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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

May 29, 2007

In Reply Refer To: WTR-7

Eric Tieg, Owner
Process Stainless Lab, Inc.
1280 Memorex Drive
Santa Clara, California 95050

Re: April 10, 2007 Clean Water Act Inspection

Dear Mr. Tieg:

Enclosed is the May 29, 2007 report for our inspection of the Process Stainless Lab facility in Santa Clara. Please submit a short response to the Summary of Findings in Section 3.0 of this report to EPA, with copies to the City of San Jose and the Regional Water Quality Control Board, by **July 31, 2007**.

The main findings are summarized below:

1. This Process Stainless Lab facility is subject to the federal categorical standard, 40 CFR 433. Based on the monitoring data through February 2007 which we reviewed, this facility has not exceeded any of the federal categorical limits, as listed in 40 CFR 433.17.
2. The City of San Jose will need to revise the wastewater discharge permit (No. SC-276B) accordingly.
3. The facility's discharges of slurry from the Sludge Thickener Tank directly to the city sewer line were in violation of the federal pretreatment regulations, specifically 40 CFR 403.17(d).
4. The facility was in violation of at least one other portion of the federal pretreatment regulations in 40 CFR 403.12.

We would like to thank you and your staff for your helpfulness and courtesy during the inspection. We remain available to you and the City of San Jose to assist in any way. If you have any questions, please call Anna Yen at (415) 972-3976 or e-mail her at yen.anna@epa.gov.

Sincerely,
<Original signed by>
Ken Greenberg
Chief, CWA Compliance Office

Enclosure

cc: Heidi Geiger, City of San Jose, enclosure by e-mail
Michael Chee, RWQCB-San Francisco Bay, enclosure by e-mail

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U.S. Environmental Protection Agency
Region 9
Clean Water Act Compliance Office

NPDES Compliance Evaluation Inspection Report

Industrial User:	Process Stainless Lab, Inc.
Industrial User Address:	1280 Memorex Dr., Santa Clara, CA 95050
Inspection Date:	April 10, 2007
EPA Region 9 Inspectors:	Greg Arthur, Environmental Engineer Anna Yen, Environmental Engineer Water Division, CWA Compliance Office
City of San Jose Inspectors:	Heidi Geiger, Source Control Program Supervisor Paul Alexa, Environmental Inspector II City of San Jose, Environmental Services Department

Facility Contact During Inspection: Eric Tieg, Owner

Report Prepared by Anna Yen on May 29, 2007.

1.0 Scope and Purpose

EPA learned that the Process Stainless Lab facility in Sparks, NV would be subject to the metal finishing federal categorical standard, but the City of San Jose had determined that the Santa Clara facility was not subject to the categorical standard. The main purpose of the inspection on April 10, 2007 was to determine whether the Santa Clara facility was subject to 40 CFR 433. An additional objective was to determine the facility's compliance status with applicable federal regulations.

1.1 Process Description

Process Stainless Lab began operations at the Santa Clara facility in 1996. This facility primarily provides electropolishing services of stainless steel parts. It more infrequently provides cleaning of aluminum parts. All steps of electropolishing and cleaning of aluminum are performed by employees and are not automated.

<u>Electropolishing Line</u>

1. **Degreasing** – The part is dipped in a 10-15% potassium hydroxide (KOH) solution.

2. **Alkaline spray rinse with water** – The part is spray rinsed over a tank.
3. **Electropolish with acid solution** – The part is dipped in a 75% phosphoric acid/25% sulfuric acid solution.
4. **Drag-out rinse** – The part is dipped in water. Then it is spray rinsed over the tank.
5. **Nitric acid passivation dip** – The part is dipped in a nitric acid solution, which is at 50-70% (water solution), to remove any surface residue and to add a thin protective oxide film.
6. **Spray rinse** – The part is spray rinsed off with a mixture of water and air over grid flooring. The water-air mixture is sprayed out of a hose connected to a 50-gallon drum of water. The source water is city water further treated by reverse osmosis and ion exchange. The water sprayed over the steel part simply collects in the secondary containment under the grid flooring.
7. **Hot deionized water** – The part is set into a tank of hot deionized water until it is ready to be dried off.
8. **Drying** – The part is dried using compressed air and is simply toweled off.

Desmut of Aluminum
Hydrofluoric acid dip – The part is dipped in hydrofluoric acid to remove marks. The hydrofluoric acid essentially removes a layer of aluminum oxide.

Wastewater Treatment System
See Section 1.3

Miscellaneous Systems
- Reverse Osmosis (RO) Water Treatment System
- Ion Exchange (Deionized) Water Treatment System

1.2 Facility Wastewater Sources

Process Stainless Lab generates wastewater streams from the electropolishing line. In particular, the wastewater sources are as follows:

- Alkaline spray rinse (after degreasing) – tank is drained through pipe to the secondary containment area
- Spray water under grid flooring in secondary containment area
- Acidic electropolishing spent drag-out rinses – this wastewater stream is recycled and, therefore, not discharged to the city sewer system.
- RO reject stream
- RO overflow stream

The first two wastewater sources listed above are treated in the on-site wastewater treatment system before being discharged to the city sewer system. The last two wastewater sources above are discharged directly to the city sewer system.

The acidic electropolishing spent drag-out rinses are reclaimed onsite. The very dilute acidic solution is pumped out of a drag-out rinse tank to the Evaporator Tank for acid

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recovery. The resulting acidic solution from the Evaporator Tank is reused in the electropolishing line

Other wastes
The other steps of the electropolishing line do not generate wastewater streams. However, there may be some solids generated that are hauled offsite for hazardous waste disposal. Specifically,

- Degreasing – additional KOH solution periodically needs to be added to the tank; however, the solution in the tank does not need to be replaced or cleaned.
- Electropolish – additional acidic solution periodically needs to be added to the tank; however, the solution in the tank does not need to be replaced or cleaned.
- Drag-out rinse – Sludge accumulates at the bottom of the drag-out rinse tank and periodically needs to be cleaned out. Cleanout involves the following:
  - The dilute acidic solution is pumped to the Evaporator Tank for acid recovery (see more detailed description in above subsection)
  - The sludge is removed from the bottom of the drag-out rinse tank and hauled offsite for hazardous waste disposal.
- Nitric acid dip – additional acidic solution periodically needs to be added to the tank; however, the solution in the tank does not need to be replaced or cleaned.

Similarly, the hydrofluoric acid used for cleaning of aluminum occasionally needs to be added to the tank; however, the solution in the tank does not need to be replaced or cleaned.

1.3 Facility Process Wastewater Treatment System

Process Stainless Lab provides on-site batch treatment for the spray rinses following degreasing and nitric acid dip. All components of the treatment system were connected by hard piping. No flexible hosing was noted. The wastewater treatment consisted of the following steps:

- A sump pump pumps the wastewater (via hard piping) from the secondary containment area to a 550-gallon **Holding Tank (Tank #23)**.
- Wastewater is pumped from the Holding Tank to a 500-gallon **pH Adjustment Tank (Tank #13)**, where sodium hydroxide is metered and added for metals precipitation. A pH meter providing continuous measurement indicated a pH at that moment of approximately 8.0.
- The pH-adjusted wastewater is then discharged to a 500-gallon **Flocculation Tank (Tank #12)**. Here, ferrous sulfate and polymer are added to the wastewater for coagulation/flocculation of the metals precipitates.
- The wastewater is then directed to a plate **clarifier (Tank #24)**, where the floc settle out.
- The clarified liquid flows through a sample box, then is piped to a floor drain leading directly to the city sewer.
- The slurry in the clarifier is discharged to a 700-gallon **Sludge Thickener Tank (Tank #11)**, where the liquid is decanted off.

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- The sludge from the sludge thickener tank is pumped to a **filter press**, while the decanted liquid is directed back to the pH Adjustment Tank.
- The cake from the filter press drops into a small hopper directly beneath the filter press, to be hauled offsite for hazardous waste disposal. And the filtrate is recycled back to the pH Adjustment Tank.

See photos in Attachment B at end of report.

1.4 Wastewater Discharge

The following discharge lines run to one of two floor drains, as shown in the floor plan (*see Attachment A*):

- Treated wastewater from the wastewater treatment system
- RO reject stream
- RO overflow stream

Photo #9 in Attachment B shows one of the floor drains.

Wastewater from this Process Stainless Lab facility will discharge to the San Jose/Santa Clara Water Pollution Control Facility. The Cities of San Jose and Santa Clara own and operate this wastewater treatment plant under an NDPES permit (No. CA0037842).

2.0 Compliance with Federal Categorical Standards

Local Permitting

The City of San Jose had looked into the applicability of 40 CFR 433 and determined that the facility was not subject to this categorical standard. In the fact sheet for the local permit issued to the facility (Wastewater Discharge Permit No. SC-276B, dated August 1, 2002), San Jose states:

> IU does not perform one of the six core metal finishing operations on any base material found under 40 CFR 433 (Electroplating, Electroless Plating, Anodizing, Coating (chromating, phosphating, and coloring), Chemical Etching and Milling or Printed Circuit Board Manufacturing) and is therefore not categorical under 40 CFR 433. Although process performed are similar to chemical etching, IU does not produce a specific design or surface appearance on parts by controlled dissolution with chemical reagents or etchants. Only local limits and pH limit found at 40 CFR 403.5 will apply.

Federal Categorical Pretreatment Standards

Metal Finishing Point Source Category – 40 CFR 433
Pretreatment Standards for New Sources (PSNS) – 40 CFR 433.17

EPA has determined that this facility is, in fact, subject to the categorical standard of 40 CFR 433. The facility performs operations that would fall under at least two of the six "core metal finishing categories": (1) coating and (2) chemical etching and milling.

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The metal finishing regulations are supported by the U.S. EPA's technical conclusions detailed in the Development Document for Effluent Limitations Guidelines and Standards for the Metal Finishing Point Source Category (EPA 440/1-83/091, June 1983) (See 48 FR 32462 (July 15, 1983)). Page III-24 of the Development Document describes coating, in pertinent part, as follows:

> Coating – This manufacturing operation includes chromating, phosphating, metal coloring and passivating…. Passivating refers to forming a protective film on metals, particularly stainless steel and copper, by immersion in an acid solution. Stainless steel is passivated in order to dissolve any imbedded iron particles and to form a thin oxide film on the surface of the metal. Typical solutions for passivating stainless steel include nitric acid and nitric acid with sodium dichromate….

As described in Section 1.1, step 5 of the electropolishing line involves dipping the stainless steel part in a nitric acid solution. The purpose of this step is to remove any residue and to form a protective layer. This process is clearly passivation.

Page III-25 of the Development Document describes chemical etching as follows:

> Etching and Chemical Milling – These processes are used to produce specific design configurations and tolerances or surface appearances on parts…by controlled dissolution with chemical reagents or etchants. Included in this classification are the processes of chemical milling, chemical etching and bright dipping. Chemical etching is the same process as chemical milling except the rates and depths of metal removal are usually much greater in chemical milling. Typical solutions for chemical milling and etching include ferric chloride, nitric acid, ammonium persulfate, chromic acid, cupric chloride, hydrochloric acid and combinations of these reagents. Bright dipping is a specialized form of etching and is used to remove oxide and tarnish from ferrous and nonferrous materials and is frequently performed just prior to anodizing. Bright dipping can produce a range of surface appearances from bright clean to brilliant depending on the surface smoothness desired for the finished part. Bright dipping solutions usually involve mixtures of two or more of sulfuric, chromic, phosphoric, nitric and hydrochloric acids. Also included in this unit operation is the stripping of metallic coatings.

As described in Section 1.1, step 3 of the electropolishing line involves dipping the stainless steel part in a phosphoric acid/sulfuric acid mixture. This process is clearly a form of etching and, more specifically, is bright dipping. In addition, the purpose of the electropolishing process is to remove oxide and tarnish and, thereby, to produce a particular surface appearance, in a range from bright clean to brilliant.

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The City of San Jose states, in its local permit fact sheet, that the industrial user does not produce a specific design or surface appearance. However, the facility is indeed producing a specific surface appearance, as described above.

2.1 Recent Enforcement

Local Enforcement

Through its surveillance monitoring program, the City of San Jose discovered compliance issues with this facility in late 2006. Samples collected in the sewer trunk line from September 6, 2006 to November 19, 2006 showed pollutant levels in excess of local limits 91% of the time. The City of San Jose traced the source of the high levels of pollutants to this Process Stainless Lab facility. In an inspection conducted on December 1, 2006, the City of San Jose discovered that a valved, hard plumbed line from the Sludge Thickener Tank (Tank #11) bypassed pretreatment and the legal sampling point and connected directly to the floor drain leading to the city sewer line. From our discussions with the City of San Jose after this April 10, 2007 inspection, we learned that the City of San Jose had discovered that an employee at the facility had been sending slurry from the Sludge Thickener Tank directly to the city sewer line at night. Management at the facility claim that they were not aware this was occurring because the employee would perform this direct discharge only during times that management was not present. Since then, the facility has removed this line.

A record of a compliance meeting between Process Stainless Lab and the City of San Jose on January 18, 2007, contains the following corrective actions:

1. Process Stainless will start by going to batch discharge. All batches will be tested for chromium, copper, lead, nickel, silver, zinc, and pH. Discharge may only occur with permission of the POTW inspector. Date: 1/26/07
2. PE will evaluate process and treatment systems and submit results by 2/28/07.
3. pH probe and pH recorder shall be repaired and calibration maintained. Date: 2/28/07
4. Sanitary sewer lateral will be cleaned out by a contractor. This must be coordinated with the POTW inspector, to be completed by 2/28/07.

The City of San Jose issued a total of 25 notices of violation to Process Stainless Lab for exceedances of local limits (copper, chromium total, nickel, and zinc) which occurred over the period of September 6, 2006 through October 26, 2006.

The City of San Jose also noted in its inspection of the facility on December 1, 2006, that the secondary containment area was full of liquid, thus leaving no available secondary containment.

Visual Confirmation

On April 10, 2007, we observed that the Sludge Thickener Tank had a side tap connection, but it was capped off. We did not see any piping that would bypass any part of the treatment system and lead directly to the city sewer.

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In addition, we noted that the secondary containment area was still full of liquid, leaving no available secondary containment.

2.2 Sampling Data

The facility's permit requires that the facility perform composite sampling and analysis for chromium, copper, and nickel semiannually. Monitoring for pH based on grab samples is also required semiannually. Sampling and analysis by the San Jose/Santa Clara Water Pollution Control Plant is to be conducted for the same parameters at the same frequency.

As a result of the compliance issues discovered by the City of San Jose, the City of San Jose required that the facility increase its monitoring frequency beginning in February 2007 to a daily basis.

Based on our review of semi-annual monitoring data from 2002 through 2006 and daily monitoring data for February 2007, the facility is in compliance with the applicable federal categorical limits of 40 CFR 433.17.

2.3 Compliance with Other Federal Pretreatment Standards

Though Process Stainless Lab received notices of violation from the City of San Jose for exceeding local limits, the facility also violated federal pretreatment standards. First, its discharges of slurry from the Sludge Thickener Tank directly to the city sewer line were in violation of the federal prohibition of bypass in 40 CFR 403.17(d). Bypass is defined in the federal pretreatment standards as "the intentional diversion of wastestreams from any portion of an Industrial User's treatment facility." By discharging directly from the Sludge Thickener Tank, Process Stainless Lab bypassed the filter press, which is part of the treatment facility.

Secondly, despite the City of San Jose's misclassification of this facility as being noncategorical, some federal pretreatment standards in 40 CFR 403 still applied to this IU, regardless of its status as categorical or non-categorical. In particular, 40 CFR 403.12 contains the reporting requirements for publicly owned treatment works (POTWs) and industrial users (IUs). Though we did not conduct a thorough review of the facility's compliance with these requirements, we know that the facility is in violation of at least one of these requirements: §403.12(j), which has the heading, "Notification of changed Discharge." This paragraph states, "All Industrial Users shall promptly notify the Control Authority (and the POTW if the POTW is not the Control Authority) in advance of any substantial change in the volume or character of pollutants in their Discharge…." Discharge of slurry from the Sludge Thickener Tank would have surely caused a substantial change in the volume and character of pollutants in the facility's usual discharge. However, the City of San Jose discovered this "substantial change" solely through its surveillance monitoring program.

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3.0 Summary of Findings

1. This Process Stainless Lab facility is subject to the federal categorical standard, 40 CFR 433, and is, therefore, not only an industrial user (IU) but more specifically a significant industrial user (SIU), per 40 CFR 403.3(v).
2. The facility is considered a new source under 40 CFR 433 and, therefore, must comply with the requirements and pollutant limits listed in 40 CFR 433.17.
3. The facility must also comply with the requirements in 40 CFR 403 applicable to an SIU as well as those applicable to an IU.
4. The City of San Jose will need to revise the wastewater discharge permit (No. SC-276B) accordingly.
5. Based on monitoring data from 2002 through 2006 and during the month of February 2007, this facility has not exceeded any of the federal categorical limits, as listed in 40 CFR 433.17.
6. Because of the liquid level in the secondary containment area, the facility, in effect, does not have secondary containment for the spray rinse area.
7. The facility's discharges of slurry from the Sludge Thickener Tank directly to the city sewer line were in violation of the federal pretreatment regulations, specifically 40 CFR 403.17(d).
8. The facility was in violation of at least one other portion of the federal pretreatment regulations in 40 CFR 403.12.

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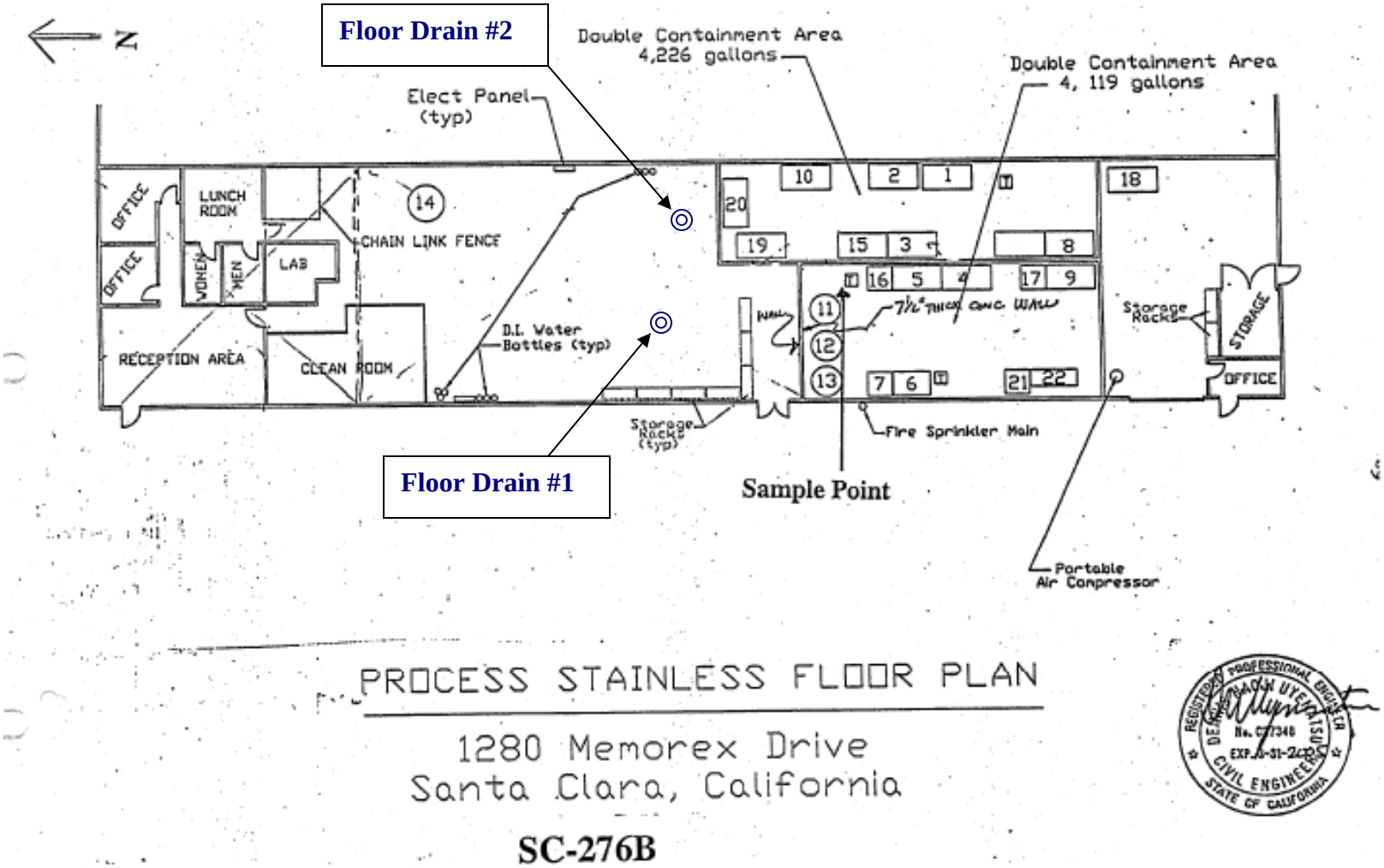
Attachment A



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Attachment B: Photos

Photo 1

Photo 2

Photos #1 & #2: Step 6 of the Electropolishing Line – Spray Rinse;
Grid Flooring Above Secondary Containment Area

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Photo 3

Photo #3: Wastewater Treatment System –
Holding Tank (Tank #23), Flocculation Tank (Tank #12),
Sludge Thickener Tank (Tank #11)

Photo 4

Photo #4: Wastewater Treatment System -
pH Adjustment Tank (Tank #13),
Flocculation Tank (Tank #12),

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Photo 5

Photo #5: Wastewater Treatment System – Clarifier (Tank #24)

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Photo 6a

Photo #6a: Sample Box: Inlet Side

Photo 6b

Photo #6b: Sample Box – Outlet Side

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Photo 7

Photo #7: Wastewater Treatment System – Sludge Thickener Tank (#11)

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Photo 8a

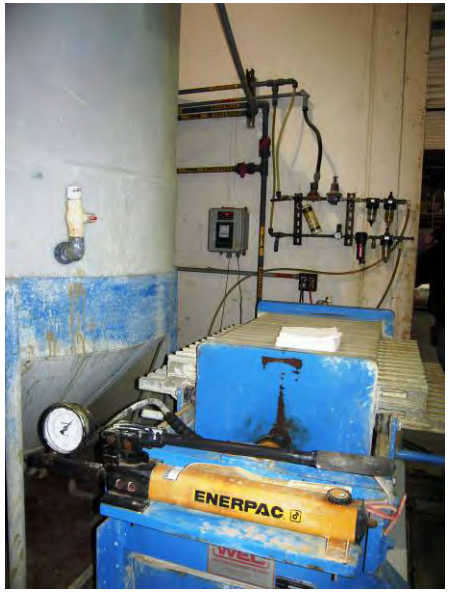

Photo 8b

Photos #8a & #8b: Wastewater Treatment System – Filter Press

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Photo 9

Photo #9: Floor Drain #1– Discharge of RO Overflow to City Sewer

Note: During the inspection, we informed Process Stainless Lab of its right to claim any information gathered during the inspection (except effluent data) as confidential. We also informed the facility that we would be taking some photographs. Process Stainless Lab did not object to these photographs being taken, nor did it claim any information gathered during the inspection as confidential.