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Mr. Allen Gilliam
NPDES Pretreatment Engineer
Water Division – ADEQ

Dear Mr. Gilliam,

The information about our Water Treatment Process is in the following document. There is a description of the processes, drawings of the equipment locations and a blow up of our soon to be complete Environmental Area, (the current location is also highlighted on this drawing), documents from our Water Treatment Operating Manual supplied by Harchem Engineering Company on our process and procedures and a sample operating procedure from one of our systems on how we charge the system.

Everything will print out in 8.5 X 11. The details in these documents should clear up any questions about our process and systems. Let us know if there are any questions and we will get you answers.

Note: Transfer of Ownership to Nidec is planned on 9/30/2010. My current e-mail address will still be good for 6 months. Location, phone numbers, etc. will remain the same.

Cordially
Aaron Exley

Waste Water Treatment Streams Mena, AR.

To be used with Schematic My Documents/Schematic Pretreatment 40 CFR 403.12

- 1- Carousel Parts Washer – This process is located in the assembly department and is approximately in the middle of the plant. It is a JRI 3 stage washing system. Each tank holds about 500 gallons of liquid. Parts pass through the washer on a conveyor, the chemical mix is sprayed on the parts through pipes and nozzles. The tanks are below the conveying system and the chemical mix drops back into the tank to be use over again. All three tanks are sucked out with our large vacuum tank each month and the waste water is taken to the start of the Water Treatment System tank 1.

The chemicals used in the Carousel parts washer are Lily Chemicals. The first stag has Paint Lok 567-LT and additive 503. It is added until the PH of the mix reaches 3.8. The second tank is a rinse and has 1/3 cup of Liquid Caustic Soda added to the 500 gallons of water when first charged. The third tank has Lily Rinse 33 added to it and is titrated to 8 to10 drops. The water and chemicals are heated to improve the performance of the process.

- 2- Titan Wash Tank – This process is located in the assembly department and is approximately in the middle of the plant. It is a set of two 1100 gallon tanks placed side by side. Parts are placed on a tray that agitates the part up and down in the solution. Once washed the parts are moved to the rinse tank. They are also agitated in this tank. When complete the parts are blown off with air and sent to the assembly operation. Both tanks are sucked out with our large vacuum tank each month and the chemicals are taken to the start of the Water Treatment System tank 1.

The chemicals used in the Titan Wash Tanks are Lily Chemicals. The first tank has Paint Lok 550 and additive 503 in it. It is added until the PH of the mix reaches 3.8. The second tank has Rinse 33 added to it and is titrated to 10 drops. Chemicals are heated to improve the performance of the operation.

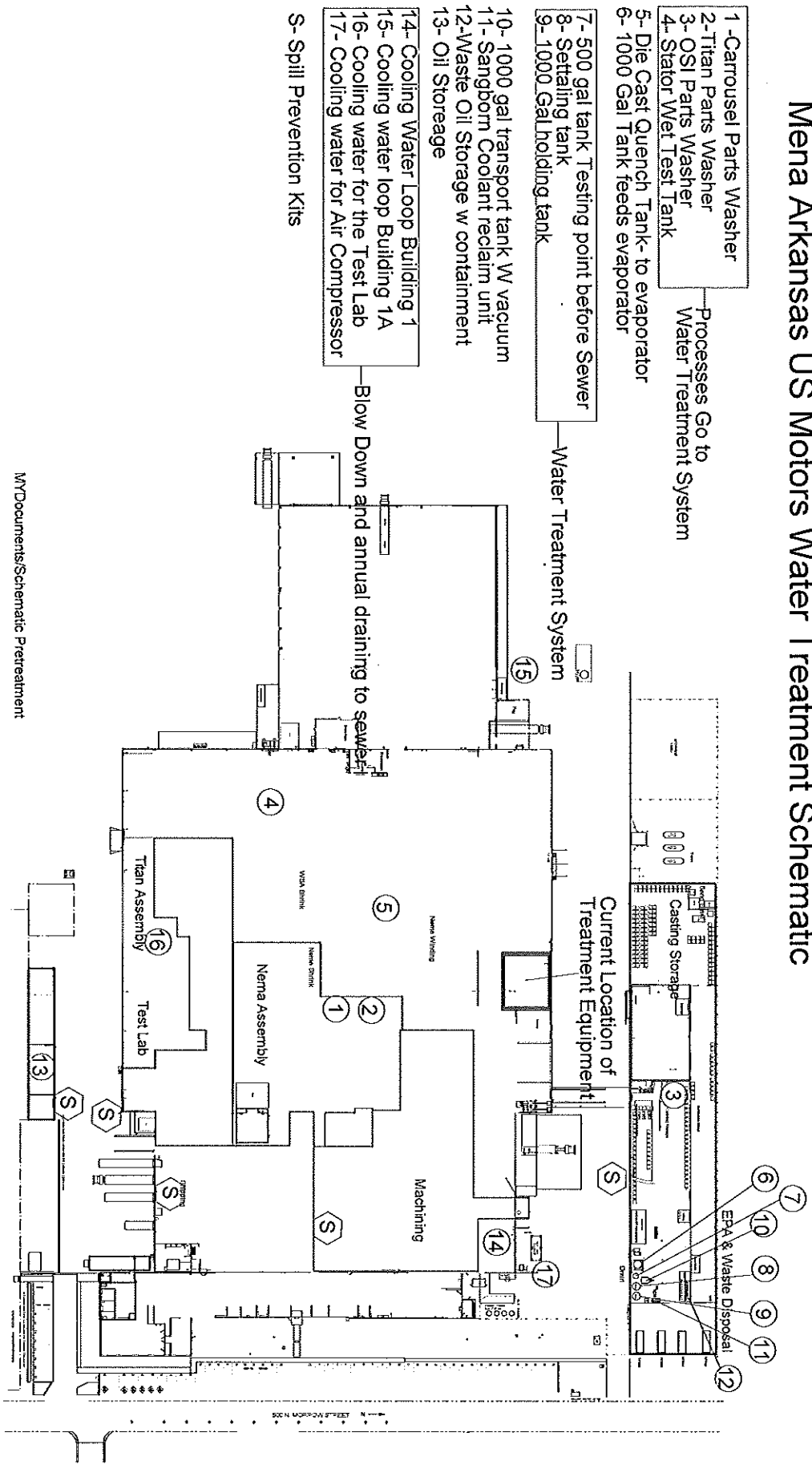
- 3- OSI Wash System – This is a wash process that is located in building two approximately in the middle of the building. It is made up of two 4200 gallon tanks placed side by side. Parts are suspended from a hoist in these tanks and air is blown into the tank to agitate the mix. The parts are first washed then dipped into the rinse tank before being blown off with air. The part then goes on pallets to the next operation which could be welding, machining or assembly. These tanks are vacuumed out once every 6 months and the chemicals sent to tank 1 of the Water Treatment System.

The chemicals used in the OSI Wash System are Lily Chemicals. The first tank has Paint Lok 580 and additive 503 in it. It is added until the PH of the mix

reaches 3.8. The second tank has Rinse 533 added to it and is titrated to 8 to 10 drops. Chemicals are heated to improve the performance of the operation.

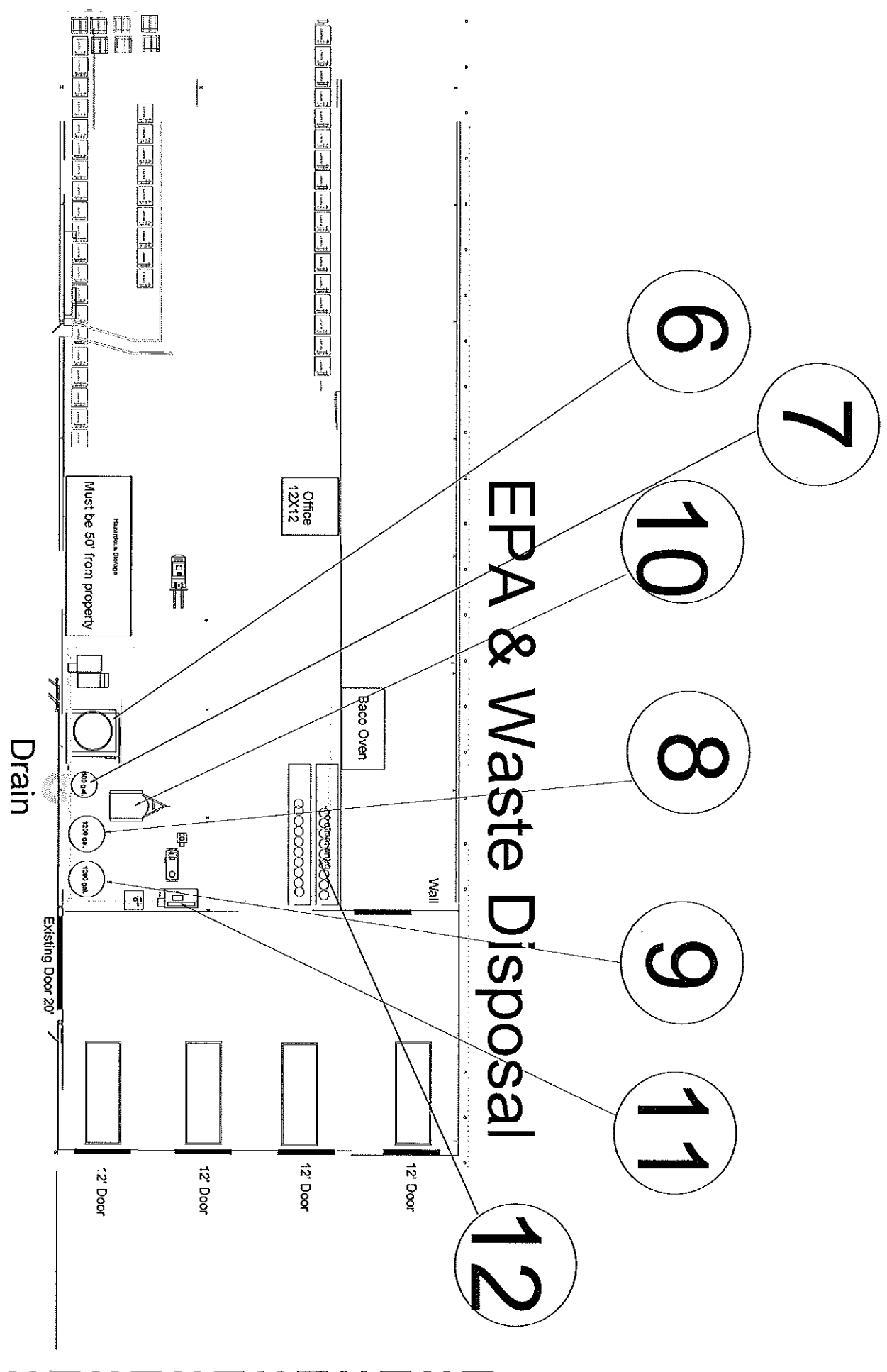
4- Stator Submersion Electrical Test – This is a large tank located in our winding department. It is in the Northwest part of the building, this tank is filled with 1130 gallons of water with 64 oz. of NuFinish Dishwasher Rinse. The tank has a lid and the tank isn't used very often so the water is only changed as needed. When the water is changed the tank is vacuumed out and taken to the Water Treatment System Tank 1 or the Evaporator Tank.

Mena Arkansas US Motors Water Treatment Schematic



M:\Documents\Schematic Pretreatment

Any water that comes in contact with the floor, machines, parts, paint water falls, coolant, oil etc. is vacuumed up and sent through the evaporator. The evaporator boils the water and releases it as steam the remaining liquid is handled as non-hazardous waste and is put in drums for pick up by our waste handler.



WASTEWATER TREATMENT SYSTEM

A. Source

A. OSE Tank Rinse
 Wash

B. Titan Tank (# of tanks) Rinse
 Wash

C. Carousel Washer Wash
 Rinse

B. Treatment Schedule

A. The carousel washer - As needed

B. Titan Tank - As needed

C. OSE - As needed

C. Chemical Treatment

Utilize 25% caustic (HarChem HB-017) for pH increase to enhance precipitation. Utilize one of HarChem cationic and anionic polymers if necessary to improve settling. Also, Calcium chloride or magnesium oxide may be necessary to form metal complex with calcium to enhance precipitation.

The most effective chemical treatment may vary as the quality of wash and rinse waters changes. HarChem will establish the treatment requirements based on testing once we get into treatment. We are currently treating similar waters and have the experience to optimize treatment.

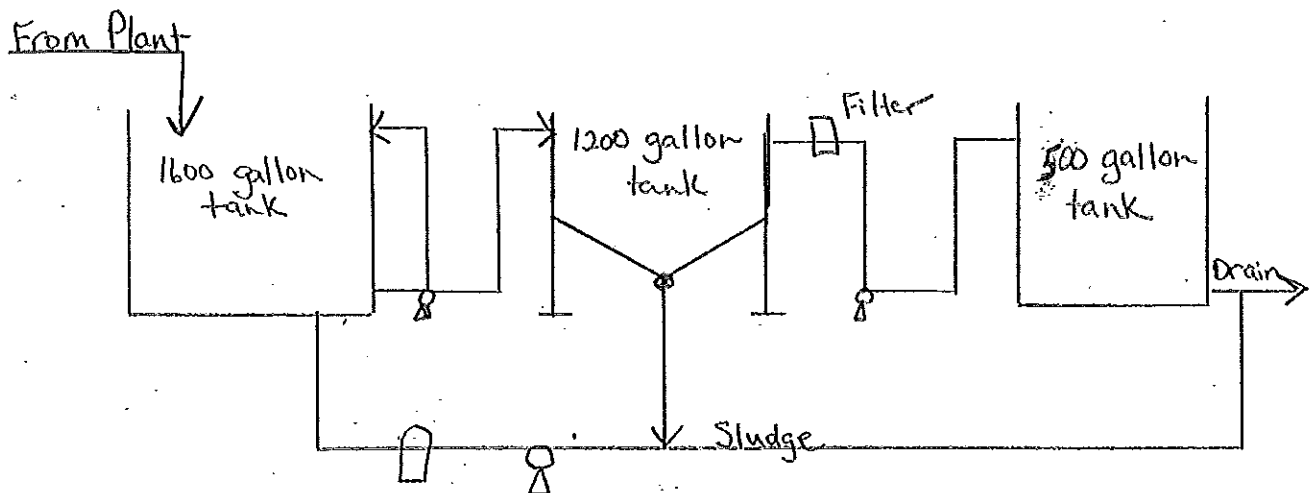
Water Services

D. Physical Treatment

Once the chemicals are mixed and reactions are allowed to proceed it will be necessary to allow time for precipitation and settling. This should be approximately two hours. We are recommending filtration following the settling tank. This will allow us to capture suspended metals on filter cartridge. The cartridge can then be disposed of properly and water passing through filter can be tested and released.

- E. The sludge which is settling to bottom of cone shaped tanks can be removed through the 2" valve and captured on filter cartridge. The water released by the sludge will be returned to 1600 gallon storage tank and retreated.

WASTEWATER TREATMENT SYSTEM



- Note:
1. Three pumps plumbed and valved to do all necessary pumping.
 - B. All three tanks valved and plumbed to be used for all three purposes.
 - C. We are supplying system installed (including valves, piping, fittings, etc.).
 - D. We are supplying start up chemicals.
 - E. We are providing startup training.
 - F. We are supplying operation procedure and maintenance manual.

EQUIPMENT LIST

1. 1600 Gallon Tank ✓
2. 1200 Gallon Cone Bottom Tank
3. Recirculating Pump (3 Each)
3/4 hp
4. 2 Filters Cartridge
5. 6 (1 1/2" Ball Valves)
6. 2 (2" Ball Valves)
7. 2 (90° 2" Elbows)
8. 1 1/2" and 2" Schedule 40 PVC

HarChem
H₂O

Water Services

CHEMICAL LIST

1. Sulfuric Acid - for pH depress ▼
2. HB-01^{34 17} (caustic) for pH increase
3. HCF-50P - Aluminum Chlorohydrate Solution
4. EM-533 - Anionic Flocculant

SEE MSDS IN SECTION ON SAFETY

BENCH TESTING PROGRAM

Initially it will be necessary to simulate treatment in a beaker. This will allow for optimization of chemical dosages. The following can be a typical bench study:

- E. Use a 2000 ml beaker on top of a magnetic stirrer.
- F. Fill beaker to correlate with gallons in tank to be treated. Example; if tank has 1000 gallons then use 1000 ml in beaker. Start mixer.
- G. Use HB-017 to adjust pH up as required. Record mls used. This will also be gallons used in tank.
- H. Continue chemical additions and mixing until you have gone through treatment process. Looking especially for floc size and settling rates.

Notes:

- 1. The polymer (HCF50P) is used to coagulate the precipitated metal. We calculated a dosage of 1 ml per 30 gals. (1000 gals./30=33 ml) 1400 gals./30=46 ml. Use this dosage to treat and if necessary we will adjust.
- 2. The polymer (EM-533) is a flocculant used to enhance settling. Dosage should be 1 ml - 166 gals., 6 ml/1000 gal. This should be mixed in 5 gallons of water and slowly added to tank. Mix on hour.

WASTEWATER TREATMENT
OPERATION PROCEDURE
(Updated 3-02-01)

17
34

1. Adjust pH of incoming water to 9.5 to 9.8 by using HB-017. Mix 1 hour.
2. Add HCF-50P to mix tank. (Use 1 ml per 30 gals.) Mix 30 minutes.
3. Add EM-533 (2 ppm) to mix tank. (Use 6 ml per 1000 gals.) Mix 1 hour.
4. Transfer to settling tank where it will remain for a minimum of 4 hours.
5. Transfer to effluent (discharge) tank through filter.
6. Add H₂SO₄ (sulfuric acid) to adjust pH between 6-9.
Note: Target 8-8.5 pH.
7. Discharge to drain.

System should now be ready for next batch to be treated. If necessary clean system tanks and pipes by circulating fresh water and releasing to drain (or if necessary return to 1600 gallon tank to be treated with next batch.

WASTEWATER TREATMENT WORKSHEET

DATE _____ GALLONS OF WATER TREATED _____

Bench Study.

Fill beaker with 1 ml of incoming water for each gallon of water to be treated. Add HB-017 to beaker to raise pH to 9.5-9.8. Each ml added equals 1 gallon of HB-017 to be added to incoming water treatment tank.

1. Adjust PH of incoming water to 9.5-9.8 using HB-017 (caustic soda).

• Incoming water pH _____ HB-017 _____ gal. PH _____

2. Add HCF-50P to mix tank. (Use 1 ml per 30 gallons). Mix 30 minutes.

• ml HCF-50P added _____

3. Add EM-533 to mix tank. (Use 1 ml per 167 gallons.) Mix 1 hour.

• ml EM-533 added _____

4. Transfer to settling tank where it will remain for a minimum of 4 hours.

5. Transfer to effluent (discharge) tank through filter.

• Gallons to Discharge Tank _____

• Gallons to Discharge Tank _____

• Gallons to Discharge Tank _____

6. Add H₂SO₄ (sulfuric acid) to adjust PH between 6-9.

• Oz. Sulfuric Acid added _____ Final pH _____

• Oz. Sulfuric Acid added _____ Final pH _____

• Oz. Sulfuric Acid added _____ Final pH _____

• Gallons of Water discharged to sewer. _____ Date _____

• Gallons of Water discharged to sewer. _____ Date _____

• Gallons of Water discharged to sewer. _____ Date _____

Signature _____

SAMPLE

503-SOAK
LOT A DAY

OPERATING PROCEDURE
FOR
IMMERSION WASHER FINISHING SYSTEM

STAGE ONE: LILY PAINT LOK 580

TANK CAPACITY	-- 4200 GALLONS
INITIAL CHARGE	-- 190 GALLONS
TEMPERATURE	-- 130° TO 150°
OPERATING RANGE	-- 8 TO 10 DROPS
pH RANGE	-- 3.5 TO 5.0
TEST FREQUENCY	-- TWO TIMES PER SHIFT
MAINTENANCE	-- DRAIN AND CLEAN TANK EVERY SIX MONTHS

TITRATION TEST:

FILL TEST TUBE TO 10 ML MARK WITH SOLUTION TO BE TESTED. ADD 3 OR 4 DROPS OF PHENOLTHALEIN SOLUTION. ADD 2N KOH TITRATING SOLUTION DROPWISE UNTIL COLOR CHANGES FROM CLEAR TO PINK. RECORD NUMBER OF DROPS, MAINTAIN 8 TO 10 DROPS

REPLINISHMENT:

ADD 20 GALLONS OF LILY PAINT LOK 580 TO RAISE TITRATION 1 DROP

STAGE TWO: RINSE 33

TANK CAPACITY	-- 4200 GALLONS
INITIAL CHARGE	-- 15 GALLONS
TEMPERATURE	-- 130 TO 150
pH	-- 6.0 TO 7.0
MAINTENANCE	-- DRAIN AS NEEDED

TITRATION TEST:

FILL TEST TUBE TO 10 ML MARK WITH SOLUTION TO BE TESTED. ADD 3 OR 4 DROPS OF PHENOLTHALEIN INDICATOR. TITRATE DROPWISE WITH TITRATING SOLUTION UNTIL COLOR CHANGES FROM CLEAR TO PINK. RECORD NUMBER OF DROPS, MAINTAIN 1 TO 2 DROPS.

REPLINISHMENT:

ADD 8 GALLONS OF RINSE 33 TO RAISE TITRATION 1 DROP.