CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

CLEANUP AND ABATEMENT ORDER R5-2015-0704
FOR

CALIFORNIA DEPARTMENT OF CORRECTIONS AND REHABILITATION
FOR
OPERATION OF WASTEWATER TREATMENT FACILITY
DEUEL VOCATIONAL INSTITUTION
SAN JOAQUIN COUNTY

This Order is issued to the California Department of Corrections and Rehabilitation (Discharger) based on provisions of California Water Code section 13304, which authorizes the California Regional Water Quality Control Board, Central Valley Region, (Central Valley Water Board or Board) to issue a Cleanup and Abatement Order (CAO or Order), and Water Code section 13267 Order, which authorizes the Board to require the submittal of technical reports.

The Assistant Executive Officer of the Central Valley Water Board finds, with respect to the Discharger's acts, or failure to act, the following:

1. The Discharger is the owner and operator of a wastewater collection, treatment, and disposal system, and provides sewerage service to the Deuel Vocational Institution (Facility), a California prison (prison).

2. The Facility discharges domestic wastewater to Deuel Drain, a water of the United States, tributary to the San Joaquin River via Paradise Cut within the Sacramento – San Joaquin Delta. The discharge to surface water was previously permitted by Waste Discharge Requirements (WDRs) Order R5-2008-0164 (NPDES CA0078093), which was effective 13 December 2008 through 28 March 2014. On 7 February 2014, WDRs Order R5-2008-0164 was rescinded and replaced by WDRs Order R5-2014-0014, effective 29 March 2014.

3. The Facility was upgraded to include nitrification, denitrification and membrane bioreactor (MBR) filtration in September 2010. The Discharger also constructed a Reverse Osmosis (RO) water treatment plant to provide higher quality drinking water and to reduce electrical conductivity (EC) in the influent to the wastewater treatment plant.

VIOLATIONS OF WDRS ORDER R5-2014-0014

<u>Chronic Toxicity</u>

4. Effluent Limitations and Discharge Specifications Section IV.A.e. of the WDRs R5-2014-0014 states: "*There shall be no toxicity in the effluent discharge.*"

5. On 12 January 2012, the Discharger exceeded the chronic toxicity trigger level of 1 Toxic Unit Chronic (TUc) with a reported result of 1.33 TUc for *Selenastrum capricornutum*. Consequently, the Discharger initiated accelerated monitoring but was unable to achieve

four consecutive accelerated monitoring tests that did not exceed the monitoring trigger. After several requests made by Board staff in September 2012, the Discharger began a Toxicity Reduction Evaluation (TRE). On 27 March 2013, the Discharger submitted the TRE final findings report (report). The report concluded that one of the sources of toxicity is high EC. The wells which supply drinking water to the facility inmates and staff has high EC and a RO plant had been installed for the removal of contaminants and to provide potable water. However, when the RO plant is not operational, the wastewater treatment plant effluent has elevated EC which results in chronic toxicity. The report states, "…*When collecting samples for chronic toxicity testing, DVI's Waste Water Treatment Plant (WWTP) staff should first identify and verify the operational status of the ROP* [reverse osmosis plant]*… If found to be off line for maintenance, staff should postpone sampling until the unit is back online. However, if a sample must be collected for either regular quarterly monitoring or accelerated and/or TRE monitoring, DVI staff should note this information when reporting the results, particularly if the results indicate toxicity of the effluent."*

6. The RO plant was permitted to operate in February 2010. Since that time, the RO plant has not operated during all or part of the following months[1]:

   1. April 2010 – February 2012: Out of service due to severe corrosion and cracking discovered in components of the brine conversion system (BCS).
   2. March 2012: BCS out of service for a planned inspection.
   3. May 2012 – June 2012: BCS was out of service for cleaning. Heat exchanger problem was discovered during restart, delaying the routine service.
   4. November 2012: BCS was out of service for cleaning.
   5. November 2013 – December 2013: BCS was out of service for cleaning. Heat exchanger plates were changed out for thicker titanium plates.
   6. October 2014 – current: BCS out of service.

   To summarize, the RO plant has only operated for 16 months of the 48 months since it has been permitted to operate (i.e., it has operated 33% of the time). Chronic toxicity tests conducted while the RO plant is not operating continue to show toxicity to *Selenastrum capricornutum.*

   <u>Effluent Limitation Violations</u>

7. WDRs Order R5-2008-0164 Effluent Limitations IV.A.1.a. includes, in part, the following effluent limitations:

   a. Effective immediately, the Discharger shall maintain compliance with the effluent limitations at Discharge Point No. 001…..

[1] Citation No. 01-10-15C-002 from the State Water Resources Control Board Division of Drinking Water to Deuel Vocational Institution, 2 March 2015.

Table 6. Effluent Limitations – Discharge Point No. 001

Parameter	Units	Average Monthly
Nitrate Nitrogen, Total (as N)	mg/L	10

8. According to the Discharger's self-monitoring reports (SMRs), between 1 December 2013 and 28 March 2014, the Discharger violated the total nitrate nitrogen monthly average effluent limitation on two occasions. The Discharger was assessed mandatory minimum penalties (MMPs) of $6,000 for these violations.

9. WDRs Order R5-2014-0014 Effluent Limitations IV.A.1.a. includes, in part, the following effluent limitations:

    a. Effective immediately, the Discharger shall maintain compliance with the effluent limitations at Discharge Point No. 001…

Table 4. Effluent Limitations – Discharge Point 001

Parameter	Units	Average Monthly
Nitrate Plus Nitrite (as N)	mg/L	10

10. According to the Discharger's SMRs, the Discharger violated the nitrate plus nitrite monthly average effluent limitation on two occasions in August and September 2014. These violations were not subject to MMPs[2]. The Discharger stated that high nitrate plus nitrite is due to manual operation of the membrane bioreactor (MBR), which decreases the detention time in the denitrification process resulting in high nitrate plus nitrite in effluent.

THREATENED VIOLATIONS OF WDRS ORDER R5-2014-0014

11. According to Standard Provision I.D of WDRs Order R5-2014-0014, the Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Discharger to achieve compliance with the conditions of the WDRs. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures.

    <u>Membrane Bioreactor (MBR)</u>

12. During an 18 February 2015 compliance inspection, Board staff noticed that the MBR was being manually operated. According to the Discharger, the MBR modules have been damaged due to inadequate maintenance, resulting in reduced filtration efficiency; therefore, it is necessary to operate the MBR manually. The manufacturer of the Facility's MBR is Siemens. Siemens recommends in their Operations and Maintenance Manual, which was provided to the Discharger at the start-up of operations, that the membranes be removed and cleaned at least once per year. The Discharger stated that a crane is needed to remove the filters. Due to the time delay in permitting a crane to work at the

[2] MMPs were not assessed because the concentration did not exceed the effluent limit by more than 40%.

Facility, the membranes were not properly pulled and cleaned for 2 ½ years. The lack of proper maintenance and the resulting nitrate effluent violations is a violation of the WDRs.

13. According to the 21 February 2010 Siemens report regarding the MBR (found as Attachment A to this CAO), Siemens notified the Discharger that their membrane has been damaged by screenings bypass and the membrane warranty does not cover this damage. The report states, "…*Once the source of the screenings bypass is eliminated, Siemens suggests the membrane modules be manually cleaned of as much debris as possible…removing trash from the fibers can cause damage. However, with excursions like these the only option of trash removal is by hand cleaning the modules...*"

14. According to the 25 January 2013 Siemens MBR inspection report (found as Attachment B to this CAO), it was noted that 80% of the jets were plugged and 80% of modules were also packed with sludge and the condition of the membrane modules is clearly inefficient, as shown in the photo log attached to Siemens' inspection report.

15. According to the 24 July 2014 recommendation regarding the MBR modules (found as Attachment C to this CAO), Evoqua Water Technologies recommended actions to improve the performance of the MBR. The report finds that the MBR modules must be replaced and states that, "…*cleaning recommendations are based our visit to your site January 22-24, and may, for a time, allow you to get more useable flow through the system. The improved efficiency should help you to get by until the new modules arrive at site. Technically speaking; however, the module replacement is overdue as they have reached the end of their useful life…"*

Chemical Reagent

16. During the 18 February 2015 compliance inspection, Board staff observed one bottle of chemical standard reagent for total chlorine residual had expired in 2014 and was still in use. Board staff is concerned that the current system to track expiration dates of reagents and laboratory controls does not comply with the Standard Provisions.

Standard Operating Procedures

17. During the 18 February 2015 compliance inspection, Board staff noted that the Discharger has not developed standard operating procedures (SOPs). SOPs are necessary for proper operation and maintenance of the Facility to ensure consistency among operation and maintenance staff. In addition, SOPs will assist the Discharger in training new operators, which is critical in assuring the Facility is properly operated and maintained.

Adequate Staffing

18. According to Chapter 26 of Division 3 of Title 23 of the California Code of Regulations:

> …. a chief plant operator shall appoint a certified operator to be the designated operator-in-charge for any period of time during which the chief plant operator is unable to carry out the responsibilities of the position of "chief plant operator" as defined in section 3671.

19. According to the 2013 and 2014 Annual Operations Report, the Facility has only two full time operators. The chief plant operator oversees multiple operations, including those at the RO plant. Because there are only two full time operators, there may be times when there isn't another certified operator for the chief plant operator to designate in his absence. Moreover, it appears that the Discharger needs more than two staff to respond to maintenance needs of the Facility, especially when the Facility is operated manually.

Housekeeping

20. During the 18 February 2015 compliance inspection, Board staff noted general housekeeping issues in and around the Facility's grounds. Specifically, it was found that the Discharger uses the site for general storage of old and unused equipment, vehicles, metal debris, and dumpster bins. Pooled water from a recent broken pipeline was also observed during the inspection. Good housekeeping practices and procedures are necessary to ensure that the activities at the Facility protect groundwater and surface water quality.

Influent Flows

21. According to Standard Provision A.2.k. of the WDRs, a publicly owned treatment works whose waste flow has been increasing, or is projected to increase, shall estimate when flows will reach the hydraulic and treatment capabilities of the treatment and disposal facilities.

22. Based on the 18 February 2015 compliance inspection and evaluation of membrane efficiency, Board staff is concerned that the Facility may not have enough treatment capacity to capture all wastewater flows and treat to tertiary standards as set forth in WDRs Order R5-2014-0014. In addition, the Discharger stated that if all inmates in the prison were to flush at or around the same time, the Facility would not have sufficient capacity to treat all of the flows. During summer months, inmates fill the basins in their cells to bathe, which potentially increases the dry weather flows from the Facility.

REGULATORY CONSIDERATIONS

23. The Discharger is in violation of the WDRs because the reverse osmosis treatment plant, which removes salts and therefore allows the wastewater treatment plant to comply with effluent limits, has failed to operate reliably and has remained out of service for 66% of the time since it was permitted. Without the reverse osmosis plant, the discharged effluent will likely continue to exceed chronic toxicity limits. In addition, inadequate operation and maintenance has resulted in water quality exceedances above the permitted effluent limitations. When left unaddressed, there is a likely potential that the discharges of domestic wastewater will continue to contain levels exceeding the chronic toxicity and nitrate/nitrite limits in WDRs Order R5-2014-0014. Requiring the Discharger to comply with this Order, including the requirement to continuously operate the RO plant and reporting obligations related to the operations and maintenance of the RO plant, are necessary remedial actions to prevent wastewater from polluting Deuel Drain and its connected tributaries.

24. As a result of the events and activities described in this Order, the Regional Board finds that the Discharger has caused or permitted, or threatens to cause or permit, waste to be discharged in such a manner that it threatens to cause, or has caused, a threat to public health and/or created a condition of pollution or nuisance. These actions subject the Discharger to this Order under Section 13304 of the California Water Code.

25. The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition* (Basin Plan) designates beneficial uses, establishes water quality objectives, contains implementation plans and policies for protecting waters of the basin, and incorporates by reference plans and policies adopted by the State Board. These requirements implement the Basin Plan.

26. Surface water drainage is toward the San Joaquin River in the Sacramento San Joaquin Delta Hydrologic Area (544.00). The beneficial uses of the Sacramento San Joaquin Delta are municipal and domestic supply; agricultural supply; industrial supply, water contact recreation; non-contact water recreation; warm freshwater habitat; cold freshwater habitat; migration of aquatic organisms; spawning reproduction and/or early development; wildlife habitat; and navigation.

27. The beneficial uses of the underlying groundwater are municipal and domestic supply, agricultural supply, industrial service supply, and industrial process supply.

28. Water Code section 13304(a) states, in relevant part: *Any person who has discharged or discharges waste into the waters of this state in violation of any waste discharge requirement or other order or prohibition issued by a regional board or the state board, or who has caused or permitted, causes or permits, or threatens to cause or permit any waste to be discharged or deposited where it is, or probably will be, discharged into the waters of the state and creates, or threatens to create, a condition of pollution or nuisance, shall upon order of the regional board, clean up the waste or abate the effects of the waste, or, in the case of threatened pollution or nuisance, take other necessary remedial action, including, but not limited to, overseeing cleanup and abatement efforts.*

29. Water Code section 13267(b) states, in relevant part: *In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region … shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.*

30. The technical reports required by this Order are necessary to ensure compliance with this Order and WDRs Order R5-2014-0014, and to ensure the protection of surface water and groundwater. The Discharger owns and operates the Facility that discharges waste subject to this Order and WDRs Order R5-2014-0014. Reports related to the operation

and maintenance of all facilities and systems of treatment and control (including the RO plant) are necessary for the Discharger to properly assess and document the treatment capacity, staff requirements, procurement processes, contingency measures, and the like to achieve compliance with conditions of WDRs Order R5-2014-0014. The burden, including costs, of producing the technical reports is outweighed by the need of the reports in ensuring compliance with the WDRs Order R5-2014-0014 and ensuring the protection of water quality.

31. This Order conforms to, and implements policies and requirements of, the Porter-Cologne Water Quality Control Act (Division 7, commencing with Water Code section 13000) including: (1) Water Code sections 13267 and 13304; (2) applicable state and federal regulations; (3) all applicable provisions of Statewide Water Quality Control Plans adopted by the State Water Resources Control Board (State Board) and the *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins*, Fourth Edition, revised October 2011, (hereafter "Basin Plan") adopted by the Regional Board; (4) State Board policies and regulations, including State Board Resolution No. 68-16 (Statement of Policy with Respect to Maintaining High Quality of Waters in California), and Resolution No. 92-49 (Policies and Procedures for Investigation and Cleanup and Abatement of Discharges under Water Code section 13304) ("Resolution 92-49"); CCR Title 23, Section 3890 et. seq., and (5) relevant standards, criteria, and advisories adopted by other state and federal agencies.

32. On 14 February 2014, the Executive Officer designated Andrew Altevogt, Assistant Executive Officer, as the Lead Prosecution Officer for all enforcement matters originating in the Central Valley Region. The 14 February 2014 Delegation of Authority also authorizes Andrew Altevogt to issue Cleanup and Abatement Orders.

33. The issuance of this Order is an enforcement action taken by a regulatory agency and is exempt from the provisions of the California Environmental Quality Act (Pub. Resources Code, § 21000 et seq.) pursuant to California Code of Regulations, title 14, section 15321(a)(2).

IT IS HEREBY ORDERED, pursuant to Water Code sections 13304 and 13267 of the California Water Code, that the California Department of Corrections and Rehabilitation shall cleanup and abate the water quality impacts caused by the wastewater treatment plant at the Deuel Vocational Institution, and take the necessary remedial actions in the case of threatened water quality impacts, in accordance with the scope and schedule set forth below.

This Order requires submittal of technical reports. These technical reports shall contain the information and decisions required by the following paragraphs. If a report is submitted without the required information or decision, then the Discharger is in violation of this Order and subject to additional enforcement action.

All technical reports required by this Order must be converted to a searchable pdf file and emailed to centralvalleysacramento@waterboards.ca.gov. The following information shall be included in the body of the email: Attention Mohammed Farhad, Compliance Section, NPDES

Unit. In addition, include the Discharger's name, facility name, county, and CIWQS place ID (642462) in the body of the email.

1. The Discharger shall **immediately** comply with all aspects of WDRs Order and Monitoring and Reporting Program R5-2014-0014, including complying with effluent limits.

2. Unless the Discharger presents an alternative plan to reduce the electrical conductivity in its waste stream, beginning **10 April 2015**, the Discharger shall **continuously** operate the RO plant at all times.

    a. In event that the RO plant is taken off-line for maintenance for more than 24 hours, the Discharger shall immediately notify the Central Valley Water Board and state when the RO plant will return to operation.

    b. In the event that the RO plant is taken off-line for more than seven days, the Discharger shall immediately submit a time schedule for when the RO plant will return to operation. In addition, beginning on the eighth day after the RO plant is taken off-line, the Discharger shall conduct three species chronic toxicity testing, as specified in MRP V.B. of WDRs R5-2014-0014, to determine whether the effluent is contributing chronic toxicity to the receiving water due to the RO plant being off-line. The chronic toxicity monitoring results shall be reported to the Central Valley Water Board within 15 days following completion of the test and shall contain an updated chronology of chronic toxicity test results expressed in TUc, organized by test species, and type of test (survival, growth or reproduction).

    c. As of **10 April 2015**, if the RO plant is off-line for more than seven days, then the Discharger shall provide alternate drinking water to inmates and staff, as required by Citation No. 01-10-15C-002 from the State Water Resources Control Board Division of Drinking Water to Deuel Vocational Institution. Within **one day** of providing alternate drinking water, the Discharger shall notify Board staff that it has done so.

3. By **1 May 2015**, the Discharger shall submit a *RO Plant Spare Parts Status* report documenting that the RO plant has adequate spare parts available, describe redundancy and/or features in place for continuous operation, and an action plan containing a schedule to prevent chronic toxicity when the RO plant is taken off-line for maintenance.

4. By **1 May 2015**, the Discharger shall submit a *MBR Modules Replacement Time Schedule* for replacing membrane bioreactor (MBR) modules, which shall be replaced no later than **31 March 2016**. The schedule shall include the process for all contracting actions necessary to complete the work.

5. By **1 June 2015**, the Discharger shall update and submit the Facility's *Operation and Maintenance (O&M) Manual and Standard Operating Procedures (SOPs)* to maximize efficiency of the MBR under current operating conditions such that the wastewater treatment plant effluent will meet all requirements of WDRs Order R5-2014-0014.

6. By **1 September 2015**, the Discharger shall submit a *Time Schedule for Cleaning and Properly Maintaining Facility Grounds* for either removing and/or adequately storing broken and unused equipment, non-operational vehicles, metal debris and dumpster bins, to assure protection of groundwater and surface water quality.

7. By **1 October 2015**, the Discharger shall submit a *Third Party Selection Report.* The Discharger shall contract with a qualified Professional Engineer or Registered Geologist third party to complete the evaluation required by Item #9, below. The report due on 1 October 2015 shall contain the name of the selected third party, their statement of qualifications, and the contract for services.

8. By **1 May 2016**, the Discharger shall submit a *MBR Modules Replacement Final Report* and *Updated O&M Manual.* The Replacement Report shall document that the MBR modules have been replaced and are operational. The Updated O&M Manual shall contain procedures to ensure that the newly installed MBR modules are maintained properly and in accordance with the manufacturer's recommendations

9. By **1 June 2016**, the Discharger shall submit a *Third Party Evaluation of the Operation and Maintenance* of the Facility, which includes recommendations on how to adequately operate and maintain the Facility. The review shall be completed by the individual identified in the report required by Item #7, above. At a minimum, the items listed below shall be reviewed and evaluated. The *Evaluation* shall contain recommendations for any needed improvements.

   a. Appropriate staffing levels for the Facility's operations;
   b. Appropriate staffing levels for the Facility's maintenance;
   c. Redundancy processes and/or features for the Facility and RO Plant to ensure compliance with WDRs;
   d. The Facility's treatment capacity at maximum projected flows in the summer and winter;
   e. The backlog of corrective and preventive maintenance work orders; and
   f. Determine if industrial activities (including vocational training programs) occurring at the Facility are subject to or require coverage under the Industrial Storm Water General Permit.

10. **Beginning with the first quarter 2014**, the Discharger shall submit quarterly progress reports describing the work completed to date to comply with each of the above requirements, as well as what work will be conducted in the next quarter. The Quarterly Progress Reports shall be submitted by the **30th day of the month following the end of the quarter** (e.g. by 30 April, 30 July, 30 October, and 30 January).

As required by the California Business and Professions Code sections 6735, 7835, and 7835.1, all reports shall be prepared by, or under the supervision of, a California Registered Engineer or Professional Geologist and signed by the registered professional.
Any person signing a document submitted under this Order shall make the following certification:

> *"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my knowledge and on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."*

If the Discharger is unable to perform any activity or submit any document in compliance with the schedule set forth herein, or in compliance with any work schedule submitted pursuant to this Order and approved by the Assistant Executive Officer, the Discharger may request, in writing, an extension of the time specified. The extension request shall include justification for the delay. Any extension request shall be submitted as soon as a delay is recognized and prior to the compliance date. An extension may be granted by revision of this Order or by a letter from the Assistant Executive Officer.

If the Discharger fails to comply with the provisions of this Order, the Assistant Executive Officer may refer this matter to the Attorney General for judicial enforcement or may issue a complaint for administrative civil liability. Failure to comply with this CAO may result in the assessment of administrative civil liability up to $5,000 per violation per day, pursuant to Water Code section 13350, and up to $1,000 per day pursuant to Water Code section 13268. The Central Valley Water Board reserves its right to take any enforcement actions authorized by law. Water Code sections 13268, 13350, and/or 13385

Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Board to review the action in accordance with Water Code section 13320 and California Code of Regulations, title 23, sections 2050 and following. The State Water Board must receive the petition by 5:00 p.m., 30 days after the date of this Order, except that if the thirtieth day following the date of this Order falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Board by 5:00 p.m. on the next business day. Copies of the law and regulations applicable to filing petitions may be found on the Internet at: http://www.waterboards.ca.gov/public_notices/petitions/water_quality or will be provided upon request.

This Order is effective upon the date of signature.

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Andrew Altevogt, Assistant Executive Officer

_____

(Date)

Attachment A: Siemens MBR Report
Attachment B: Siemens MBR Inspection Report
Attachment C: Evoqua Water Technologies MBR Recommended Actions

MoF/KH/WW: 30March2015

SIEMENS

February 21, 2010

Chris Clardy
Water & Sewage Plant Supervisor
CDCR - Deuel Vocational Institution
23500 Kasson Rd
Tracy, CA95376
(209) 835-4141 x5897

Ref: Siemens MBR Project 43026 DVI, Tracy, CA

Dear Chris,

We have been in contact with your plant regarding the screenings bypass debris that has accumulated in the membrane modules supplied by Siemens. Our initial contact with you on this subject matter was on 1/6/2011. Since then we have observed several photos from the plant showing the debris that appears to be accumulated in the membranes. The level of debris we observed in the photos raises our concern over the long term integrity of the membrane modules.

As you may know our membrane warranty does not cover damage caused by screenings bypass. We suggest that the screenings bypass be eliminated as soon as possible to prevent further damage to the membranes. Once the source of the screenings bypass is eliminated, Siemens suggests the membrane modules be manually cleaned of as much debris as possible. Manual cleaning is an activity that we try to avoid as the action of physically removing trash from the fibers can cause damage. However, with excursions like these the only option of trash removal is by hand cleaning the modules. It is needed to prevent further damage and to prevent accumulation of solids within the trash that can lead to solids packing of the membranes. We suggest you schedule this cleaning with us in advance so that we can make arrangements to be onsite to oversee this cleaning process. We can count this as one of our required follow-up trips.

Once the membranes have been manually cleaned, we recommend performing a sodium hypochlorite CIP on each tank. Following the manual and chemical cleaning we suggest the facility assess the condition of the membrane modules by running each tank at the design peak flux rates to confirm hydraulic capacity. Based on the results of the hydraulic capacity testing, Siemens will make an assessment of the damage caused by the screenings bypass.

Sincerely,

Branden E. Hudson
Project Manager
Biological and Clarification
Siemens Water Technologies

cc: Jeff Piccirillo, Gerry Kwiatkowski (Siemens)
Mike Tooley (Misco)
Chris Cleveland, Keith Corcoran (Carollo Engineers)
Steve Haslam (RGW Construction)

Siemens Water Technologies Corp.
1901 South Prairie Avenue
Waukesha, WI 53189
Tel: (262) 547-0141
Fax: (262) 547-4120
www.siemens.com/water

FIELD SERVICE REPORT

Service Technician	**Russell Goodpasture**	**Date of Report:**	**1-25-2013**
Project No:	**SAP # 1190/000049 Field Service Time 1190/000049.W.01.L - 5003015 - FSA0 Field Service Expenses 1190/000049.W.01.D 43026**	**Project Manager:**	**John Hartwick Branden Hudson,**
Product (s) Inspected:		**Date(s) of Service:**	**1-22-24-2013**
Customer: **(Main Contact, Title, Phone & Email)**	**DUELL VOCATIONAL INST. Mullins, Daniel@CDCR [mailto:Daniel.Mullins@cdcr.ca.gov]**		
Jobsite Name: **(Installation name, & Address City/State)**	**DVI 23500 Kasson Road, Tracy, CA 95304**		
Jobsite Contact: **(Main Contact, Title, Phone & Email)**			
WWTP Supervisor/Plant Mgr or Superintendent **(Name, Phone & Email)**	**Mullins, Daniel@CDCR [mailto:Daniel.Mullins@cdcr.ca.gov]**		
Equipment: **(Include Description)**	**MBR**		
Unit Designation per Drawing:			
Engineer Contact: **(Main Contact, Phone & E-mail – if available)**	**na**		

<u>Service Objective:</u>
Investigate the condition of the membrane system low permeability and high TMP.
<u>Details of Services Performed:</u>
Tank #4 was taken out of service. Packed sludge and trash was removed from MEMJET header piping. 80% of the jets were plugged and the last 3 to 4 jets in the piping were packed with sludge. 80% of the Modules were also packed with sludge. The modules were clean of the packed sludge. There is a good amount of plastic tangle in the fibers of the modules. The fibrousness material seen at other site was not present. I have included pictures from the site.

When I was on site the plant was running with three tanks online running at rate of 174 GPM per tank. Mix liquor total flow of 2427 GPM. The Air scours total flow of 1328 SCFM. The filtrate temperature of 76 degrees F. The ML is (per there test) 7000 PPM in bio tanks and 8842 RAS from the membrane tanks. It looks higher than that? They are wasting 5000 gals. Per day with

FIELD SERVICE REPORT

an SRT of 60 days this was just been changed form 120 days. The ml in the bio tank CST test results was 36.8.
Tank 1 TMP 2 psi and the perm. 2.78.
Tank 2 TMP 2 0.85 psi and the perm. 6.48.
Tank 3 TMP 1.93 psi and the perm. 2.69.
They were going to perform a HCIP on tank 4 before they put it back in service.
As time would allow them they were to perform the same maintenance on the remaining of the tanks.
I will be sending all of my pictures under a addition email from the visit to the site.

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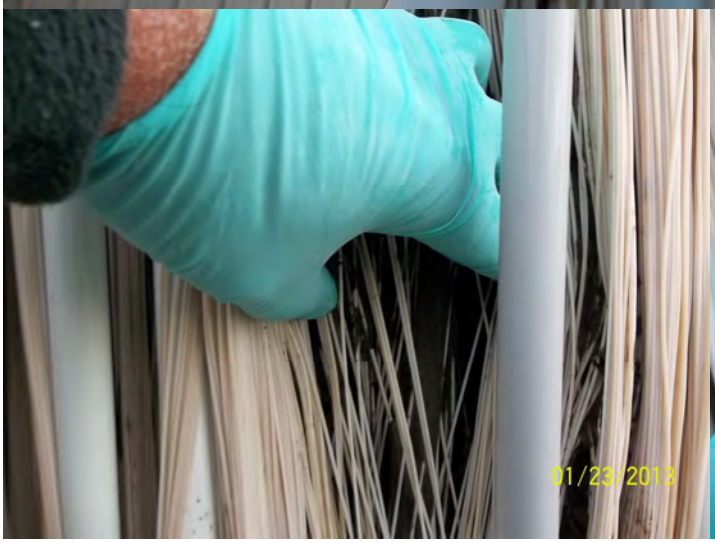

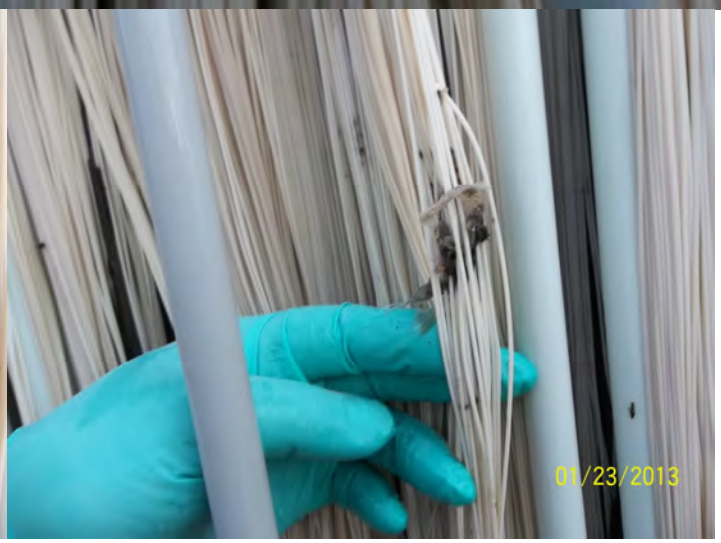

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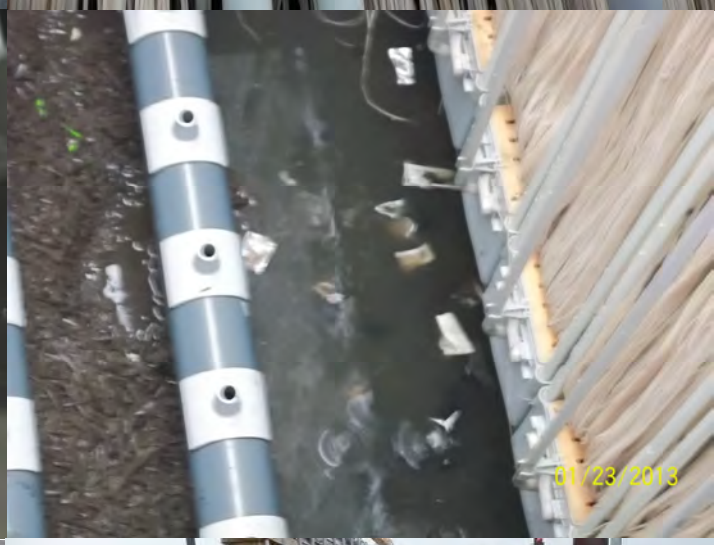

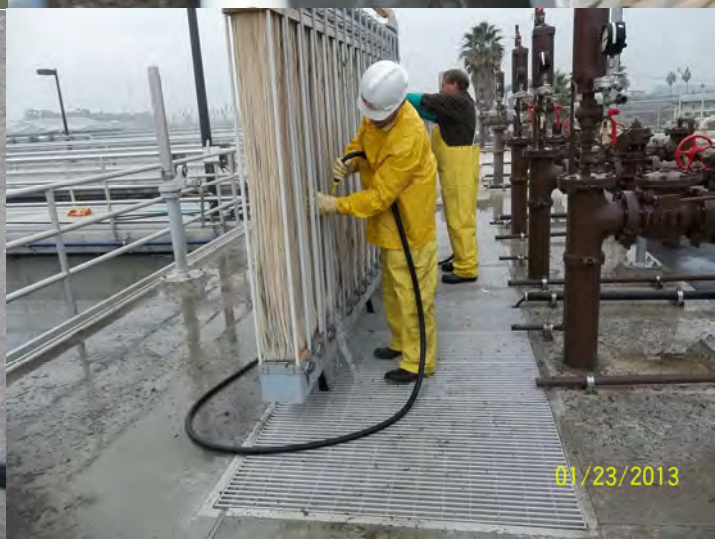

FIELD SERVICE REPORT

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Additional Service Trips Required:	
for this unit?	
for entire job?	
Can Certification form be sent for this unit?	

Check list Required for this trip?	
Checklist Attached?	
Checklist Completed?	

FIELD SERVICE REPORT

INTERNAL ONLY:

Time Allocation for PM

General comments

Aftermarket Parts:

Action Items:

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July 24, 2014

ROBERT ENGLEHEART
Regional Manager
California Department of Corrections and Rehabilitation

Dear Robert,
Please see the recommendation below regarding the MBR Modules at your facility.

DUELL VOCATIONAL INST (DVI) Tracy, CA
Recommended action to improve the performance of the installed MBR modules.

The primary issue is trash and debris in the BIO system that collects and causes the jets to become plugged. Once this occurs, the modules get extremely dirty and will not function efficiently, so an in place cleaning becomes necessary. As the modules age and are cleaned repeatedly via the clean in place system, they lose some efficiency each time so that over a period of years, they cannot be cleaned enough to get back to an acceptable operational level. At this point they must be replaced.
The following cleaning recommendations are based our visit to your site January 22-24, 2013, and may, for a time, allow you to get more useable flow through the system. The improved efficiency should help you to get by until the new modules arrive at site. Technically speaking; however, the module replacement is overdue as they have reached the end of their useful life.

Procedure:

- Drain and inspect modules for packing/fouling if the modules are packed with sludge, proceed to the next steps. If they are not packed increase the intervals of the Hypo Clean in Place (HCIP) process.
- If packing is present pull modules and hand clean each of them.
- Clean all trash and sludge from the Memjet headers in the bottom of the tanks to allow for maximum flow through all jets.
- Keeping the module wet during this process is essential. If the modules are allowed to dry out, their performance will be further impaired.
- Perform a Hypo Clean in Place (HCIP) on each tank after hand cleaning
- Place cleaned tank back in operation.

NOTE: It should be understood that this process will/may provide a temporary operational improvement in your MBR module system. It should not be expected to provide a long term solution for your location.

With kind regards,

Charles Harrison, MTO Aftermarket

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