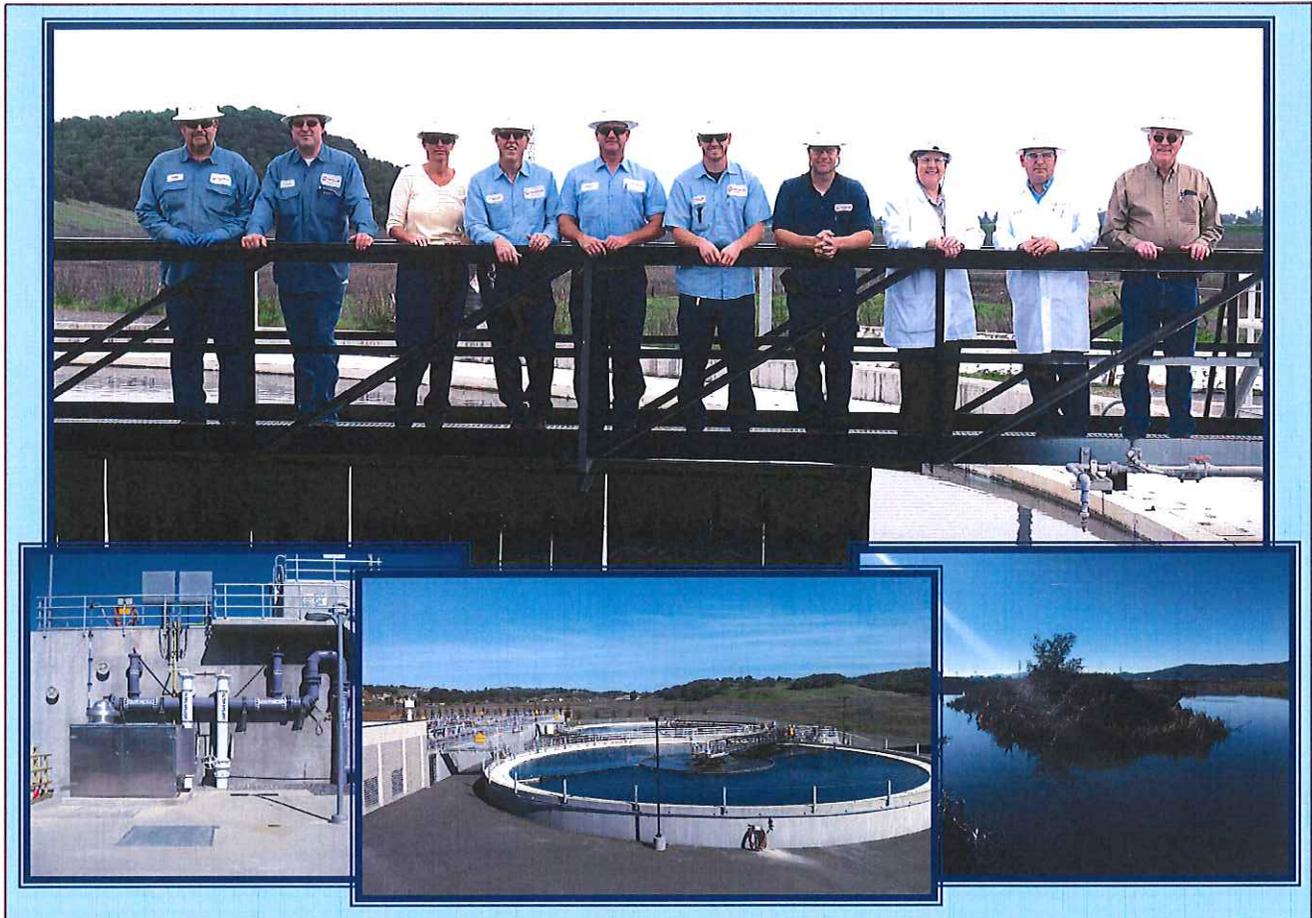


2015 ANNUAL OPERATIONS AND MAINTENANCE REPORT FOR THE NOVATO SANITARY DISTRICT

Prepared by:

Veolia Water Operating Services
March 2016



2015 ANNUAL OPERATIONS AND MAINTENANCE REPORT
Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station

NOVATO WASTEWATER TREATMENT FACILITY
NOVATO SANITARY DISTRICT, CALIFORNIA

Veolia Water West Operating Services, Inc.
500 Davidson Street
Novato, CA 94947

TABLE OF CONTENTS

OVERVIEW	1
PROCESS DESCRIPTION & LOADING SUMMARY	2
Preliminary Treatment - Influent Pump Station and Headworks	2
Flow and Loading Measurement	3
Primary Treatment – Primary Clarifiers	4
Secondary Treatment – Aeration Basins & Secondary Clarifiers	4
Ultra Violet (UV) Disinfection	5
Effluent Disposal – Bay Discharge / Reclamation / Storage	6
PERFORMANCE AND COMPLIANCE SUMMARY	7
Treatment Plant Performance Summary	7
Treatment Plant Compliance Summary	8
ENVIRONMENTAL SERVICES REPORT	10
ASSET MANAGEMENT	13
SAFETY AND TRAINING	21
STAFFING AND ORGANIZATION	24
BUDGET	27
ATTACHMENTS	28
Data and Graphs	28
Place Holder This will be inserted prior to scanning	28
Plant Flow	29
Place Holder This will be inserted prior to scanning	29
BOD (Influent & Effluent)	30
Place Holder This will be inserted prior to scanning	30
Suspended Solids (Influent & Effluent)	31
Place Holder This will be inserted prior to scanning	31
Oil and Grease (Effluent)	32
Place Holder This will be inserted prior to scanning	32
pH (Effluent)	33
Place Holder This will be inserted prior to scanning	33
Temperature (Effluent)	34
Place Holder This will be inserted prior to scanning	34
Community Outreach Activities 2015	35
TITLE 22 – Recycled Water Production Report for 2015	38

2015 ANNUAL OPERATIONS AND MAINTENANCE REPORT

Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station

OVERVIEW

The top priorities for 2015 were to meet the goals of zero lost time incidents or OSHA recordable incidents and no treatment plant effluent violations. This is a year in and year out objective plainly stated and firmly established throughout Veolia Water. A term we apply to this end is "Zero Harm". We are very happy and proud to report that both goals were met. 2015 represents our fourth consecutive year of zero effluent violations and fifth year of zero recordable incidents. We celebrate that success with and offer congratulations to the Novato Sanitary District on its vision and commitment to water quality.

Key areas of focus throughout the year include:

- Safety Training
- Regulatory Compliance
- Third Party Facility Reviews
- Reporting (internal and external)
- Records Keeping and Data Base Management
- No Safety Incidents (recordable, lost time, or medical)
- Participation in Company *Near Miss* Reporting Program (focused on prevention)
- Employee Education and Certification / Professional Advancement
- Community Outreach and Participation
- Transition from Job Cal Plus (CMMS) to Oracle Work Asset Management (OWAM) for Maintenance Tracking, Scheduling, Scheduling, Inventory, and Purchasing.
- Operation, Management, & Oversight of Laboratory and Pretreatment Program.
- Assist in the successful negotiation of the new Discharge (NPDES) Permit.

2015 ANNUAL OPERATIONS AND MAINTENANCE REPORT

Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station

PROCESS DESCRIPTION & LOADING SUMMARY

Wastewater is collected throughout the Novato Sanitary District service area and conveyed by gravity as well as mechanical means (pump stations) to the Davidson Street Treatment Plant.

Preliminary Treatment - Influent Pump Station and Headworks

When the wastewater arrives at the Treatment Plant it is pumped from the Influent Pump Station to the Headworks. The Headworks provides screening of coarse materials and removal of grit which consists of heavy matter such as sand, silt, and gravel.



Top Left – Influent Pump Station

Top Right – Parkson Aqua Guard Screen™

Bottom Left – Grit Conveyance and Pumping

Bottom Right – Screenings Washer / Compactor, Compacted Screenings Being Discharged to Dumpster

2015 ANNUAL OPERATIONS AND MAINTENANCE REPORT

Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station

Flow and Loading Measurement

Flow at the Novato Wastewater Treatment Plant is measured using a Parshall Flume and Hydro Ranger™ ultra sonic level meter in combination. This pairing is considered very reliable and provides a high degree of accuracy.

Composite samples for biochemical oxygen demand (BOD) and total suspended solids (TSS) are collected downstream of screening and grit removal. Composite samples are flow proportioned throughout the sampling period (normally 24 hours). Flow proportioning provides the most representative sample.



Above Left – Hydro Ranger level meter, hourglass shaped plating over Parshall Flume
 Above Right – Hach Model 3540 SDR Composite Sampler

Rated Capacities

DESIGN CRITERIA			
Condition	Value	Unit	Notes
Average Dry Weather Flow	7.0	MGD	
Peak Wet Weather Flow (Max Day)	30.7	MGD	
Max Peak Wet Weather (1-3 Hour)	47.0	MGD	
Average BOD Loading	14,600	Lbs/D	
Average TSS Loading	17,600	Lbs/D	

Actual 2015

2015 FLOWS AND LOADS SUMMARY			
Condition	Value	Unit	Notes
Average Dry Weather Flow	3.25	MGD	Jul / Aug / Sep
Peak Wet Weather Flow (Max Day)	14.22	MGD	2/8/15
Max Peak Wet Weather (1-3 Hour)	~21.00	MGD	2/8/2015, 12:40 pm
Average BOD Loading	8,873	Lbs/D	
Average TSS Loading	10,627	Lbs/D	

Significant Peak Wet Weather Events occurred in February.

2015 ANNUAL OPERATIONS AND MAINTENANCE REPORT

Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station

Primary Treatment – Primary Clarifiers

Primary clarifiers typically remove approximately 60 – 70% of the solids from raw wastewater. Clarifiers are large tanks that slow the flow of water and allow the force of gravity to remove solids. Heavier solids referred to as “sludge” settles to the bottom. Lighter material such as fat, oil, grease and plastic referred to as “scum” rises to the surface. Both sludge and scum are removed from the waste stream and pumped to a digester for additional treatment.



Above Left – Primary Clarifier #2, Superstructure supports the cover.
 Above Right – Sludge and Scum Pumping

PRIMARY CLARIFIERS			
	Value	Unit	Notes
Number	2		
Diameter	100	Ft	Each
Sidewall Depth	12	Ft	Each
Capacity (Volume)	880,770	Gallons	Each
BOD Removal	27	%	2015 Results
TSS Removal	78	%	2015 Results

Novato’s primary clarifiers are covered to contain foul air associated with raw sewage. The foul air is removed and discharged to odor scrubbing biofilters by large fans. Like much of the wastewater process the biofilters are living processes. Various life forms including fungi, worms, and microbial populations convert odorous compounds to other gases, primarily carbon dioxide.

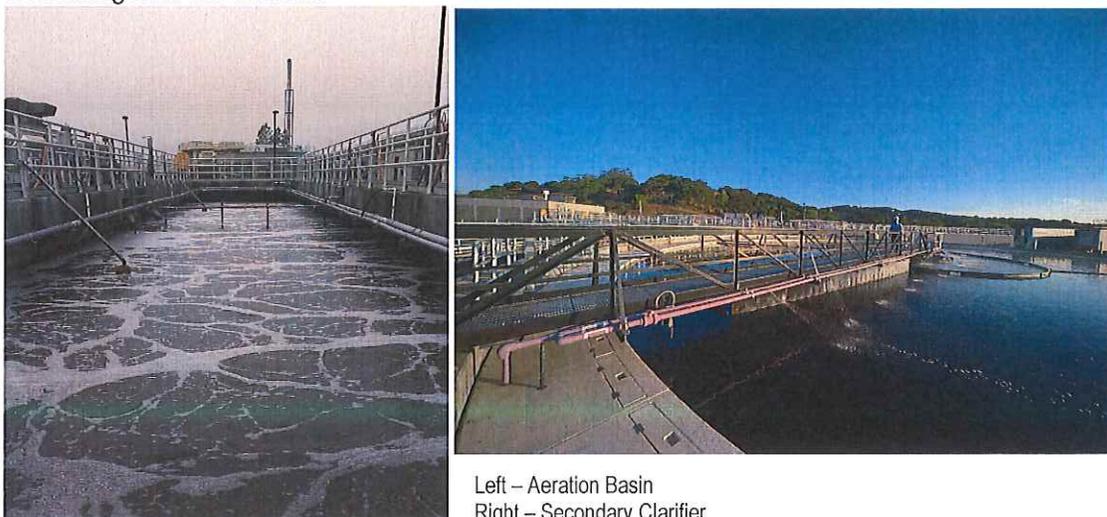
Secondary Treatment – Aeration Basins & Secondary Clarifiers

After screening, grit removal, and primary solids removal, all wastewater receives full secondary treatment. Large rectangular tanks with baffle walls, mechanical mixers, air diffusers, and recirculation pumps make up the aeration basins. The Novato facility was designed with both flexibility and reliability in mind. Four aeration basins, each with a capacity of more than 850,000 gallons provides complete secondary treatment under all flow conditions.

2015 ANNUAL OPERATIONS AND MAINTENANCE REPORT

Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station

Each aeration basin has three anoxic (no dissolved oxygen) zones accounting for almost 25% of the tank volume. The anoxic zones convert nitrate and nitrite to nitrogen gas to reduce the level of total nitrogen in the effluent.



Left – Aeration Basin
Right – Secondary Clarifier

Solids, primarily biological cell mass, are produced during the process of removing dissolved pollutants (BOD) in the aeration basins. A combination of wastewater and bio-mass, known as mixed liquor, typically contains between 1,500 mg/L and 2,500 mg/L (0.15% to 0.25%) of solids. The aeration basins are well mixed and as a result, a continuous stream of solids leaves the aeration basins. Solids are captured in the secondary clarifiers and the majority are returned to the head end of the aeration basins to maintain the proper biomass concentration for treatment. Excess solids are sent to the gravity belt thickener (GBT) where they are concentrated to 4% - 6% solids content and then pumped to a digester for additional treatment. Effluent from the secondary clarifiers is then ready for disinfection.

SECONDARY CLARIFIERS			
	Value	Unit	Notes
Number	2		
Diameter	125	Ft	Each
Sidewall Depth	16	Ft	Each
Capacity (Volume)	1.468	MG	Each

Ultra Violet (UV) Disinfection

Prior to discharge wastewater must be disinfected. Ultra violet light disrupts the DNA of pathogens and other life forms leaving them incapable of reproduction. UV light (unlike other methods of disinfection) uses no chemicals, produces no harmful byproducts (trihalomethanes for example), and leaves no toxic residual.

2015 ANNUAL OPERATIONS AND MAINTENANCE REPORT

Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station



Left – UV Rack Removed for Cleaning
Below – Preparing UV Rack for Removal



Effluent Disposal – Bay Discharge / Reclamation / Storage

Discharge to San Pablo Bay (Bay Discharge), is prohibited beginning June 1st through August 31st. Bay Discharge is permitted (with stringent effluent limits) in the months of May, September and October. Throughout the non-discharge season effluent is either stored for future use, specifically pasture irrigation, or Recycled for a higher use such as golf course irrigation. Recycled water receives added treatment in order to comply with stringent Title 22 regulations. The Performance Summary provides a breakdown of discharge quantities.



2015 ANNUAL OPERATIONS AND MAINTENANCE REPORT
Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station

PERFORMANCE AND COMPLIANCE SUMMARY

Treatment Plant Performance Summary

The following summary provides an overview of plant performance and activities for the period January 1, 2015 through December 31, 2015.

Total Volume of Water Processed	1,397	Million Gallons
Total Volume of Water Reclaimed	623	Million Gallons
Total Volume of Water Discharged	774	Million Gallons
Recycled – Title 22 (included in Water Reclaimed)	95.497	Million Gallons
Average Daily Dry Weather Flow	3.25	MGD
Maximum Daily Flow	14.22	MGD
Pounds of BOD Treated	3,252,423	Lbs
Pounds of BOD Removed	3,152,055	Lbs
Percent BOD Removal Efficiency	97	%
Pounds of TSS Treated	3,816,836	Lbs
Pounds of TSS Removed	3,764,687	Lbs
Percent of TSS Removal Efficiency	99	%
Pounds of Bio-solids Treated	3,796,217	Lbs
Cubic Feet of Biogas Produced	27,218,876	Cu Ft
Total Number of Violations / Excursions	0	
NPDES (Bay Discharge)	0	
WDR (Reclamation)	0	

Maintenance

Total Number of Work Orders Issued	4,967
Total Number of Work Orders Closed	4210
Percentage Preventive Maintenance	98%
Average Completion	3.48 Days

Consumables / Energy

*Electricity – kWh / Year	3,318,924
Electricity – kWh / MG	2,374
*Natural Gas – Therms / Year	43,834
Natural Gas – Therms / MG	31
Diesel Fuel – Gallons / Year	1,894
Diesel Fuel – Gallons / MGD	1.36

*Excludes Administration Building, Recycled Water Plant, and Flare Pilot.

2015 ANNUAL OPERATIONS AND MAINTENANCE REPORT
Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station

Treatment Plant Compliance Summary

No treatment plant violations were experienced in 2015. The compliance summary table (below) is broken down by constituent and discharge season.

Waste Discharge Limits / Reclamation				
Parameter	Limit	Units	# Analysis	Violations
BOD Monthly Average	40	mg/L	5	0
Total Coliform – 5 Sample Median	240	mpn/100 ml	67	0
Total Coliform - Maximum	10,000	mpn/100 ml	67	0
pH – High	9.0	s.u.	110	0
pH – Low	6.0	s.u.	110	0

NPDES Wet Season Limits - November – April				
Parameter	Limit	Units	# Analysis	Violations
BOD Weekly	45	mg/L	25	0
BOD Monthly	30	mg/L	6	0
TSS Weekly	45	mg/L	25	0
TSS Monthly	30	mg/L	6	0
BOD Removal (minimum)	85	%	6	0
TSS Removal (minimum)	85	%	6	0
Enterococcus - 30 Day Geo Mean	35	Col/100 ml	6	0
Fecal Coliform - Median	140	mpn/100 ml	6	0
Fecal Coliform - 90 th Percentile	430	mpn/100 ml	6	0
Ammonia – Daily Maximum	21	mg/L	14	0
Ammonia - Monthly Average	6	mg/L	6	0
pH – High	8.5	s.u.	130	0
pH – Low	6.5	s.u.	130	0
Oil & Grease - Daily Maximum	15	mg/L	6	0
Oil & Grease - Monthly Average	5	mg/L	6	0

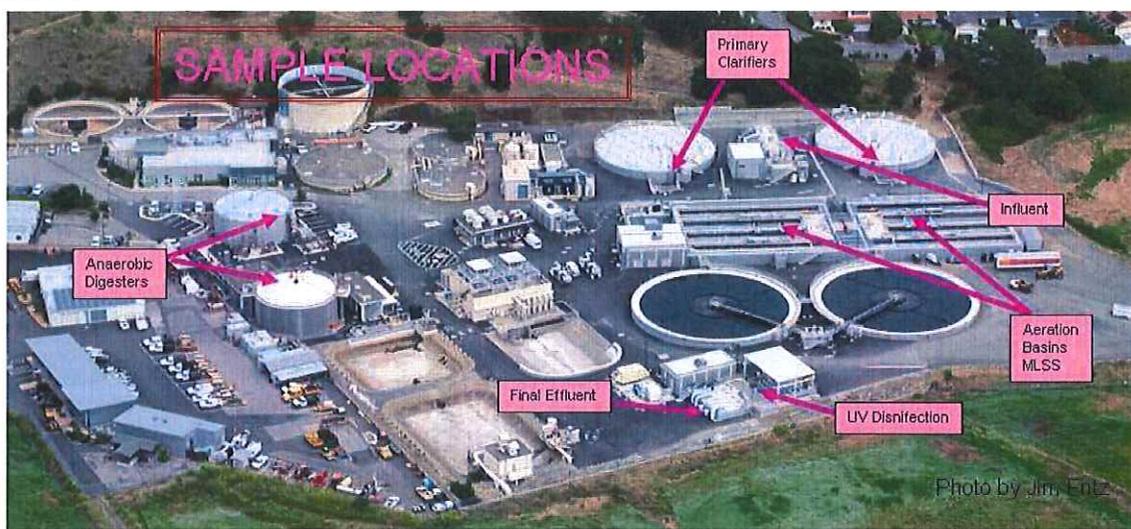
2015 ANNUAL OPERATIONS AND MAINTENANCE REPORT

Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station

Compliance Summary (Continued)

NPDES Dry Season Limits - May, September, & October				
Parameter	Limit	Units	# Analysis	Violations
BOD Weekly	30	mg/L	5	0
BOD Monthly	15	mg/L	1	0
TSS Weekly	20	mg/L	5	0
TSS Monthly	10	mg/L	1	0
BOD Removal (minimum)	85	%	1	0
TSS Removal (minimum)	85	%	1	0
Enterococcus - 30 Day Geo Mean	35	Col/100 ml	1	0
Fecal Coliform - Median	140	mpn/100 ml	1	0
Fecal Coliform - 90th Percentile	430	mpn/100 ml	1	0
Ammonia – Daily Maximum	21	mg/L	1	0
Ammonia - Monthly Average	6	mg/L	1	0
pH – High	8.5	s.u.	21	0
pH – Low	6.5	s.u.	21	0
Oil & Grease - Daily Maximum	15	mg/L	1	0
Oil & Grease - Monthly Average	5	mg/L	1	0

Sample Locations



ENVIRONMENTAL SERVICES REPORT

O & M Report 2015

Laboratory Leadership

Elizabeth Falejczyk of Veolia Water assumed direction of the Environmental Services Department, including the NSD ELAP certified laboratory (Certificate No. 1092) on February 2, 2015. Kurt Hawkyard also started working in the laboratory in February. Kurt has been trained in all of the routine analysis performed in the lab. With the assistance of Jessica Bena of North Marin Water District, we successfully transitioned to the routine of daily, weekly, monthly and semi-annual sampling schedule of the various permit regulations. Jessica has been the one constant in the laboratory and has essentially benefited the District during the different times of transition. Jessica continues to play an invaluable support role in the laboratory.

Wildlife Pond and Reclamation Activities

Samples and weekly/monthly observations at the Wildlife pond were taken according to the WDR (Order No. 92-065) throughout the year. Monthly irrigation wet well samples were monitored during the irrigation season. The lab coordinated the independent pasture evaluation and soil sampling in the pastures. All the data was compiled and reported to Blair Allen of the San Francisco, Regional Water Quality Control Board (RWQCB) in the 2015 Triennial Irrigated Pasture Report.

NPDES Permit Reissuance

Given excellent Plant and effluent water quality, we requested and received a reduced sampling schedule for some analysis, and switched the bacterial species for disinfection compliance. These changes save time and money for the District and provide quicker turnaround time, for results.

Laboratory

Several studies were undertaken optimize sampling and process control protocols, and changes changes implemented in sampling methods and techniques.

Examples:

- Change in sample transfer technique and thorough disinfection and cleaning of samplers and sample containers prior to chronic toxicity testing to decrease the possibility of pathogen related toxicity.
- Change of sampling method for bacteriological samples from the UV channels to get a representative sample of the entire water column.

We established better communication and understanding between all of the contract laboratories and the NSD laboratory. The contract laboratory for BOD analysis was changed for enhanced performance.

Annual Performance testing for all certified methods occurred with 100% success and the NSD ELAP certification was successfully renewed with the expansion of certified methods.

2015 ANNUAL OPERATIONS AND MAINTENANCE REPORT

Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station

Public Education

- We assisted in Wetlands Days for the Marin County public education group staffing two stations, "Bird Bingo" and "The Toilet is not a Trashcan".
- Hosting Algebra Academy in the laboratory we worked with Christian Williams (operator) to give a really visual sense of math and dilutions using bright colored dye in graduating volumetric flasks and then used different dilutions to demonstrate optimization of chemicals and relating it to annual cost savings for chemicals using algebra.
- Staffed North Bay Science Discovery Day with other Veolia Staff showing what "dispersibles" are (toilet paper vs. tissues and paper towels). Cleaned and disinfected clogs from pumps, looking like mopheads, were on display to demonstrate the problem. Clearly visible in the clogs are dental floss, wipes and strings. This is a hands on educational event and very popular.

Training

Staff attended many professional training events throughout the year. More formal in-house training of the operations staff in regulatory analysis was also initiated.

We also hosted an important training event, Comprehensive Ethics and Integrity Training for Environmental Testing Professionals. We were able to invite NMWD lab staff to the training, which was important as the NMWD staff (including Jessica) all serve as support staff in the NSD Laboratory from time to time.

Kurt earned 15.5 contact hours for various meetings and training events.

Liz earned 14.5 contact hours for various meetings and training events.

BACWA

Liz attended most of the Bay Area Clean Water Association (BACWA) Bay Area Pollution Prevention Group, Permits and Laboratory Committee meetings throughout the year.

Pretreatment

Bob Adamson was overseeing the Pretreatment Program for NSD and worked throughout the year to familiarize and train both Liz and Kurt in the program.

Permits Renewed

- BioMarin Galli
- Buck Center
- North Marin Water District Permit
- Norcal Dye Works
- Graphene Technologies
- Roys' Sewer Service
- Roto-Rooter Sewer Service

2015 ANNUAL OPERATIONS AND MAINTENANCE REPORT

Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station

New Permits

- 1 temporary groundwater discharge permit

Inspections

- All 5 significant Industrial Users
- 14 Food Service Establishments(FSE) for Fats Oil and Grease (FOG) (some more than once)
- 2 Car Wash (one installation)
- 2 Currently non-permitted industries

Sampling

- BioMarin BMK (2 events)
- BioMarin Galli (2)
- Buck Center (1)
- Optical Metals (2)
- NMWD (1)

ASSET MANAGEMENT

ASSET MANAGEMENT

Key components of an Asset Management Program include:

- Computerized Maintenance Management System (CMMS)
- Preventive, Predictive, and Corrective Maintenance
- Equipment Inventory
- Reliability / Criticality Assessment (Hierarchy of Equipment Priority)

Computerized Maintenance Management System (CMMS)

During 2015 Veolia transitioned from *Job Cal Plus*™ (Job Plus) CMMS to Oracle Work Asset Management (OWAM or WAM). OWAM is a robust multi-layered asset management system which provides modules for purchasing, inventory control, asset life cycle cost, as well as the typical scheduling and maintenance tracking tools.

OWAM is an off-the-shelf, non proprietary software program available from Oracle, Redwood Shores, California.

Preventive, Predictive, and Corrective Maintenance

Preventive maintenance (PM) is a scheduled maintenance activity generally tied to equipment run time (x hours) or period schedule (weekly / quarterly). Routines such as lubrication, oil change, filter change fall into the category of PM. Predictive maintenance (PdM) is performed to determine when maintenance might be required and or to assess condition. Tasks such as vibration, temperature, and oil analysis are types of PdM. Corrective maintenance is initiated when a deficiency is found.

Equipment Inventory

An accurate equipment inventory is crucial to all phases of Asset Management. Equipment at the Novato facility has been entered into the OWAM data base. The equipment inventory is a dynamic process with additions and deletions over time. An accurate equipment inventory is an essential component when planning for equipment replacement.

Reliability / Criticality Assessment (Hierarchy of Equipment Priority)

A Criticality Assessment was performed at the Novato facility in August 2010 and updated in June 2014. The assessment evaluates processes and equipment and rates the relative importance. The evaluation process looks at consequences and likelihood of failure. The product helps the user prioritize replacement and maintenance. The next full system Criticality Update is scheduled for 2017.

2015 ANNUAL OPERATIONS AND MAINTENANCE REPORT
Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station

Maintenance Activities Under \$10,000.00*

January	Equipment	Activity
	Operations Room UPS Unit	Annual Service
	Digested Sludge Pit	Pumped out pit
	Wet Weather Pump #1	Oil leak repaired
	UV Modules	Replaced all fans in UV modules

February	Equipment	Activity
	Gorman Rupp Trailers 6" Pump	Repairs to Fuel Tank
	Bulk Fuel Diesel Tank	Installed new anti-siphon valve
	UPS Units	Replaced batteries in all UPS units
	Wet Weather Pump #1	Replaced coolant hoses
	Sludge Lagoons	Pumped out sludge lines

March	Equipment	Activity
	Novato Video Server	Replaced Plant Video Server Drive
	Wet Weather Pump #1	Replaced cross piping and water pump manifold
	Gravity Belt Thickener #2	Replaced tension roller and bearing
	Wet Weather Pump #1	Replaced injector, valve cover gasket, rocker box gasket, head gasket and bolts

April	Equipment	Activity
	OPS Chevy Truck	Replaced fuel cap and purge valve
	Odor Control Fan #2 - Ignacio	Total Rehabilitation on fan
	Jerome Meter	Annual re-calibration
	Primary Clarifier #1	Repaired scum piping
	SCADA	Annual upgrade
	Gravity Belt Thickener #1	Replaced main roller & bearing

2015 ANNUAL OPERATIONS AND MAINTENANCE REPORT

Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station

May	Equipment	Activity
	Novato WWTP & Ignacio PS	Infrared Survey at Novato WWTP and Ignacio PS
	Ops Chevy Pick Up	New water pump, A/C coolant and fan belt
	Overhead Cranes	Annual crane inspection/certification
	Flow Meters	Annual flow meter calibration
	TWAS Pump #1	Replaced and programed VFD
	Ignacio Ops Control Room UPS	Replaced UPS
	GBT Polymer Pump #1	Replaced pump and program cable
	Emergency Generators	Annual service
	UV Generator Emergency Diesel Tank	Replaced floats in day tank
	Fire Extinguishers	Annual recharge of all fire extinguishers at Novato WWTP & Ignacio PS

June	Equipment	Activity
	Flare	Flare maintenance and tune up, replaced flame detector
	Wet Weather Pumps	Annual service
	Digested Sludge Pit	Pumped out pit
	Boiler	Water Treatment Service
	New Sampler	Hardwired sampler

July	Equipment	Activity
	Wet Weather Pump #2	Replaced fuel line, water pump belts, hoses and coolant
	Fork Lift	Annual service
	#3 Waterline behind Primary Clarifier #2	Repaired broken water line
	Novato Odor Beds	Mulch top off in all beds
	Digested Sludge Building	Replaced old door handles with lever handles
	Old Blower Building	Replaced old door handles with lever handles
	Maintenance Shop	Replaced old door handles with lever handles
	Lagoons	Line Cleaning
	Emergency Generator	Annual service performed on all 4 Emergency Generators

2015 ANNUAL OPERATIONS AND MAINTENANCE REPORT
Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station

August	Equipment	Activity
	Bulk Diesel Fuel Tank - Novato	Annual Diesel Fuel Sampling
	Bulk Diesel Fuel Tank - Ignacio	Annual Diesel Fuel Sampling
	Bulk Diesel Fuel and Day Tank - Ignacio	Filter & Polished diesel fuel in main tank and day tank
	Novato & Ignacio VFD's	Annual inspections
	Gas Sensors in wet well @ Ignacio	MSA Gas Sensor Rehabilitation of entire system after flooding

September	Equipment	Activity
	UV Emergency Generator Fuel Tank	Replaced power supply and digital screen
	Ignacio Emergency Generator Day Tank	Replaced anti siphon valve and floats
	Flygt Pumps/Mixers	Annual Flygt pump/mixer inspection
	Lagoons	Flushed lines - Decant and Feed lines

October	Equipment	Activity
	UV System	Annual tune up and rehabilitation of system
	Dry Weather Pump #4	Replaced VFD
	UV Channel Fans	Replaced all fans
	Odor Control Fan @ Primary Clarifier #2	Replaced drive guard assembly
	Microcool System	Installation of odor misting system
	Lagoons	Pumped down monitoring wells for groundwater sampling
	Digested Sludge Pit	Pumped out sludge pit

November	Equipment	Activity
	Influent Pump #3	Replaced and programed VFD
	Emergency UV Generator	Repaired exhaust stack

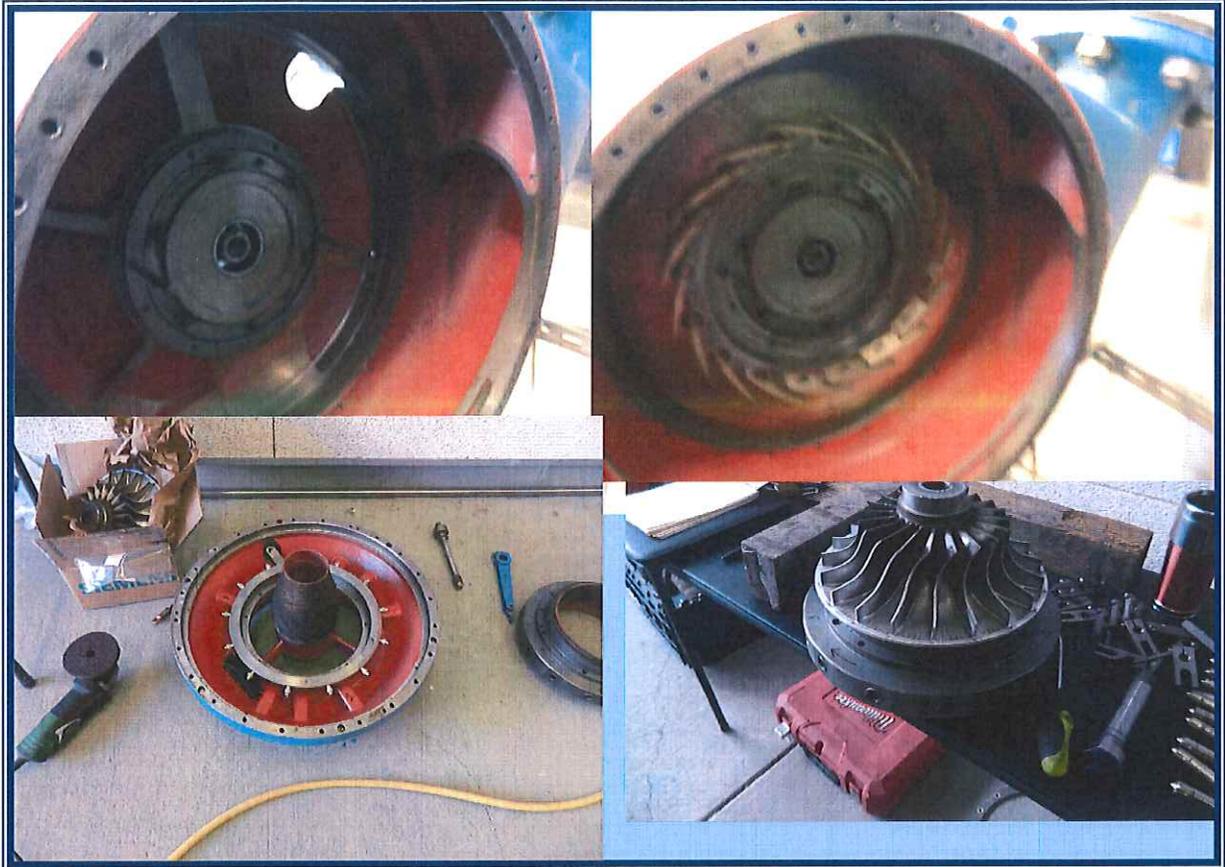
2015 ANNUAL OPERATIONS AND MAINTENANCE REPORT
Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station

December	Equipment	Activity
	Trucks	Annual oil change on 4 trucks
	Aeration Basin Mixer 3B	Repair
	Aeration Basin Mixer 4C	Repair
	Decant Pump Station	Replaced pump rails

Maintenance Activities Over \$10,000.00*

* Limit Set by Section 3.0 of the Service Agreement between Veolia and NSD.

Predictive Maintenance



An example of Predictive Maintenance (2014) - Complete disassembly and inspection of Turblex Blowers (1 & 2)
Blowers were found to be in excellent condition

2015 ANNUAL OPERATIONS AND MAINTENANCE REPORT

Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station

Maintenance

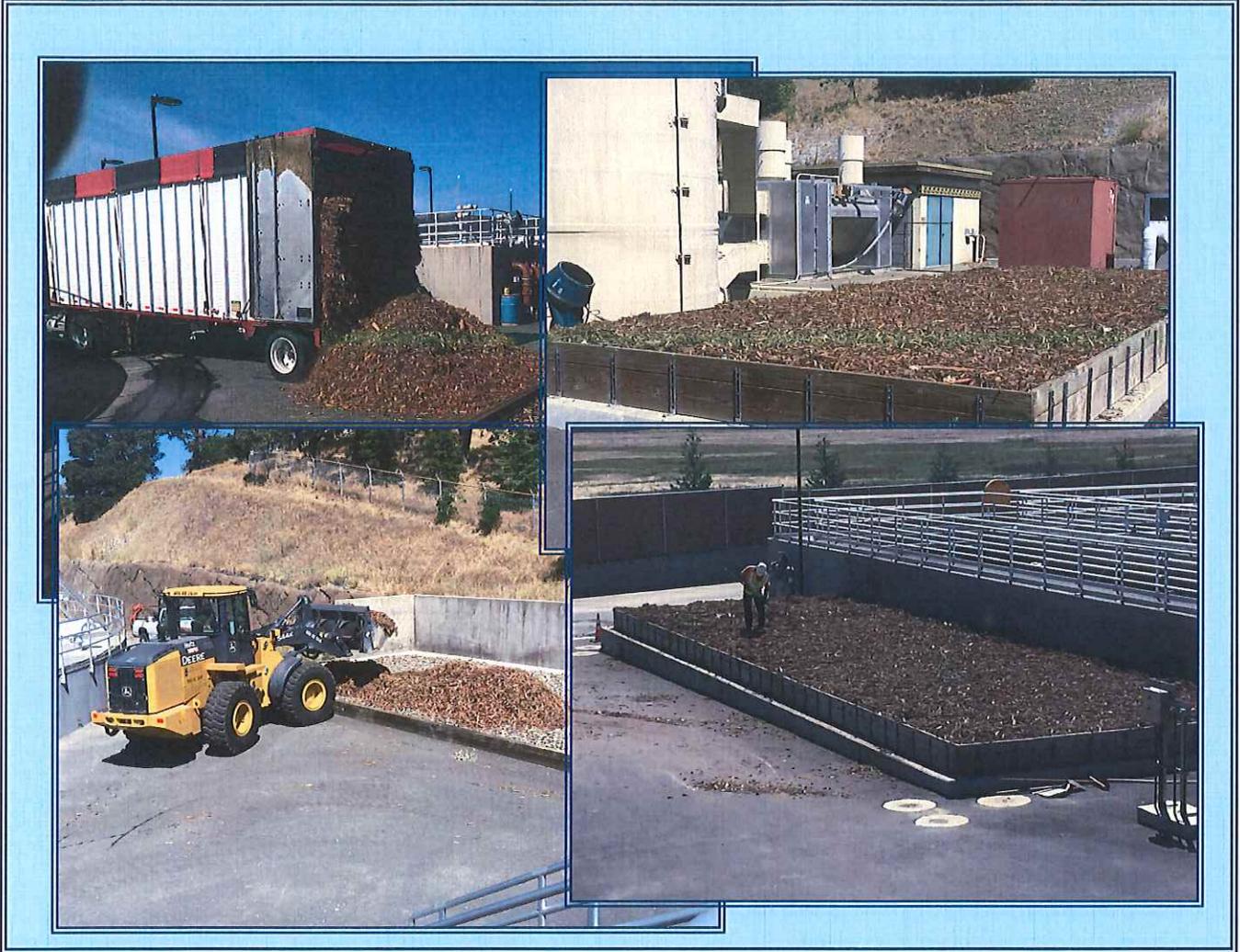


Maintenance of Ultra Violet Disinfection System

2015 ANNUAL OPERATIONS AND MAINTENANCE REPORT

Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station

General Maintenance



Top Off Foul Air Biofilters – July 2015

SAFETY AND TRAINING

SAFETY AND TRAINING

It's a Culture, Not a Campaign



Veolia Water North America (VWNA) recognizes the importance of an effective health and safety program to the well being of each employee, the general public, clients/facility owners, and to the overall success of our company. VWNA is committed to providing its employees a healthful and safe place of employment. To that end, VWNA will provide proper training, materials, and equipment so that work can be performed safely and in compliance with the Occupational Safety and Health Administration (OSHA) Regulations and other applicable standards. In turn, each employee is responsible to participate in a cooperative effort to maintain an effective health and safety program. Adherence to company policies and work practice guidelines is an essential part of this responsibility. By maintaining an effective program, we reduce the risk of personal injury, operational interruptions, regulatory fines, and maintain the company's reputation as a world leader in environmental management.

Our highest duty - to ensure health, safety and security for all. It is our highest duty, essential business priority, and the individual responsibility of each of us to ensure that at all time and in all of our operations, the health, safety and security of the general public, our customers, subcontractors and our fellow employees are protected. We allow for no compromise in this matter, and we strive to proactively identify potential risks and take diligent corrective and preventative actions to reduce and eliminate them. In the same spirit, we support, advise and encourage our fellow employees to maintain good personal health, as well as to develop positive practices and behaviors in that respect.

VWNA Novato has had no incidents from 6/1/10 to present. This reporting period from 1/1/15 - 12/31/15 resulting in 365 days - accident/incident free. In recognition of this achievement - staff celebrated at a luncheon with gifts of appreciation. Each employee received a cash incentive reward from the Company for 5 years no loss time incidents as a group and also as individual achievements.

VWNA Novato provides daily safety topics - 5 minutes in length at each of our daily morning meeting. Subjects range from personal to job related safety topics.

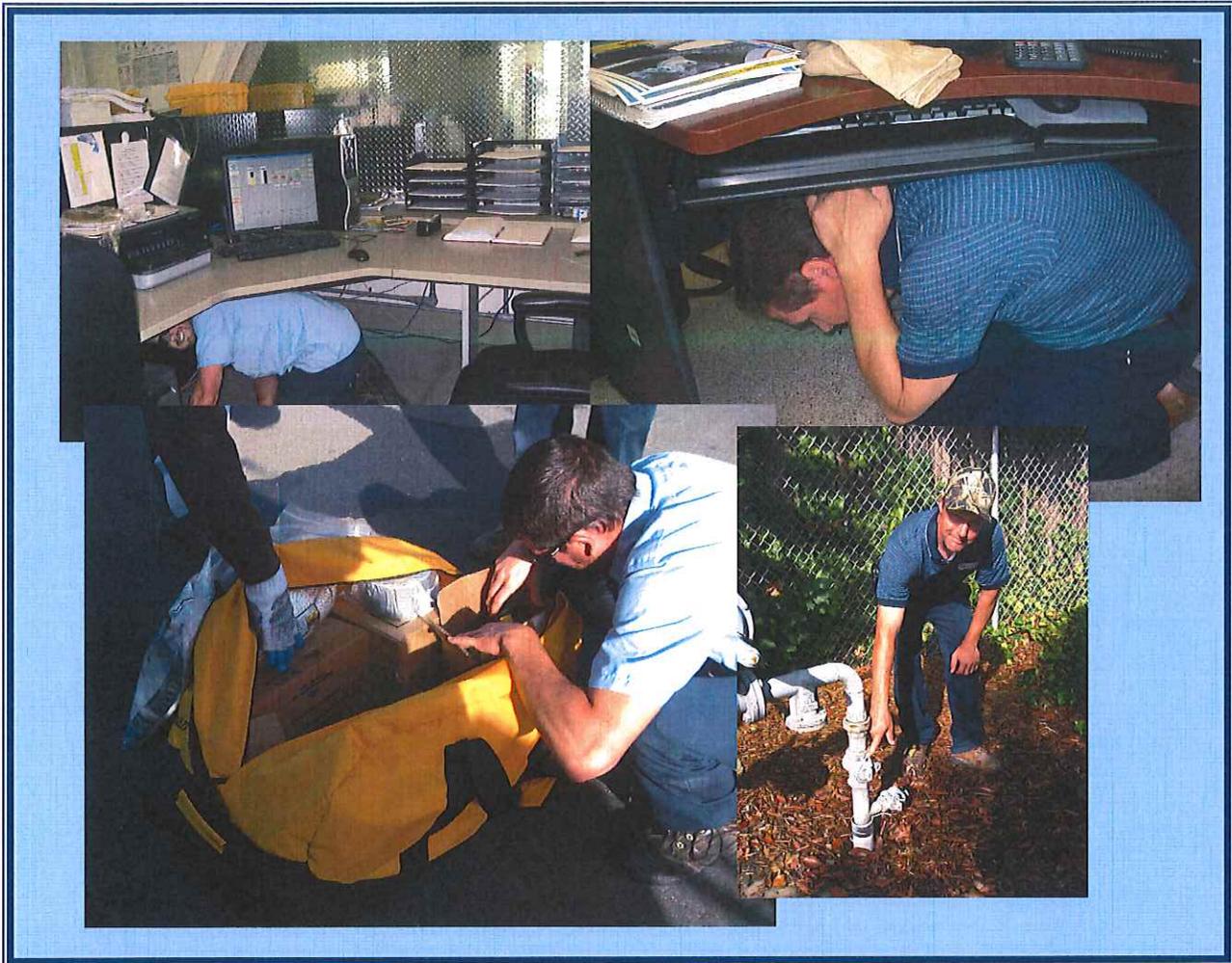
2015 ANNUAL OPERATIONS AND MAINTENANCE REPORT
Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station

In addition to daily safety discussion, formal monthly training of worksite relevant safety topics is conducted by the Safety Coordinator. The formal training includes testing. Test questions are answered round table style and discussed.

2015 Safety Training	
Date	Topic
January	Hazard Communication
February	Personal Protective Equipment
March	General Electrical Safety – General Awareness Overexertion – Sprains and Strains
April	Confined Space Training Lockout/Tagout – Control of Hazardous Energy
May	Electrical Safety Qualified Worker – OSHA - NFPA
June	Good Housekeeping
July	Fire Extinguishers Emergency Action Plan Overview
August	Bloodborne Pathogens
September	Ergonomics Cold Stress Prevention
October	Fall Protection Crane Safety Awareness Great Shakeout Earthquake Drill
November	Hearing Protection
December	Spill Prevention Control & Countermeasures (SPCC) Plans - Novato and Ignacio Veolia Code of Business Conduct

2015 ANNUAL OPERATIONS AND MAINTENANCE REPORT
Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station

GREAT SHAKEOUT – ANNUAL EARTHQUAKE DRILL
OCTOBER 15, 2015



Top Left – Christian Williams, Duck Cover Hold

Top Right – Brian Exberger, Duck Cover Hold

Bottom Left – Inventory Emergency Supplies

Bottom Right – Brian Exberger Simulates Shutoff of Natural Gas

STAFFING AND ORGANIZATION

STAFFING & CERTIFICATION STATUS (Current)

John Bailey – Project Manager

Grade V California Wastewater Treatment Plant Operator #4123, December 31, 2016

Brian N. Exberger – Assistant Project Manager / Operations Manager

Grade V California Wastewater Treatment Plant Operator #10424, June 30, 2017

Lynda Rodefer – Administrative Assistant/Planner/Scheduler/Safety Coordinator

Anthony M. Silva – Operator III

Grade V California Wastewater Treatment Plant Operator #10973, December 31, 2017

Grade II Collection System Maintenance Technician, 354, January 31, 2017

Dean B. Heffelfinger – Operator III

Grade III California Wastewater Treatment Plant Operator #III-27610, June 30, 2017

Grade T2 Water Treatment Operator #34890, August 1, 2016

Christian R. Williams – Operator III

Grade IV California Wastewater Treatment Plant Operator #28555, June 30, 2016

Preston Ingram – Operator III

Grade IV California Wastewater Treatment Plant Operator #10277, June 30, 2017

Jeffrey D. Hendricks – Operator II

Grade II California Wastewater Treatment Plant Operator #II-28377, December 31, 2017

Grade I Plant Maintenance Technologist, 070750011, July 31, 2016

Ralph Loveless – Maintenance Technician/Operator II

Grade III California Wastewater Treatment Plant Operator #28638, July 10, 2017

Elizabeth G. Falejczyk – Environmental Services Manager

Operator III California Wastewater Treatment Plant Operator #6334, June 30, 2016

Kurt Hawkyard – Laboratory Technician/Pretreatment Programs Inspector

Laboratory Analyst Grade I, #130931002, September 30, 2016

2015 ANNUAL OPERATIONS AND MAINTENANCE REPORT

Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station

Additional Support

Sachin Chawla – Area Manager

John O'Hare – Technical Director

Grade V, Wastewater Treatment Plant Operator, California, # 10669 (2005)

Grade IV, Wastewater Treatment Plant Operator, Association of Boards of Certification, # S40011R (2004)

Grade IV, Collection Systems, Massachusetts, #866 (1986)

Grade VII, Wastewater Treatment Plant Operator, Massachusetts, # 977 (1977)

Grade I, Environmental Compliance Inspection, California, CWEA # 04074112 (2004)

Grade I, Laboratory Analyst, California, CWEA # 05013114 (2005)

Grade I, Plant Maintenance Technologist, California, CWEA # 05075101 (2005)

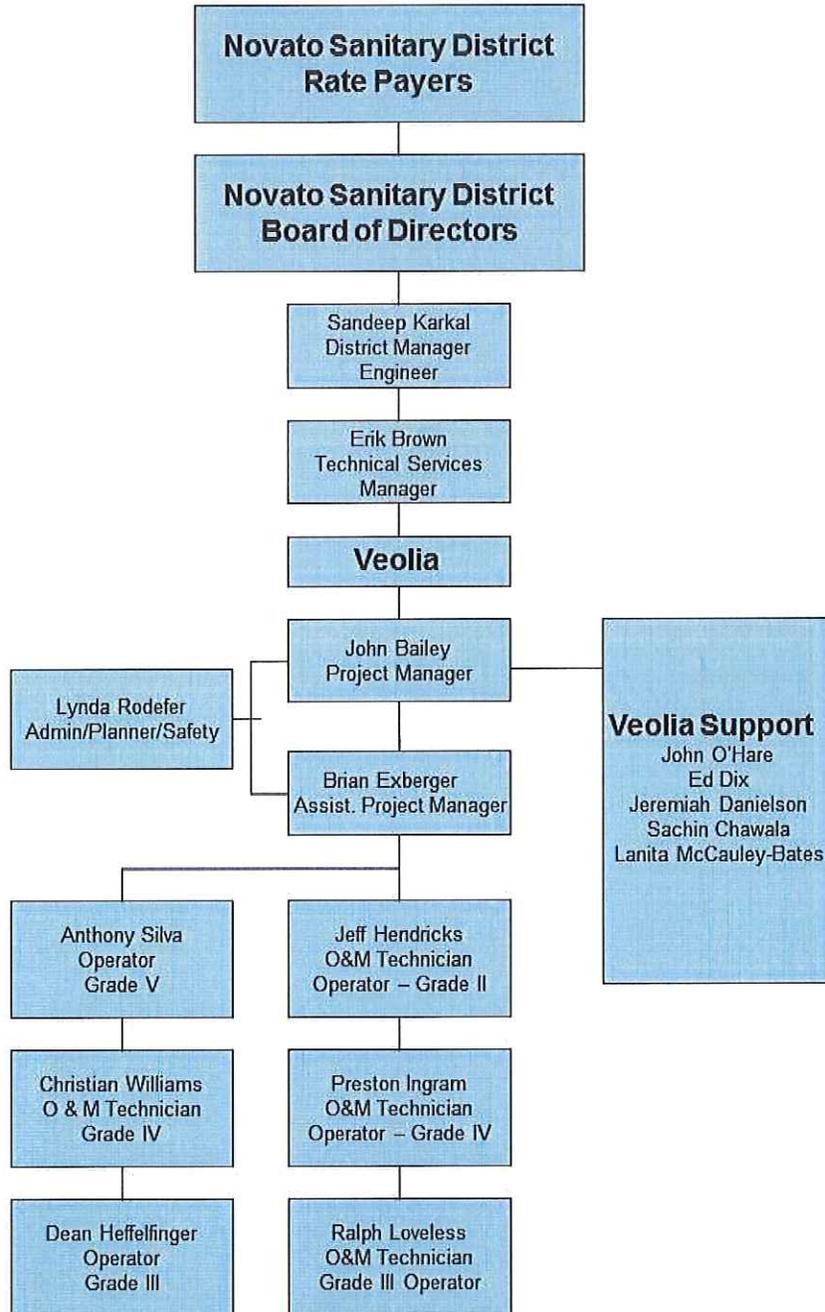
Grade I, Collection System Maintenance, California, CWEA # 070121088 (2007)

Grade I, Water Distribution Operator, California Department of Public Health, #34234 (2008)



2015 ANNUAL OPERATIONS AND MAINTENANCE REPORT
Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station

Organization Chart –
 Veolia Water/Novato Sanitary District



BUDGET

2015 ANNUAL OPERATIONS AND MAINTENANCE REPORT

Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station

BUDGET

ADJUSTMENTS OCCUR ON A "CONTRACT YEAR CYCLE", JULY - JUNE

The Amended and Restated Novato Operations and Maintenance Service Agreement adopted February 18, 2014 is a fixed price contract. Included in the base contract fee are operation, maintenance, and management. Exceptions to the fixed price include:

Schedule 13 – *Pass Through Costs*

Section 5.6 – Performance Bond

Schedule 8 – Cost Adjustment and Escalation Indices

Schedule 8 – Flow and Loading Adjustments

Schedule 11 – Usage Caps

- Electrical
- Natural Gas
- Diesel Fuel

Schedule 5 – Operation of Recycled Water Facility

Equipment Repair in excess of \$10,000

Fiscal Year 2014/15 service fee adjustment was 1.22%.

ATTACHMENTS

NOVATO SANITARY DISTRICT - VEOLIA PLANT FLOW

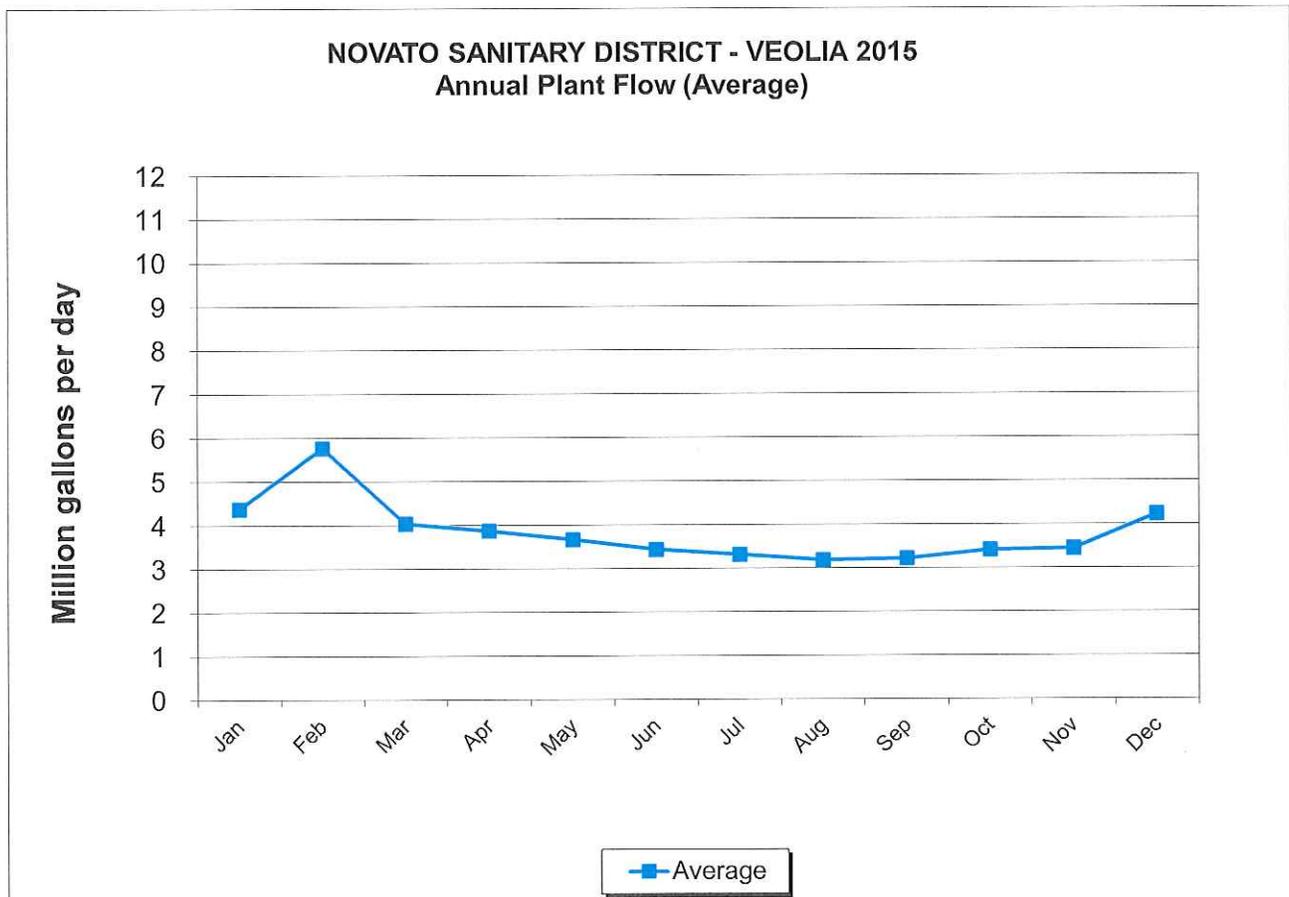
Annual Waste Characteristics & Loading Summary

(IN GALLONS TIMES 1,000,000)

YEAR: 2015

PRINT DATE: 30-Mar-2016

	Total Flow	High	Low	Average		
January	135.90	4.86	3.72	4.38		
February	161.76	14.22	3.85	5.78		
March	125.45	4.59	3.61	4.05		
April	116.41	4.72	3.49	3.88		
May	114.04	4.27	3.09	3.68		
June	103.39	3.88	3.12	3.45		
July	103.22	4.22	2.81	3.33	Three month dry weather averages:	
August	99.18	3.70	2.86	3.20		3.33
September	96.88	3.82	2.86	3.23		3.20
October	106.26	4.12	2.92	3.43		3.23
November	103.72	3.83	3.08	3.46		
December	127.22	9.33	3.19	4.24		
ANNUAL TOTAL 1393.43						
ANNUAL MAX.	161.76	14.22			Max.	3.33
ANNUAL MIN.	96.88		2.81		Min.	3.20
ANNUAL AVG.	116.12			3.84	Avg. Dry Weather Flow	3.25



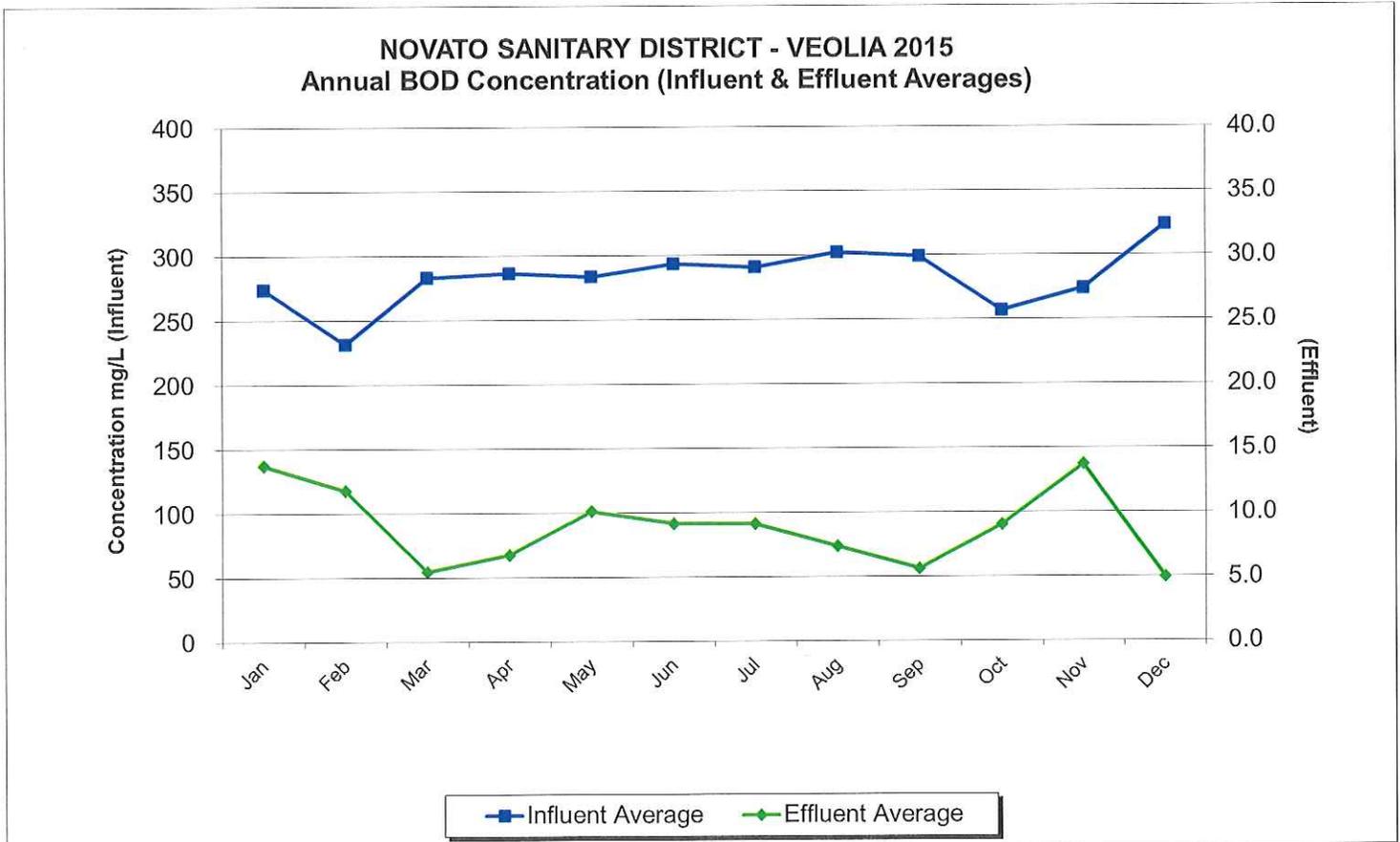
**NOVATO SANITARY DISTRICT - VEOLIA
BOD (Influent & Effluent)**

Annual Waste Characteristics & Loading Summary

YEAR: 2015

PRINT DATE: 30-Mar-2016

	INFLUENT							EFFLUENT						
	Concentration (mg/L)			No. of Samples	Loading (lb/day)			Concentration (mg/L)			No. of Samples	Loading (lb/day)		
	High	Low	Average		High	Low	Average	High	Low	Average		High	Low	Average
January	340	220	274	12	13668	7669	10062	28.0	6.0	13.8	12	904	236	495
February	324	169	232	11	24183	7246	11144	23.0	5.0	11.8	11	1648	203	602
March	352	253	283	12	11449	7923	9635	7.0	5.0	5.5	12	228	156	187
April	347	209	287	15	11576	6763	9308	11.0	5.0	6.8	15	370	153	221
May	342	217	284	12	11780	6860	8781	19.0	5.0	10.2	12	654	137	319
June	356	240	294	15	9887	6525	8417	21.0	5.0	9.2	15	606	143	263
July	342	259	291	12	11490	6940	8404	19.0	5.0	9.2	12	593	131	271
August	394	228	302	12	10909	5800	8172	9.0	6.0	7.4	12	249	163	200
September	347	254	299	5	10158	7038	7865	7.0	5.0	5.7	15	180	120	151
October	282	246	257	4	8326	6515	7328	36.0	5.0	9.1	12	212	138	164
November	340	220	274	12	10293	6220	7821	28.0	6.0	13.8	12	722	177	388
December	390	220	324	5	11829	8679	10289	5.0	5.0	5.0	7	197	134	162
ANNUAL HIGH	394	259	324	15	24183	8679	11144	36.0	6.0	13.8	15	1648	236	602
ANNUAL LOW	282	169	232	4	8326	5800	7328	5.0	5.0	5.0	7	180	120	151
ANNUAL AVG.	346	228	284	11	12129	7015	8935	17.8	5.3	8.9	12	547	158	285



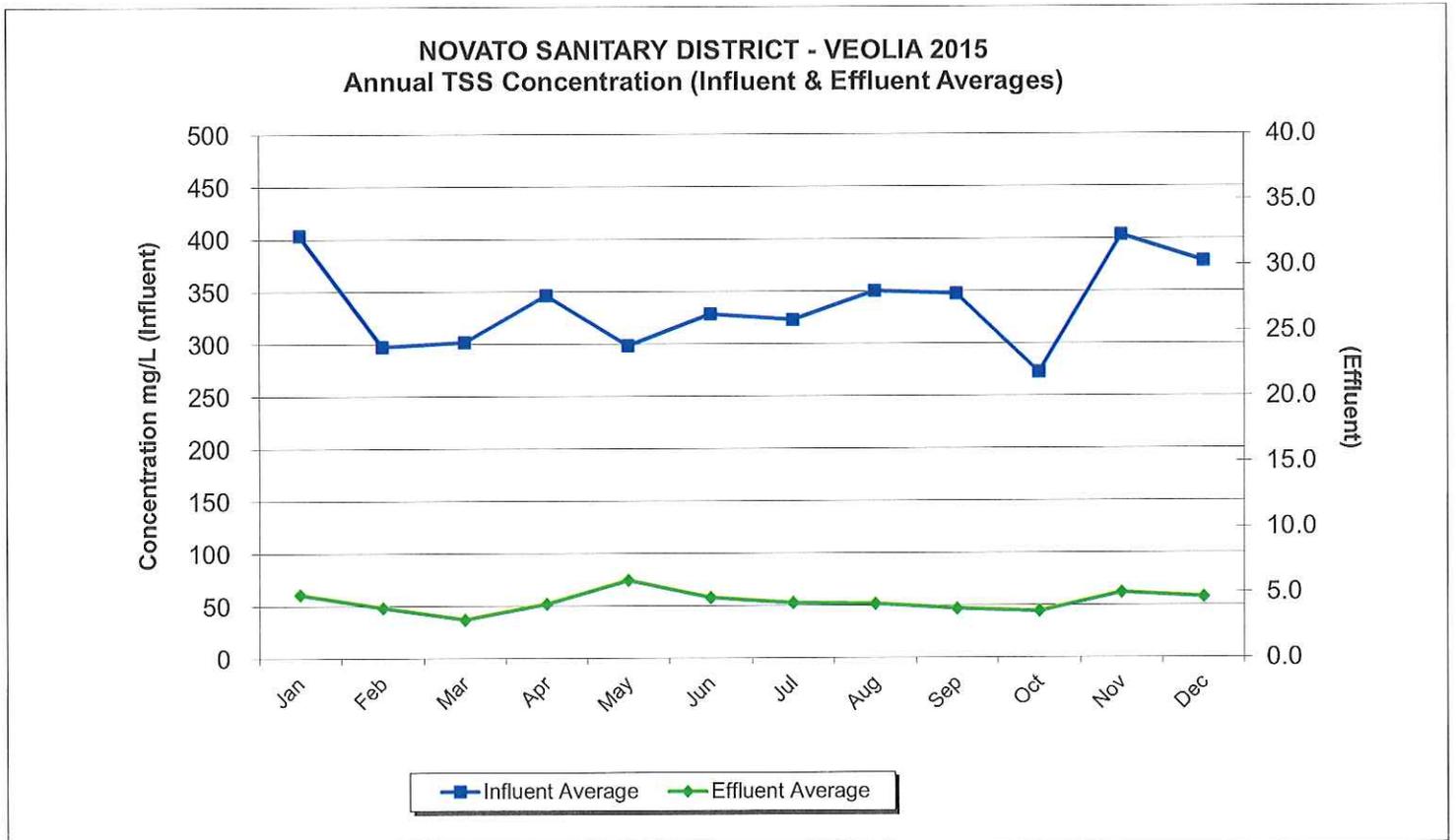
NOVATO SANITARY DISTRICT - VEOLIA SUSPENDED SOLIDS (Influent & Effluent)

Annual Waste Characteristics & Loading Summary

YEAR: 2015

PRINT DATE: 30-Mar-2016

	INFLUENT							EFFLUENT						
	Concentration (mg/L)			No. of Samples	Loading (lb/day)			Concentration (mg/L)			No. of Samples	Loading (lb/day)		
	High	Low	Average		High	Low	Average	High	Low	Average		High	Low	Average
January	681	284	404	12	27375	10327	14915	7.0	2.0	4.9	12	275	74	180
February	413	222	298	12	33197	9702	14261	10.0	3.0	3.9	12	785	96	219
March	466	231	302	12	15390	8694	10249	3.0	3.0	3.0	12	115	94	102
April	508	235	347	15	14957	7898	11214	8.0	3.0	4.2	15	262	93	136
May	439	244	299	12	13437	6919	9254	16.0	3.0	6.0	12	531	82	189
June	475	254	329	15	13192	7266	9432	8.0	3.0	4.7	15	249	82	134
July	448	266	323	12	15095	6633	9383	8.0	3.0	4.3	12	235	75	124
August	443	285	351	12	12281	7326	9506	14.0	3.0	4.2	12	356	76	111
September	432	289	348	5	12646	6990	9234	8.0	3.0	3.8	5	234	72	106
October	307	238	273	4	8689	6252	7787	6.0	3.0	3.6	4	146	78	100
November	681	284	404	12	20617	8077	11492	7.0	3.0	5.0	12	211	77	144
December	607	194	379	5	20604	7653	12214	5.0	4.0	4.7	5	203	116	159
ANNUAL HIGH	681	289	404	15	33197	10327	14915	16.0	4.0	6.0	15	785	116	219
ANNUAL LOW	307	194	273	4	8689	6252	7787	3.0	2.0	3.0	4	115	72	100
ANNUAL AVG.	492	252	338	11	17290	7811	10745	8.3	3.0	4.3	11	300	84	142



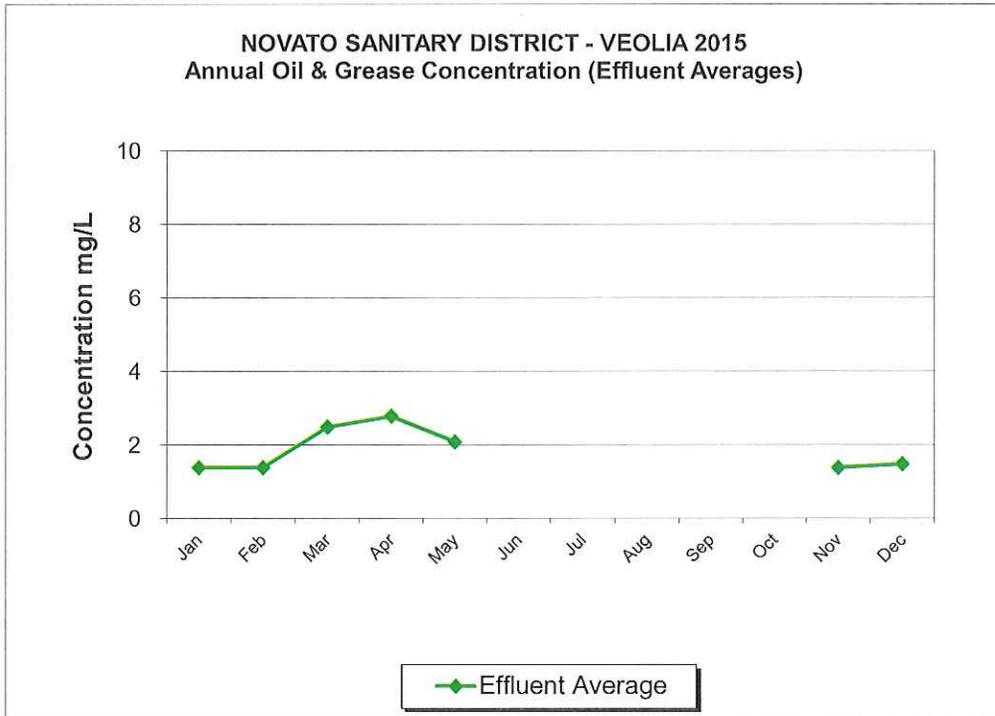
**NOVATO SANITARY DISTRICT - VEOLIA
OIL & GREASE (Effluent)**

Annual Waste Characteristics & Loading Summary

YEAR: 2015

PRINT DATE: 30-Mar-2016

	EFFLUENT						
	Concentration (mg/L)			No. of Samples	Loading (lb/day)		
	High	Low	Average		High	Low	Average
January	1.4	1.4	1.4	1	55	55	55
February	1.4	1.4	1.4	1	65	65	65
March	2.5	2.5	2.5	1	91	91	91
April	2.8	2.8	2.8	1	94	94	94
May	2.1	2.1	2.1	1	60	60	60
June				0			
July				0			
August				0			
September				0			
October				0			
November	1.4	1.4	1.4	1	41	41	41
December	1.5	1.5	1.5	1	47	47	47
ANNUAL HIGH	2.8	2.8	2.8	1	94	94	94
ANNUAL LOW	1.4	1.4	1.4	0	41	41	41
ANNUAL AVG.	1.9	1.9	1.9	1	65	65	65



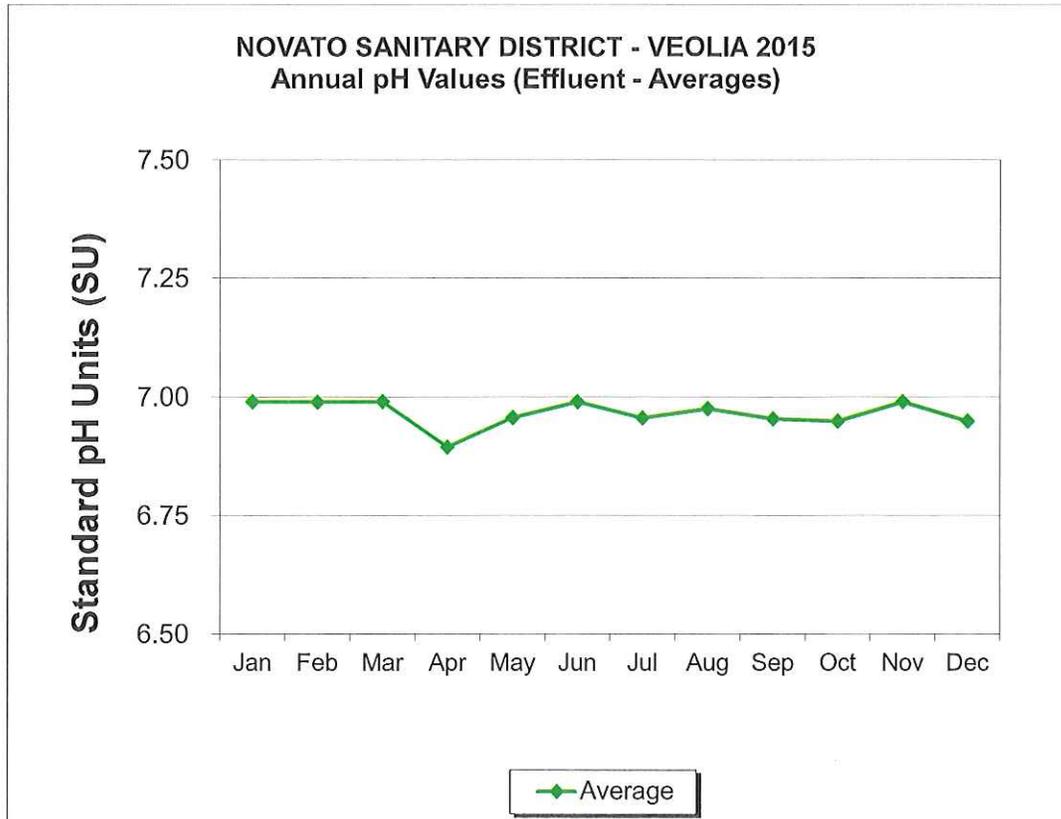
**NOVATO SANITARY DISTRICT - VEOLIA
pH (Effluent)**

Annual Waste Characteristics & Loading Summary

YEAR: 2015

PRINT DATE: 30-Mar-2016

	High	Low	Average	Number of Samples			
				1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.
January	7.1	6.9	7.0	22			
February	7.1	6.9	7.0	20			
March	7.1	6.8	7.0	22			
April	7.0	6.8	6.9	22			
May	7.1	6.8	7.0	21			
June	7.2	6.8	7.0	22			
July	7.0	6.9	7.0	23			
August	7.1	6.9	7.0	21			
September	7.0	6.8	7.0	22			
October	7.0	6.8	7.0	22			
November	7.1	6.9	7.0	22			
December	7.1	6.7	7.0	22			
ANNUAL MAX.				Number of Samples Total = 261			
ANNUAL MIN.				1st Qtr.	64	2nd Qtr.	65
ANNUAL AVG.				3rd Qtr.	66	4th Qtr.	66



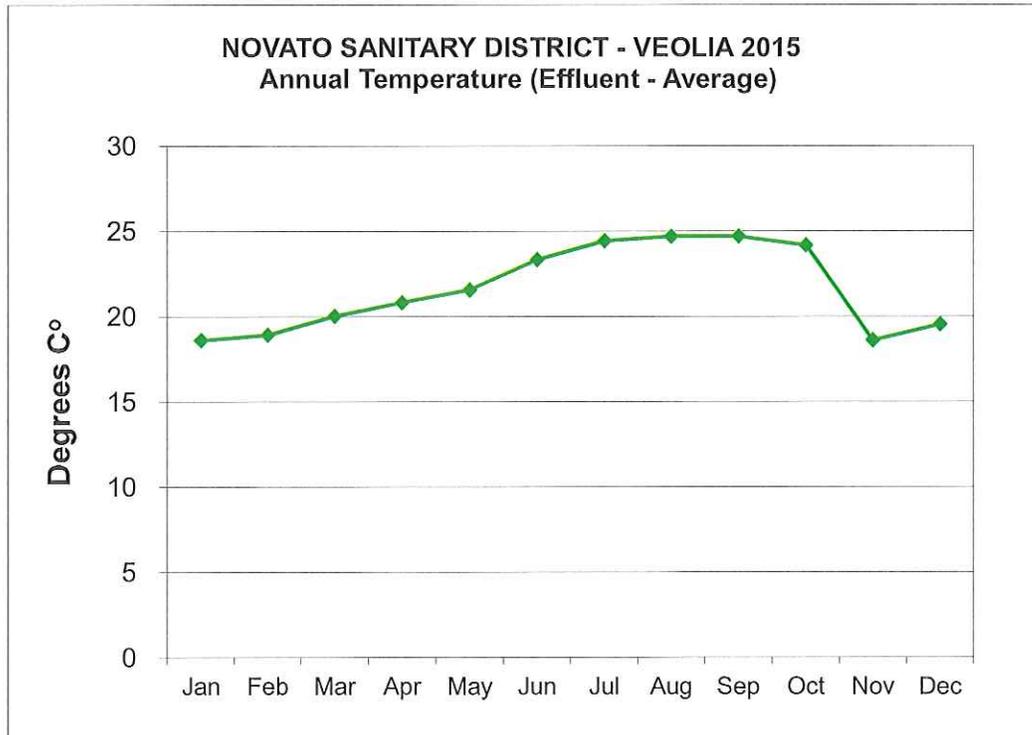
**NOVATO SANITARY DISTRICT - VEOLIA
TEMPERATURE (Effluent)**

Annual Waste Characteristics & Loading Summary

YEAR: 2015

PRINT DATE: 30-Mar-2016

	High	Low	Average	Number of Samples						
January	19.3	17.7	18.6	22.0						
February	19.5	18.1	19.0	20.0						
March	21.1	18.5	20.1	22.0						
April	21.8	19.7	20.9	22.0						
May	22.2	20.9	21.6	21.0						
June	24.4	21.9	23.4	22.0						
July	25.4	23.5	24.5	23.0						
August	26.1	23.7	24.7	21.0						
September	25.7	23.1	24.7	22.0						
October	24.9	23.5	24.2	22.0						
November	19.3	17.7	18.6	22.0						
December	21.4	18.3	19.6	22.0						
ANNUAL MAX.				26.1	23.7	24.7	Number of Samples Total = 261			
ANNUAL MIN.				19.3	17.7	18.6	1st Qtr.	64	2nd Qtr.	65
ANNUAL AVG.				22.6	20.6	21.6	3rd Qtr.	66	4th Qtr.	66



2015 ANNUAL OPERATIONS AND MAINTENANCE REPORT Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station

Community Outreach Activities 2015

Veolia is proud to be a member of the Novato community and we are committed to supporting local activities. The following are events and organizations supported by Veolia in 2015.

School Fuel – Tour of Novato

Member Rotary Club Novato Sunrise (RCNS)

2015 American Crown Circus/Circus Osorio (RCNS)

Member – Novato Chamber of Commerce

Margaret Todd Senior Center Monthly Birthday Celebrations

Senior Pharmaceutical Collection

Senior Craft Fair

Senior Health Fair

Senior Health and Fitness Day

Rotary Club of Ignacio – Novato Bike and Hike

Chamber of Commerce Annual Golf Tournament

North Bay Leadership Council - Algebra Academy

North Bay Science Fair

Paint The Town Red – “Novato Birthday Bash”

2015 ANNUAL OPERATIONS AND MAINTENANCE REPORT
Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station

NORTH BAY SCIENCE FAIR
October 24, 2015



VEOLIA STAFF – Brian Exberger, John O'Hare, Lynda Rodefer, and John Bailey participated in the North Bay Science and Discovery Fair. The Veolia display highlighted water science, microbiology, and the inner workings of a wastewater treatment plant.

2015 ANNUAL OPERATIONS AND MAINTENANCE REPORT

Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station

SCHOOL FUEL – TOUR OF NOVATO May 2, 2015



Top Left – Lynda Farmery prepares for a big day of sand art
Fun was had by all!

2015 ANNUAL OPERATIONS AND MAINTENANCE REPORT
Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station

TITLE 22 – Recycled Water Production Report for 2015

All water produced by the NSD Recycled Water Facility was distributed by the North Marin Water District (NMWD).

Compliance testing for coliform was performed at the NMWD laboratory, NMWD is an ELAP certified facility.

RW Table 1 below provides a summary of the quantity and quality of recycled water produced by NSD.

RW Table 1

Novato Sanitary District 2015 Recycled Water Production Data								
	Water Delivered (Million Gal)	Effluent Turbidity (NTU)		Effluent CT Value (mg min/L)		Effluent Coliform (mpn/100 ml)		Notes
Criteria	1.7 mgd	<2		>450		<2.2		
		Max	Ave	Min	Ave	Max	7Med	
January	0.278	0.7	0.5	>450	>450	<2	<2	
February	*0.593							No Production in February
March	6.293	1.5	0.9	>450	>450	<2	<2	
April	7.890	2.0	1.5	>450	>450	220	4.5	See RW Table 2 for Violation Details
May	16.224	1.8	1.2	>450	>450	350	4.5	See RW Table 2 for Violation Details
June	13.309	2.0	1.4	>450	>450	<2	<2	
July	8.456	1.8	1.1	>450	>450	<2	<2	
August	19.064	1.5	0.9	>450	>450	<2	<2	
September	12.573	0.8	0.6	>450	>450	<2	<2	
October	10.000	1.6	1.0	>450	>450	<2	<2	
November	0.817	1.4	1.1	>450	>450	<2	<2	
December	0.000							No Production in December
TOTAL	95.497							

*Water Delivered in February was produced and stored in January.

2015 ANNUAL OPERATIONS AND MAINTENANCE REPORT
Novato Wastewater Treatment Plant and Ignacio Transfer Pump Station

Coliform

During the period April 25th through April 29th we experienced an inordinate number of Total Coliform values exceeding 2.2 mpn the problem surfaced again between May 11th and May 14th. During the two periods we reported three excursions in April and five in May. It is believed that all excursions were tied to a contaminated clear well used to store water during low demand and provide water during high demand. The clear well has been removed from service and will remain out of service until adequate improvements can be made to ensure reliable operation. No excursions were experienced prior to April 25th or after May 14th.

Table RW 2 below illustrates the dates and type of excursion(s).

Date	Value	Compliant	LIMITS		
			7 Sample Median >2.2 mpn	2 Sample >23 In 30 Days	>240 Any Sample
April 25, 2015	4.5	X	All sample results prior to April 28 th were compliant		
April 26, 2015	N/S				
April 27, 2015	140	X			
April 28, 2015	220			X	
April 29, 2015	4.5		X		
April 30, 2015	<2		X		
May 1, 2015	<2		X		
May 2, 2015	<2		X		
May 3, 2015	<2	X			
May 4, 2015	<2	X			
May 5, 2015	<2				
May 6, 2015	<2	X			
May 7, 2015	<2	X			
May 8, 2015	<2	X			
May 9, 2015	<2	X			
May 10, 2015	<2	X			
May 11, 2015	49			X	
May 12, 2015	<2	X			
May 13, 2015	350			X	X
May 14, 2015	5.6	X			
May 15, 2015	<2	X	All sample results after May 14 th were compliant		