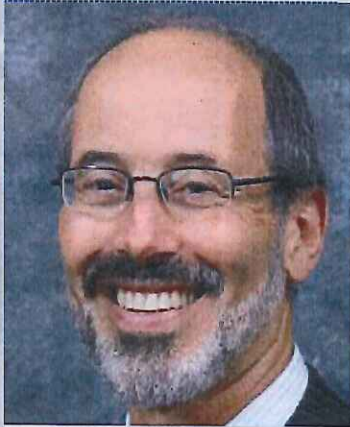
Utility/Agency name:  
**West Lafayette Wastewater Treatment Plant**  
<http://www.westlafayette.in.gov/wwtu/>

Title:  
**Utility Director**

What are my main interests and desired take away(s) of the trip?

Real world application of optimizing wastewater treatment to become energy neutral.

I would like to observe best practices and technologies that can be applied to my plant.



Name:

**Ed McCormick**

Organization name:

**McCormick Strategic Water Management, LLC**

*(previous: 1) Union Sanitary District; 2) East Bay Municipal Utility District)*

Title:

**President**

*(previous: 1) Assistant General Manager; 2) Manager of WW Engineering)*

### Main Interests

- **Water Resource Recovery – Water & Biosolids Reuse, Energy Recovery/Efficiency**
- **Strategic Planning and Performance Measurement**
- **Community Partnering/Engagement**

### Desired Trip “Takeaways”

- **Gain understanding of qualitative & quantitative Sustainability performance measures at Danish utilities, as well as current state and sector goals for Water Resource Recovery**
- **Learn of successful strategies by Danish utilities for community outreach & media engagement**
- **Establish collaborative relationships for potential future utility & association partnerships**
- **Gain understanding of capital project delivery systems (Design, Construction, Design-Build)**
- **Increase knowledge of Best Practices for Strategic Planning and Operations & Maintenance**
- **Learn about Danish Climate Change regulations & utility planning for mitigation & adaptation**